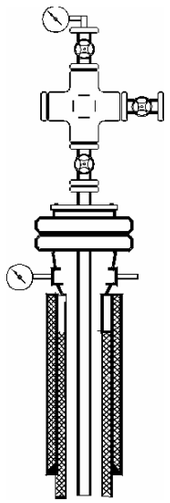
PERMIT RENEWAL APPLICATION TO DISPOSE OF WASTE IN A CLASS I INJECTION WELL

- WDW-397 AND WDW-398 -



EXXON MOBIL CORPORATION
PASADENA PLANT FACILITY
PASADENA, TEXAS

FEBRUARY 2024

Project No. 23-141

2300 GREENHILL DRIVE SUITE 700 ROUND ROCK, TEXAS 78664 OFFICE 512-795-8183

PERMIT RENEWAL APPLICATION TO DISPOSE OF WASTE IN A CLASS I INJECTION WELL WDW-397 AND WDW-398

Prepared for

ExxonMobil

Prepared by

TERRA DYNAMICS INC

ROUND ROCK, TEXAS

Project No. 23-141
February 2024

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TERRA DYNAMICS INC

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WDW 397

Texas Commission on Environmental Quality
Permit Application to Dispose of Waste
In A Class I Injection Well

I. General Information

A. Type of Application (check all that apply):

☐ Initial
☒ Renewal
☐ Major Amendment
☐ Minor Amendment
☐ Minor Modification
☐ Transfer
☐ Endorsement

Type of Waste (check all that apply):

☒ Hazardous Waste
☒ Nonhazardous Waste

Type of Facility (check all that apply):

☐ Commercial
☒ Noncommercial

Source of waste for noncommercial (check all that apply):

☒ Onsite
☐ Captured facility
☒ Offsite from facilities owned or effectively controlled by owner/operator

B. Facility Name: Pasadena Injection Well
Street Address: 1933 Jackson Road
City, State, Zip: Pasadena, TX 77506-3447
Mailing Address: same
Mailing City, State, Zip: same
County: Harris
TCEQ Solid Waste Registration (SWR) Number: 87314
EPA ID Number: TXD099387474

Give a description of the location of the facility site with respect to known or easily identifiable landmarks. Detail the access routes from the nearest U.S. or State Highway to the facility: The facility site is located along the south bank of the Houston Ship Channel in Pasadena, Texas. The plant site is accessed by following Highway 225 from Houston to Pasadena. In Pasadena, turn left and go north on Jefferson Street for about 1.5 miles. At the end of Jefferson Street, turn left on 1st Street. Head west on 1st Street for about 1/3-mile. Turn right onto Jackson Road and head north. The plant site is located at 1933 Jackson Road.

Is the facility located within the Coastal Management Program boundary? Refer to Texas Coastal Management Boundary Map[1] for boundary. For questions regarding the Coastal Management Program, please call (800) 998-4456 (within Texas) or (512) 475-0773. [30 TAC §281.41]

☒ Yes ☐ No

Provide the location of the injection well relative to established surveys: The location of the well is approximately 1,450 feet east of the west line and 25,700 feet north of the south line of the James Seymore Survey, Abstract-698.

Enter the geographical coordinates of the injection well in decimal degrees to 6 decimal places:

Latitude: 29.740792

Longitude: -95.189832

Provide the depths of the injection zone and injection interval:

Injection Zone: FrioFormation(s) at depths of 5,325 to 7,250 feet below ground level.

Injection Interval: Frio Formation(s) at depths of 5,900 to 7,250 feet below ground level

C. Operator/Applicant (Individual, Corporation, or other Legal Entity Name)

Name: Exxon Mobil Corporation
Address: 2800 Decker Dr. NW 55
City, State and Zip: Baytown, TX 77520
Telephone Number: 281-834-4675

If the application is submitted on behalf of a corporation or other business organization with filing requirements, please identify the Charter Filing Number as recorded with the Office of the Secretary of State for Texas.

Charter Filing Number: 0003362806

Is the applicant required to designate a registered agent with the Secretary of State of Texas?

☐ Yes ☒ No

If the application is submitted by a business organization that is required to designate and maintain a registered agent, the applicant must provide the name and address of the registered agent.

Agent: Corporation Service Company d/b/a CSC-Layers Incorporating Service Company
Address: 211 E. 7th Street, Suite 620
City, State, and Zip: Austin, TX 78701-3218
Telephone Number: 512-379-1550

[1] https://www.glo.texas.gov/coast/coastal-management/forms/files/CoastalBoundaryMap.pdf

D. Facility Owner(s) (Individual, Corporation, or other Legal Entity Name)

The facility includes all contiguous land, and structures, other appurtenances, and improvements on the land, used for storing, processing, or disposing of waste. The facility owner must be consistent with the owner on the deed filing bearing the stamp of the county property records or other generally accepted identifying reference of the current ownership record provided in Section I.P.5, Attachment C of the application. If the facility owner is the same as the operator, state "same as operator". If the facility land, structures, appurtenances, and improvements on the land are owned by more than one individual, corporation or other legal entity, provide the following information for all owners. Clearly identify the relationship(s) between the operator and all facility owner(s). [THSC §361.087(1)]

Name: same as operator
Address: _____
City, State, Zip: _____
Telephone Number: _____
Charter Filing Number: _____

E. Indicate the ownership status of the facility.

Private:

☒ Corporation
☐ Partnership
☐ Proprietorship
☐ Nonprofit organization

Public:

☐ Military
☐ State
☐ Regional
☐ County
☐ Municipal
☐ Federal

Other (specify): _____

F. List those persons or firms authorized to act for the applicant during the processing of the permit application. Indicate the capacity in which each person may represent the applicant (engineering, geology, legal, etc.). The person listed first will be the primary recipient of correspondence regarding this application. Include complete mailing addresses, phone numbers and e-mail addresses.

Primary Applicant
Breanna Jackson
ExxonMobil Environmental and Property Solutions
22777 Springwoods Village Pkwy,
Spring, TX 77389
(201) 407-0462 TEL
breanna.j.jackson@exxonmobil.com

Technical Issues
Stephanie K. Williams,
Terra Dynamics Inc.
2300 Greenhill Dr
Ste 700
Round Rock, TX 78664
(512) 795-8183 TEL
swilliams@terradyn.com

Technical Issues
Phani Pamidimukkala
Arcadis
10205 Westheimer Road
Ste. 800
Houston, TX 77042
(713) 953-4800 TEL
phani.pamidimukkala@arcadis.com

G. For new, renewal, and major amendment applications specify the individual who will be responsible for causing notice to be published in the newspaper. Include the complete mailing address, telephone number, fax number and e-mail address.

Phani Pamidimukkala
Arcadis
10205 Westheimer Road, Ste. 800, Houston 77042
(713) 953-4800TEL phani.pamidimukkala@arcadis.com

H. Describe the activities conducted by the applicant which require a permit.

As part of a previous sales agreement, ExxonMobil retained some closure obligations at the Pasadena Fertilizer Plant owned and operated by PCI Nitrogen, LLC. ExxonMobil has purchased property and constructed two Class I injection wells in the vicinity of the stacks being closed. These wells are utilized to dispose of pond water generated during the closure of "gyp stacks" located at the Pasadena Fertilizer Plant. The two Class I injection wells are currently permitted by the TCEQ. ExxonMobil owns the injection wells, surface facilities and a small parcel of property associated with each of the well locations.

I. For amendment, modification, transfer or endorsement applications, briefly describe all requested changes to the permit and to the application contents and the reasons for the changes.

none

J. Business Information

1. Give a brief description of the nature of your business.

   The purpose of the wells is to dispose of pond water associated with stack closures at the PCI Nitrogen Pasadena Fertilizer Plant.

2. List the principal products and/or services which are provided by your plant. Please itemize by Standard Industrial Classification (SIC) codes. Also label the products with their common names, if applicable.

   Hazardous waste treatment and disposal.

   SIC Codes: 4953 – Establishments primarily engaged in the collection and disposal of refuse by processing or destruction or in the operation of incinerators, waste treatment plants, landfills, or other sites for disposal of such materials.

   NAICS Code: 562211 – Hazardous waste treatment and disposal.

K. Applicant Compliance History

The TCEQ will utilize compliance history when making decisions regarding the issuance, renewal, amendment, modification, denial, suspension, or revocation of a permit. Violations included in a criminal conviction are considered when evaluating and classifying the site's compliance history.

For the five years preceding the filing date of this application, please submit a complete listing of all criminal convictions (i.e., State or Federal) of the operator and facility owner in which a violation of environmental law was an element of the crime. [30 TAC §60.2(d)(1)(E) and §60.2(d)(2)(F)] If there have been no such convictions then the application should state

the following. If the operator is not the facility owner, a separate statement should be provided for each facility owner.

"In the five years preceding the filing of this application (the operator/applicant, owner), Exxon Mobil Corporation, has not been convicted of a State or Federal crime in which a violation of environmental law was an element of the crime."

L. TCEQ Core Data Form

The TCEQ requires that a Core Data Form[2] (TCEQ-10400) be submitted with all new and renewal applications. Submit the form as "Attachment A". For all other applications, if a Regulated Entity Number (RN) and Customer Reference Number (CN) have been issued by the TCEQ and core data information has not changed, a Core Data Form is not required. For more information regarding the Core Data Form, call (512) 239-5175 or go to the Core Data Form Instructions[3] on the TCEQ website.

See Attachment A for the Core Data Form (Form 10400)

RN104151204

CN600123939

M. Public Interest Demonstration

Section 27.051 of the Texas Water Code (TWC) stipulates certain conditions that must exist for the Commission to grant an application and issue a permit. For all new applications, permit renewals, and major and minor amendments, submit as "Attachment B" information addressing the following considerations: See Attachment B

1. That the use or installation of the injection well is in the public interest. [TWC§27.051(a)(1)]

2. That no existing rights, including, but not limited to, mineral rights, will be impaired. [TWC §27.051(a)(2)]

3. That, with proper safeguards, both ground and surface fresh water can be adequately protected from pollution. [TWC §27.051(a)(3)]

4. That the applicant has made a satisfactory showing of financial responsibility if required by Section 27.073 of this code. [TWC §27.051(a)(4)]

5. That the compliance history of the applicant and related entities is acceptable. [TWC §27.051(d)(1), 30 TAC § 331.121(b)(1)]

6. That there is no practical, economic, and feasible alternative to an injection well reasonably available. Provide justification for subsurface disposal. Include results of treatability studies of alternate, practical, economic and feasible methods of waste disposal. Explain in detail why each method is considered to be less satisfactory in terms of environmental protection than the proposed subsurface disposal method.

[2] https://www.tceq.texas.gov/downloads/permitting/central-registry-docs/10400-core-data-form.docx
[3] https://www.tceq.texas.gov/downloads/permitting/central-registry-docs/10400-core-data-form-instructions.pdf

Indicate whether this waste is presently being produced and, if so, what method is used for disposal. Describe the manufacturing process(es) and product(s) which produce the waste(s). [TWC §27.051(d)(2), 30 TAC § 331.121(b)(2)]

7. (for hazardous waste injection wells only) That the applicant has provided for the proper operation of the proposed hazardous waste injection well. [TWC §27.051(a)(5)]

8. (for hazardous waste injection wells only) That the applicant for a hazardous waste injection well not located in an area of industrial land use has made a reasonable effort to ensure that the burden, if any, imposed by the proposed hazardous waste injection well on local law enforcement, emergency medical or fire-fighting personnel, or public roadways, will be reasonably minimized or mitigated. [TWC §27.051(a)(6)]

9. (for hazardous waste injection wells only) That the applicant owns or has made a good faith claim to own, or has the consent of the owner to utilize, or has an option to acquire, or has the authority to acquire through eminent domain, the property or portions of the property where the hazardous waste injection well will be constructed. [TWC §27.051(a)(7)]

10. (for hazardous waste injection wells only) That the applicant will maintain sufficient public liability insurance for bodily injury and property damage to third parties that is caused by sudden and non-sudden accidents or will otherwise demonstrate financial responsibility in a manner adopted by the Commission in lieu of public liability insurance. [TWC §27.051(d)(3), 30 TAC § 331.121(b)(3)]

11. (for hazardous waste injection wells only) For on-site generated waste, provide certification by the owner/operator that (1) the generator of the hazardous waste has a program to reduce the volume or quantity and toxicity of the waste to the degree determined by the generator to be economically practicable, and (2) injection of the waste is that practicable method of disposal currently available to the generator which minimizes the present and future threat to human health and the environment. [30 TAC §331.121(b)(4)]

N. For applications for new permits, renewals, and major amendments, a copy of the administratively complete application and subsequent revisions must be made available at a public place in the county where the facility is located or proposed to be located for review and copying by the public. Identify the public place in the county (e.g., public library, county courthouse, city hall), including the address, where the application will be located. [30 TAC §39.405(g)]

Pasadena Public Library
1201 Jeff Ginn Memorial Dr, Pasadena, TX 77506

O. Facility Background Information [30 TAC §305.45(a)(7)]

Indicate (by listing the permit number(s) and governing agency(ies) in the columns below) all existing, pending, interim status, or permit-by-rule State and/or Federal permits, licenses or construction approvals which pertain to pollution control or industrial solid waste management activities conducted by your plant or at your location, or existing at a proposed plant or location. Complete each blank by entering either the **permit number** or **the date of application**, and the **governing agency** or **none**.

Existing Permits

Relevant Program and/or Law	Permit Number or License	Government Agency *
Hazardous Waste Management Program under the Texas Solid Waste Disposal Act	None	
UIC Program under the Texas Injection Well Act (Class I, II, III, IV, V and VI Wells)	WDW-397 WDW-398	TCEQ
Texas Pollutant Discharge Elimination System Program under the Clean Water Act and Waste Discharge Program under the Texas Water Code, Chapter 26	None	
Prevention of Significant Deterioration Program under the Federal Clean Air Act (FCAA)	none	
Nonattainment Program under the FCAA	None	
National Emission Standards for Hazardous Air Pollutants preconstruction approval under the FCAA	None	
Ocean dumping permits under the Marine Protection Research and Sanctuaries Act	None	
Dredge or fill permits under the Federal Clean Water Act	None	
Licenses under the Texas Radiation Control Act	None	
Subsurface Area Drip Dispersal System permits under Texas Water Code, Chapter 32	None	
Texas Solid Waste Disposal Act	None	
Texas Uranium Surface Mining and Reclamation Act	None	
Texas Surface Coal Mining and Reclamation Act	None	
Other relevant environmental permits/licenses	None	

* Use the following acronyms for each agency:

TCEQ = Texas Commission on Environmental Quality
RRC = Railroad Commission of Texas
DSHS = Department of State Health Services
TDA = Texas Department of Agriculture
EPA = U.S. Environmental Protection Agency
CORPS = U.S. Army Corps of Engineers

P. Location

1. Is the facility located on Indian lands?

   ☐ Yes ☒ No

   If yes, do not complete this application. Contact EPA Region 6 for application and permitting requirements for injection wells located on Indian lands. [40 CFR §147.2205(a)]

2. Is the facility located in an area in which the governing body of the county or municipality has prohibited the processing or disposal of municipal hazardous waste or industrial solid waste?

☐ Yes ☒ No

If yes, do not complete this application. TCEQ may not grant an application for an injection well permit in this area. [THSC §363.112(d)]

3. If the facility is a new commercial hazardous waste management facility, or the subsequent areal expansion of such a facility, is the boundary of the well or pre-injection units to be located within ½ of a mile of an established residence, church, school, day care center, surface water body used for public drinking water supply, or dedicated park?

☐ Yes ☒ No

If yes, do not complete this application. TCEQ may not issue a permit for a facility in this location. [30 TAC §335.205(a)(3)]

4. Is the location or proposed location of the injection well in the territory of a groundwater conservation district? To determine if the injection well is or will be located in the territory of a groundwater conservation district refer to the Texas Groundwater Conservation District map[4] on the TWDB website.

☒ Yes ☐ No

If yes, provide the contact name and mailing address for the groundwater conservation district. To obtain a point of contact and mailing address refer to the Groundwater Conservation Districts Contact List[5] on the TCEQ website. [TWC §27.017(b)]

Mr. Michael Turco, General Manager
Harris-Galveston Coastal Subsidence District
1660 West Bay Area Blvd.
Friendswood, TX 77546

5. Legal Description of Facility Land

Submit, as "Attachment C", a legal description of the tract or tracts of land upon which the facility is or will be located and the deed filing bearing the stamp of the county property records or other generally accepted identifying reference of the current ownership record. If ownership of the property is transferring and new ownership documents are not final, provide the date upon which the documents will be submitted. The facility includes all contiguous land, and structures, other appurtenances, and improvements on the land, used for storing, processing, or disposing of waste including pre-injection units used for storage and processing waste to be injected into the injection well. The legal description should include the metes and bounds description or for platted urban sites the final plat with appropriate "lot" description(s). [THSC §361.087(2)]

See Attachment C

6. Submit, as "Attachment D", a drawn-to-scale topographic map of the facility and the tract or tracts of land upon which the facility is or will be located as described in Attachment C and area extending at least one mile beyond the tract boundaries. The map must be prepared by a licensed professional engineer or a registered surveyor. The

[4] https://www.twdb.texas.gov/mapping/doc/maps/GCDs_8x11.pdf
[5] https://www.tceq.texas.gov/downloads/groundwater/gcd/gcd-contact-list.pdf

scale should be adequate to depict the following features: [30 TAC §305.45(a)(6)(A), (C) & (E)]

a. the boundary of the tract or tracts of land upon which the facility is or will be located as described in Attachment C; areal size of the tract or tracts of land in acres should be given;

b. if different, the boundary of the facility, and the location of all injection wells; each depicted area should be labeled to identify the well(s) and the well status (active, inactive, or proposed); areal size of the facility in acres should be given;

c. if applicable, the boundaries of captured facilities that generate waste to be disposed in the injection wells, each depicted area should be labeled to identify the names of the captured facilities;

d. the overall facility, each of its surface intake and discharge structures, each of its waste treatment, storage or disposal facilities, including proposed or existing pre-injection units for processing or storage of waste to be disposed in the injection wells; and

e. all wells (water, oil and gas, disposal, etc.), springs, other surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant within one mile of the facility property boundary, and the purpose for which each water well is used (e.g., domestic, livestock, agricultural, industrial, etc.).

See Attachment D

Q. Plain-Language Summary

The TCEQ implemented new rule requirements in 30 TAC Chapter 39 that impact all permit applications subject to the Chapter 39 public notice requirements that are declared administratively complete after May 1, 2022. One of the new rules, 30 TAC §39.405(k), requires the applicant to provide a plain-language summary in English, and in an alternative language if required in accordance with 30 TAC §39.426. The plain-language summaries for all applications will be posted on the TCEQ website.

For new, renewal and major amendment permit applications submit, as “Attachment E”, a Plain-Language Summary of the application that is no more than two pages long. The summary should be entitled “Plain-Language Summary” and should be prepared in simple, concise, easy-to-understand terminology. The summary must include the following information. [30 TAC §39.405(k)]

1. the applicant/operator name;

2. the type of application;

3. the type of waste;

4. the type of facility;

5. the facility name and location;

6. the function of the proposed plant or facility;

7. the expected output of the proposed plant or facility;

8. the expected pollutants that may be emitted or discharged by the proposed plant or facility which require an injection well permit; and

9. how the applicant will control those pollutants, so that the proposed plant will not have an adverse impact on human health or the environment.

If the applicant is required to provide notice in an alternative language in accordance with 30 TAC §39.426, provide a copy of the plain-language summary in English and in the alternative language.

In addition, provide a copy of the plain-language summaries in pdf clearly labeled on a flash drive.

See Attachment E

R. Public Involvement Plan

TCEQ's Public Participation Plan provides guidance for using preliminary screening and public involvement plans to ensure meaningful public outreach. Applicants who are applying for a new injection well permit are required to complete a Public Involvement Plan. A Public Involvement Plan is intended to provide an applicant and the agency with information to determine if additional public outreach is necessary or beneficial. Applicants may complete a Public Involvement Plan, even if not required, to learn about the communities in which their facilities are located or where their activities may have an impact.

Submit a Public Involvement Plan, as "Attachment F", using the Public Involvement Plan Form[6] (TCEQ-20960) and Instructions for Completing a Public Involvement Plan Form for Permit and Registration Applications[7] (TCEQ-20960).

For more information regarding Title VI compliance at TCEQ[8] or the Public Participation Plan[9] go on the TCEQ website.

See Attachment F

[6] https://www.tceq.texas.gov/downloads/agency/decisions/hearings/environmental-equity/pip-form-tceq-20960.pdf
[7] https://www.tceq.texas.gov/downloads/agency/decisions/hearings/environmental-equity/instructions-for-pip-form-tceq-20960.pdf
[8] https://www.tceq.texas.gov/agency/decisions/participation/title-vi-compliance
[9] https://www.tceq.texas.gov/downloads/agency/decisions/participation/public-participation-plan-gi-607.pdf

Signature Page

I (Signatory Name) Breanna Jackson (Title) Project Manager
(Company) ExxonMobil Corporation certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: Breanna Jackson Date: 7/24/2024

See 30 TAC §305.44 for signatory authority.

Applications must be signed by the operator of the facility and the facility owner(s). The facility includes all contiguous land, and structures, other appurtenances, and improvements on the land, used for storing, processing, or disposing of waste. Duplicate this page for additional signatories.

To Be Completed by the Applicant if the Applicant Is a Corporation and the Responsible Corporate Officer Is Assigning or Delegating Signature Authority to a Manager in Accordance with 30 TAC §305.44(a)(1)

I (Signatory Name) _____ (Title) _____
(Company) _____ hereby designate (Agent Name and/or Title) _____ as my agent and hereby authorize said agent to sign any application, submit additional information as may be requested by the Commission, and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a Texas Water Code or Texas Solid Waste Disposal Act permit. I further understand that I am responsible for the contents of this application, for oral statements given by my agent in support of the application, and for compliance with the terms and conditions of any permit which might be issued based upon this application.

Signature: _____ Date: _____

(Note: Application Must Bear Signature and Seal of Notary Public)

SUBSCRIBED AND SWORN to before me by the said Breanna Jackson, Project Manager

on this _____ day, 24 month of July, year of 2024

My commission expires on the 31 day, month of March, year of 2026

Donetta E. Williams
Notary Public

DONETTA E. WILLIAMS
Notary Public, State of Texas
Comm. Expires 03-31-2026
Notary ID 129767625

II. Information Required to Provide Notice

Submit, as "Attachment G", a mailing list of landowners identified under Section II.A. and a mailing list of mineral rights owners identified under Section II.B. In accordance with 30 TAC §39.405(b), please also submit this mailing list electronically, in Microsoft Word. The electronic list must contain only the name, mailing address, city, state, and zip code with no reference to the lot number or lot location. The list should contain up to 30 names and addresses (10 per column) per page. Each name and address must be typed in the format that meets the United States Postal Service (USPS) requirements for machine readability. The letters in the name and address must be capitalized, contain no punctuation, and the two-character abbreviation must be used for the state. Contact the USPS for further instructions on formatting addresses for machine readability. The applicant may elect to submit pre-printed mailing labels of this mailing list with the application instead of submitting the mailing list electronically. If you wish to provide the list on printed labels, please use sheets of labels that have 30 labels to a page (10 labels per column). Please provide **four complete sets of labels** of the landowners and mineral rights owners list.

See Attachment G

A. Provide a complete mailing address for persons who own the property on which the existing or proposed injection well facility is or will be located and all persons who own tracts of land adjacent to the property on which the existing or proposed injection well facility is or will be located and within a reasonable distance from the proposed point or points of discharge, deposit, injection, or other place of disposal or activity. Identify the tracts of land and landowners on a map and provide the general character of the areas adjacent to the facility, including public roads, towns and the nature of development of adjacent lands (e.g., residential, commercial, agricultural, recreational, industrial or undeveloped) on the map. The property boundary of the tract or tracts of land on which the existing or proposed injection facility is or will be located must be consistent with the legal description of the tract or tracts of land provided in Section I.P.5, Attachment C, of the application. (Refer to Example Application Map) [30 TAC §281.5(6), §305.45(a)(6)(B) & (D) and §39.651(c)(4)(A) & (B)]

B. Provide a complete mailing address for all persons who own the mineral rights underlying the existing or proposed injection well facility and underlying the tracts of land adjacent to the property on which the existing or proposed injection well facility is or will be located as required by 30 TAC §39.651(c)(4)(C) & (D). Identify the mineral rights owners on the map provided above in Section II.A.

C. If the facility is located adjacent to navigable territorial waters of the state, or the State of Texas is an adjacent landowner and/or owner of mineral rights underlying the facility or underlying adjacent tracts, your application may affect lands dedicated to the permanent school fund. A determination whether lands dedicated to the permanent school fund will be affected by TCEQ formal action on the application will be made by the Texas General Land Office (TXGLO).

General Land Office
Deputy Commissioner of Asset Acquisition
Steven F. Austin Bldg
1700 N. Congress
Austin, TX 78701

In order for the TXGLO to make a determination, the TCEQ will provide notice to the TXGLO regarding the application. Provide the following information for inclusion in the notice to the TXGLO:

1. state the location of the permanent school fund land, mineral rights, or waters of the state that may be affected; and

   The facility location is not adjacent to navigable territorial waters of the state, nor is the State of Texas an adjacent landowner or owner of mineral rights underlying the facility or underlying adjacent tracts.

2. describe any foreseeable impact or effect of the proposed permitted action may have on permanent school fund land.

   As the State of Texas is not an adjacent land or mineral owner, no impact or effect on the permanent school fund is foreseen.

A formal action or ruling by the Commission on an application affecting permanent school fund land that is made without the notice required by 30 TAC §39.651(c)(3) is voidable by the School Land Board as to any permanent school fund lands affected by the action or ruling. [TWC §5.115(c) and (g)]

D. Provide the name and mailing address of the mayor and health authority of the municipality in whose territorial limits or extraterritorial jurisdiction the well is or will be located, and the name and mailing address of the county judge and the health authority of the county in which the facility is located. [30 TAC §39.651(c)(5)]

<u>Mayor</u>
Mayor Jeff Wagner
1149 Ellsworth Drive
Pasadena, TX 77506
(713) 475-5545

<u>Health Authority</u>
Pasadena Health Department
1149 Ellsworth Drive
Pasadena, TX 77506
(713) 475-5529

<u>County Judge</u>
Judge Lina Hidalgo
1001 Preston, Suite 911
Houston, TX 77002
(713) 274-7000

<u>Harris County Health Authority</u>
Harris County Public Health
1111 Fannin Street
Houston, TX 77002
(713) 439-6000

E. Bilingual Notice Instructions. For new, renewal and major amendment permit applications, public notice in an alternate language may be required. If an elementary school or middle school nearest to the facility offers a bilingual program, notice may be required to be published in an alternative language. The Texas Education Code, upon which the TCEQ alternative language notice requirements are based, requires a bilingual education program for an entire school district should the requisite alternative language speaking student population exist. However, there may not be any bilingual-speaking students at a particular school within a district which is required to offer the bilingual education program. For this reason, the requirement to publish notice in an alternative language is triggered if the nearest elementary or middle school, as part of a larger school district, is required to make a bilingual education program available to qualifying students and either the school has students enrolled at such a program on-site or has students who attend such a program at another location to satisfy the school's obligation to provide such a program. [30 TAC §39.426]

Bilingual notice confirmation for this application

1. Is the school district of the elementary or middle school nearest to the facility required by the Texas Education Code to have a bilingual program?

   ☒ Yes ☐ No

If **no**, alternative language notice publication not required.

2. If **yes** to question 1, are students enrolled in a bilingual education program at either the elementary school or the middle school nearest to the facility?

   ☒ Yes ☐ No

   If yes to questions 1 and 2, alternative language publication is required.
   If no to question 2, then consider the next question.

3. If **yes** to question 1, are there students enrolled at either the elementary school or the middle school nearest to the facility who attend a bilingual education program at another location?

   ☒ Yes ☐ No

   If **yes** to questions 1 and 3, alternative language publication is required.
   If **no** to question 3, then consider the next question.

4. If **yes** to question 1, has the elementary school or the middle school nearest to the facility been granted an exception from the requirement to provide a bilingual education program, as available under 19 TAC §89.1207(a)?

   ☒ Yes ☐ No

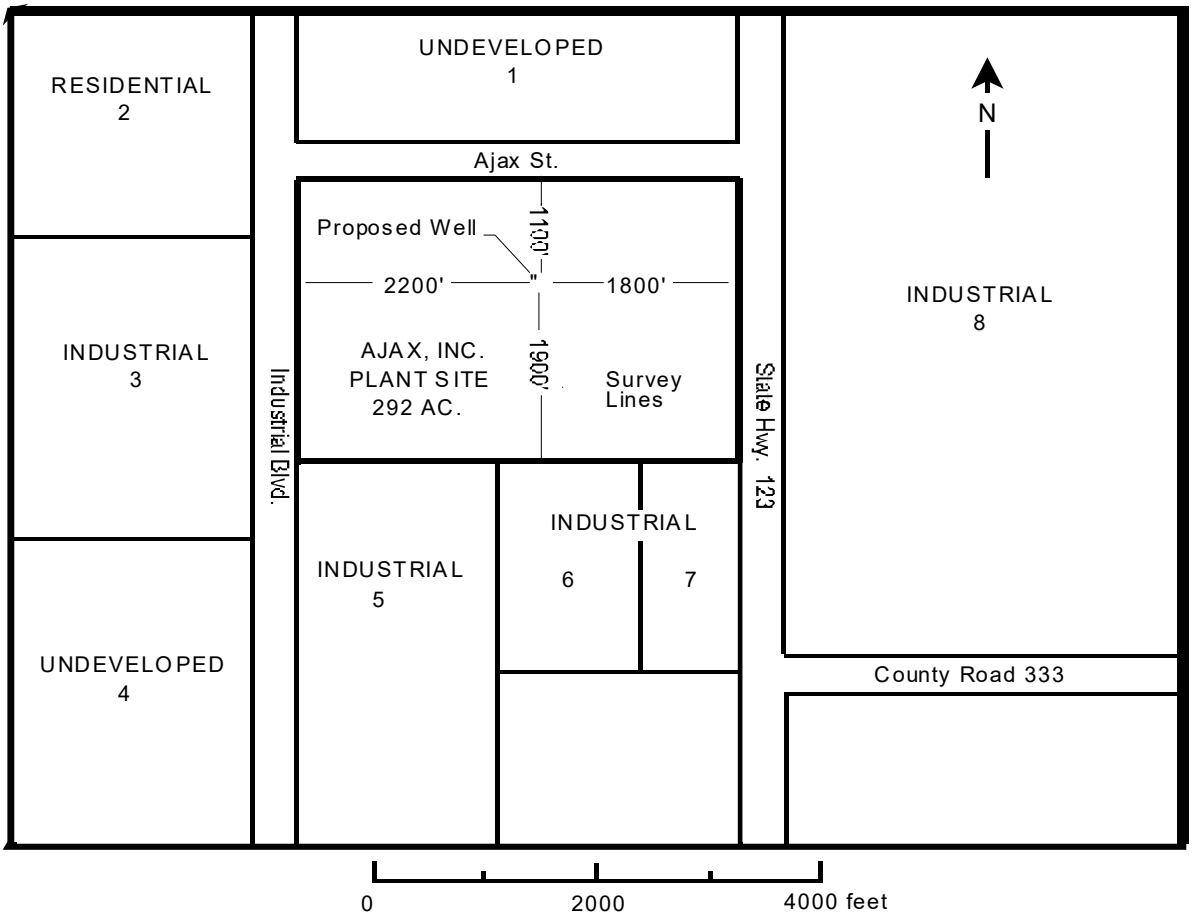
   If **yes** to questions 1 and 4, alternative language publication is required.
   If **no** to question 4, alternative language notice publication not required.

5. Provide the alternative language for which the bilingual education program(s) is provided or for which an exception has been approved.

   Spanish

Example Application Map

Landowners and Mineral Rights Owners



Landowners

1. Mr. & Mrs. Samuel Davis
2. Mr. & Mrs. Edward Sanchez
3. Texlink Corporation
4. Mr. & Mrs. Ted Goldsby
5. Jaxson Brewing Company
6. Plainview Company
7. ABC Chemicals Inc.
8. Big C Bottle Company

Mineral Rights Owners

1. Mr. & Mrs. Samuel Davis
   Mr. Fred Davis
   Mrs. R.C. Davis
2. The Edward Sanchez Trust
3. Cibolo Energy LP
4. Mr. Don Williams
   Mr. & Mrs. Richard Coons
   Mrs. Dorothy Moore
5. The Larson Family Trust
6. SBN Minerals, LLC
   Sorona Oil & Gas Company
   Klein Operations, LLC.
7. Jack Walsh Family Trust
8. Terrace Flats Exploration Corp.

III. Railroad Commission Letter

Submit, as "Attachment H," a letter from the Railroad Commission stating that "drilling the disposal well and injecting industrial or municipal waste into the subsurface stratum will not endanger or injure any known oil or gas resources." This letter is required with initial and renewal applications, and with permit amendment applications for injection into subsurface formations not addressed by the current Railroad Commission letter for the injection well. [30 TAC §305.49(a)(7)] See Attachment H

IV. Financial Assurance, Liability, and Financial Capability

Submit as, "Attachment I," a description of the manner in which compliance with the financial assurance and liability requirements in 30 TAC Chapter 37, Subchapter Q will be attained, and demonstration of financial capability as outlined below. For converted wells and constructed wells provide documentation that financial assurance in the amount provided in Section VI of the application will be in effect upon permit issuance. [30 TAC §305.49(a)(3)] See Attachment I

A. Financial Assurance Requirements [30 TAC §§331.142-144 and §331.68(a)(3)]

The financial assurance requirements of 30 TAC Chapter 37, Subchapter Q, require an owner or operator to submit an originally signed financial assurance mechanism to the TCEQ Financial Assurance Unit at least 60 days prior to commencement of drilling operations for new wells. All financial assurance mechanisms shall be in effect before commencement of drilling operations. For converted wells and other previously constructed wells, financial assurance shall be provided at least 30 days prior to permit issuance and be in effect upon permit issuance. [§37.7021 (c) & §37.7031(c)]

1. Financial Assurance for Closure

Secure and maintain financial assurance for plugging and abandonment of each existing and new well in the amount of the closure cost estimate in current dollars developed in accordance with 30 TAC §331.143 and included in Section VI.D. of the application using the mechanisms listed in 30 TAC §37.7021(b).

2. Financial Assurance for Post Closure Care (hazardous waste wells only)

If applicable, demonstrate and maintain financial assurance for post-closure of each existing and new hazardous waste well in the amount of the post-closure care cost estimate in current dollars developed in accordance with 30 TAC §331.68(a)(4)(F) and included in Section VI.D. of the application using the mechanisms provided in 30 TAC §37.7031(b).

B. Liability Requirements (hazardous waste wells only) [30 TAC §331.142(b)]

For hazardous waste injection wells establish and maintain liability coverage for sudden and non-sudden bodily injury and property damage to third parties caused by accidental occurrences arising from operations of the facility in accordance with the requirements of 30 TAC §37.7041. Evidence must be provided to show that the insurance policy covers the injection well(s).

C. Financial Capability Requirements (hazardous waste wells only) [30 TAC §305.49(c)]

For hazardous waste injection wells demonstrate to the satisfaction of the executive director that the applicant has sufficient financial resources to operate the facility in a safe manner and in compliance with the permit and all applicable rules, including, but not limited to, how an applicant intends to obtain financing for construction of the facility, and to close the facility properly as required by 30 TAC §305.50(a)(4)(B).

Information requirements for making this demonstration vary depending on the type of financial information available to applicants, primarily whether audited financial statements are available as well as the type of application submitted. For each type of application described below, financial information must be provided for the specific type of applicant entities.

1. New Permits, Permit Amendment for Facility Expansions, and Permit Transfers

   a. Publicly Traded Entities

      i. Securities and Exchange Commission (SEC) Form 10-Ks

         This portion of the requirement calls for the two most recent 10-K reports filed.

      ii. SEC Form 10-Q

         This portion of the requirement calls for a copy of the most recent quarterly report.

      iii. Explanation statement

         This portion of the requirement calls for a statement signed by an authorized signatory [as described in 30 TAC 305.44(a)] explaining in detail how the applicant demonstrates sufficient financial resources to construct, safely operate, properly close, perform post-closure care, perform corrective action and provide adequate liability coverage for the facility. This statement must also address how the closure, post-closure, corrective action, and liability coverage financial assurance requirements of Chapter 37, Subchapter P will be met. (i.e., which financial assurance mechanism is or will be used).

      iv. Construction capital cost estimates

         This portion of the requirement calls for estimates of capital costs for expansion and/or initial construction if the application encompasses facility expansion, capacity expansion, or new construction.

   b. Privately Held Entities with Audited Financial Statements

      i. Audited financial statements

         This portion of the requirement calls for complete copies of the audited financial statements for each of the most recent two fiscal years. If an audit has not been completed for one of the previous two years, a complete copy of the fiscal year-end financial statement and federal tax return may be substituted in lieu of the audit not performed. The tax return must be certified by original signature of an authorized signatory as being a "true and correct copy of the return filed with the Internal Revenue Service." Financial statements must be prepared consistent with generally accepted accounting principles and include a balance sheet, income statement, cash flow statement, notes to the financial statement, and an accountant's opinion letter.

      ii. Quarterly financial statement

         This portion of the requirement calls for a complete copy of the most current quarterly financial statement prepared consistent with generally accepted accounting principles. Internally prepared statements are satisfactory.

      iii. Supplementary information statement

         This portion of the requirement calls for a written statement detailing the information that would normally be found in SEC's Form 10-K including descriptions of the business and its operations; identification of any affiliated

relationships; credit agreements and terms; any legal proceedings involving the applicant; contingent liabilities; and significant accounting policies.

iv. Construction capital cost estimates

This portion of the requirement calls for estimates of capital costs for expansion and/or initial construction if the application encompasses facility expansion, capacity expansion, or new construction.

v. Explanation statement

This portion of the requirement calls for a statement signed by an authorized signatory [as described in 30 TAC 305.44(a)] explaining in detail how the applicant demonstrates sufficient financial resources to construct, safely operate, properly close, perform post-closure care, perform corrective action and provide adequate liability coverage for the facility. This statement must also address how the closure, post-closure, corrective action, and liability coverage financial assurance requirements of Chapter 37, Subchapter P will be met (i.e., which financial assurance mechanism is or will be used).

c. Entities without Audited Financial Statements or Entities Choosing Not to Provide the Information Listed Above

i. Financial Plan

This portion of the requirement calls for a financial plan (including balance sheets listing assets, liabilities and capital accounts) sufficiently detailed to clearly demonstrate that the applicant will be in a position to readily secure financing for construction, operation, and closure, post-closure, and corrective action if the permit is issued. At least 3 balance sheets should be included as of: a) approximately the date of the permit application, b) 12 months after any construction is completed (or assumption of operational control for a permit transfer), and c) 24 months after any construction is completed (or assumption of operational control for a permit transfer).

ii. Letters of opinion

The submitted financial plan must be accompanied by original letters of opinion from two financial experts, not otherwise employed by the applicant, who have the demonstrated ability to either finance the facility or place the required financing. If the permit action sought involves construction of a new facility or expansion of an existing facility, the opinion letters must certify that financing is obtainable within 180 days of permit approval and include the time schedule contingent upon permit finality for securing the financing as well as certify the financial plan is reasonable. Even if the application does not involve a facility or capacity expansion, the opinion letters must certify that the financial plan is reasonable. Only one opinion letter from a financial expert, not otherwise employed by the applicant, is required if the letter renders a firm commitment to provide all the necessary financing.

Letters of opinion are usually issued by investment or commercial bankers but there could be additional sources. Applicants are encouraged to verify the adequacy of the credentials of their chosen financial expert with TCEQ's financial assurance unit prior to a formal engagement. Financial experts should describe their qualifications and disclose their independence from the applicant and/or any entity or person affiliated with the applicant.

iii. Operating and cash flow statement

This portion of the requirement calls for a written detail of the annual operating costs of the facility and a projected cash flow statement including the period of construction and first two years of operation. The cash flow statement must

demonstrate the financial resources to meet operating costs, debt service, and provide financial assurance for closure, post-closure care, and liability coverage requirements. A list of the assumptions made to forecast cash flow must also be provided.

iv. Explanation statement

This portion of the requirement calls for a statement addressing how the closure, post-closure, corrective action, and liability coverage financial assurance requirements of Chapter 37, Subchapter P will be met (i.e., which financial assurance mechanism is or will be used).

v. Construction capital cost estimates

This portion of the requirement calls for estimates of capital costs for expansion and/or initial construction if the application encompasses facility expansion, capacity expansion, or new construction.

d. Entities with A Resolution from A Governing Body Approving or Agreeing to Approve the Issuance of Bonds to Satisfy Financial Assurance Requirements (e.g., a City or County)

i. Explanation statement

This portion of the requirement calls for a statement signed by an authorized signatory [as described in 30 TAC30 305.44(a)] explaining in detail how the applicant demonstrates sufficient financial resources to construct, safely operate, properly close, perform post-closure, perform corrective action and provide adequate liability coverage for the facility. This statement must also address how the closure, post-closure, corrective action, and liability coverage financial assurance requirements of Chapter 37, Subchapter P will be met (i.e., which financial assurance mechanism is or will be used).

ii. Certified copy of the resolution from the governing body

iii. Certification by the governing body of passage of the resolution

2. Permit Renewals

For all types of applicant entities, include a financial disclosure letter addressed to UIC Permits Section signed by an applicant representative meeting the application signatory requirements of 30 TAC §305.44 stating the following information:

> "This letter is furnished to you in response to financial disclosure requirements as applicable under Texas Health and Safety Code Section 361.085 and Title 30, Texas Administrative Code (30 TAC), Section 305.50 to provide assurance that [name of applicant] has sufficient financial resources.
>
> In keeping with the above law and rule requirements I hereby certify that [name of applicant] is adequately capitalized and has sufficient financial resources to operate, close, provide post-closure care for and perform corrective action for the above-referenced facility in a safe manner, and in compliance with the permit and all applicable rules.
>
> [name of applicant] currently provides a [describe type of mechanism, i.e., letter of credit, surety bond, etc.] financial assurance mechanism as set out in 30 TAC, Chapter 37, Subchapter C to meet [name of applicant]'s financial assurance obligations.
>
> I am authorized to make these statements on behalf of [name of applicant]. I understand that the TCEQ may request additional information as part of their review."

WDW 398

Texas Commission on Environmental Quality
Permit Application to Dispose of Waste
In A Class I Injection Well

I. General Information

A. Type of Application (check all that apply):

☐ Initial
☒ Renewal
☐ Major Amendment
☐ Minor Amendment
☐ Minor Modification
☐ Transfer
☐ Endorsement

Type of Waste (check all that apply):

☒ Hazardous Waste
☒ Nonhazardous Waste

Type of Facility (check all that apply):

☐ Commercial
☒ Noncommercial

Source of waste for noncommercial (check all that apply):

☒ Onsite
☐ Captured facility
☒ Offsite from facilities owned or effectively controlled by owner/operator

B. Facility Name: Pasadena Injection Well WDW398
Street Address: 1933 Jackson Road
City, State, Zip: Pasadena, TX 77506-3447
Mailing Address: same
Mailing City, State, Zip: same
County: Harris
TCEQ Solid Waste Registration (SWR) Number: AWAITING NEW SWR
EPA ID Number: TXD099387474

Give a description of the location of the facility site with respect to known or easily identifiable landmarks. Detail the access routes from the nearest U.S. or State Highway to the facility: The facility site is located along the south bank of the Houston Ship Channel in Pasadena, Texas. The plant site is accessed by following Highway 225 from Houston to Pasadena. In Pasadena, turn left and go north on Jefferson Street for about 1.5 miles. At the end of Jefferson Street, turn left on 1st Street. Head west on 1st Street for about 1/3-mile. Turn right onto Jackson Road and head north. The plant site is located at 1933 Jackson Road.

Is the facility located within the Coastal Management Program boundary? Refer to Texas Coastal Management Boundary Map[1] for boundary. For questions regarding the Coastal Management Program, please call (800) 998-4456 (within Texas) or (512) 475-0773. [30 TAC §281.41]

☒ Yes ☐ No

Provide the location of the injection well relative to established surveys: The location of the well is approximately 1,200 feet west of the east line and 16,600 feet north of the south line of the William Vince Survey, Abstract-78.

Enter the geographical coordinates of the injection well in decimal degrees to 6 decimal places:

Latitude: 29.736673

Longitude: -95.198069

Provide the depths of the injection zone and injection interval:

Injection Zone: FrioFormation(s) at depths of 5,345 to 7,270 feet below ground level.

Injection Interval: Frio Formation(s) at depths of 5,940 to 7,270 feet below ground level

C. Operator/Applicant (Individual, Corporation, or other Legal Entity Name)

Name: Exxon Mobil Corporation
Address: 2800 Decker Dr. NW 55
City, State and Zip: Baytown, TX 77520
Telephone Number: 281-834-4675

If the application is submitted on behalf of a corporation or other business organization with filing requirements, please identify the Charter Filing Number as recorded with the Office of the Secretary of State for Texas.

Charter Filing Number: 0003362806

Is the applicant required to designate a registered agent with the Secretary of State of Texas?

☐ Yes ☒ No

If the application is submitted by a business organization that is required to designate and maintain a registered agent, the applicant must provide the name and address of the registered agent.

Agent: Corporation Service Company d/b/a CSC-Layers Incorporating Service Company
Address: 211 E. 7th Street, Suite 620
City, State, and Zip: Austin, TX 78701-3218
Telephone Number: 512-379-1550

[1] https://www.glo.texas.gov/coast/coastal-management/forms/files/CoastalBoundaryMap.pdf

D. Facility Owner(s) (Individual, Corporation, or other Legal Entity Name)

The facility includes all contiguous land, and structures, other appurtenances, and improvements on the land, used for storing, processing, or disposing of waste. The facility owner must be consistent with the owner on the deed filing bearing the stamp of the county property records or other generally accepted identifying reference of the current ownership record provided in Section I.P.5, Attachment C of the application. If the facility owner is the same as the operator, state "same as operator". If the facility land, structures, appurtenances, and improvements on the land are owned by more than one individual, corporation or other legal entity, provide the following information for all owners. Clearly identify the relationship(s) between the operator and all facility owner(s). [THSC §361.087(1)]

Name: same as operator
Address: _____
City, State, Zip: _____
Telephone Number: _____
Charter Filing Number: _____

E. Indicate the ownership status of the facility.

Private:

☒ Corporation
☐ Partnership
☐ Proprietorship
☐ Nonprofit organization

Public:

☐ Military
☐ State
☐ Regional
☐ County
☐ Municipal
☐ Federal

Other (specify): _____

F. List those persons or firms authorized to act for the applicant during the processing of the permit application. Indicate the capacity in which each person may represent the applicant (engineering, geology, legal, etc.). The person listed first will be the primary recipient of correspondence regarding this application. Include complete mailing addresses, phone numbers and e-mail addresses.

Primary Applicant
Breanna Jackson
ExxonMobil Environmental and Property Solutions
22777 Springwoods Village Pkwy,
Spring, TX 77389
(201) 407-0462 TEL
breanna.j.jackson@exxonmobil.com

Technical Issues
Stephanie K. Williams,
Terra Dynamics Inc.
2300 Greenhill Dr
Ste. 700
Round Rock, TX 78664
(512) 795-8183 TEL
swilliams@terradyn.com

Technical Issues
Phani Pamidimukkala
Arcadis
10205 Westheimer Road
Ste. 800
Houston, TX 77042
(713) 953-4800 TEL
phani.pamidimukkala@arcadis.com

G. For new, renewal, and major amendment applications specify the individual who will be responsible for causing notice to be published in the newspaper. Include the complete mailing address, telephone number, fax number and e-mail address.

Phani Pamidimukkala
Arcadis
10205 Westheimer Road, Ste. 800, Houston 77042
(713) 953-4800TEL phani.pamidimukkala@arcadis.com

H. Describe the activities conducted by the applicant which require a permit.

As part of a previous sales agreement, ExxonMobil retained some closure obligations at the Pasadena Fertilizer Plant owned and operated by PCI Nitrogen. ExxonMobil has purchased property and constructed two Class I injection wells in the vicinity of the stacks being closed. These wells are utilized to dispose of pond water generated during the closure of "gyp stacks" located at the Pasadena Fertilizer Plant. The two Class I injection wells are currently permitted by the TCEQ and this application is a request for permit renewal, with no change in permit terms or conditions. ExxonMobil owns the injection wells, surface facilities and a small parcel of property associated with each of the well locations.

I. For amendment, modification, transfer or endorsement applications, briefly describe all requested changes to the permit and to the application contents and the reasons for the changes.

none

J. Business Information

1. Give a brief description of the nature of your business.

   The purpose of the wells is to dispose of pond water associated with stack closures at the PCI Nitrogen Pasadena Fertilizer Plant.

2. List the principal products and/or services which are provided by your plant. Please itemize by Standard Industrial Classification (SIC) codes. Also label the products with their common names, if applicable.

   Hazardous waste treatment and disposal.

   SIC Codes: 4953 – Establishments primarily engaged in the collection and disposal of refuse by processing or destruction or in the operation of incinerators, waste treatment plants, landfills, or other sites for disposal of such materials.

   NAICS Code: 562211 – Hazardous waste treatment and disposal.

K. Applicant Compliance History

The TCEQ will utilize compliance history when making decisions regarding the issuance, renewal, amendment, modification, denial, suspension, or revocation of a permit. Violations included in a criminal conviction are considered when evaluating and classifying the site's compliance history.

For the five years preceding the filing date of this application, please submit a complete listing of all criminal convictions (i.e., State or Federal) of the operator and facility owner in which a violation of environmental law was an element of the crime. [30 TAC §60.2(d)(1)(E) and §60.2(d)(2)(F)] If there have been no such convictions then the application should state

the following. If the operator is not the facility owner, a separate statement should be provided for each facility owner.

> "In the five years preceding the filing of this application (the operator/applicant, owner), Exxon Mobil Corporation, has not been convicted of a State or Federal crime in which a violation of environmental law was an element of the crime."

L. TCEQ Core Data Form

The TCEQ requires that a Core Data Form[2] (TCEQ-10400) be submitted with all new and renewal applications. Submit the form as "Attachment A". For all other applications, if a Regulated Entity Number (RN) and Customer Reference Number (CN) have been issued by the TCEQ and core data information has not changed, a Core Data Form is not required. For more information regarding the Core Data Form, call (512) 239-5175 or go to the Core Data Form Instructions[3] on the TCEQ website.

See Attachment A for the Core Data Form (Form 10400)

RN112024260

CN600123939

M. Public Interest Demonstration

Section 27.051 of the Texas Water Code (TWC) stipulates certain conditions that must exist for the Commission to grant an application and issue a permit. For all new applications, permit renewals, and major and minor amendments, submit as "Attachment B" information addressing the following considerations: See Attachment B

1. That the use or installation of the injection well is in the public interest. [TWC§27.051(a)(1)]

2. That no existing rights, including, but not limited to, mineral rights, will be impaired. [TWC §27.051(a)(2)]

3. That, with proper safeguards, both ground and surface fresh water can be adequately protected from pollution. [TWC §27.051(a)(3)]

4. That the applicant has made a satisfactory showing of financial responsibility if required by Section 27.073 of this code. [TWC §27.051(a)(4)]

5. That the compliance history of the applicant and related entities is acceptable. [TWC §27.051(d)(1), 30 TAC § 331.121(b)(1)]

6. That there is no practical, economic, and feasible alternative to an injection well reasonably available. Provide justification for subsurface disposal. Include results of treatability studies of alternate, practical, economic and feasible methods of waste disposal. Explain in detail why each method is considered to be less satisfactory in terms of environmental protection than the proposed subsurface disposal method. Indicate whether this waste is presently being produced and, if so, what method is used

[2] https://www.tceq.texas.gov/downloads/permitting/central-registry-docs/10400-core-data-form.docx
[3] https://www.tceq.texas.gov/downloads/permitting/central-registry-docs/10400-core-data-form-instructions.pdf

for disposal. Describe the manufacturing process(es) and product(s) which produce the waste(s). [TWC §27.051(d)(2), 30 TAC § 331.121(b)(2)]

7. (for hazardous waste injection wells only) That the applicant has provided for the proper operation of the proposed hazardous waste injection well. [TWC §27.051(a)(5)]

8. (for hazardous waste injection wells only) That the applicant for a hazardous waste injection well not located in an area of industrial land use has made a reasonable effort to ensure that the burden, if any, imposed by the proposed hazardous waste injection well on local law enforcement, emergency medical or fire-fighting personnel, or public roadways, will be reasonably minimized or mitigated. [TWC §27.051(a)(6)]

9. (for hazardous waste injection wells only) That the applicant owns or has made a good faith claim to own, or has the consent of the owner to utilize, or has an option to acquire, or has the authority to acquire through eminent domain, the property or portions of the property where the hazardous waste injection well will be constructed. [TWC §27.051(a)(7)]

10. (for hazardous waste injection wells only) That the applicant will maintain sufficient public liability insurance for bodily injury and property damage to third parties that is caused by sudden and non-sudden accidents or will otherwise demonstrate financial responsibility in a manner adopted by the Commission in lieu of public liability insurance. [TWC §27.051(d)(3), 30 TAC § 331.121(b)(3)]

11. (for hazardous waste injection wells only) For on-site generated waste, provide certification by the owner/operator that (1) the generator of the hazardous waste has a program to reduce the volume or quantity and toxicity of the waste to the degree determined by the generator to be economically practicable, and (2) injection of the waste is that practicable method of disposal currently available to the generator which minimizes the present and future threat to human health and the environment. [30 TAC §331.121(b)(4)]

N. For applications for new permits, renewals, and major amendments, a copy of the administratively complete application and subsequent revisions must be made available at a public place in the county where the facility is located or proposed to be located for review and copying by the public. Identify the public place in the county (e.g., public library, county courthouse, city hall), including the address, where the application will be located. [30 TAC §39.405(g)]

Pasadena Public Library
1201 Jeff Ginn Memorial Dr, Pasadena, TX 77506

O. Facility Background Information [30 TAC §305.45(a)(7)]

Indicate (by listing the permit number(s) and governing agency(ies) in the columns below) all existing, pending, interim status, or permit-by-rule State and/or Federal permits, licenses or construction approvals which pertain to pollution control or industrial solid waste management activities conducted by your plant or at your location, or existing at a proposed plant or location. Complete each blank by entering either the **permit number** or **the date of application**, and the **governing agency** or **none**.

Existing Permits

Relevant Program and/or Law	Permit Number or License	Government Agency *
Hazardous Waste Management Program under the Texas Solid Waste Disposal Act	None	
UIC Program under the Texas Injection Well Act (Class I, II, III, IV, V and VI Wells)	WDW-397 WDW-398	TCEQ
Texas Pollutant Discharge Elimination System Program under the Clean Water Act and Waste Discharge Program under the Texas Water Code, Chapter 26	None	
Prevention of Significant Deterioration Program under the Federal Clean Air Act (FCAA)	none	
Nonattainment Program under the FCAA	None	
National Emission Standards for Hazardous Air Pollutants preconstruction approval under the FCAA	None	
Ocean dumping permits under the Marine Protection Research and Sanctuaries Act	None	
Dredge or fill permits under the Federal Clean Water Act	None	
Licenses under the Texas Radiation Control Act	None	
Subsurface Area Drip Dispersal System permits under Texas Water Code, Chapter 32	None	
Texas Solid Waste Disposal Act	None	
Texas Uranium Surface Mining and Reclamation Act	None	
Texas Surface Coal Mining and Reclamation Act	None	
Other relevant environmental permits/licenses	None	

* Use the following acronyms for each agency:

TCEQ = Texas Commission on Environmental Quality
RRC = Railroad Commission of Texas
DSHS = Department of State Health Services
TDA = Texas Department of Agriculture
EPA = U.S. Environmental Protection Agency
CORPS = U.S. Army Corps of Engineers

P. Location

1. Is the facility located on Indian lands?

   ☐ Yes ☒ No

   If yes, do not complete this application. Contact EPA Region 6 for application and permitting requirements for injection wells located on Indian lands. [40 CFR §147.2205(a)]

2. Is the facility located in an area in which the governing body of the county or municipality has prohibited the processing or disposal of municipal hazardous waste or industrial solid waste?

☐ Yes ☒ No

If yes, do not complete this application. TCEQ may not grant an application for an injection well permit in this area. [THSC §363.112(d)]

3. If the facility is a new commercial hazardous waste management facility, or the subsequent areal expansion of such a facility, is the boundary of the well or pre-injection units to be located within ½ of a mile of an established residence, church, school, day care center, surface water body used for public drinking water supply, or dedicated park?

☐ Yes ☒ No

If yes, do not complete this application. TCEQ may not issue a permit for a facility in this location. [30 TAC §335.205(a)(3)]

4. Is the location or proposed location of the injection well in the territory of a groundwater conservation district? To determine if the injection well is or will be located in the territory of a groundwater conservation district refer to the Texas Groundwater Conservation District map[4] on the TWDB website.

☒ Yes ☐ No

If yes, provide the contact name and mailing address for the groundwater conservation district. To obtain a point of contact and mailing address refer to the Groundwater Conservation Districts Contact List[5] on the TCEQ website. [TWC §27.017(b)]

Mr. Michael Turco, Manager
Harris-Galveston Coastal Subsidence District
1660 West Bay Area Blvd.
Friendswood, TX 77546

5. Legal Description of Facility Land

Submit, as "Attachment C", a legal description of the tract or tracts of land upon which the facility is or will be located and the deed filing bearing the stamp of the county property records or other generally accepted identifying reference of the current ownership record. If ownership of the property is transferring and new ownership documents are not final, provide the date upon which the documents will be submitted. The facility includes all contiguous land, and structures, other appurtenances, and improvements on the land, used for storing, processing, or disposing of waste including pre-injection units used for storage and processing waste to be injected into the injection well. The legal description should include the metes and bounds description or for platted urban sites the final plat with appropriate "lot" description(s). [THSC §361.087(2)]

See Attachment C

6. Submit, as "Attachment D", a drawn-to-scale topographic map of the facility and the tract or tracts of land upon which the facility is or will be located as described in Attachment C and area extending at least one mile beyond the tract boundaries. The map must be prepared by a licensed professional engineer or a registered surveyor. The

[4] https://www.twdb.texas.gov/mapping/doc/maps/GCDs_8x11.pdf
[5] https://www.tceq.texas.gov/downloads/groundwater/gcd/gcd-contact-list.pdf

scale should be adequate to depict the following features: [30 TAC §305.45(a)(6)(A), (C) & (E)]

a. the boundary of the tract or tracts of land upon which the facility is or will be located as described in Attachment C; areal size of the tract or tracts of land in acres should be given;

b. if different, the boundary of the facility, and the location of all injection wells; each depicted area should be labeled to identify the well(s) and the well status (active, inactive, or proposed); areal size of the facility in acres should be given;

c. if applicable, the boundaries of captured facilities that generate waste to be disposed in the injection wells, each depicted area should be labeled to identify the names of the captured facilities;

d. the overall facility, each of its surface intake and discharge structures, each of its waste treatment, storage or disposal facilities, including proposed or existing pre-injection units for processing or storage of waste to be disposed in the injection wells; and

e. all wells (water, oil and gas, disposal, etc.), springs, other surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant within one mile of the facility property boundary, and the purpose for which each water well is used (e.g., domestic, livestock, agricultural, industrial, etc.).

See Attachment D

Q. Plain-Language Summary

The TCEQ implemented new rule requirements in 30 TAC Chapter 39 that impact all permit applications subject to the Chapter 39 public notice requirements that are declared administratively complete after May 1, 2022. One of the new rules, 30 TAC §39.405(k), requires the applicant to provide a plain-language summary in English, and in an alternative language if required in accordance with 30 TAC §39.426. The plain-language summaries for all applications will be posted on the TCEQ website.

For new, renewal and major amendment permit applications submit, as “Attachment E”, a Plain-Language Summary of the application that is no more than two pages long. The summary should be entitled “Plain-Language Summary” and should be prepared in simple, concise, easy-to-understand terminology. The summary must include the following information. [30 TAC §39.405(k)]

1. the applicant/operator name;

2. the type of application;

3. the type of waste;

4. the type of facility;

5. the facility name and location;

6. the function of the proposed plant or facility;

7. the expected output of the proposed plant or facility;

8. the expected pollutants that may be emitted or discharged by the proposed plant or facility which require an injection well permit; and

9. how the applicant will control those pollutants, so that the proposed plant will not have an adverse impact on human health or the environment.

If the applicant is required to provide notice in an alternative language in accordance with 30 TAC §39.426, provide a copy of the plain-language summary in English and in the alternative language.

In addition, provide a copy of the plain-language summaries in pdf clearly labeled on a flash drive.

See Attachment E

R. Public Involvement Plan

TCEQ's Public Participation Plan provides guidance for using preliminary screening and public involvement plans to ensure meaningful public outreach. Applicants who are applying for a new injection well permit are required to complete a Public Involvement Plan. A Public Involvement Plan is intended to provide an applicant and the agency with information to determine if additional public outreach is necessary or beneficial. Applicants may complete a Public Involvement Plan, even if not required, to learn about the communities in which their facilities are located or where their activities may have an impact.

Submit a Public Involvement Plan, as "Attachment F", using the Public Involvement Plan Form[6] (TCEQ-20960) and Instructions for Completing a Public Involvement Plan Form for Permit and Registration Applications[7] (TCEQ-20960).

For more information regarding Title VI compliance at TCEQ[8] or the Public Participation Plan[9] go on the TCEQ website.

See Attachment F

[6] https://www.tceq.texas.gov/downloads/agency/decisions/hearings/environmental-equity/pip-form-tceq-20960.pdf
[7] https://www.tceq.texas.gov/downloads/agency/decisions/hearings/environmental-equity/instructions-for-pip-form-tceq-20960.pdf
[8] https://www.tceq.texas.gov/agency/decisions/participation/title-vi-compliance
[9] https://www.tceq.texas.gov/downloads/agency/decisions/participation/public-participation-plan-gi-607.pdf

Signature Page

I (Signatory Name) Breanna Jackson (Title) Project Manager
(Company) Exxon Mobil Corporation certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: Breanna Jackson Date: 7/24/2024

See 30 TAC §305.44 for signatory authority.

Applications must be signed by the operator of the facility and the facility owner(s). The facility includes all contiguous land, and structures, other appurtenances, and improvements on the land, used for storing, processing, or disposing of waste. Duplicate this page for additional signatories.

To Be Completed by the Applicant if the Applicant Is a Corporation and the Responsible Corporate Officer Is Assigning or Delegating Signature Authority to a Manager in Accordance with 30 TAC §305.44(a)(1)

I (Signatory Name) _____ (Title) _____
(Company) _____ hereby designate (Agent Name and/or Title) _____ as my agent and hereby authorize said agent to sign any application, submit additional information as may be requested by the Commission, and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a Texas Water Code or Texas Solid Waste Disposal Act permit. I further understand that I am responsible for the contents of this application, for oral statements given by my agent in support of the application, and for compliance with the terms and conditions of any permit which might be issued based upon this application.

Signature: _____ Date: _____

(Note: Application Must Bear Signature and Seal of Notary Public)

SUBSCRIBED AND SWORN to before me by the said Breanna Jackson, Project Manager

on this 24 day, _____ month of July, year of 2024

My commission expires on the 31 day, month of March, year of 2026

Donetta E. Williams
Notary Public

DONETTA E. WILLIAMS
Notary Public, State of Texas
Comm. Expires 03-31-2026
Notary ID 129767625

II. Information Required to Provide Notice

Submit, as "Attachment G", a mailing list of landowners identified under Section II.A. and a mailing list of mineral rights owners identified under Section II.B. In accordance with 30 TAC §39.405(b), please also submit this mailing list electronically, in Microsoft Word. The electronic list must contain only the name, mailing address, city, state, and zip code with no reference to the lot number or lot location. The list should contain up to 30 names and addresses (10 per column) per page. Each name and address must be typed in the format that meets the United States Postal Service (USPS) requirements for machine readability. The letters in the name and address must be capitalized, contain no punctuation, and the two-character abbreviation must be used for the state. Contact the USPS for further instructions on formatting addresses for machine readability. The applicant may elect to submit pre-printed mailing labels of this mailing list with the application instead of submitting the mailing list electronically. If you wish to provide the list on printed labels, please use sheets of labels that have 30 labels to a page (10 labels per column). Please provide **four complete sets of labels** of the landowners and mineral rights owners list.

See Attachment G

A. Provide a complete mailing address for persons who own the property on which the existing or proposed injection well facility is or will be located and all persons who own tracts of land adjacent to the property on which the existing or proposed injection well facility is or will be located and within a reasonable distance from the proposed point or points of discharge, deposit, injection, or other place of disposal or activity. Identify the tracts of land and landowners on a map and provide the general character of the areas adjacent to the facility, including public roads, towns and the nature of development of adjacent lands (e.g., residential, commercial, agricultural, recreational, industrial or undeveloped) on the map. The property boundary of the tract or tracts of land on which the existing or proposed injection facility is or will be located must be consistent with the legal description of the tract or tracts of land provided in Section I.P.5, Attachment C, of the application. (Refer to Example Application Map) [30 TAC §281.5(6), §305.45(a)(6)(B) & (D) and §39.651(c)(4)(A) & (B)]

B. Provide a complete mailing address for all persons who own the mineral rights underlying the existing or proposed injection well facility and underlying the tracts of land adjacent to the property on which the existing or proposed injection well facility is or will be located as required by 30 TAC §39.651(c)(4)(C) & (D). Identify the mineral rights owners on the map provided above in Section II.A.

C. If the facility is located adjacent to navigable territorial waters of the state, or the State of Texas is an adjacent landowner and/or owner of mineral rights underlying the facility or underlying adjacent tracts, your application may affect lands dedicated to the permanent school fund. A determination whether lands dedicated to the permanent school fund will be affected by TCEQ formal action on the application will be made by the Texas General Land Office (TXGLO).

General Land Office
Deputy Commissioner of Asset Acquisition
Steven F. Austin Bldg
1700 N. Congress
Austin, TX 78701

In order for the TXGLO to make a determination, the TCEQ will provide notice to the TXGLO regarding the application. Provide the following information for inclusion in the notice to the TXGLO:

1. state the location of the permanent school fund land, mineral rights, or waters of the state that may be affected; and

   The facility location is not adjacent to navigable territorial waters of the state, nor is the State of Texas an adjacent landowner or owner of mineral rights underlying the facility or underlying adjacent tracts.

2. describe any foreseeable impact or effect of the proposed permitted action may have on permanent school fund land.

   As the State of Texas is not an adjacent land or mineral owner, no impact or effect on the permanent school fund is foreseen.

A formal action or ruling by the Commission on an application affecting permanent school fund land that is made without the notice required by 30 TAC §39.651(c)(3) is voidable by the School Land Board as to any permanent school fund lands affected by the action or ruling. [TWC §5.115(c) and (g)]

D. Provide the name and mailing address of the mayor and health authority of the municipality in whose territorial limits or extraterritorial jurisdiction the well is or will be located, and the name and mailing address of the county judge and the health authority of the county in which the facility is located. [30 TAC §39.651(c)(5)]

<u>Mayor</u>
Mayor Jeff Wagner
1149 Ellsworth Drive
Pasadena, TX 77506
(713) 475-5545

<u>Health Authority</u>
Pasadena Health Department
1149 Ellsworth Drive
Pasadena, TX 77506
(713) 475-5529

<u>County Judge</u>
Judge Lina Hidalgo
1001 Preston, Suite 911
Houston, TX 77002
(713) 274-7000

<u>Harris County Health Authority</u>
Harris County Public Health
1111 Fannin Street
Houston, TX 77002
(713) 439-6000

E. Bilingual Notice Instructions. For new, renewal and major amendment permit applications, public notice in an alternate language may be required. If an elementary school or middle school nearest to the facility offers a bilingual program, notice may be required to be published in an alternative language. The Texas Education Code, upon which the TCEQ alternative language notice requirements are based, requires a bilingual education program for an entire school district should the requisite alternative language speaking student population exist. However, there may not be any bilingual-speaking students at a particular school within a district which is required to offer the bilingual education program. For this reason, the requirement to publish notice in an alternative language is triggered if the nearest elementary or middle school, as part of a larger school district, is required to make a bilingual education program available to qualifying students and either the school has students enrolled at such a program on-site or has students who attend such a program at another location to satisfy the school's obligation to provide such a program. [30 TAC §39.426]

Bilingual notice confirmation for this application

1. Is the school district of the elementary or middle school nearest to the facility required by the Texas Education Code to have a bilingual program?

   ☒ Yes ☐ No

If **no**, alternative language notice publication not required.

2. If **yes** to question 1, are students enrolled in a bilingual education program at either the elementary school or the middle school nearest to the facility?

   ☒ Yes ☐ No

   If yes to questions 1 and 2, alternative language publication is required.
   If no to question 2, then consider the next question.

3. If **yes** to question 1, are there students enrolled at either the elementary school or the middle school nearest to the facility who attend a bilingual education program at another location?

   ☒ Yes ☐ No

   If **yes** to questions 1 and 3, alternative language publication is required.
   If **no** to question 3, then consider the next question.

4. If **yes** to question 1, has the elementary school or the middle school nearest to the facility been granted an exception from the requirement to provide a bilingual education program, as available under 19 TAC §89.1207(a)?

   ☒ Yes ☐ No

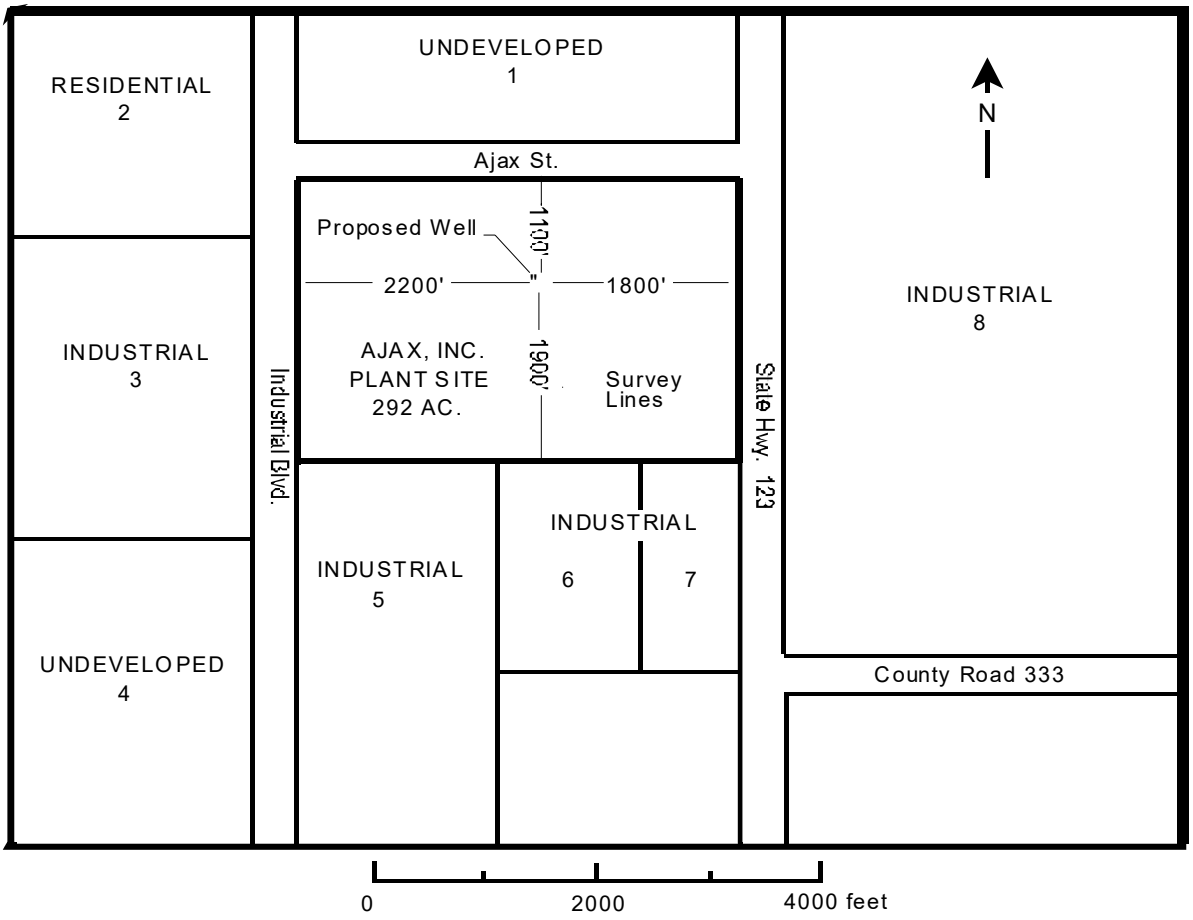
   If **yes** to questions 1 and 4, alternative language publication is required.
   If **no** to question 4, alternative language notice publication not required.

5. Provide the alternative language for which the bilingual education program(s) is provided or for which an exception has been approved.

   Spanish

Example Application Map

Landowners and Mineral Rights Owners



Landowners

1. Mr. & Mrs. Samuel Davis
2. Mr. & Mrs. Edward Sanchez
3. Texlink Corporation
4. Mr. & Mrs. Ted Goldsby
5. Jaxson Brewing Company
6. Plainview Company
7. ABC Chemicals Inc.
8. Big C Bottle Company

Mineral Rights Owners

1. Mr. & Mrs. Samuel Davis
   Mr. Fred Davis
   Mrs. R.C. Davis
2. The Edward Sanchez Trust
3. Cibolo Energy LP
4. Mr. Don Williams
   Mr. & Mrs. Richard Coons
   Mrs. Dorothy Moore
5. The Larson Family Trust
6. SBN Minerals, LLC
   Sorona Oil & Gas Company
   Klein Operations, LLC.
7. Jack Walsh Family Trust
8. Terrace Flats Exploration Corp.

III. Railroad Commission Letter

Submit, as "Attachment H," a letter from the Railroad Commission stating that "drilling the disposal well and injecting industrial or municipal waste into the subsurface stratum will not endanger or injure any known oil or gas resources." This letter is required with initial and renewal applications, and with permit amendment applications for injection into subsurface formations not addressed by the current Railroad Commission letter for the injection well. [30 TAC §305.49(a)(7)] See Attachment H

IV. Financial Assurance, Liability, and Financial Capability

Submit as, "Attachment I," a description of the manner in which compliance with the financial assurance and liability requirements in 30 TAC Chapter 37, Subchapter Q will be attained, and demonstration of financial capability as outlined below. For converted wells and constructed wells provide documentation that financial assurance in the amount provided in Section VI of the application will be in effect upon permit issuance. [30 TAC §305.49(a)(3)] See Attachment I

A. Financial Assurance Requirements [30 TAC §§331.142-144 and §331.68(a)(3)]

The financial assurance requirements of 30 TAC Chapter 37, Subchapter Q, require an owner or operator to submit an originally signed financial assurance mechanism to the TCEQ Financial Assurance Unit at least 60 days prior to commencement of drilling operations for new wells. All financial assurance mechanisms shall be in effect before commencement of drilling operations. For converted wells and other previously constructed wells, financial assurance shall be provided at least 30 days prior to permit issuance and be in effect upon permit issuance. [§37.7021 (c) & §37.7031(c)]

1. Financial Assurance for Closure

Secure and maintain financial assurance for plugging and abandonment of each existing and new well in the amount of the closure cost estimate in current dollars developed in accordance with 30 TAC §331.143 and included in Section VI.D. of the application using the mechanisms listed in 30 TAC §37.7021(b).

2. Financial Assurance for Post Closure Care (hazardous waste wells only)

If applicable, demonstrate and maintain financial assurance for post-closure of each existing and new hazardous waste well in the amount of the post-closure care cost estimate in current dollars developed in accordance with 30 TAC §331.68(a)(4)(F) and included in Section VI.D. of the application using the mechanisms provided in 30 TAC §37.7031(b).

B. Liability Requirements (hazardous waste wells only) [30 TAC §331.142(b)]

For hazardous waste injection wells establish and maintain liability coverage for sudden and non-sudden bodily injury and property damage to third parties caused by accidental occurrences arising from operations of the facility in accordance with the requirements of 30 TAC §37.7041. Evidence must be provided to show that the insurance policy covers the injection well(s).

C. Financial Capability Requirements (hazardous waste wells only) [30 TAC §305.49(c)]

For hazardous waste injection wells demonstrate to the satisfaction of the executive director that the applicant has sufficient financial resources to operate the facility in a safe manner and in compliance with the permit and all applicable rules, including, but not limited to, how an applicant intends to obtain financing for construction of the facility, and to close the facility properly as required by 30 TAC §305.50(a)(4)(B).

Information requirements for making this demonstration vary depending on the type of financial information available to applicants, primarily whether audited financial statements are available as well as the type of application submitted. For each type of application described below, financial information must be provided for the specific type of applicant entities.

1. New Permits, Permit Amendment for Facility Expansions, and Permit Transfers

   a. Publicly Traded Entities

      i. Securities and Exchange Commission (SEC) Form 10-Ks

         This portion of the requirement calls for the two most recent 10-K reports filed.

      ii. SEC Form 10-Q

         This portion of the requirement calls for a copy of the most recent quarterly report.

      iii. Explanation statement

         This portion of the requirement calls for a statement signed by an authorized signatory [as described in 30 TAC 305.44(a)] explaining in detail how the applicant demonstrates sufficient financial resources to construct, safely operate, properly close, perform post-closure care, perform corrective action and provide adequate liability coverage for the facility. This statement must also address how the closure, post-closure, corrective action, and liability coverage financial assurance requirements of Chapter 37, Subchapter P will be met. (i.e., which financial assurance mechanism is or will be used).

      iv. Construction capital cost estimates

         This portion of the requirement calls for estimates of capital costs for expansion and/or initial construction if the application encompasses facility expansion, capacity expansion, or new construction.

   b. Privately Held Entities with Audited Financial Statements

      i. Audited financial statements

         This portion of the requirement calls for complete copies of the audited financial statements for each of the most recent two fiscal years. If an audit has not been completed for one of the previous two years, a complete copy of the fiscal year-end financial statement and federal tax return may be substituted in lieu of the audit not performed. The tax return must be certified by original signature of an authorized signatory as being a "true and correct copy of the return filed with the Internal Revenue Service." Financial statements must be prepared consistent with generally accepted accounting principles and include a balance sheet, income statement, cash flow statement, notes to the financial statement, and an accountant's opinion letter.

      ii. Quarterly financial statement

         This portion of the requirement calls for a complete copy of the most current quarterly financial statement prepared consistent with generally accepted accounting principles. Internally prepared statements are satisfactory.

      iii. Supplementary information statement

         This portion of the requirement calls for a written statement detailing the information that would normally be found in SEC's Form 10-K including descriptions of the business and its operations; identification of any affiliated

relationships; credit agreements and terms; any legal proceedings involving the applicant; contingent liabilities; and significant accounting policies.

iv. Construction capital cost estimates

This portion of the requirement calls for estimates of capital costs for expansion and/or initial construction if the application encompasses facility expansion, capacity expansion, or new construction.

v. Explanation statement

This portion of the requirement calls for a statement signed by an authorized signatory [as described in 30 TAC 305.44(a)] explaining in detail how the applicant demonstrates sufficient financial resources to construct, safely operate, properly close, perform post-closure care, perform corrective action and provide adequate liability coverage for the facility. This statement must also address how the closure, post-closure, corrective action, and liability coverage financial assurance requirements of Chapter 37, Subchapter P will be met (i.e., which financial assurance mechanism is or will be used).

c. Entities without Audited Financial Statements or Entities Choosing Not to Provide the Information Listed Above

i. Financial Plan

This portion of the requirement calls for a financial plan (including balance sheets listing assets, liabilities and capital accounts) sufficiently detailed to clearly demonstrate that the applicant will be in a position to readily secure financing for construction, operation, and closure, post-closure, and corrective action if the permit is issued. At least 3 balance sheets should be included as of: a) approximately the date of the permit application, b) 12 months after any construction is completed (or assumption of operational control for a permit transfer), and c) 24 months after any construction is completed (or assumption of operational control for a permit transfer).

ii. Letters of opinion

The submitted financial plan must be accompanied by original letters of opinion from two financial experts, not otherwise employed by the applicant, who have the demonstrated ability to either finance the facility or place the required financing. If the permit action sought involves construction of a new facility or expansion of an existing facility, the opinion letters must certify that financing is obtainable within 180 days of permit approval and include the time schedule contingent upon permit finality for securing the financing as well as certify the financial plan is reasonable. Even if the application does not involve a facility or capacity expansion, the opinion letters must certify that the financial plan is reasonable. Only one opinion letter from a financial expert, not otherwise employed by the applicant, is required if the letter renders a firm commitment to provide all the necessary financing.

Letters of opinion are usually issued by investment or commercial bankers but there could be additional sources. Applicants are encouraged to verify the adequacy of the credentials of their chosen financial expert with TCEQ's financial assurance unit prior to a formal engagement. Financial experts should describe their qualifications and disclose their independence from the applicant and/or any entity or person affiliated with the applicant.

iii. Operating and cash flow statement

This portion of the requirement calls for a written detail of the annual operating costs of the facility and a projected cash flow statement including the period of construction and first two years of operation. The cash flow statement must

demonstrate the financial resources to meet operating costs, debt service, and provide financial assurance for closure, post-closure care, and liability coverage requirements. A list of the assumptions made to forecast cash flow must also be provided.

iv. Explanation statement

This portion of the requirement calls for a statement addressing how the closure, post-closure, corrective action, and liability coverage financial assurance requirements of Chapter 37, Subchapter P will be met (i.e., which financial assurance mechanism is or will be used).

v. Construction capital cost estimates

This portion of the requirement calls for estimates of capital costs for expansion and/or initial construction if the application encompasses facility expansion, capacity expansion, or new construction.

d. Entities with A Resolution from A Governing Body Approving or Agreeing to Approve the Issuance of Bonds to Satisfy Financial Assurance Requirements (e.g., a City or County)

i. Explanation statement

This portion of the requirement calls for a statement signed by an authorized signatory [as described in 30 TAC30 305.44(a)] explaining in detail how the applicant demonstrates sufficient financial resources to construct, safely operate, properly close, perform post-closure, perform corrective action and provide adequate liability coverage for the facility. This statement must also address how the closure, post-closure, corrective action, and liability coverage financial assurance requirements of Chapter 37, Subchapter P will be met (i.e., which financial assurance mechanism is or will be used).

ii. Certified copy of the resolution from the governing body

iii. Certification by the governing body of passage of the resolution

2. Permit Renewals

For all types of applicant entities, include a financial disclosure letter addressed to UIC Permits Section signed by an applicant representative meeting the application signatory requirements of 30 TAC §305.44 stating the following information:

> "This letter is furnished to you in response to financial disclosure requirements as applicable under Texas Health and Safety Code Section 361.085 and Title 30, Texas Administrative Code (30 TAC), Section 305.50 to provide assurance that [name of applicant] has sufficient financial resources.
>
> In keeping with the above law and rule requirements I hereby certify that [name of applicant] is adequately capitalized and has sufficient financial resources to operate, close, provide post-closure care for and perform corrective action for the above-referenced facility in a safe manner, and in compliance with the permit and all applicable rules.
>
> [name of applicant] currently provides a [describe type of mechanism, i.e., letter of credit, surety bond, etc.] financial assurance mechanism as set out in 30 TAC, Chapter 37, Subchapter C to meet [name of applicant]'s financial assurance obligations.
>
> I am authorized to make these statements on behalf of [name of applicant]. I understand that the TCEQ may request additional information as part of their review."

Geoscientist Seal

Signature by Texas Professional Geoscientist

I, Stephanie K. Williams, the undersigned state: As an employee of Terra Dynamics Incorporated that I am authorized to prepare this document (***V. Geology Report***) and that this document (***V. Geology Report***) was prepared under my supervision and direction. All facts stated herein are true, correct and complete to the best of my knowledge. The geosciences information, calculations and analyses attested to in this document (***V. Geology Report***) were prepared in accordance with generally and currently accepted geosciences principles and practices. The information specifically covered by this seal includes Pages V-1 to V-32, Tables V-1 to V-2 and Figures V-1 to V-31 as they relate to the Permit Renewal Application to Dispose of Waste in a Class I Injection Well [WDW-397 and WDW-398] for the Exxon Mobil Corporation, Pasadena Plant facility, Pasadena, Texas.

STATE OF TEXAS
STEPHANIE K. WILLIAMS
GEOLOGY
NO. 11198
LICENSED
PROFESSIONAL GEOSCIENTIST

Stephanie K. Williams 2/26/2024

Signature Date

Licensed Professional Geoscientist
#11198, State of Texas
Terra Dynamics Incorporated
Texas Registered Engineering Firm
F-3501

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V. GEOLOGY AND HYDROGEOLOGY

The following sections present a summary of the regional and local stratigraphic and structural geology, lithology, hydrostratigraphy and hydrogeology within the Exxon Mobil Corporation (ExxonMobil) geologic study area. Information obtained from the data, interpretations, and conclusions of the artificial penetrations review study, and from the drilling and completion of WDW-397 and WDW-398 were used for the study of the geologic conditions at and surrounding the Pasadena Plant facility.

V.A. Regional Geology and Hydrogeology

The ExxonMobil regional geologic study area is located in southeastern Harris County on the Texas Gulf Coast. The regional study area is circular and focuses on Harris County and the counties surrounding Harris County.

V.A.1. Regional Stratigraphy

Figure V-1 is a regional stratigraphic column showing the relationships of the various formations. The earliest record of sedimentation in the Gulf of Mexico Basin occurred during the Late Triassic to Early Jurassic time when the early phases of continental rifting resulted in the deposition of non-marine red bed and deltaic sediments (shales, siltstones, sandstones and conglomerates) in a series of restricted, graben fault-block basins. These sediments were overlain by a thick sequence of anhydrite and salt beds (Werner Anhydrite and Louann Salt) deposited during Middle Jurassic time. The deposition of the Louann Salt beds was localized within major basins that were defined by the major structural elements in the Gulf Coast Basin. The clastic Norphlet Formation (sandstones and conglomerates) overlies the Louann Salt and is more than 1,000 feet thick in Mississippi but thins westward to a sandstone and siltstone in Texas. Norphlet conglomerates were deposited in coalescing alluvial fans near Appalachian sources and grade downdip into dune and interdune sandstones deposited on a broad desert plain (Mancini and others, 1985).

Shallow-water carbonate and clastic rocks of the Smackover, Buckner, and Haynesville Formations and Cotton Valley Group were deposited over the Norphlet Formation from the Late Jurassic into the Late Cretaceous time. Jurassic, non-skeletal, carbonate sands and muds accumulated on a ramp-type shelf with reef buildups developed on subtle topographic highs (Baria and others, 1982). A high terrigenous clastic influx in eastern Louisiana and Mississippi occurred during deposition of the Haynesville, and diminished westward where the Haynesville Formation grades into the Gilmer Limestone in East Texas. The top of the Jurassic Period occurs within the Cotton Valley Group, with the Knowles Limestone dated as Early Cretaceous in age (Todd and

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Mitchum, 1977). The middle Cretaceous was a period of notable stability, permitting the development of extensive, shelf-edge reef complexes (Baria and others, 1982). Tectonism in the western United States and northern Mexico (Laramide Orogeny) in the Late Cretaceous resulted in a large influx of terrigenous sands and muds (Washita-Fredericksburg and Tuscaloosa Formations) into the Gulf Coast Basin. This effectively shut off production of carbonates, except in the Florida and Yucatan regions. The rate of terrigenous sediment influx has been greater than the rate of basin subsidence, resulting in significant progradation of the continental shelf margin since the Cretaceous Period.

The geometry of Cenozoic deposition in the Gulf Coast Basin was primarily controlled by the interaction of the following factors:

1) Changes in the location and rates of sediment input, resulting in major shifts in the location of areas of maximum sedimentation;
2) Changes in the relative position of sea level, resulting in the development of a series of large-scale depositional cycles throughout Cenozoic time;
3) Diapiric intrusion of salt and shale in response to sediment loading; and
4) Flexures and growth faults due to sediment loading and gravitational instability.

Early Tertiary sediments are thickest in the Rio Grande Embayment of Texas, reflecting the role of the ancestral Rio Grande and Nueces Rivers as sediment sources to the Gulf of Mexico. By Oligocene time, deposition had increased to the northeast in the Houston Embayment, suggesting that the ancestral Colorado, Brazos, Sabine and Mississippi Rivers were increasing in importance. Figure V-2 shows the major structural features of the Texas Gulf Coast generated by these variable deposition rates. Miocene time is marked by an abrupt decrease in the amount of sediment entering the Rio Grande Embayment, with a concurrent increase in the rate of sediment supply in southeast Texas, Louisiana and Mississippi. Throughout the Pliocene and Pleistocene Epochs, maximum depocenters of sedimentation were controlled by the Mississippi River and are located offshore of Louisiana and Texas.

Tertiary sediments accumulated to great thicknesses where the continental platform began to build toward the Gulf of Mexico, beyond the underlying Mesozoic shelf margin and onto transitional oceanic crust. Rapid loading of sand on water-saturated prodelta and continental slope muds resulted in contemporaneous growth faulting (Loucks and others, 1986). The effect of this syndepositional faulting was significant expansion of the sedimentary section on the downthrown side of the faults. Sediment loading also led to salt diapirism, with its associated faulting and formation of large salt withdrawal basins (Galloway and others, 1982a).

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Sediments of the Tertiary progradational wedges were deposited in continental, marginal marine, near shore marine, shelf and basinal environments and present a complex depositional system along the Texas Gulf Coast.

Overlying the Tertiary progradational wedges along the Texas Gulf Coast are the Pleistocene and Holocene sediments of the Quaternary Period. Pleistocene sedimentation occurred during a period of complex glacial activity and corresponding sea level changes. As the glaciers made their final retreat, Holocene sediments were being deposited under the influence of an irregular, but rising, sea level. Quaternary sedimentation along the Texas Gulf Coast occurred in fluvial, marginal marine, and marine environments.

V.A.2. Regional Hydrostratigraphy

Miocene and younger formations contain usable quality water (<3,000 mg/L total dissolved solids (TDS)) and potentially usable quality water (<10,000 mg/L TDS) (base of lowermost USDW). Baker (1979) describes four major hydrogeologic units along the Texas Gulf Coast. These are, from oldest to youngest, the Miocene-aged Jasper Aquifer and the Burkeville confining system, the Miocene-Pliocene-aged Evangeline Aquifer, and the Pleistocene-Holocene-aged Chicot Aquifer. Figure V-3 is a regional hydrostratigraphic column showing the relationships of the various aquifers. Freshwater recharge to the aquifer system is primarily from rainfall on the outcrop areas and from rainfall on the surficial aquifer system, which in turn recharges the underlying aquifers.

Most of the groundwater in Harris County is supplied by the Evangeline and Chicot aquifers. Large groundwater withdrawals for municipal, industrial and agricultural uses from the Evangeline and Chicot aquifers began in the 1930s (Gabrysch, 1980), and in the Houston area, averaged 500 million gallons per day from 1969 through 1982. These large amounts of groundwater withdrawal, in excess of natural recharge, have resulted in water-level declines in both the Chicot and Evangeline aquifers throughout Harris County. Groundwater withdrawals from the Chicot and Evangeline aquifers are not expected to influence the safety of the site (non-endangerment of underground source of drinking water (USDW)) nor injection operations, since the water levels are stabilized or rising. Based on the detailed geologic study, no natural conduits (vertically transmissive faults or fractures) exist between the injection sands and the freshwater aquifers. The Frio sands are separated by over 2,000 feet of geologic section from the shallow, freshwater aquifers (<10,000 mg/L TDS). As a result of the above-described conditions in the area of the Pasadena Plant, continued groundwater withdrawals from the Chicot or Evangeline aquifers will not have an effect on either non-endangerment or waste containment.

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V.A.3. Confining Zone and Injection Zone

The Confining Zone for WDW-397 and WDW-398 is the Anahuac Formation. The Injection Zone used as the disposal horizon is the Frio Formation. The injection wells inject across the middle and basal portions of the Frio Formation.

V.A.3.(a) Confining Zone

The Anahuac Formation is designated as the Confining Zone for the underlying Frio Formation Injection Zone. Figure V-4 is a dip-oriented stratigraphic and hydrogeologic cross section across Harris County which illustrates the positioning of the zones of interest. The Anahuac Formation is predominantly shale, deposited during a major rise in sea level and extends across most of the Gulf Coast Basin. In the local area, a prominent limestone interval (Het lime) is present within the Anahuac Formation. The Het lime interval is easily identifiable on the geophysical well logs as an interval of higher resistivity. The lateral continuity and structure of the Anahuac Formation across the Area of Review (AOR) and within the study area is depicted on the structure and isopach maps provided as Figure V-19 and V-20, respectively. Across the study area, the Anahuac Formation thickens southwestward, from about 400 feet in the northwest portion of the study area to over 550 feet in the southeast, forming a thick, continuous wedge across the study area.

V.A.3.(b) Injection Zone

The Frio Formation serves as the Injection Zone for WDW-397 and WDW-398. Figure V-5 is a regional structure map of the top of the Frio Formation and Figure V-6 is a regional total thickness map of the Frio Formation. At the ExxonMobil facility, the top of the Frio Formation is present at a depth of about 5,375 feet relative to ground level. The thickness of the Frio Formation in Harris County ranges from less than 1,000 feet in the northwestern part of the county, to greater than 3,000 feet in thickness in the southeastern part of the county.

V.A.4. Regional Surface Geology

Two regional structural cross sections demonstrate the lateral continuity for the sand and shale (aquiclude) layers within the Frio Formation Injection Zone (Figures V-7 and V-8). The cross sections illustrate the continuity and thickness of the Injection Zone across the regional study area. Additional cross sections are provided as Figures V-27 and V-28.

V.A.5. Regional Structural Geology

Cenozoic sediments were deposited along the margin of the Gulf Coast basin, an extracratonic basin characterized by rapid subsidence in areas of sediment loading. Three major areas characterized by unique structural styles have been defined along the Texas Gulf Coast. These

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unique structural styles are classified based on the syndepositional province and the type of diapiric sediment involved in deformational processes. They are the Houston Embayment of Southeast Texas, the San Marcos Arch of South Central Texas and the Rio Grande Embayment of South Texas, as depicted on Figure V-2.

ExxonMobil is located in the Houston Embayment, which is characterized by salt diapirism, faulting and unfaulted salt withdrawal sub-basins (Bebout and others, 1978) (Figure V-2). The Oligocene-Holocene section thickens basinward, periodically interrupted by coast-parallel fault systems and salt diapirism, which often become increasingly complex as they extend upward through the section (Galloway and others, 1982a).

V.A.6. Regional Seismic Activity

The Texas Gulf Coast is historically an area of low seismicity with naturally occurring earthquakes being rare and of low magnitude. ExxonMobil is located in one of the areas recognized as having the lowest level of seismic risk in the continental United States (Figure V-9). Rare instances of fluid injection-induced and fluid withdrawal-induced earthquakes from oil field operations have been documented along the Texas Gulf Coast. However, fluid injection-induced earthquakes are associated with much higher injection pressures and volumes than what is encountered during Class I waste injection operations; fluid withdrawal-induced earthquakes are most associated with large scale oil and gas production of greater magnitude than any past/present production in the Pasadena area.

V.A.7. Regional Groundwater Flow in the Injection Zone

Groundwater in the Coastal Plain aquifers are considered to have two origins: meteoric waters - precipitation that enters the shallow aquifers by infiltration, and formation waters - water trapped in sediments from the original depositional environments (Kreitler, 1979). These two types of waters coexist in the basin in the following three hydrologic regimes: 1) the uppermost permeable strata are continuously recharged by meteoric waters forming a freshwater regime, which may extend to a depth of several thousand feet below land surface, and where flow is directed downdip toward the basin center; 2) the underlying compacting strata expel original formation water or water at least several million years old from sediments forming a hydrostatic system, where waters from this essentially saline section can come in contact with the overlying meteoric sections to prevent excessive pressure buildup within the hydrostatic zone; and 3) further downdip, the underlying strata represent the overpressured or geopressured zone where abnormally high fluid pressures exist due to restricted drainage conditions (Kreitler and Richter, 1986).

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Groundwater flow was researched by Kreitler and others in 1990 with a geohydrologic characterization study of the Frio Formation to evaluate pressure regimes and their influence on the migration potential of formation fluids. The study used pressure data gathered from drillstem tests and bottomhole pressure measurements in onshore oil and gas wells along the Texas Gulf Coast. The data was used to construct potentiometric surfaces and residual potential surfaces and to assess the effects of depressurization caused by hydrocarbon production. The data indicates that the potential for groundwater movement in the Frio Formation is from areas of recharge toward the Gulf (generally northwest to southeast), except in areas where significant hydrocarbon production has occurred.

V.B. Local Geology and Hydrogeology

This discussion addresses the local stratigraphic and structural geology, lithology and hydrogeology pertinent to the proposed ExxonMobil injection operations. For the purposes of this application, the local geologic area of study is defined as the area within the 2.5-mile radius AOR. The uninterpreted base map provided as Figure V-10 shows the local study area, wells used for geologic interpretation, and the locations of local cross section lines constructed for this permit application.

V.B.1. Local Stratigraphy

The Injection Interval for the ExxonMobil injection wells is contained within the Frio Formation. Therefore, this local stratigraphy discussion begins with the Frio Formation and then discusses the successive shallower geologic formations (Figure V-11).

Frio Formation

Deposition of the progradational Frio wedge was initiated by a major global fall in sea level, with subsequent Frio sediments being deposited under the influence of a slowly rising sea (Galloway and others, 1982b). Figure V-5 shows a regional structure map on the top of the Frio Formation and Figures V-7 and V-8 show regional structural cross sections of the Frio Formation depositional wedge through Harris County. On a regional scale, the Frio and Catahoula Formations can be divided into several distinct depositional systems that are related spatially and in time. Two major progradational delta complexes, designated the Houston and Norias delta systems and identified by Galloway and others (1982b), were centered in the Houston and Rio Grande Embayments, respectively (Figure V-12). Separating the two delta complexes was a broad barrier island/strand plain system (Greta/Carancahua) along the south-central Texas coast. A similar but smaller barrier island/strand plain system (Buna) was deposited by longshore currents off the eastern flank of the Houston delta system (Galloway and others, 1982b). Two Catahoula Formation fluvial systems,

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the Chita/Corrigan and the Gueydan, respectively, supplied sediment to the delta complexes. Frio sandstones of the Upper Texas Gulf Coast contain a higher percent of quartz, less feldspar and less volcanic rock fragments (quartzose feldspathic volcanic litharenite) than Frio sandstones (feldspathic litharenite) of the Lower Texas Gulf Coast (Bebout and others, 1978).

The Houston delta system of East Texas underlies parts of nine counties centered in southern Harris County. The system is composed of several minor, laterally coalescent, and frequently shifting delta lobes (Galloway and others, 1982b). Sediment was supplied by streams of the Chita/Corrigan fluvial system of the Catahoula Formation. Updip deltas exhibited wave-dominated, arcuate geometries, while lobate delta geometries characterized episodes of maximum progradation or an area where high subsidence rates were associated with salt withdrawal basins (Galloway and others, 1982b). Due to constant switching of delta lobes, the rate of coastal progradation was slow for the Houston delta system.

Catahoula Formation

Stratigraphically updip of the Frio Formation, the time-equivalent Catahoula Formation accumulated on the progradational continental platform generated from Yegua, Jackson, and Vicksburg deposition (Galloway and others, 1982b). The two Catahoula fluvial systems, the Gueydan and the Chita/Corrigan, supplied terrigenous clastic sediment to the Norias delta system and the Houston delta system, respectively. The Choke Canyon/Flatonia coastal lake/stream plain system drained the south-central Texas Coast behind the Greta/Carancahua barrier island/strand plain system (see Figure V-12).

The Gueydan fluvial system records the entry of a major river into the Gulf Coast Basin (Galloway and others, 1977). The system is characterized by the development of multilateral sand belts several miles wide, composed of coarse-grained, bedload, and mixed-load fluvial channel fill deposits encased in flood plain mudstones (Galloway and others, 1977; Galloway and others, 1982b). The Chita/Corrigan fluvial system in the Houston Embayment constitutes a broad sand belt with at least three main drainage axes.

Sandstone composition in the Catahoula Formation reflects the nature of transport of volcanic debris and distance from the volcanic source. East Texas samples have heavy mineral assemblages containing ultra-stable, polycyclic, metamorphic and igneous minerals such as rounded zircon, sphene, tourmaline, staurolite, kyanite, apatite, rutile, sillimanite and garnet (Ledger and Rowe, 1984). South Texas samples contain abundant hornblende, zircon, apatite and biotite (Ledger and Rowe, 1984). The Trans-Pecos volcanic area is the probable source for the volcaniclastic material

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found in the Catahoula Formation (Ledger and others, 1984).

Anahuac Formation

As sea level continued to rise during the late Oligocene Epoch, the underlying Frio progradational platform flooded. Wave reworking of sediment along the encroaching shoreline produced thick, time-transgressive blanket sands at the top of the Frio Formation and base of the Anahuac Formation (Marg-Frio) section. The transgressive Anahuac marine shale deposited conformably on top of the blanket sands throughout the Texas and Louisiana coastal region. The Anahuac shale was deposited in an open-shelf environment and is typically composed of calcareous, marine shales with localized, lenticular, micritic limestone units. The Anahuac shale is regional, thickening from its inshore margin to nearly 2,000 feet offshore in the Gulf of Mexico (Galloway and others, 1982b).

Fleming Group

The Oakville Formation and the Lagarto Formation form the units of the thick Miocene Fleming Group and were deposited throughout the Gulf Coast. Deposition of the Fleming Group occurred in relatively shallow water across the broad, submerged, shelf platform constructed during Frio and Anahuac deposition. Three major depositional regimes characterize the Fleming Group. Figure V-13 shows the distribution of the lower Miocene depositional systems across the Texas Coastal Plain.

Along the northeastern boundary of Texas, the Newton fluvial system supplied sediment to the Calcasieu delta system of Southeast Texas and Southwest Louisiana (Figure V-13). Sands of the Newton fluvial system are fine to medium-grained, with thick, vertically and laterally amalgamated sand lithosome geometries typical of meander belt fluvial systems (Galloway, 1985). Depositional patterns within the Oakville Formation (lower Fleming) of Southeast Texas show facies assemblages typical of a delta-fringing strand plain system (Galloway, 1985). The Calcasieu delta system is best developed in Southeast Texas in the Lagarto Formation of the upper Fleming. The delta system consists of stacked delta-front, coastal-barrier and interbedded delta-destructional shoreline sandstones that compose the main body of the delta system, with interbedded prodelta mudstones and progradational sandy sequences deposited along the distal margin of the delta (Galloway, 1985).

Along the south-central Texas Coast, flanking the two Miocene delta systems, is a broad, strike-parallel barrier island/strand plain system. The Matagorda barrier/strand plain system is cored by a prominent strike-parallel belt of sandstone, bounded both updip and downdip by mud-rich bays

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and lagoons, and marine shales, respectively (Galloway, 1985). The shore-zone complex has been interpreted by Galloway (1985) and Galloway and others (1986) to consist of a mix of microtidal barrier-island and sand-rich strand plain deposits. Where streams of the Moulton/Point Blank stream plain infilled the back-barrier bays and lagoons, fluvial channel deposits merge directly with shore-zone sands (Galloway, 1985).

Pliocene

Conformably overlying the Miocene marine units are the Pliocene-aged sediments of the Goliad Formation. The Goliad sedimentary sequence is similar in character to the underlying Miocene unit, having been deposited in fluvial, deltaic and marginal marine environments. The section thickens in a dip direction (toward the present-day coastline) and has a variable thickness along strike. In the ExxonMobil, Pasadena Plant area, the unit reaches a thickness of approximately 1,900 feet and is composed of interbedded fluvial and deltaic sandstones with minor conglomerates. Sandstones of the Goliad Formation are the lowermost units containing fresh to slightly saline water and form the Evangeline Aquifer in Harris County (Aronow and Wesselman, 1971).

Pleistocene

Lying conformably above the Goliad are the Pleistocene-aged sediments of the Beaumont Formation, which was deposited under the influence of the complex glacial and interglacial climatic sea level changes of the Pleistocene. The Beaumont Formation was deposited in both fluvial and deltaic environments and thickens in a dip direction as well as along strike toward the southwest. Pleistocene sediments thicken along the Texas-Louisiana border and in a dip direction where there was significant deposition along growth faults during Pleistocene sea level low stands (Aronow and Wesselman, 1971). The Beaumont Formation, the uppermost Pleistocene formation in the AOR is approximately 650 feet in the vicinity of the Pasadena Plant. Willis sediments grade conformably into the overlying Holocene depositional units. Pleistocene and Holocene units contain fresh water and comprise the Chicot Aquifer.

Holocene

With the retreat of the Pleistocene glaciers, sea level began a final irregular rise to its present-day level. As sea level rose, the lower reaches of the San Jacinto River Valley slowly filled with brackish-to-marine water and subsequently began filling with fluvial sediments. In the area, Holocene sediments were deposited in river valley meander belts and are primarily composed of point bar sandstones with interbedded, finer-grained overbank deposits. The most extensive Holocene sedimentation occurred in coastal marsh, mud flat and beach environments located along the southern coastal margin of Harris County (Aronow and Wesselman, 1971).

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The slow rise of the Holocene sea level marked the beginning of the recent geologic processes that have created the present Texas coastal zone. During recent times, sediment compaction, slow basin subsidence and minor glacial fluctuations have resulted in insignificant, relative sea level changes. The coastal zone in Southeast Texas has evolved to its present condition through the continuing processes of erosion, deposition, compaction and subsidence periods. Recent alluvial deposition in the area is restricted to the geomorphic flood plain of the present-day San Jacinto River system and to the entrenched valleys of the ancestral San Jacinto River system, which had downcut into the underlying Pleistocene deposits during sea level low stands (Aronow and Wesselman, 1971).

V.B.2. Local Hydrostratigraphy

There are four major hydrostratigraphic divisions in the Miocene and younger formations. These are, in descending order: the Chicot Aquifer, the Evangeline Aquifer, the Burkeville confining layer and the Jasper Aquifer. In the AOR and to the south, the Chicot Aquifer is divided into upper and lower units of which the basal beds are locally known as the Alta Loma sand. Hydrostratigraphic units are included on the stratigraphic column provided as Figure V-11. Figure V-4 is a stratigraphic and hydrogeologic cross section across Grimes, Waller, Mongomery, Harris and Galveston Counties which depicts these hydrostratigraphic units. The ExxonMobil facility location has been projected onto the cross section.

In the study area, most of the groundwater is supplied by the Evangeline Aquifer and the lower unit of the Chicot Aquifer. The base of the Chicot Aquifer occurs at approximately 680 feet, with the Evangeline Aquifer base lying at approximately 2,600 feet. Figure V-14 is a structure contour map which depicts the approximate altitude of the undifferentiated Chicot and Evangeline aquifers. Figure V-15 is a structure contour map which depicts the approximate altitude of the base of the Evangeline Aquifer. The base of the Burkeville confining system is found at approximately 3,150 feet. The Jasper Aquifer base is found at approximately 4,100 feet and is the deepest occurring aquifer which is identified as containing USDW. Figure V-18 is a structure contour map depicting the approximate altitude of the base of the Jasper Aquifer.

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V.B.3. Local Lithology and Rock Properties

This discussion addresses the local lithology and rock properties related to the ExxonMobil injection operations. For the purposes of this application, the local geologic area of study is defined as the area within the 2.5-mile radius AOR. Refer back to Figure V-10 showing the local study area, wells used for geologic interpretation, and the locations of local cross section lines constructed for this permit application.

The approximate depths to the various zones of interest for this permit application include the following:

Horizon	WDW-397 Depth (KB)	WDW-398 Depth (KB)
Base of USDW	3,221′	3,222′
Top of Confining Zone	4,850′	4,885
Top of Injection Zone	5,347′	5,370′
Top of Injection Interval	5,922′	5,965′
Base of Injection Interval & Zone	7,272′	7,295′

KB – Kelly bushing

V.B.3a. Lowest USDW

The base of water having less than 10,000 mg/L TDS is usually picked on electric logs as the depth where the deep resistivity log curve in a clean sand first kicks below 3 ohms. Hydrologists contacted at both the TCEQ in Austin and United States Geological Survey (USGS) in Houston use a range of 3 to 6 ohms as read from the deep curve on the electric log for the 10,000 mg/L TDS point, and 10 ohms for the 3,000 mg/L TDS level. Electric log resistivity methods were employed by Baker (1979), Ryder (1988) and Turcan (1966) to determine similar correlations of TDS levels in aquifer systems in the Gulf Coast region.

In the general area of the injection wells, sands containing usable quality water (< 1,000 mg/L TDS) occur to a depth of 1,800 feet and those sands containing potentially usable water (< 3,000 mg/L TDS) occur to a depth of about 2,600 feet. These depths have been established through a survey of selected freshwater wells in the area and by research and review of available published literature. The base of the lowest underground source of drinking water (USDW), defined as groundwater containing less than, or equal to, 10,000 mg/L TDS, occurs at a depth of 3,221 feet KB in WDW-397 and 3,222 feet KB in WDW-398. Figure V-18 is a structure contour map of the base of the lowermost USDW in the AOR surrounding the ExxonMobil facility. The base of the lowermost USDW was determined by detailed log analysis of the well logs in the area surrounding

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the ExxonMobil facility location. The base of the USDW was chosen as the depth where the recorded deep resistivity in a porous sand fell below 4 ohms of resistivity. The USDW selected is within the Jasper Aquifer.

V.B.3b. Confining Zone

The Anahuac Formation serves as the Confining Zone for the underlying Frio Formation Injection Zone. The Anahuac Formation is predominantly shale, deposited during a major rise in sea level and extends across most of the Gulf Coast Basin. The two structural cross sections show the lateral continuity of the Anahuac Formation across the AOR and within the study area. A structure map of the Anahuac Formation (Confining Zone) is included as Figure V-19. The structure map is mapped on a "marker" within the Anahuac Formation which occurs at a depth of about 5,023 feet subsea in WDW-397 and 5,063 feet subsea in WDW-398. The top of the Confining Zone is present at a depth of about 4,818 feet subsea in WDW-397 and 4,856 feet subsea in WDW-398. The top of the Confining Zone strikes generally southwest to northeast and dips toward the coast. A gross thickness isopach map of the Confining Zone is included as Figure V-20. The Anahuac Formation in the study area thickens southwestward, from about 450 feet in the northwest portion of the AOR to over 550 feet in the southeast, forming a thick, continuous wedge across the AOR.

Several conventional cores were taken from the micritic limestone section (Het Lime) within the Anahuac Formation during the drilling of Lyondell Chemicals injection well WDW-148. The core data report for WDW-148 is included in Appendix B. WDW-148 is located about 13 miles northeast, and along strike, of the ExxonMobil facility. The cores contained fossiliferous, chalky, cryptocrystalline limestone with dirty shale striations. Core porosities for the limestone ranged from 5 to 12.3 percent and permeabilities ranged from less than 0.1 milliDarcies (mD) (lower limit of the analytical method employed) to 3 mD. This tight limestone interval will add an additional layer of confinement to the Anahuac Formation Confining Zone.

A conventional core, characteristic of the Anahuac Formation shale, obtained during drilling of the Elf Atochem North America, Inc. injection well WDW-230, indicates a bulk porosity of 21.8 percent and a permeability of <0.001 mD from a vertical shale sample using simulated formation brine as the permeate. The WDW-230 injection well is located about 25 miles northwest, and along strike, of the ExxonMobil facility location. The core data report for WDW-230 is included in Appendix B. Petrophysical and mineralogical analysis of several samples from this core showed the composition of the Anahuac Formation to be approximately 48 percent total clay (predominantly illite and smectite, with minor amounts of kaolinite) and 40 percent quartz, with

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minor amounts of calcite and feldspar. These values are in the range expected for typical Tertiary sedimentary shale.

A conventional core from the Anahuac Formation shale was obtained during drilling of the ExxonMobil WDW-397 injection well. The core data report for WDW-397 is included in Appendix B. Permeability to Frio Formation brine was determined for three samples and ranged from 2.3 x 10^{-3} mD to 6.2 x 10^{-4} mD, confirming the tight nature and confining capabilities of the Anahuac Formation. Neither conventional core, nor sidewall cores were collected from the Anahuac Formation during the drilling of the ExxonMobil WDW-398 injection well.

V.B.3c. Injection Zone

The Injection Zone for ExxonMobil's WDW-397 and WDW-398 includes the entire upper, middle and lower Frio Formation. The Injection Zone depths in WDW-397 occur from approximately 5,347 feet to 7,272 feet KB. The Injection Zone depths in WDW-398 occur from approximately 5,370 feet to 7,295 feet KB. Note that the base of the Injection Zone in each well is below the total depth of the well. The structure map of the Injection Zone (Figure V-21) identifies the top of the Injection Zone at the facility location. A gross thickness map of the Injection Zone is included as Figure V-22. Figure V-23 is a commercial structure map on the top of the Frio Formation, which is equivalent to the top of the Injection Zone. The structure maps suggest that the strike direction is generally east-west, while the dip direction is generally south. The presence of faulting in the AOR has slightly altered the typical strike and dip from the regional norm (strike – northeast to southwest; dip – toward the coast). The gross thickness map indicates the wedge-shaped nature of the Frio Formation. The Injection Zone is thinnest in the northwest portion of the AOR (1,700 feet) and thickens to over 2,000 feet towards the southeast.

The Injection Zone is segregated into two distinct horizons. Various portions of the Lower Frio Formation comprise the Injection Interval for the ExxonMobil injection wells. The sand layers within the Injection Interval have a net thickness of approximately 720 feet at the injection well locations.

Across the AOR, various portions of the upper Frio Formation serve as containment intervals for the Injection Interval. The containment interval is that portion of the Injection Zone which is present between the top of the Injection Interval and the top of the Injection Zone. The containment interval provides additional low permeability strata which prevent upward movement of injected fluids.

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The Frio Formation is more porous and permeable than the shales of the overlying Anahuac Formation and the underlying Vicksburg Formation. Based on density porosity log response and core data collected from the Lyondell Chemical injection wells (WDW-148 and/or WDW-162), the permeable horizons within the Injection Zone have an average porosity of 30 percent and an average permeability of between 500 mD to 1,000 mD.

V.B.3d. Injection Interval

The permitted Injection Interval is the Lower Frio Formation sand interval, which is present from approximately 5,922 feet to 7,272 feet KB in the WDW-397 injection well. The equivalent interval in the WDW-398 injection well is present from 5,965 feet to 7,295 feet KB. Note that the base of the Injection Interval in each well is below the total depth of the well. The Lower Frio Formation sand intervals are identified as the Frio D Sand, the Frio E&F Sand (primary completion interval for ExxonMobil injection wells) and the Frio A/B Sand.

Figure V-24 is a structure map on top of the Frio E&F Sand within the Injection Interval. The Frio E&F Sand is an easily identifiable and readily traced marker within the Injection Interval. The Frio E& F Sand parallels the top of the Injection Interval and mimics the Injection Interval surface approximately 775 feet below the top of the Injection Interval.

The structure map suggests that the strike direction is generally east-west, while the dip direction is generally south below the facility location. As with the top of the Injection Zone, the presence of faulting in the AOR has slightly altered the typical strike and dip from the regional norm (strike – northeast to southwest; dip – toward the coast).

Figure V-25 is a net sand thickness map of the Injection Interval. The net sand isopach for the Injection Interval shows a dip-oriented geometry near the plant site, with the thickest portion of the sand (> 800 feet) occurring east of the plant site. Thickness of the net sand ranges from about 550 to 850 feet across the AOR and is about 725 feet thick below the facility location.

V.B.3e. Confining Strata Beneath Injection Zone

The confining strata beneath the Injection Zone is comprised of shales and silts of the Vicksburg-Jackson Groups. Consistent with the porosity and permeability of the overlying Confining Zone shales, it is anticipated that the porosity and permeability of the Vicksburg-Jackson Groups are sufficient to contain any injected fluids which may migrate below the Injection Zone. Figure V-26 is a commercial structure map on top of the Vicksburg Formation.

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V.B.3f. Uninterpreted Base Map

An uninterpreted base map is provided as Figure V-10.

V.B.4. Local Structural Cross Sections

Figure V-27 (Strike-Oriented Structural Cross Section B-B') and Figure V-28 (Dip-Oriented Structural Cross Section A-A') illustrate the continuity of the Confining Zone, Injection Zone and Injection Interval within the AOR. The projected locations of the ExxonMobil injection wells are identified on the cross sections.

The two structural cross sections demonstrate the lateral continuity for the sand and shale layers within the Frio Formation Injection Zone and Injection Interval. The sand body geometry of the Frio sands near the Pasadena Plant site is consistent with the overall wave-modified, lobate depositional patterns exhibited during Frio time in this portion of the Houston Embayment.

V.B.5. Structural Geology

The subsurface structure at ExxonMobil is characteristic of the salt deformed sediments of the Houston Embayment of the Texas Gulf Coast. The structural setting of the Confining Zone (as represented by the Anahuac marker), Injection Zone and Injection Interval (as represented by the Frio E&F Sand within the Injection Interval) is depicted on the local structure maps (Figures V-19, V-21 and V-24). Two major structural features (salt domes) in the area control the structural orientation within the AOR. The Clinton Oil Field located about six miles to the northwest of the project location, is centered on the top of the Clinton Dome. A second salt deformation structure, the South Houston Dome is located about six miles to the southwest of the project location. The South Houston Field is centered on this domal structure. These structural features greatly influence the nature and structural orientation of the formations present below the project locations.

Surface Faults and Lineations

No active or inactive surface faults have been mapped in the AOR. However, Fisher and others (1972) mapped several lineations through the AOR which can sometimes be indicative of the presence of surface faults. Figure V-29 is a surface lineament map across the study area. The figure depicts several surface lineations which extend through the AOR. Given the distance traversed by the lineations depicted in Figure V-29 and the lack of curvature (straight lines), these lines are thought to depict pipelines or utility lines. Surface fault expressions in the area do not typically extend greater than a few miles and are almost never straight. A good illustration is the lineation mapped on Figure V-29 just south of the AOR. The depicted lineation is about five miles in length and "snakes" from south to north. The lineation has been mapped as a surface fault by other

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researchers and is associated with structural disruption across the top of the South Houston Dome. Figure V-30 is a geologic atlas map of the project area. The subject surface fault is mapped on this figure in the same location.

Continuity between known surface and subsurface faults has been demonstrated by several investigators. Van Siclen (1967) correlated the Addicks Scarp with the subsurface fault controlling the oil accumulation in the Fairbanks oil field, northwest of Houston. Sheets (1974) identified the surface expression of the large Clinton Field fault in northeast Houston. Woodward, Lundgren and Associates (1974) mapped the Ethyl fault in Pasadena, Texas using dense well control from the surface to a depth of at least 1,000 feet. Because of limited available data and the difficulty of correlating shallow, undifferentiated sediments of electric logs, no additional studies relating surface and subsurface faults were found.

Contradicting the conclusions mentioned above, Verbeek (1979), stated that correlations between surface and subsurface faults are not conclusive because of the large distances (6,000 to 12,000 feet) involved in making the inferred connections. It should also be noted that even if such correlations are valid, deep-seated growth faults are no longer very active and fault displacements in the uppermost few thousand feet are very minor. The Ethyl Fault discussed above illustrates this point (Woodward, Lundgren and Associates, 1974). Displacement does not exceed 36 feet in the uppermost 1,000 feet of beds along the Ethyl Fault.

Investigations show that the rate of movement on surface faults is very low. Verbeek and Clanton (1978) report that contemporary rates of movement on many faults in the Houston area are in the range of 0.2 to 0.79 in/yr. Reid (1973) suggested that the movement on some faults was episodic rather than continuous.

Land subsidence due to large groundwater withdrawal has been a subject of serious concern in the Houston-Galveston area. In particular it is alleged that groundwater pumpage and subsequent compaction of the clays in the shallow section has caused existing surface faults to move and new faults to form. However, since the creation of the Harris-Galveston Coastal Subsidence District, groundwater withdrawal in the Texas City area has been significantly reduced which has effectively halted subsidence in the area.

Subsurface Faults

Subsurface structural mapping based on electric log correlations indicates that the strike of Lower Miocene and younger sediments in the study area is east-northeast to west-southwest. This is

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parallel to the current coastline and is similar to the trend of other Tertiary sediments along the Texas Gulf Coast. Three structure maps were constructed to illustrate the subsurface structure in the vicinity of the ExxonMobil facility location. A structure map on the Anahuac Formation shows that the plant site sits on the western flank of the Lynchburg Field structure, near the south-southwest plunging saddle separating the Clinton Dome (located approximately five miles to the northwest) from the Renee-Lynchburg Field structure (located approximately three miles to the east) (Figure V-19). The structure map on top of the Frio E&F sand shows similar structuring (Figure V-24). With minor fluctuations and interruptions, depositional dip to the south-southeast in the study area is on the order of 100 feet/mile at the top of the Injection Zone. The rate of dip away from the plant site of the south-southwest plunging saddle is approximately 130 feet/mile at the Vicksburg Formation marker level. The Renee-Lynchburg Field structure is transected by two main southwest-to-northeast trending down-to-the-basin normal faults (labeled Fault A and Fault B). Based on fault cuts in the field wells and contouring, the three main faults that cross-cut Lynchburg Field have throws of 100 to 200 feet at the Frio E&F Sand level. These faults apparently cut through the Frio Formation Injection Zone and the Anahuac Formation Confining Zone (see Figures V-19, V-21 and V-24). The depth to which these faults extend is not known. The subject faults appear to attenuate or totally die out in the Anahuac Formation. These main faults are detailed below:

Fault A – This fault is primarily defined by log cuts on its eastern segment. The westernmost fault cut is found in the Mitchell Energy, Houston Port Authority #1 well located 10,150 feet northeast of WDW-397. A 150-foot displacement fault is observed at -5,850 feet subsea. Measured displacements range from 100 to 180 feet along the trace of this fault. Fault A separates the high-side structural closure at Renee Field (northeast corner of the Richard & Robert Vince A-76 survey) from the down-thrown four-way closure to the south-southeast.

Fault B – This fault is defined by log cuts on its southern and eastern segments. The southernmost fault cut is found in the Traders, Houston Deepwater Land Co. #1 well located approximately 7,500 feet south of the WDW-397 injection well, with an 80-foot displacement fault observed at -6,660 feet subsea. Additional fault cuts are observed to the northeast of the Traders well in the Frazier, T Jones #1 well (Map ID Number 14), the Ethyl, Ethyl Fee #1 well (Map ID Number 13). Measured displacements along the trace of Fault B range from 100 to 180 feet along the trace of this fault. Fault B separates the downthrown four-way Renee Field, closure from the downthrown four-way Lynchburg Field closure to the south-southeast.

Additionally, a small displacement splinter fault (Fault A') occurs trending to the northeast of Fault A. This fault is defined by cuts in the Mitchell Energy, Houston Port Authority #1 well (50-foot displacement fault is observed at -6,820 feet subsea) and the L. Bowling, Bynum et al. #1 well

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(Vicksburg Formation marker faulted-out by a 60-foot fault), located in the Peter J. Duncan A-232 Survey. The splinter fault is not believed to carry much further northeast of the L. Bowling, Bynum et al. #1, as no faults are found in either the Humble Furr # 1 well or the wells located east of the study area near the Lyondell Chemical Company, Plant Well No. 1 (WDW-148) and Plant Well No. 2 (WDW-162) injection wells.

V.B.6. Faults within the AOR

Horizontal Fault Transmissivity

The horizontal fluid transmissivity potential of the faults discussed above is dependent on whether the throw of the faults results in sands being juxtaposed against sands, as it appears that the Gulf Coast fault planes themselves do not typically act as lateral barriers to flow. Displacement along these faults ranges from 100 to 250 feet in the Injection Interval; net sand within the Injection Interval ranges from 600 to 800 feet within the approximately 1,250- to 1,450-foot thick Injection Interval. These sands are scattered throughout the entire vertical thickness of the Injection Interval, with no horizon of any thickness totally void of sands. The southernmost fault, with approximately 200 feet of offset through the Injection Interval, does not result in a sufficient percentage of the Injection Interval sands being totally juxtaposed against laterally sealing shale units to substantially slow horizontal flow through the Injection Interval sands. The northernmost fault also has approximately 200 feet of offset through the Injection Interval and does not substantially impede horizontal flow. Again, the Injection Interval sands are not sufficiently sealed laterally by juxtaposed shales to substantially retard horizontal flow.

Vertical Fault Transmissivity

The subsurface faults discussed above may extend above the top of the Confining Zone at approximately 4,800 feet. However, the faults are not vertically transmissive and will not allow migration of waste constituents out of the Injection Zone.

At the nearby Sterling Chemical Company in Texas City, approximately 500 feet of net shale exists in the Confining Zone, plus an additional 250+ feet of shale in the interval between the top of the Injection Zone and the top of the Injection Interval. Because the shales at the ExxonMobil site are plastic and unconsolidated at the depth of interest, it is unlikely that coherent, transmissive fractures or faults would form. When two bodies of unconsolidated shale, or shale and sand, slide past each other along a fault, it is likely that the fault plane will become filled and sealed with plastic shale. Jones and Haimson (1986) have noted that due to the very plastic nature of the Gulf Coast Region shales, faults tend to seal themselves, allowing no vertical fluid movement up the fault plane. The large thickness of shale strata above the Injection Interval, which provides

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extensive shale to shale contact along the fault plane, combined with possible shale smearing along the fault plane, should ensure adequate sealing to prevent any significant vertical migration of formation and/or injected fluids along the fault plane.

Summary of 2019 Petition Reissuance Approval from USEPA

A Petition Reissuance Approval Decision was issued by the United States Environmental Protection Agency (USEPA) for WDW-397 and WDW-398 on October 29, 2019. USEPA recognized the WDW-397 and WDW-398 Confining Zone contains at least one formation capable of preventing vertical fractures and is laterally continuous and free of transmissive faults or fractures. USEPA determined the facility is located in a geologically suitable site which is free of transecting, transmissive faults or fractures over an area sufficient in preventing movement of fluids out of the permitted Injection Zone. USEPA determined the information provided for the ExxonMobil site meets the requirements of 40 CFR Part 148 and demonstrates, to a reasonable degree of certainty, there will be no migration of hazardous constituents from the Injection Zone (Appendix C).

V.B.7. Demonstration of the Confining Zone

The purpose of evaluating a confining layer or layers for containment is to provide assurance against vertical migration of the injected fluid or saline water from the Injection Zone into overlying freshwater bearing aquifers. Such vertical movement may result from:

- Intergranular flow through unbreeched confining strata,
- Flow through naturally fractured or faulted confining strata,
- Flow through confining strata with diagenetic secondary porosity,
- Flow through artificially fractured strata, and
- Flow through abandoned, unplugged or improperly plugged wells.

The following discussion explains the above potential pathways of fluid movement.

Naturally Fractured or Faulted Strata

Fractures may create a secondary form of porosity. This porosity is often small in magnitude but effective when interconnected. The effect usually results in an increase in permeability resulting in fluid movement through the fractured rock which may be orders of magnitude more rapid than through similar, unfractured rock. Such transmissive fractures may exist deep in the overpressured zone of the Gulf Coast where increased temperatures and pressures have cemented the sediments into rock (Galloway and others, 1982). However, in unlithified sediments it is probable that fracture planes become filled with material of significantly lower permeability. Thus, it is unlikely that fractures in unlithified Gulf Coastal sediments will effectively transmit fluids.

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Because the shales at the Pasadena, Texas site are plastic and unconsolidated at the depth of interest, it is unlikely that coherent, transmissive fractures or faults would form. When two bodies of unconsolidated shale, or shale and sand, slide past each other along a fault, it is likely that the fault plane will become filled and sealed with plastic shale. Morrow and others (1984) found that the permeability of fault gouges generally ranged between 1×10^{-4} and 1×10^{-7} mD. Permeabilities of this magnitude are equal to or less than those of most clay shales in confining layers. Jones and Haimson (1986) have noted that due to the very plastic nature of the Gulf Coast Region shales, faults tend to seal themselves, allowing no vertical fluid movement up the fault plane. Evidence of this sealing tendency can be seen in numerous oil and gas fields with a fault trapping mechanism. The large amount of hydrocarbon accumulation in these fields would not have occurred if faults served as a vertical conduit. Perkins (1961) postulated that hydrocarbon sealing faults in the Gulf Coast may form from soft shale smearing and impregnating the faulted sandstone face during fault movement. He states, "in essence, a natural 'mudcake' is formed over the sand fault plane surface and an impervious barrier is created against which migrating hydrocarbons may accumulate." Clark (1989) presents a similar scenario of the vertically sealing nature of Gulf Coast faults and their effects on groundwater flow.

Smith (1980) presents another mechanism for emplacing shale along faults to provide an effective vertical seal against fluid migration. Shale can be deformed much more than sandstone before faulting occurs (Handin, 1983). In the normally-pressured stratigraphic sequence of the Gulf Coast, faults might occur in the sandstone beds whereas the shale beds are merely deformed, or sheared, along the potential fault zone. Continued deformation would eventually fault the shales, but a zone of deformed shale might become greatly attenuated and trapped along the fault, separating sandstones juxtaposed by the fault. The important point is that a fault through partially deformed shale or completely faulted shale would not act as an effective conduit for vertical fluid movement. A field example of this fault plane filling as presented by Smith (1980), is the Mount Enterprise fault system of the Tyler Basin in east Texas. Movement along this fault has juxtaposed two separate sandstone units and created a fault zone which is approximately three feet wide. Shale units that are positioned between the two sand units have been deformed and squeezed along the fault zone. This contemporaneous deformation emplaced clay from the shale units in the fault zone. The fault zone clay has a mineralogy similar to the shale unit samples collected in the area. The clay is not fault gouge material but is apparently a part of the shale formation that has become stretched and trapped in the fault zone.

Cementation of cavities and factures along fault zones and cementation of porous fault zone material such as fault breccia by secondary mineral deposits from subsurface waters will also

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produce a zone that has low permeability to fluid migration (Smith, 1980). The result is a fault plane that contains cemented, low-permeability material which should impede the vertical migration of fluid along the fault.

Kreitler (1977) and Kreitler and others (1977), cite evidence which suggests that Gulf Coast faults, at least in the shallow Plio-Pleistocene section, are sealing or at least partially sealing. The evidence is the difference in observed potentiometric levels and different amounts of ground level subsidence across the Ethyl, Long Point and Eureka Heights faults in the Houston area. In all cases, the side of the fault from which groundwater pumpage was heavier exhibited lower potentiometric levels and a greater amount of subsidence. This suggests that these faults are acting as low-permeability barriers.

Artificially Fractured Strata

Injection zones can be artificially fractured if the combined hydrostatic and injection pressure exceeds the hydraulic fracture gradient at that depth. Although artificial fracturing is frequently utilized as a method to enhance hydrocarbon recovery, injection pressures for industrial wells are limited by regulations to prevent such fracturing.

Natural Intergranular Flow

The above discussion suggests that the lithological and structural conditions at the ExxonMobil facility are not conducive to flow through fractures or secondary porosity. Natural intergranular flow, although minimal, is apparently the main type of fluid movement through the shale confining layers at the Pasadena facility location. The main parameter of interest is, when dealing with fluid flow through any medium, permeability and effective porosity of the medium.

Shale is usually considered a good confining rock because of its fine grain size and low permeability. Various studies on shale permeability within the Gulf of Mexico were reviewed to provide an estimate of shale permeability. Published permeability data on shale are notably scarce, for reasons including: the low economic importance of shale to oil companies, the difficulty in obtaining shale cores without damaging or distorting them, and the difficulty and length of time required to perform laboratory permeability measurements. A compilation of published and unpublished data (Table V-1 - Summary of Published Shale Permeability Data), offers representative shale permeabilities at the depth of interest (about 5,500 to 7,200 feet). The published values in these studies offer insight into the very low permeability and porosity of Gulf Coast shales. This inherent characteristic makes Gulf Coast shales an excellent medium for use as a confining strata in waste injection operations.

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The Confining Zone has been determined to be laterally continuous and free of transecting, transmissive faults or fractures over an area sufficient to prevent the movement of fluids into a USDW or freshwater aquifer.

V.B.8. Confining Zone Lithologic and Stress Characteristics

The Confining Zone for ExxonMobil's facility location is the Anahuac Formation. The top of the Confining Zone is present at a depth of about 4,818 feet subsea in WDW-397 and 4,856 feet subsea in WDW-398. The Anahuac Formation consists predominantly of unlithified marine shale. Electric log spontaneous potential curve patterns indicate most of the Anahuac Formation shale was deposited in an open-shelf environment and is typically composed of calcareous, marine shales with localized, lenticular, micritic limestone units.

Given the plastic and ductile nature of the shales which comprise the Anahuac Formation Confining Zone, the Anahuac Formation is of sufficient thickness (450 feet to 550 feet of net shale) and possesses lithologic and stress characteristics capable of preventing initiation and/or propagation of fractures. Fractures may create a secondary form of porosity through which injected fluids or reservoir fluids could migrate. This porosity is often small in magnitude but effective when interconnected. The effect usually results in an increase in permeability resulting in fluid movement through the fractured rock which may be orders of magnitude more rapid than through similar, unfractured rock. Such transmissive fractures may exist deep in the overpressured zone of the Gulf Coast where increased temperatures and pressures have cemented the sediments into rock (Galloway and others, 1982). However, in unlithified sediments of the Anahuac Formation, it is probable that fracture planes become filled with material of significantly lower permeability. Thus, it is unlikely that fractures in unlithified Gulf Coastal sediments will effectively transmit fluids.

Because the Anahuac Formation shales are plastic and unconsolidated at the depth of interest, it is unlikely that coherent, transmissive fractures would form. When two bodies of unconsolidated shale slide past each other along a fault, it is likely that the fault plane will become filled and sealed with plastic shale. Morrow and others (1984) found that the permeability of fault gouges generally ranged between 1×10^{-4} and 1×10^{-7} mD. Permeabilities of this magnitude are equal to or less than those of most clay shales in confining layers. Jones and Haimson (1986) have noted that due to the plastic nature of the Gulf Coast Region shales, fractures tend to seal themselves, allowing no vertical fluid movement up the fracture plane.

Given the ductile nature of the Confining Zone strata and the overburden pressure at the depth of the Anahuac Formation, any fractures which developed in the zone would “heal” themselves

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almost immediately. It is common knowledge that borehole closure in unlithified shale layers occurs in deep boreholes during the drilling and exploration for oil and gas reservoirs in the Texas Gulf Coast. The borehole closure phenomenon is related to the plastic, ductile nature of the shale and the overburden (lithostratigraphic) pressure which squeezes the shale and forces it into the borehole where the lithostratigraphic stress is less. It is anticipated that if any fractures developed in the soft, unlithified Anahuac Formation, a similar phenomenon would occur, effectively sealing or healing the fracture, thus preventing the propagation of fractures.

The ExxonMobil Confining Zone has a net shale content of between 450 to 550 feet in the AOR. In consideration of the information presented above, one can safely state that the Confining Zone contains at least one formation of sufficient thickness and with lithologic and stress characteristics capable of preventing initiation and/or propagation of fractures.

V.B.9. Confining Zone – USDW Separation

V.B.9a. Confining Zone Separation from Base of the Lowermost USDW

The base of the lowermost USDW (<10,000 mg/L TDS) was determined to be consistent with detailed log analysis of the artificial penetrations located within and near the AOR. The base of the USDW occurs at a log depth of 3,221 feet KB in WDW-397 and at a log depth of 3,222 feet KB in WDW-398. The top of the Confining Zone occurs at a depth of about 4,850 feet KB in WDW-397 and 4,885 feet KB in WDW-398. Therefore, the estimated separation between the top Confining Zone and base of lowermost USDW is between 1,629 and 1,663 feet, which provides sufficient separation between the two zones.

V.B.9b. Potentiometric Surface of Injection Zone

Within the AOR, the potentiometric surface of the Injection Zone is less than the potentiometric surface of the lowermost USDW. A potentiometric surface map of the undifferentiated Chicot-Evangline Aquifers is provided as Figure V-16. A potentiometric surface map of the top of the Injection Zone, or Frio Formation is included as Figure V-17. At the Exxon Mobil facility location, the potentiometric surface of the undifferentiated Chicot-Evangeline Aquifer is estimated between -100 and -149 feet, as shown on Figure V-16. The potentiometric surface of the top of the Injection Zone is estimated between -250 and -500 feet as shown on Figure V-17.

V.B.9c. USDW Presence

The Confining Zone has no present USDW. The geologic formations above the Confining Zone are composed of alternating sand and shale packages which reflect changes in sea level during

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deposition, as well as abandonment and re-establishment of various delta lobes within the Houston Embayment during deposition of the formations. Within 500 feet of the top of the Confining Zone, several clean deltaic sands are present which total more than 100 feet in cumulative thickness. These sand packages are separated by shale sequences which have individual thicknesses of as much as 100 feet. Both the sand and shale sequences are laterally extensive across the AOR. These alternating sand and shale layers are well below the base of the USDW and provide added sequences of permeable and less permeable strata that offer an added layer of protection for the USDW in the event of fluid movement in an unlocated borehole or transmissive fault.

V.B.10. Seismic History

Regional seismic history is discussed in Section V.A.6. Local potential for a seismic event due to injection is discussed in the following section.

V.B.10a. Recorded Seismic Activity

The ExxonMobil study area is an area of minimal seismicity as shown by observational data obtained from the National Earthquake Information Center (NEIC) in Boulder Colorado. A search of the NEIC Preliminary Determination of Epicenters (PDE) Catalogue revealed no new earthquakes within the 80-kilometer search radius (USGS, 2024). This data is presented in Figure V-31 (Seismic Activity Within 80 Kilometers of the ExxonMobil Facility) and in Table V-2 (Seismic Event Data Within 80 Kilometers of the ExxonMobil Facility), respectively. The northern Texas Gulf Coast has little potential for earthquake damage in part due to the relatively low level of tectonic activity occurring within the regional study area. Figure V-9 (National Seismic Hazard Map) projects peak ground acceleration in the United States for 50 years in the future with a two percent probability that the mapped values will be exceeded. As shown in Figure V-9, peak ground acceleration at the facility location is minimal.

It is important to note that no seismic events have been recorded within the ExxonMobil AOR. The search for recorded seismic events within an 80-kilometer (~50 mile) radius indicates that only two seismic events have been observed. One of the events was recorded in 1925 at a distance of 41 kilometers (24.6 miles) southeast of ExxonMobil in Galveston Bay; no intensity, magnitude, nor depth was recorded for the event. The second event was recorded in 1956 at a distance of 61 kilometers (37.8 miles) southeast of ExxonMobil on the Galveston Island coastline; the maximum magnitude recorded for the event was 3.8. No depth or intensity was recorded for the event.

Given the extremely low level of historical seismic activity within the 80-kilometer radius of the ExxonMobil facility, the fact that no seismic activity has occurred nearer than 41 kilometers to the

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ExxonMobil facility, and the published seismic hazard map which indicates low potential for earthquake damage in the ExxonMobil study area, the risk for detrimental effects due to seismic activity in the ExxonMobil study area is extremely low.

V.B.10b. Injection Wells Authorized to Inject into the Injection Zone

ExxonMobil operates two active injection wells (WDW-397 and WDW-398) at the facility as described within this permit renewal application.

There are three Class I injection wells within the Area of Review as described in Section VIII. One of the Class I injection wells, Armco Steel Corporation WDW-90 (Map ID No. 34), was plugged and abandoned in 1984 and did not inject into the same Injection Interval as WDW-397 and WDW-398. Two other Class I injection wells, Sasol Chemicals (Sasol) WDW-147 (Map ID No. 30) and WDW-319 (Map ID No. 31) are completed within the Frio Formation Injection Interval. WDW-147 (Map ID No. 30) is currently temporarily abandoned and has not been used for injection in 24 years. WDW-319 (Map ID No. 31) is an active Class I injection well which is operated continuously, and has a historical average injection rate less than 180 gallons per minute.

V.B.10c. Pattern of Injection for Permitted Injection Wells

ExxonMobil typically operates the two active injection wells (WDW-397 and WDW-398) on a continuous basis at the Pasadena facility. WDW-397 and WDW-398 are permitted to inject at a maximum cumulative injection rate of 1,200 gallons per minute. During periods of low rainfall, one or both of the ExxonMobil wells may be shut in, depending on injection volumes.

During 2022, ExxonMobil injected a total of 138,865,789 gallons of wastewater into WDW-397 and WDW-398 (43,754,251 gallons of wastewater into WDW-397 and 95,111,538 gallons of wastewater into WDW-398). The average injection rate for WDW-397 between 2008 and 2022 has been approximately 289 gallons per minute. The average injection rate for WDW-398 between 2011 and 2023 has been approximately 341 gallons per minute.

There are three Class I injection wells within the 2.5-mile radius of WDW-397 and WDW-398. These wells are tabulated on Table VIII-1 and spotted on Plate VIII-1.

The three Class I wells in the AOR are identified as Map ID No. 34 (plugged), Map ID No. 30 (temporarily abandoned) and Map ID No. 31 (active). The plugged Class I well (Map ID No. 34) injected into a shallower Injection Interval and is not expected to have any pressure effects on the WDW-397 and WDW-398 Injection Interval. The Class I wells operated by Sasol (Map ID No.

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30 and Map ID No. 31) are permitted to inject in the same Frio Formation Injection Interval as WDW-397 and WDW-398. Their historical injection volumes have been included in the pressure modeling in Section VII.7, and future injection has been incorporated in pressure increase calculations.

V.B.10d. Thickness of Sediment Between the Base of Injection Zone and Basement Rocks

The Gulf of Mexico Basin was formed by the downfaulting of Paleozoic basement rocks during the break-up of the Paleozoic mega continent Pangaea and the opening of the North Atlantic Ocean in the Late Triassic (Chowdhury and Turco, 2006). Local structures in the Gulf of Mexico basin are primarily formed by gravity acting on thick sedimentary sections deposited on abnormally pressured shale or salt above the basement rocks (Chowdhury and Turco, 2006). Basement rocks in the Houston Embayment are presumed to be the Ouachita facies of Paleozoic age (Galloway and others, 1983). If present at the ExxonMobil facility location, the Ouachita facies are located on the order of 50,000 feet below ground level at the Pasadena facility location. The base of the Injection Zone is located at 7,250 feet below ground level, allowing approximately 40,000 feet of separation between the base of the Injection Zone and the basement rocks at the injection well location.

V.B.10.e Character of Sediment Between the Base of Injection Zone and Basement Rocks

Most of the wells within the geologic study area were drilled to the Frio Formation and therefore penetrate the top of the Anahuac shale, which serves as the lower Confining Zone for WDW-397 and WDW-398. Sediment between the base of the Injection Zone and top of the basement rocks is extensive and has multiple formations of sand and shale in the 30,000-40,000 feet of sediment between the Miocene age Anahuac shale and Paleozoic age Ouachita facies.

V.B.10.f Faults within the AOR

Fault transmissivity is discussed in Section V.B.6. The transmissivity of fluids across a fault must be considered with respect to both lateral (horizontal) and vertical components, requiring an assessment of the likelihood of a sealing surface (top seal and/or lateral seal) being present. Beneath the Pasadena facility, there is ample shale present in the 30,000-40,000 feet of sediment between the base of the Injection Interval and the lower basement rocks across faulting due to the presence of juxtaposed shale-to-shale or sand-to-shale beds

V.B.11 Surface Geology

The surface geology of the local area is shown on Figure V-30 (Geologic Atlas of Project Location). The surface deposits located at the ExxonMobil facility is described as fill and spoil.

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The Geologic Atlas describes fill as "material dredged for raising land surface above alluvium and barrier-island deposits and for creating land", and spoil is described as "dredged material along waterways" (Fisher, 1982).

The uppermost formation underlying Pasadena and which outcrops (is exposed at the surface) in the vicinity of ExxonMobil facility is of Pleistocene age (age description as related to a Geologic time scale depicting the sediments as younger than approximately 2.5 million years and older than recent time) and is mostly of fluvial (river) and interdistributary (out flowing branches of a river) muds separated by sands of fluvial-deltaic (river/delta) origin. Known as the Beaumont Formation, it is a low permeability clay unit through which little or no recharge occurs to the coastal fresh water drinking aquifers.

The Beaumont Formation outcrops in the vicinity of Pasadena and is described in the atlas as "mostly clay, silt and sand; includes mainly stream channel, point-bar, natural levee, backswamp and, to a lesser extent, coastal marsh and mud-flat deposits; concretions of calcium carbonate, iron oxide and iron-manganese oxides in zone of weathering; surface almost featureless, characterized by relict river channels shown by meander patterns and pimple mounds on meanderbelt ridges, separated by areas of low, relatively smooth, featureless backswamp deposits without pimple mounds; thickness +/-100 feet" (Fisher,1982).

Other areas of the Beaumont Formation are described as "dominantly clay and mud of low permeability, high water-holding capacity, high compressibility, high to very high shrink-swell potential, poor drainage, level to depressed relief, low shear strength, and high plasticity; geologic units include interdistributary muds, abandoned channel-fill muds and overbank fluvial muds" and "dominantly clayey sand and silt of moderate permeability and drainage, low to moderate compressibility and shrink-swell potential, level relief with local mounds and ridges, and high shear strength; geologic units include meanderbelt, levee, crevasse splay, and distributary sands". There is little or no surface recharge to coastal aquifers in the vicinity of Pasadena because the local area, like the surrounding region, is underlain by the impermeable Beaumont Formation (Fisher, 1982).

In additional fill and spoil, the atlas depicts other Holocene age (age description as related to a Geologic time scale depicting the sediments as being deposited in recent time) sediments along the coastline in the vicinity of Pasadena. These Holocene-age sediments include alluvium (stream deposits), which is described as "clay, silt and sand, organic matter abundant locally; includes

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point-bar, natural levee, stream channel, backswamp, coastal marsh, mud-flat, and narrow beach deposits" (Fisher, 1982).

V.C Well Logs

A set of well logs used in the interpretation of the geology in and around the AOR are included in Appendix A of the original set of this permit application. Additional digital copies of the well logs are provided in copies of the permit application.

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TABLE V-1

SUMMARY OF PUBLISHED SHALE PERMEABILITY DATA

Exxon Mobil Corporation
Pasadena, Texas

MATERIAL	DEPTH (feet)	ϕ	k (millidarcies)	PERMEANT	REFERENCE	REMARKS
Gulf coast sediments (various locations)	6,562	0.26	1.62×10^{-4}	35% Seawater	Bryant and others, 1975	Lab Consolidation Test performed on loose sediment. Depth of burial simulated by varying confining pressure on sample.
Silty clay – South Pass Mississippi Delta	6,562	0.26	1.00×10^{-5}	Not stated	Bryant and others, 1981	Lab Consolidation Test. Porosity of 26% used from Bryant, et al, 1975, which is equivalent to a burial depth of 6562 feet.
Marine Sediment DSDP Leg 40	6,562	0.26	1.00×10^{-5}	Not stated	Bryant and others, 1981	Lab Consolidation Test. See remarks above.
Shale, Orange Co., Texas	6,041	0.25	3.74×10^{-2} 5.34×10^{-2}	0.2N NaCl solution	URM Technical Report, 1986	Flex wall permeameter used. Cores tested in a dried out expanded state. Thus, reported permeabilities thought to be high.
	6,562	0.25	1.00×10^{-4} 1.00×10^{-5}	None used	Borst, 1983	Theoretical study based on the relationship of permeability to other pore parameters (porosity, pore surface area, mean pore size) and depth of burial and age.
Catahoula shale, Live Oak Co., Texas (Oligocene)	Outcrop	-	3.33×10^{-3}	High density deionized water	Sanks and others, 1975	Reported permeabilities are probably higher than the equivalent shales in subsurface – see text for discussion.
Shale samples 1. Colorado Co., Texas 2. Neves Field Montana 3. Havenweep Field Utah 4. Stockholm Field OK	 9,057 7,067 5,880 4,155	 - - - -	 4.00×10^{-4} 6.00×10^{-4} 7.00×10^{-6} 8.00×10^{-4}	 0.2N NaCl solution 0.02 N NaCl solution 0.2N NaCl solution 0.2N NaCl solution	Gondouin and Scala, 1958	Shale permeabilities measured as part of a study on the electrochemical properties of shale.
Eau Claire Shale	1,790 – 2,050	0.01 – 0.15	$<1.00 \times 10^{-3}$	Water	Warner and Syed, 1984	Whole core analysis on the caprock of gas storage reservoir.
Pierre Shale (Cretaceous)	5,250	-	2.99×10^{-6}	Not stated	Bredehoeft and others, 1983	Lab Consolidation Test. Depth given is about equal to the testing confining pressure of 15,900 kPa.
Huron Shale, Ohio River Valley (Upper Devonian) Marcellus Shale, West Virginia (Mid-Devonian)	3,325 7,449	<0.001 0.09	7.80×10^{-5} 1.91×10^{-2}	Nitrogen gas Nitrogen gas	Soeder, 1986	Shales are commercial gas reservoirs in the Appalachian Basin.
Wyoming bentonite Natural shale		0.34 0.24	4.16×10^{-6} 1.35×10^{-5}	0.5N NaCl solution 0.121N NaCl solution	McKelvey and Milne, 1962	
Kaolinite		0.23		0.002N NaCl solution	Olsen, 1966	

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TABLE V-2

SEISMIC EVENT DATA WITHIN 80 KM OF EXXONMOBIL FACILITY

Exxon Mobil Corporation
Pasadena, Texas

U N I T E D S T A T E S G E O L O G I C A L S U R V E Y

E A R T H Q U A K E D A T A B A S E

Circle Search Earthquakes= 2
Circle Center Point Latitude: 29.737N Longitude: -95.198W
Radius: 80.000 km
Catalog Used: SRA, PDE
Data Selection: Eastern, Central and Mountain States of U.S. (SRA), Historical & Preliminary Data (PDE)

CATALOG SOURCE	D A T E YEAR	MO DA	ORIGIN TIME		***COORDINATES** LAT	LONG	DEPTH km	pP STD DEV	*****M A G N I T U D E S**** mb	OBS Ms	OBS CONTRIBUTED VALUES	F-E STA REG	****INFORMATION**** IEMFMDIPF NFAPOEDFL TFPS PEDG	PHENOMENA DTSVNWG	RADIAL DIST km
SRA	1925			Z	29.600	-94.800						503 F	4.....	.....	41
SRA	1956	01 07	2330	Z	29.300	-94.800					3.80FASRA	503 F	4.....	....?..	61

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PERIOD	EPOCH	STAGE OR GROUP	FORMATION	ENVIRONMENT OF DEPOSITION/LITHOLOGY
QUATERNARY	HOLOCENE	UNDIFFERENTIATED		Fluvial deposits Medium based sandstones, conglomerates and shales
		12,000 ybp		
	PLEISTOCENE	HOUSTON L. WISCONSIN	BEAUMONT	Fluvian and deltaic deposits
		WISONSIN E. WISCONSIN		
		SANGAMON L. ILLINOIAN		
		PRE-SANGOMAN E. ILLINOIAN	LISSIE	Medium bedded sandstones and shales
		YARMOUTH KANSAN		
		AFTONIAN NEBRASKAN	WILLIS	
		2.8 mybp		
TERTIARY	PLIOCENE	CITRONELLE GROUP	GOLIAD	Fluvial, deltaic and marginal marine deposits Medium to thinnly bedded sandstones and shales
		5.2 mybp		
	MIOCENE	FLEMING GROUP	LARGARTO	Prodelta, delta front and delta destructional deposits Medium to thinnly bedded sandstones and shales
			OAKVILLE	Channel, meanderbelt and crevasse splay deposits Medium bedded sandstones and shales
		24 mybp		
	OLIGOCENE	CATAHOULA GROUP	ANAHUAC	Outer shelf and slope deposits Massive shale with basal sandstone and localized limestones (Het. Limestone)
			FRIO	Aggradational shoreface and beach deposits Massively bedded sandstones and shales
		VICKSBURG GROUP	VICKSBURG	Deltaic, outer shelf and slope deposits Massively bedded shales and medium bedded sandstones
		37 mybp		

CONFINING ZONE

INJECTION ZONE

INJECTION INTERVAL

Source: DERS, 1988

FIGURE V-1

STRATIGRAPHIC COLUMN OF THE TEXAS GULF COAST

PREPARED FOR

EXXON MOBIL CORPORATION PASADENA, TEXAS

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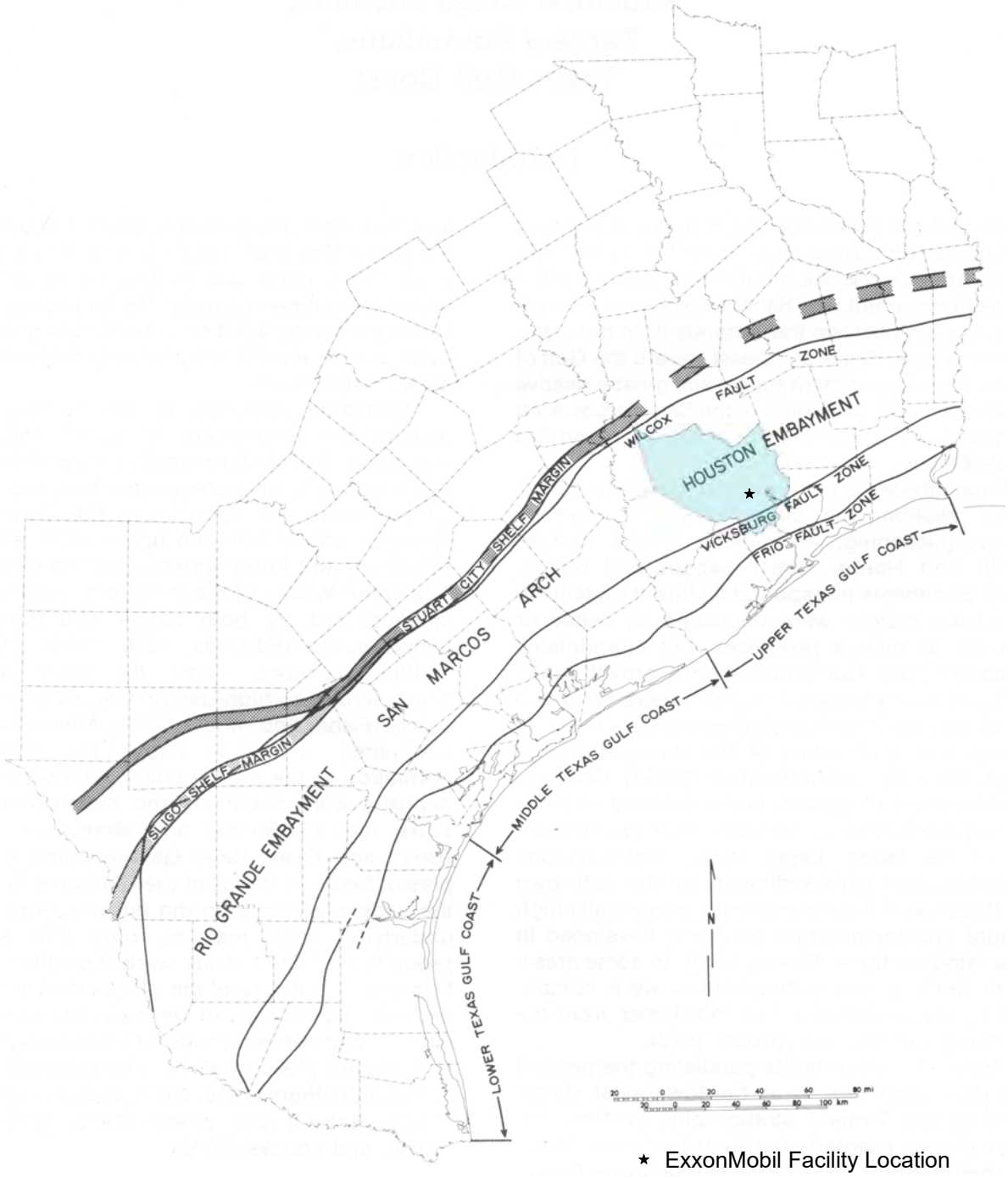
Drawing No.: Figure V-1
Date: 12/6/2023
Job No.: 23-141

Drawn By: TDM
Designed By: TDM
Checked By: TDM



Source: Dodge & Posey, 1981

FIGURE V-2

MAJOR STRUCTURAL FEATURES OF THE TEXAS GULF COAST

PREPARED FOR

EXXON MOBIL COPORATION PASADENA, TEXAS

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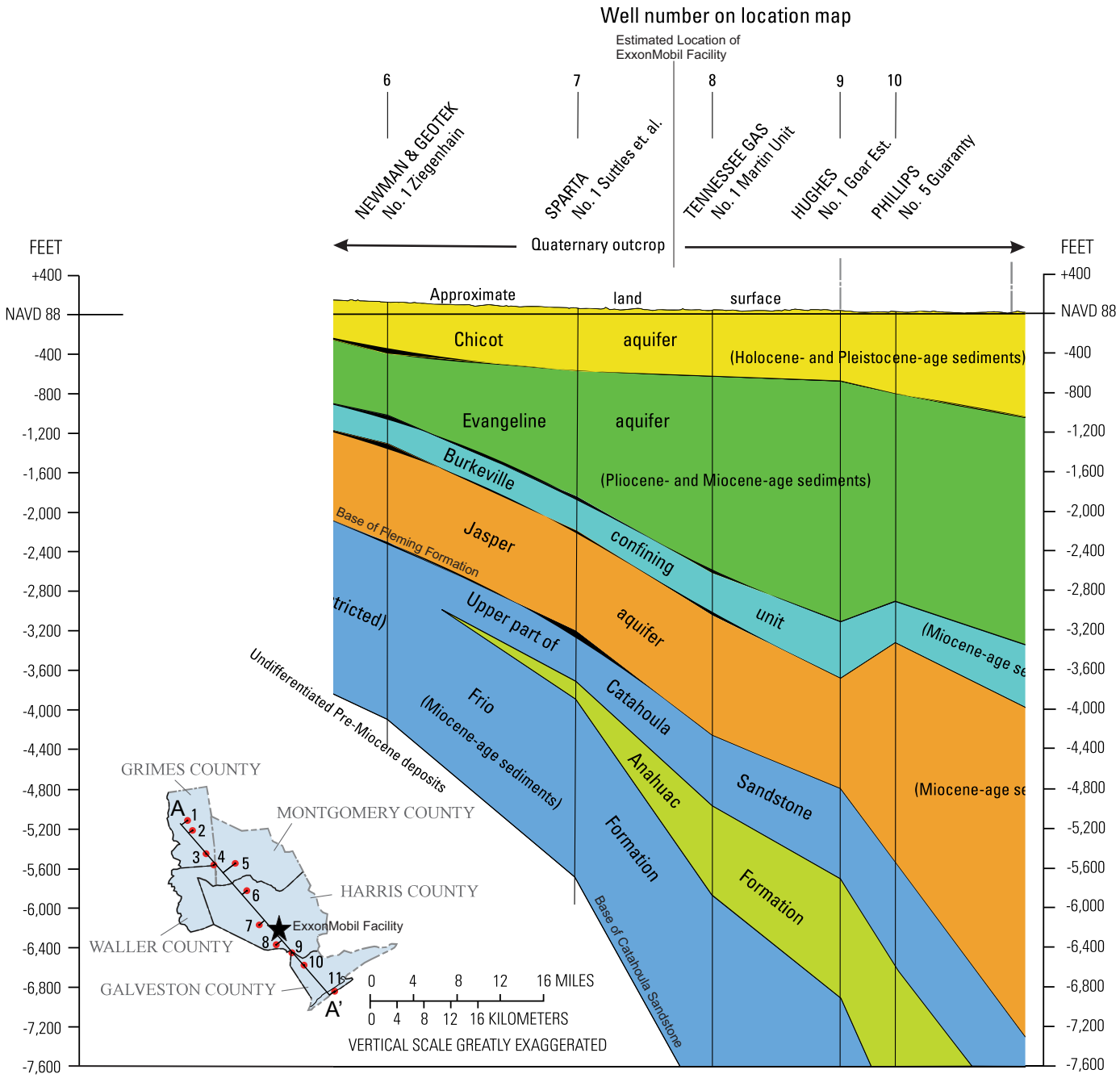
Drawing No.: Figure V-2
Date: 12/6/2023
Job No.: 23-141

Drawn By: TDM
Designed By: TDM
Checked By: SKW



Drawing No.: Figure V-3
Date: 12/13/2023
Job No.: 23-141

Drawn By: Kasmarek et al.
Designed By: HKD
Checked By: SKW

Source: Kasmarek et al., 2014

FIGURE V-3

REGIONAL HYDROSTRATIGRAPHIC COLUMN

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

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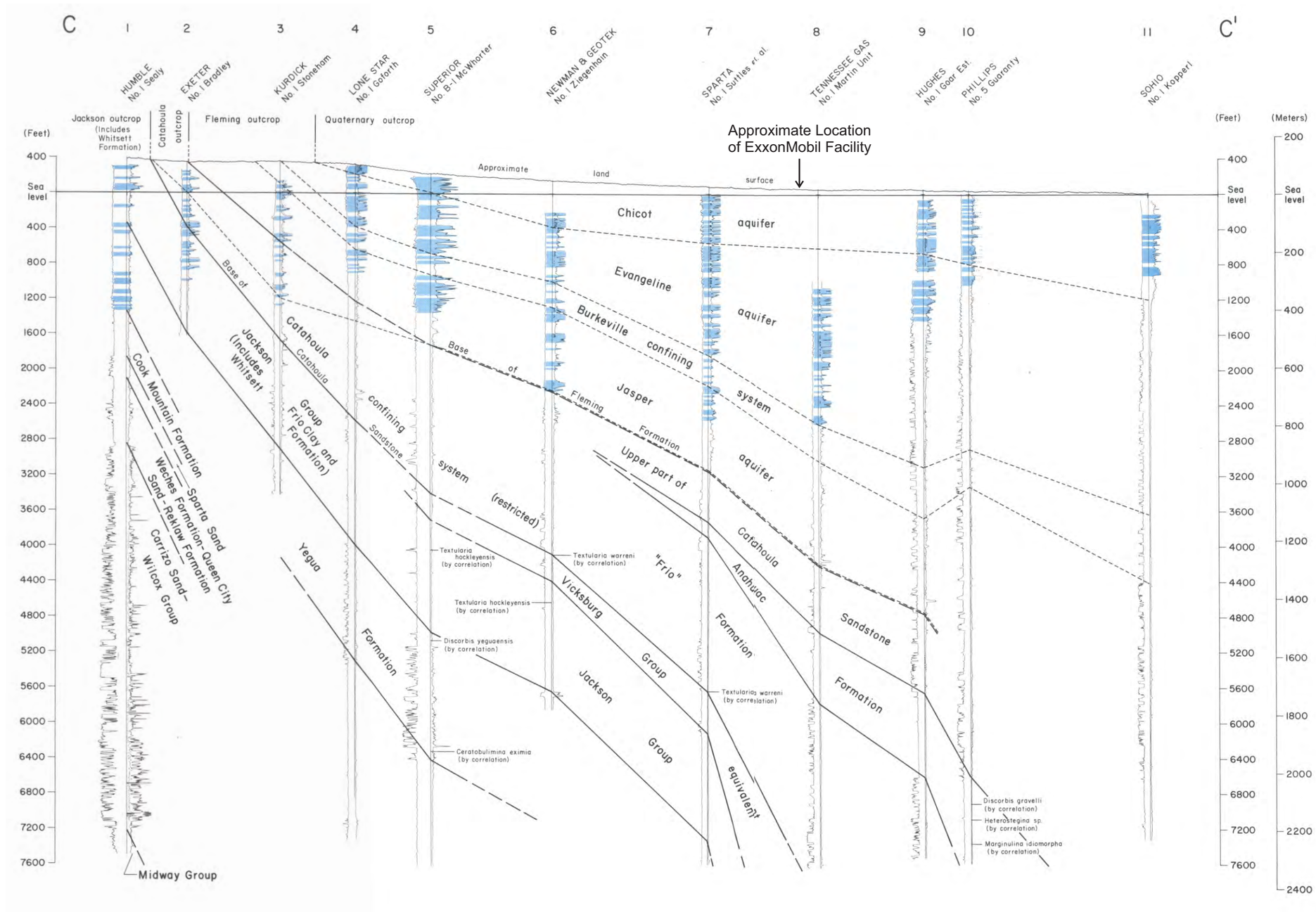

Source: Baker, 1979

FIGURE V-4

STRATIGRAPHIC AND HYDROGEOLOGIC CROSS SECTION

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

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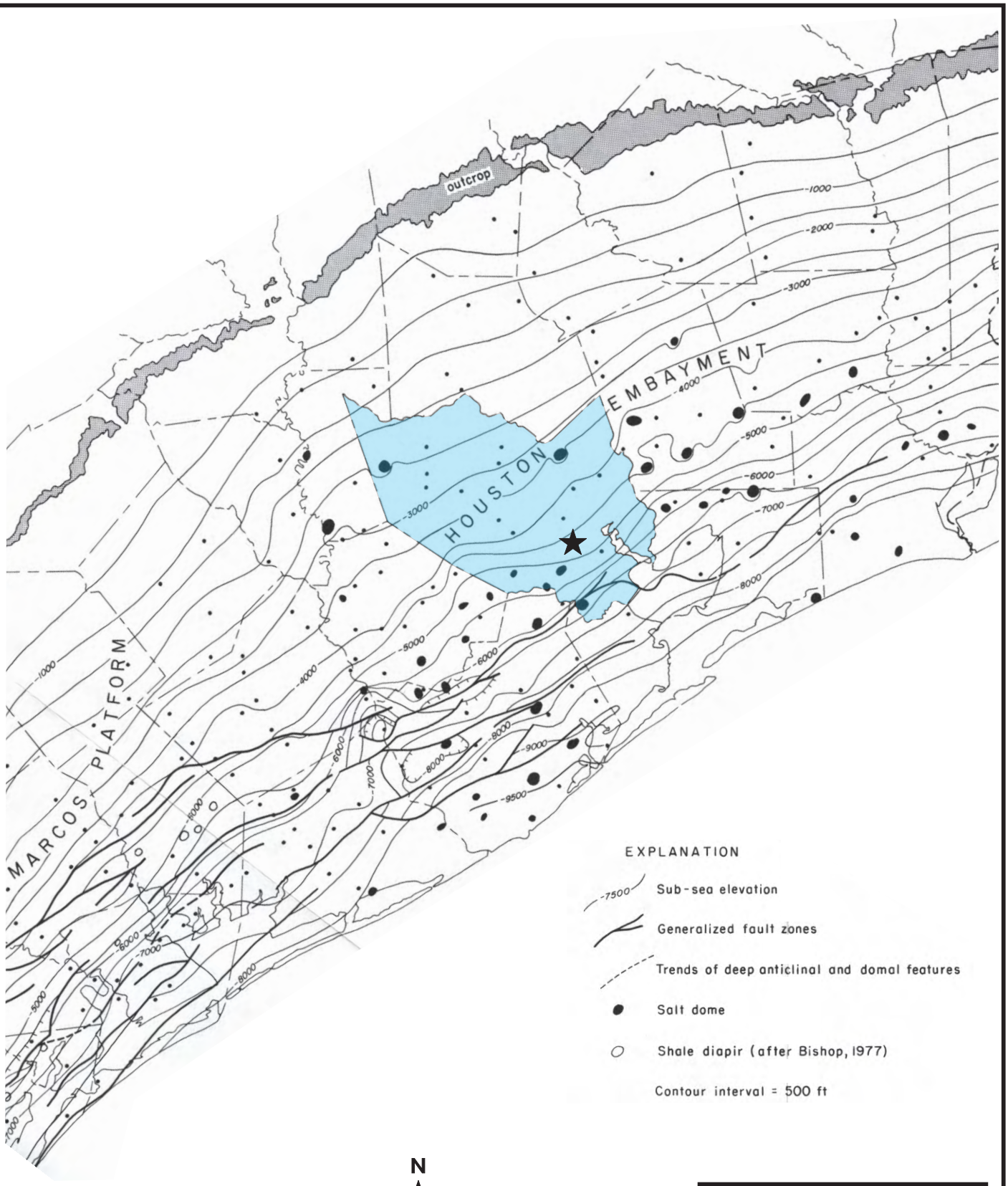
Drawing No.: Figure V-4
Date: 12/6/2023
Job No.: 23-141

Drawn By: Baker
Designed By: TDM
Checked By: TDM

Drawing No.: Figure V-5
Date: 12/6/2023
Job No.: 23-141

Drawn By: TDM
Designed By: TDM
Checked By: TDM



N

0 25 50 mi
0 25 50 km
SCALE

★ ExxonMobil Facility Location

Source: Galloway and others, 1982

FIGURE V-5

STRUCTURE ON TOP OF FRIO FORMATION

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

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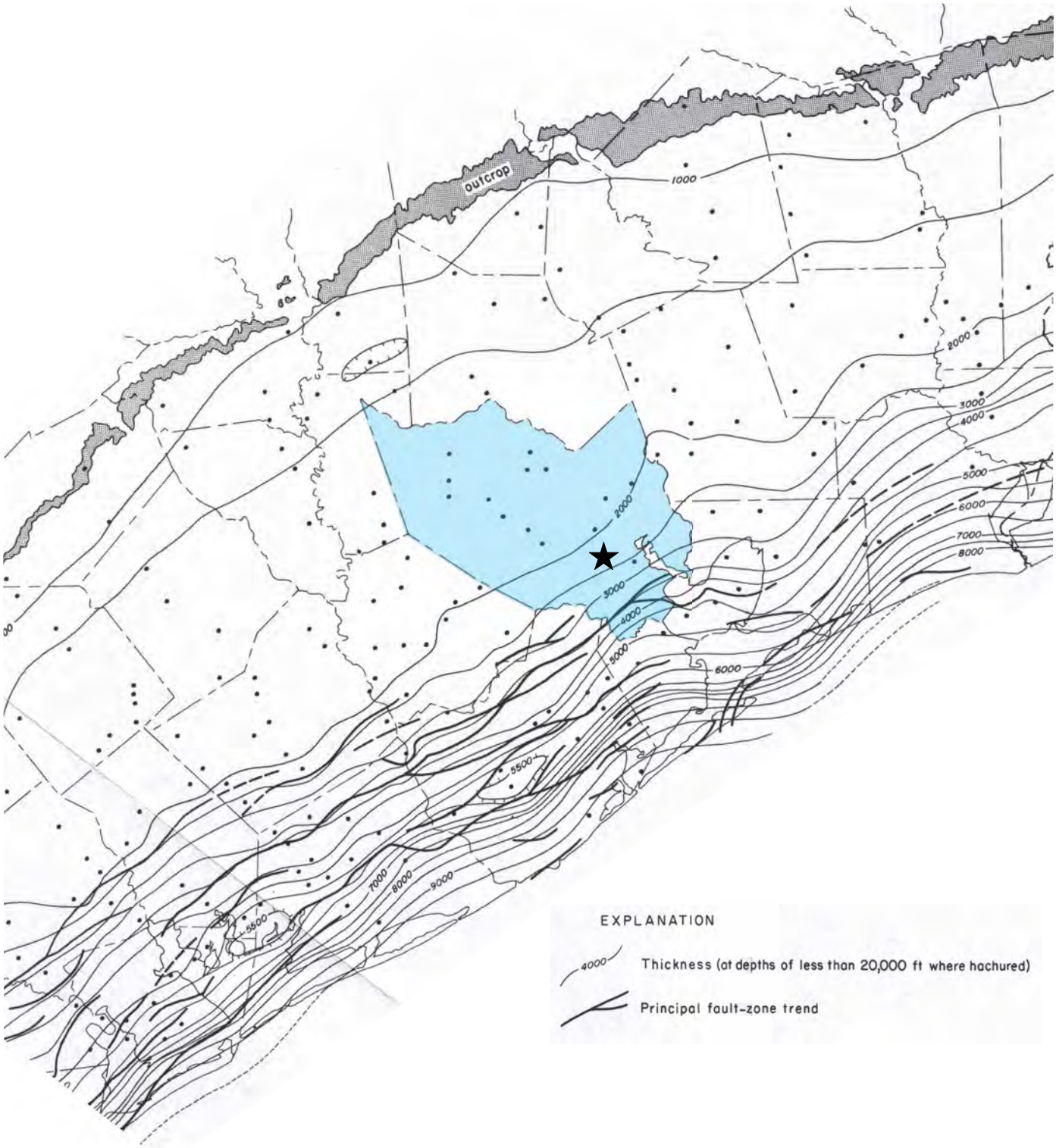

N

0 25 50 mi

0 25 50 km

★ ExxonMobil Facility Location

Source: Galloway and others, 1982

FIGURE V-6

TOTAL THICKNESS
FRIO FORMATION

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

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Drawing No.: Figure V-6
Date: 12/6/2023
Job No.: 23-141

Drawn By: TDM
Designed By: TDM
Checked By: TDM

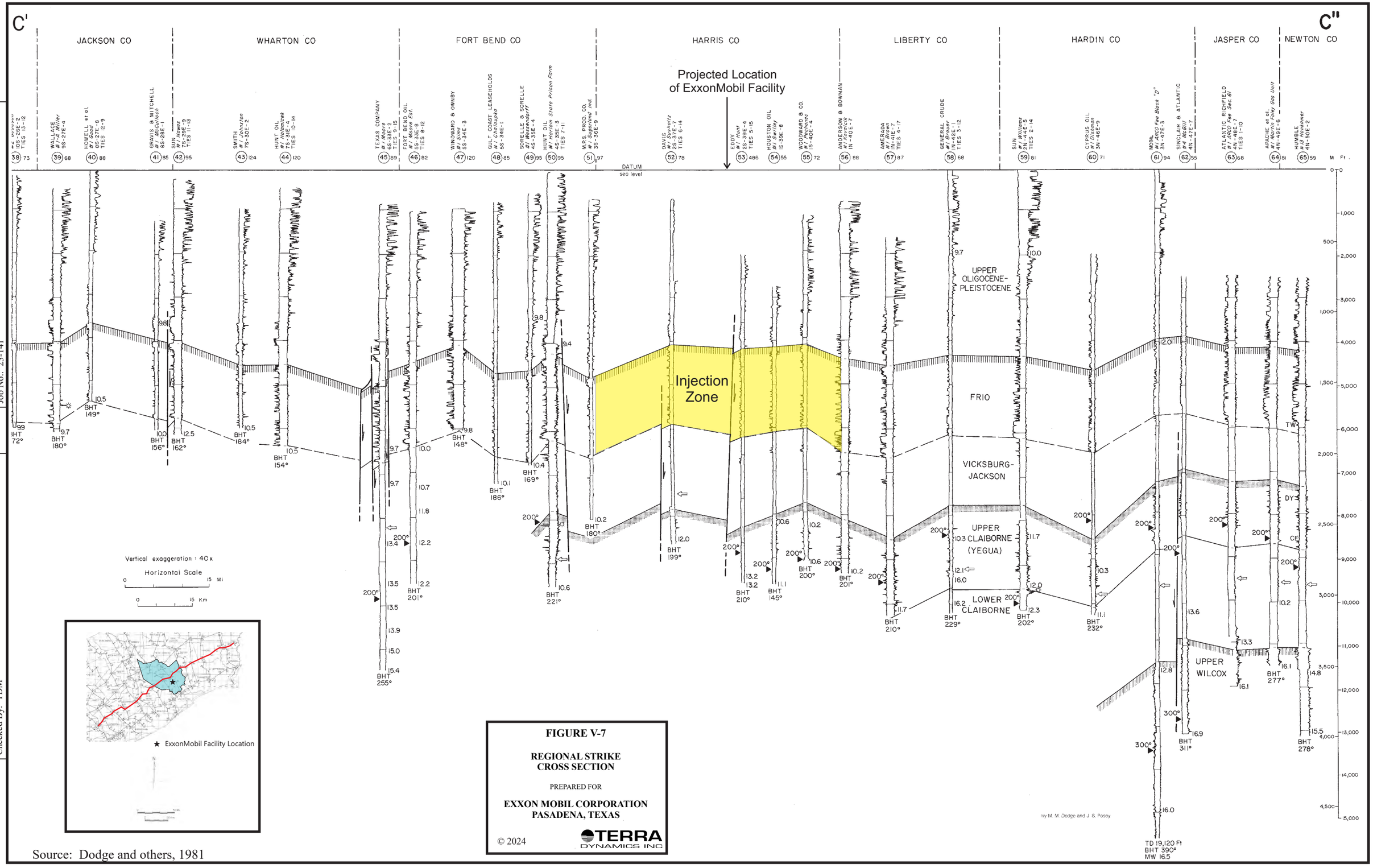

FIGURE V-7

REGIONAL STRIKE CROSS SECTION

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

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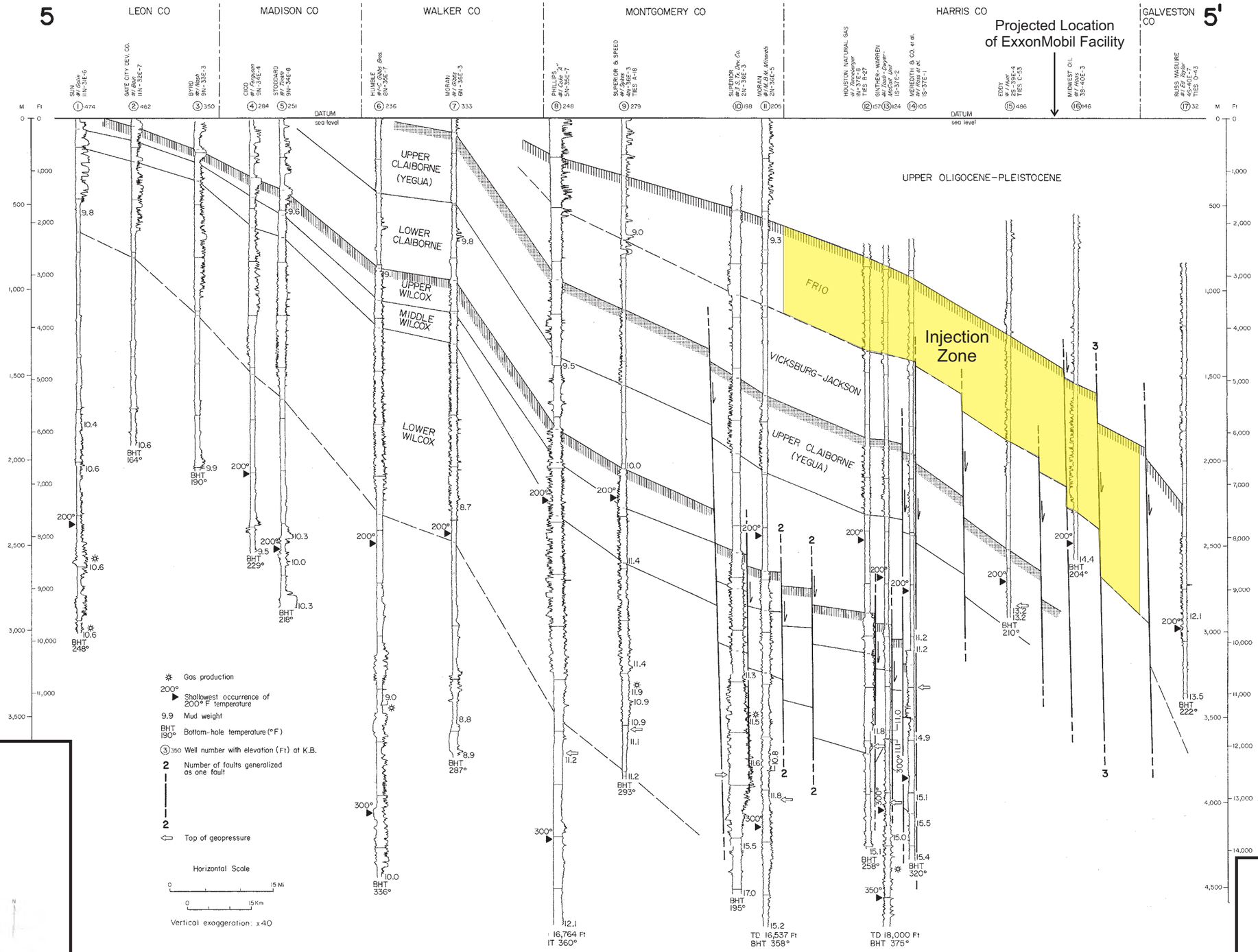
Source: Dodge and others, 1981

Drawing No.:	Figure V-7
Date:	12/6/2023
Job No.:	23-141
Drawn By:	TDM
Designed By:	TDM
Checked By:	TDM



Source: Dodge and others, 1981

FIGURE V-8

REGIONAL DIP CROSS SECTION

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

TERRA DYNAMICS INC

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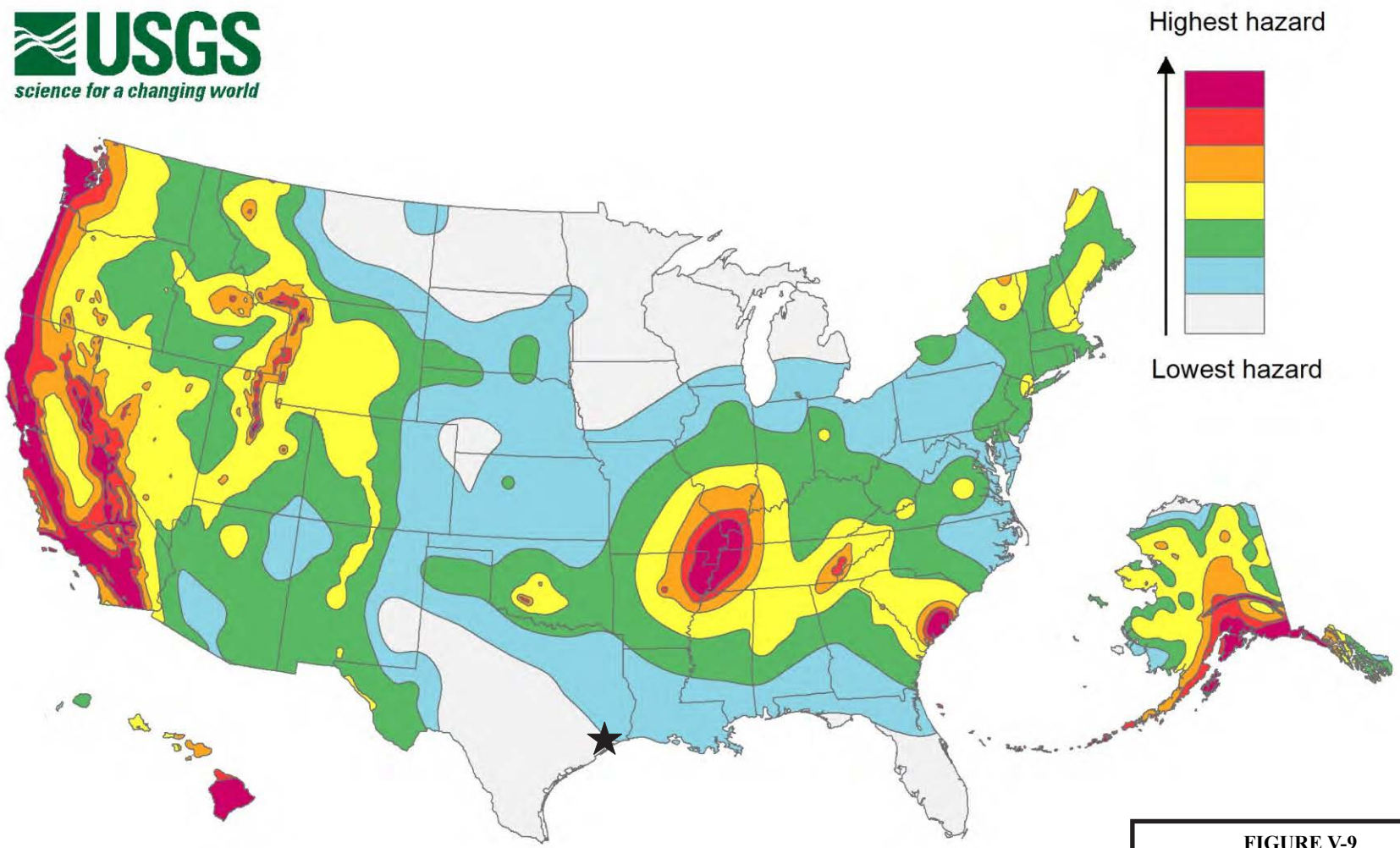
Drawing No.: Figure V-8
Date: 12/6/2023
Job No.: 23-141

Drawn By: TDM
Designed By: TDM
Checked By: TDM

Drawn By: USGS	Drawing No.: Figure V-9
Designed By: HKD	Date: 12/6/2023
Checked By: SKW	Job No.: 23-141

Peak Ground Acceleration with 2% in 50 Year Probability of Exceedance



★ ExxonMobil Facility Location
SA = Spectral acceleration
g = acceleration due to gravity = 9.8 m/s^2

Source: USGS, 2018

FIGURE V-9

NATIONAL SEISMIC HAZARD MAP

PREPARED FOR

EXXON MOBIL COPORATION
PASADENA, TEXAS

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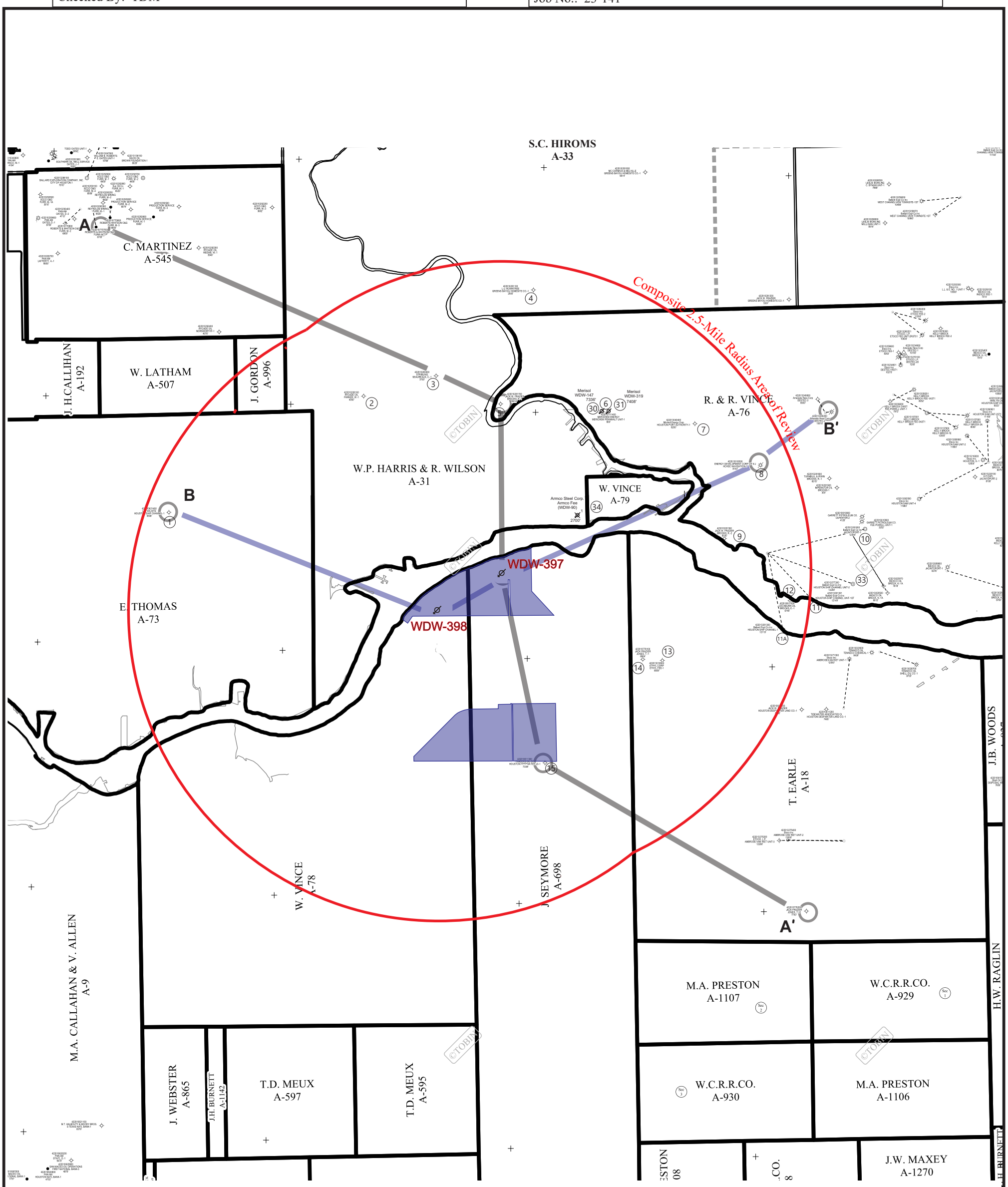
Drawn By: HKD	Drawing No.: Figure V-10
Designed By: TDM	Date: 01/30/24
Checked By: TDM	Job No.: 23-141



MAP EXPLANATION

- Location
- Location Abandoned
- Rig Up
- Drilling
- Dry & Abandoned
- Oil Well
- Oil Well Abandoned
- Gas Well
- Gas Well Abandoned
- Well Abandoned-Show of Oil & Gas
- Well Abandoned-Show of Oil
- Well Abandoned in Salt
- Well Abandoned in Cap Rock
- Core Test Well
- Wet Gas Or Condensate Well
- Wet Gas or Condensate Well Abnd
- Producing Oil & Gas
- Injection Well

Grant Or Section Line
County Line
State Line
Line Visible On Aerial Photo

(16) Map ID Number

PCI Nitrogen
Facility Boundary

STATE OF TEXAS
STEPHANIE K. WILLIAMS
GEOLOGY
NO. 11198
LICENSED
PROFESSIONAL GEOSCIENTIST

2/23/2024

N

1,000 0 1,000 2,000 FEET

FIGURE V-10

UNINTERPRETED BASE MAP

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

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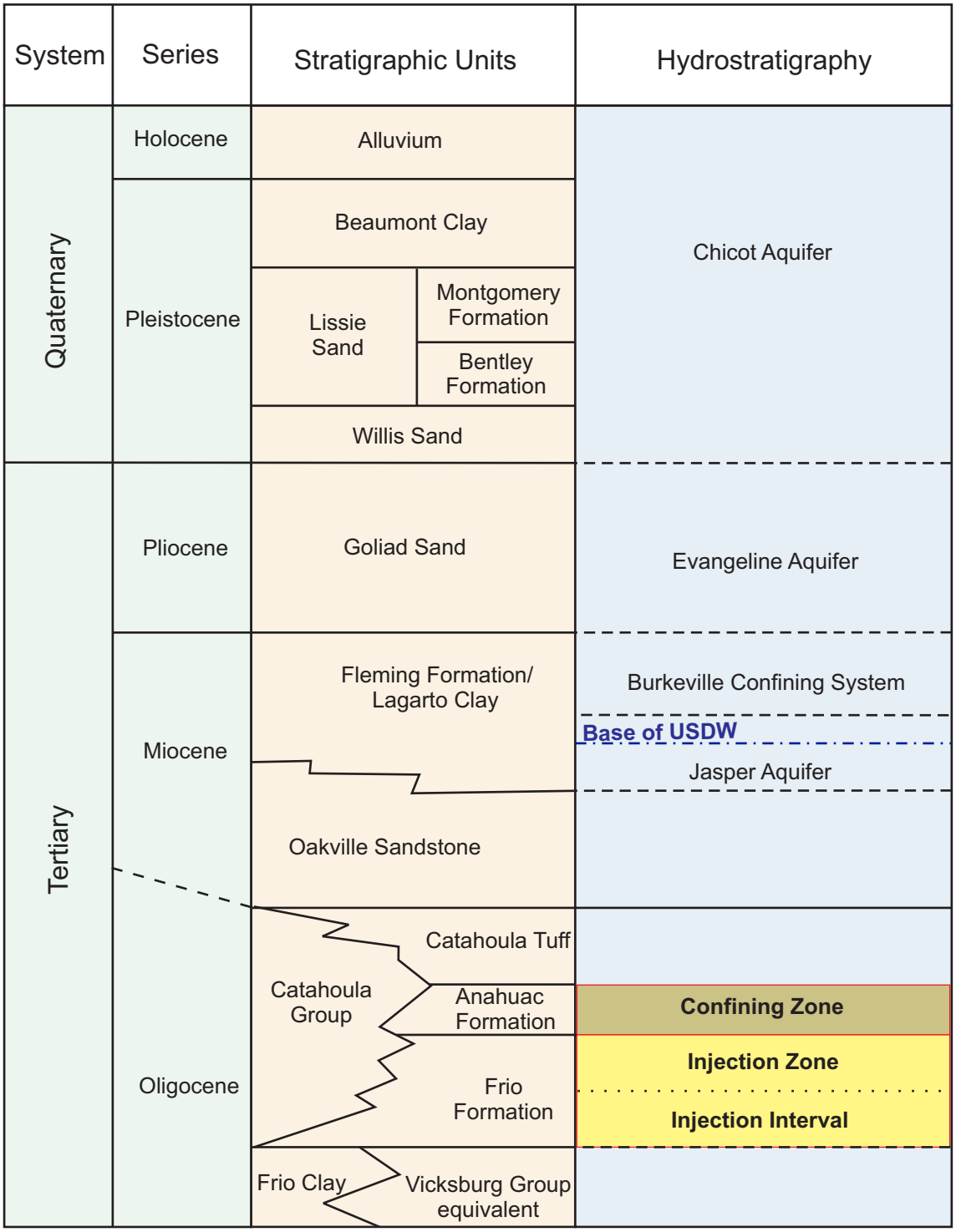
TERRA DYNAMICS INC

Base Map Source: P2 Energy Solutions (Tobin Distribution), 2017



Drawing No.: Figure V-11.cdr
Date: 1/26/2024
Job No.: 23-141

Drawn By: HKD
Designed By: HKD
Checked By: SKW

FIGURE V-11

LOCAL STRATIGRAPHIC UNITS

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

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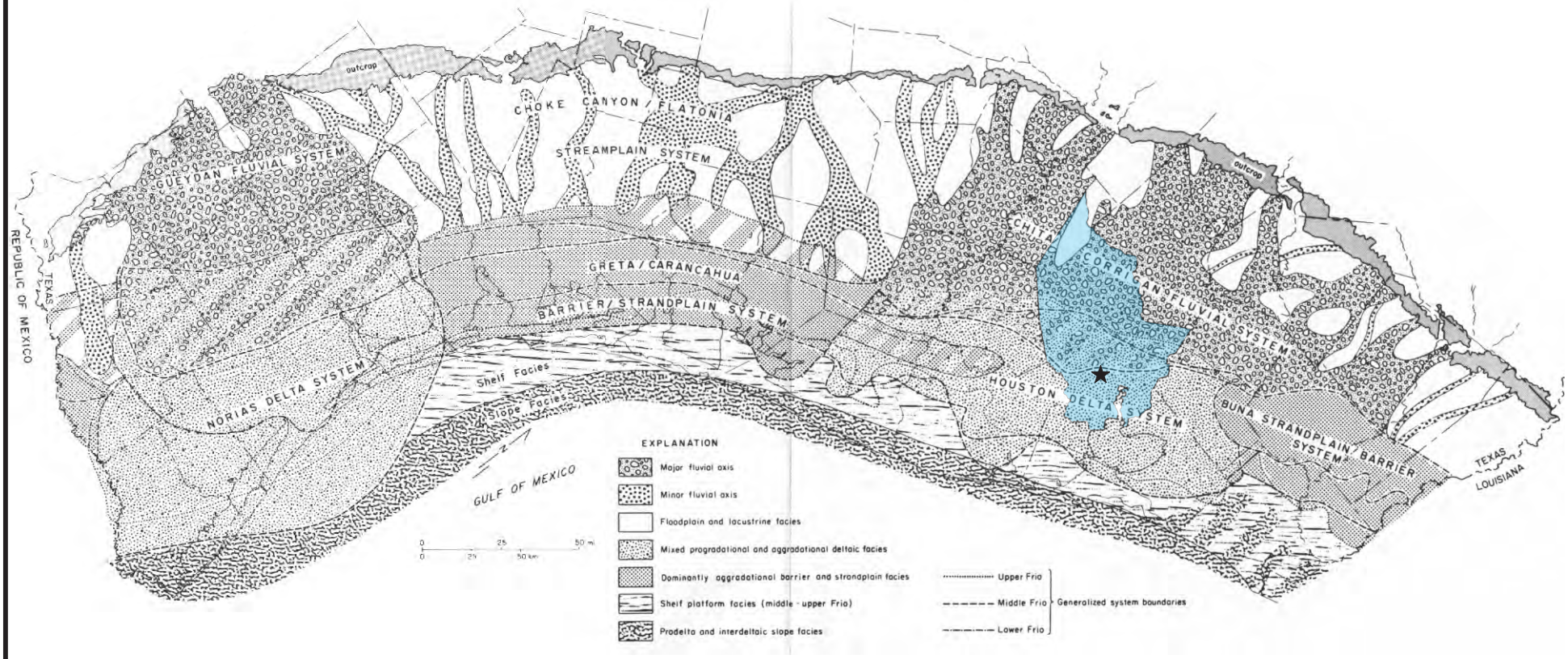
Modified from Chowdhury and Turco, 2006 and Baker, 1979.

Drawn By: TDM	Drawing No.: Figure V-12
Designed By: TDM	Date: 12/6/2023
Checked By: TDM	Job No.: 23-141



★ ExxonMobil Facility Location

Source: Galloway and others, 1982

FIGURE V-12

FRIO DEPOSITIONAL SYSTEMS

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

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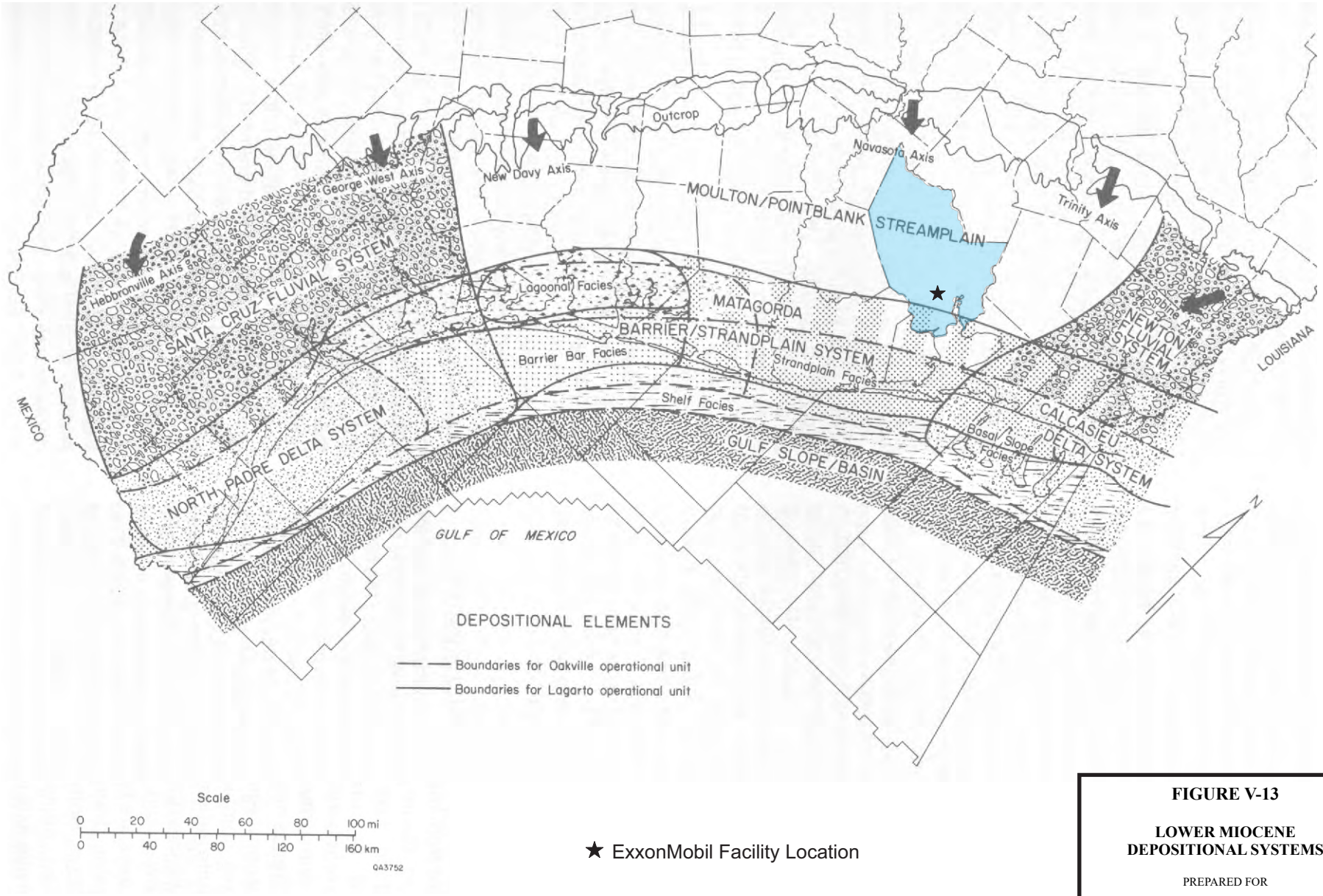
Drawn By: TDM	Drawing No.: Figure V-13
Designed By: TDM	Date: 12/6/2023
Checked By: TDM	Job No.: 23-141



★ ExxonMobil Facility Location

FIGURE V-13

LOWER MIOCENE DEPOSITIONAL SYSTEMS

PREPARED FOR

EXXON MOBIL CORPORATION PASADENA, TEXAS

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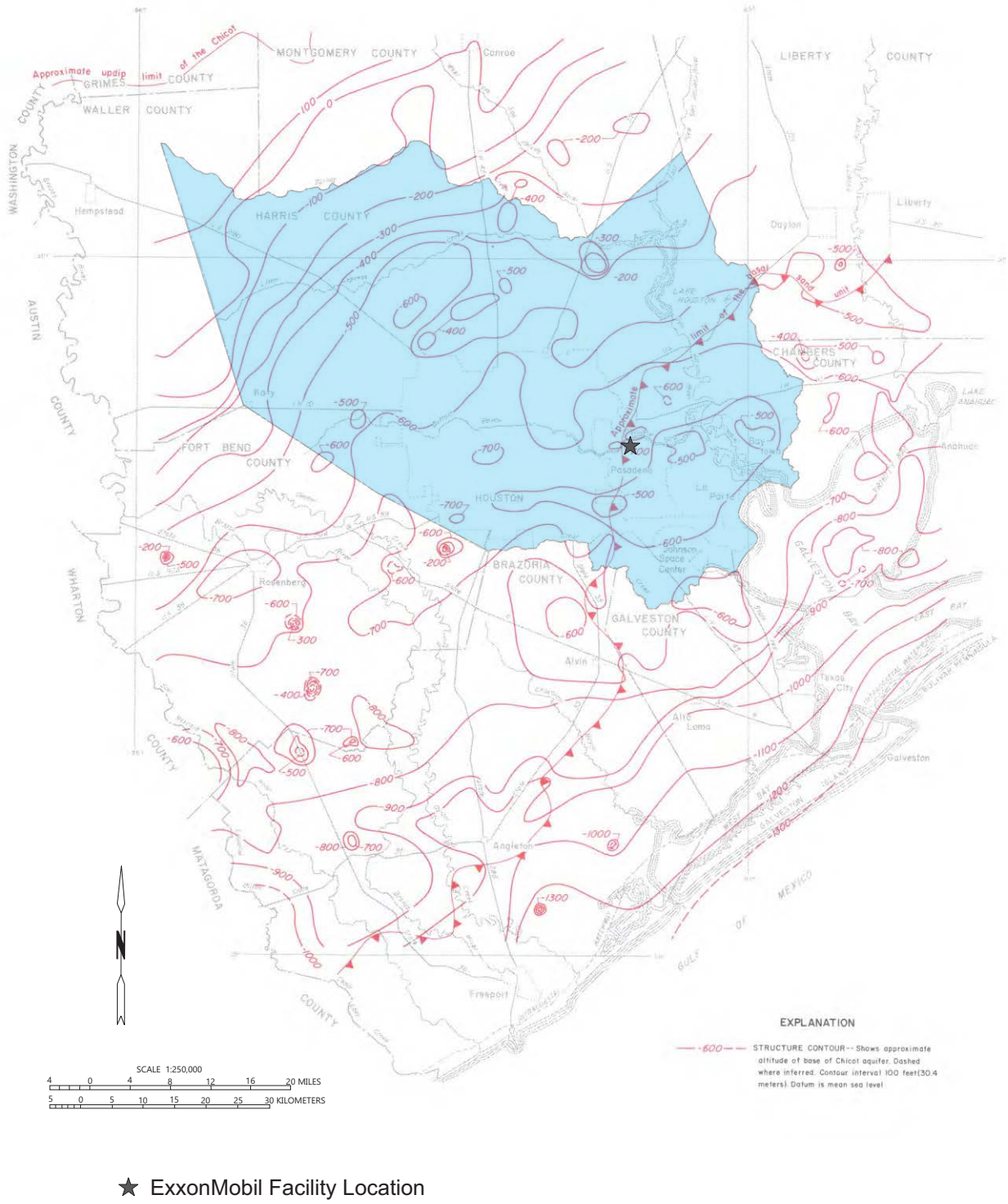
Source: Galloway and others, 1986



★ ExxonMobil Facility Location

Source: Gabrysch, 1980

FIGURE V-14

STRUCTURE CONTOUR MAP ON BASE OF CHICOT AQUIFER

PREPARED FOR

EXXON MOBIL CORPORATION PASADENA, TEXAS

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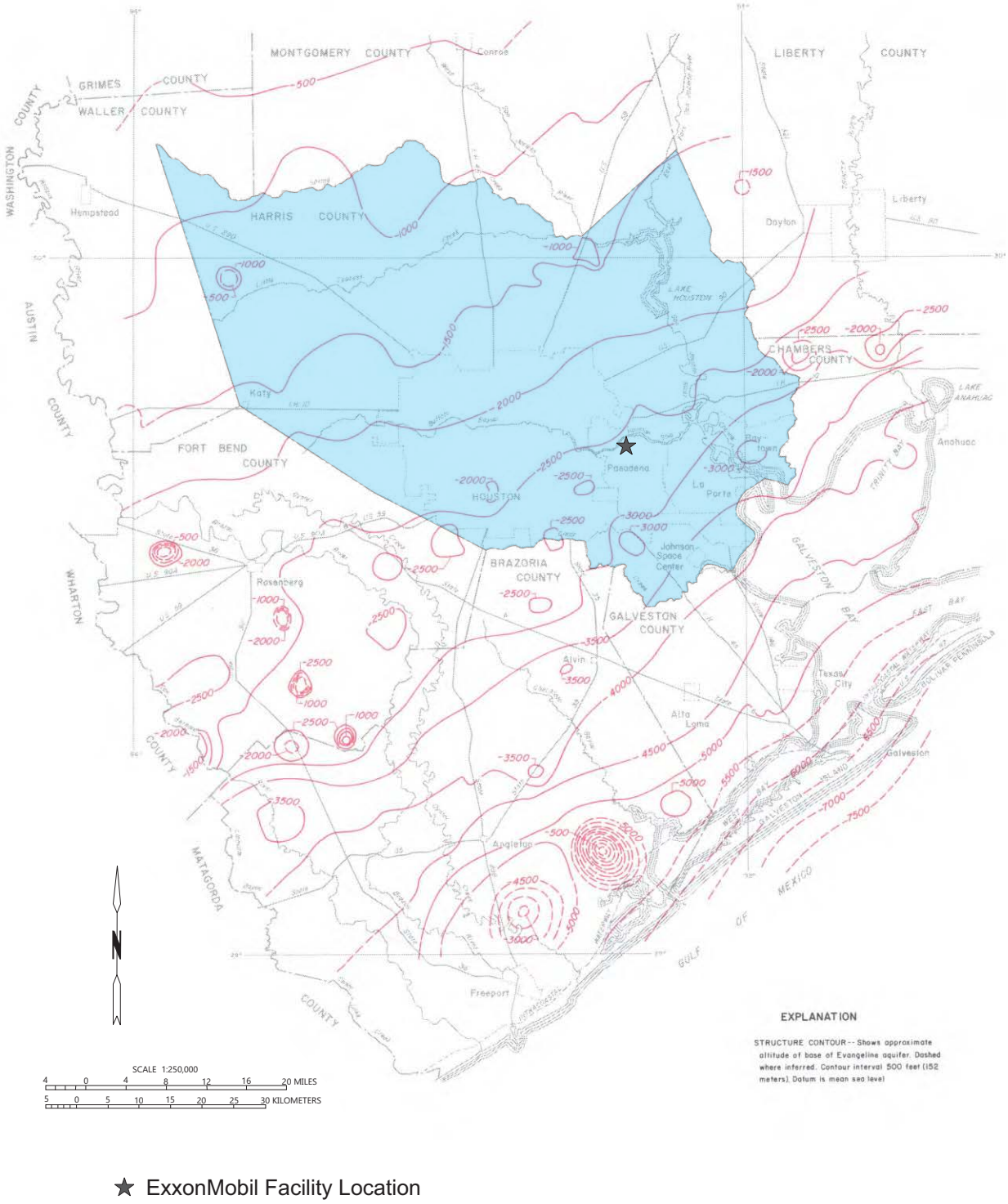
TERRA DYNAMICS INC

Drawing No.: Figure V-14
Date: 12/6/2023
Job No.: 23-141

Drawn By: TDM
Designed By: TDM
Checked By: SKW



★ ExxonMobil Facility Location

Source: Gabrysch, 1980

FIGURE V-15

STRUCTURE CONTOUR MAP ON BASE OF EVANGELINE AQUIFER

PREPARED FOR

EXXON MOBIL CORPORATION PASADENA, TEXAS

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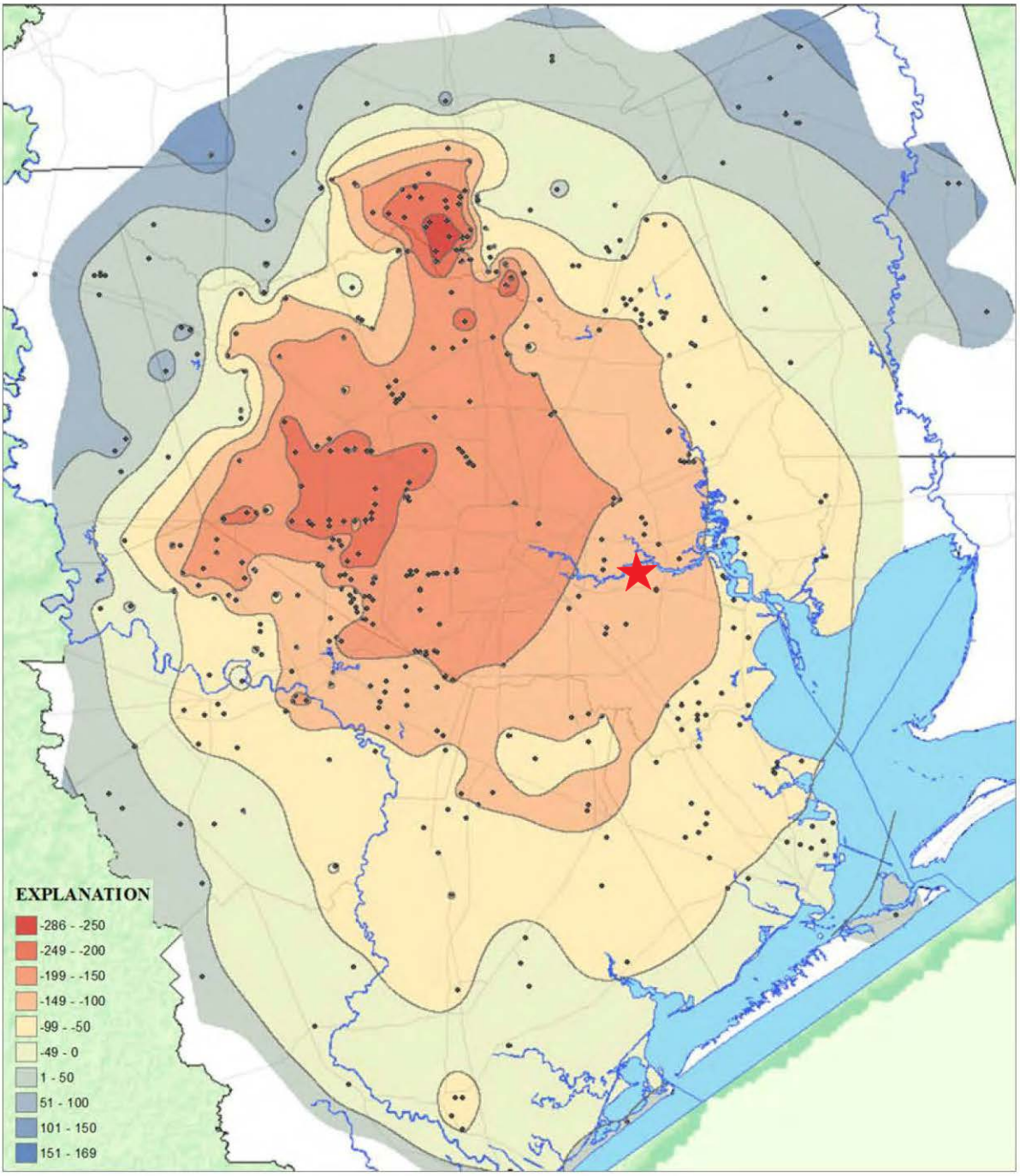
Drawing No.: Figure V-15
Date: 12/6/2023
Job No.: 23-141

Drawn By: TDM
Designed By: TDM
Checked By: SKW



Altitude of the 2023 potentiometric surface of the Chicot and Evangeline (undifferentiated) aquifers measured from tightly cased water wells in the Houston Region.

★ Exxon Mobil Facility Location

Source: Grueter, 2023

FIGURE V-16

ALTITUDE OF WATER LEVELS IN THE CHICOT AND EVANGELINE AQUIFERS

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

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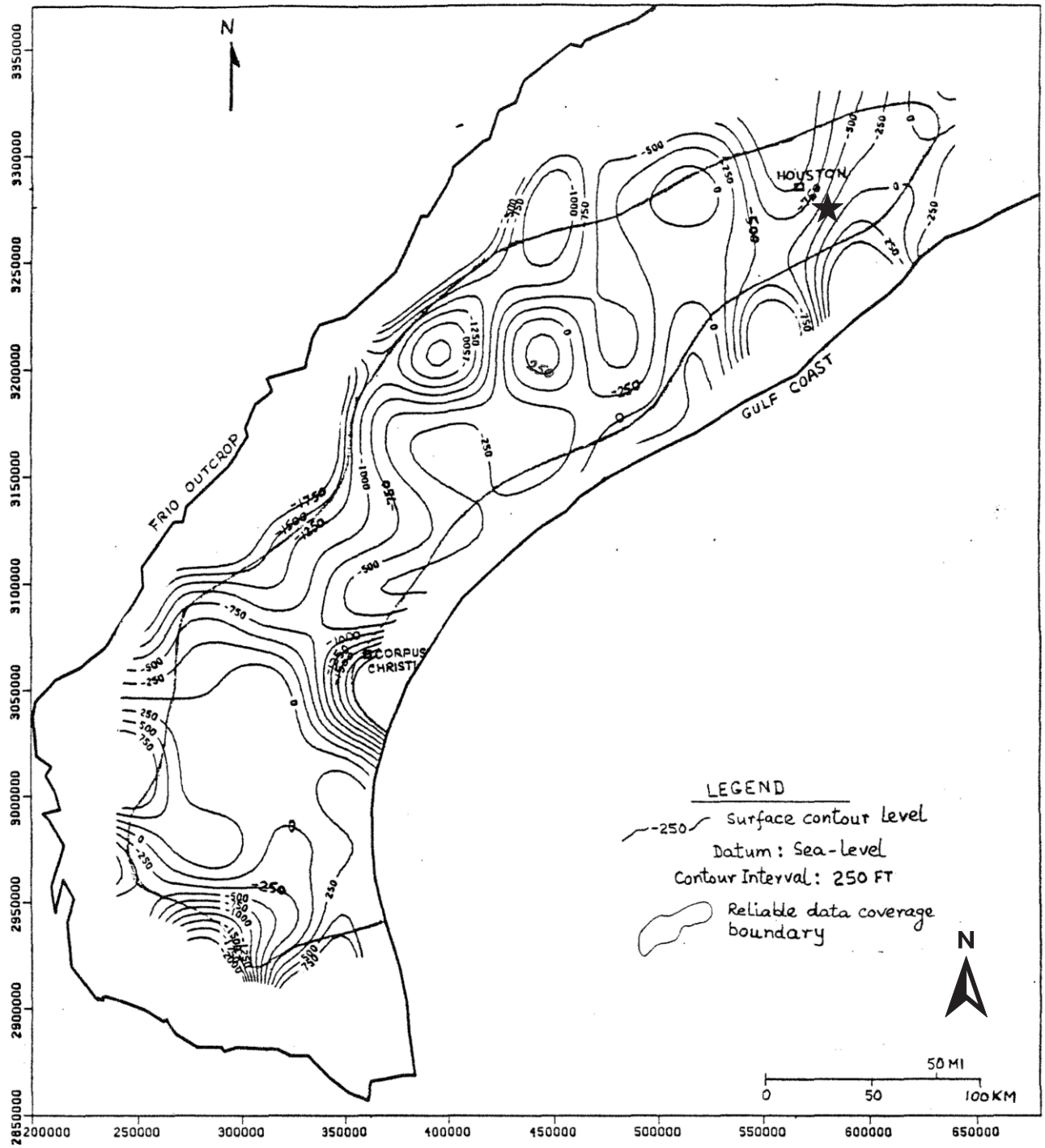
Drawing No.: Figure V-16.cdr
Date: 1/30/2024
Job No.: 23-141

Drawn By: SKW
Designed By: SKW
Checked By: HKD



Drawing No.: Figure V-17
Date: 12/6/2023
Job No.: 23-141

Drawn By: HKD
Designed By: Kreitler, 1987
Checked By: SKW

★ ExxonMobil Facility Location

Source: Kreitler, 1987

FIGURE V-17

REGIONAL POTENTIOMETRIC SURFACE MAP OF THE TOP OF THE FRIO FORMATION

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

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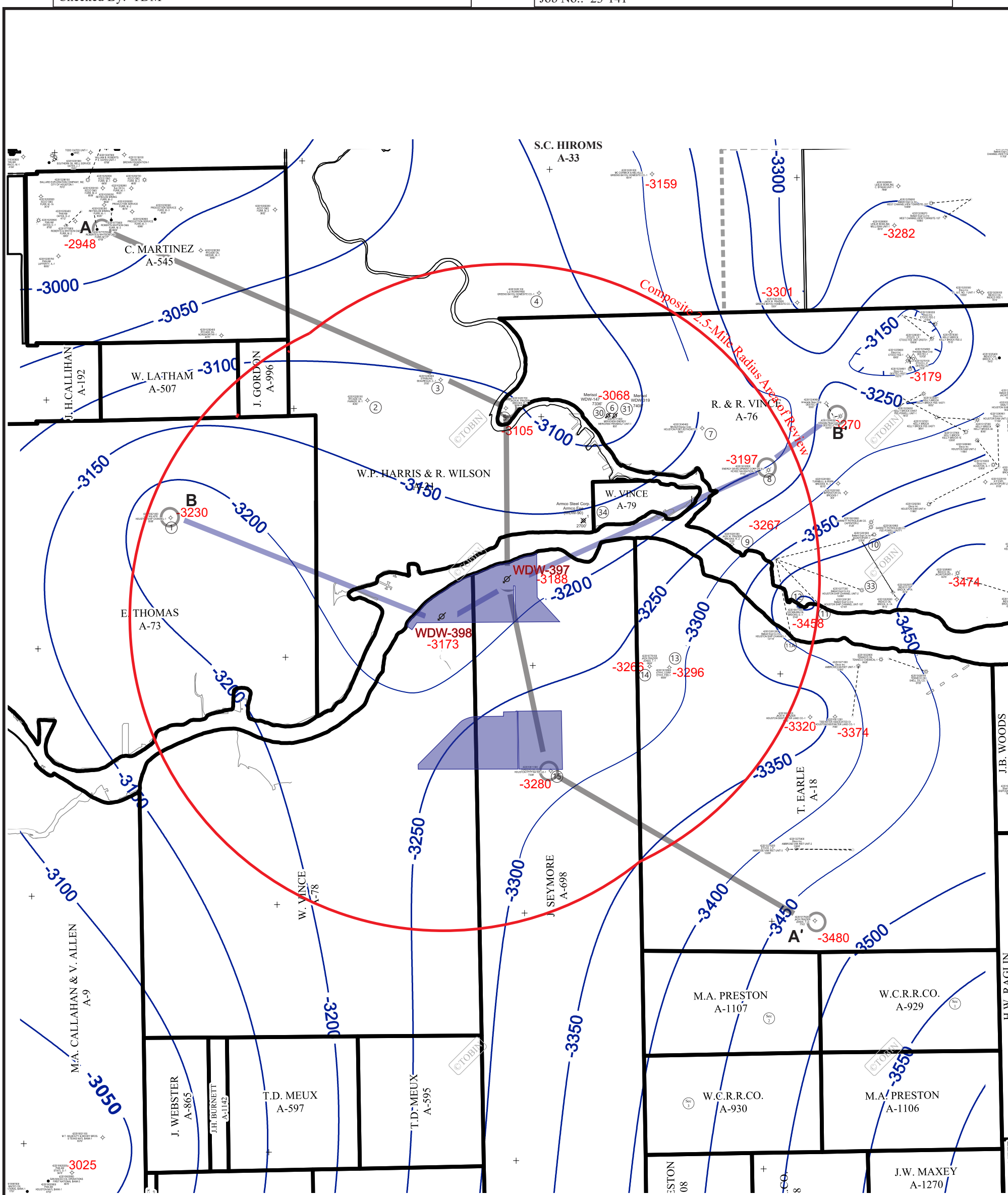
TERRA DYNAMICS INC

Drawn By: HKD	Drawing No.: Figure V-18
Designed By: TDM	Date: 01/30/24
Checked By: TDM	Job No.: 23-141



MAP EXPLANATION

- Location
- Location Abandoned
- Rig Up
- Drilling
- Dry & Abandoned
- Oil Well
- Oil Well Abandoned
- Gas Well
- Gas Well Abandoned
- Well Abandoned-Show of Oil & Gas
- Well Abandoned-Show of Oil
- Well Abandoned in Salt
- Well Abandoned in Cap Rock
- Core Test Well
- Wet Gas Or Condensate Well
- Wet Gas or Condensate Well Abnd
- Producing Oil & Gas
- Injection Well

Contour Interval = 50 feet

Grant Or Section Line
County Line
State Line
Line Visible On Aerial Photo

(16) Map ID Number

NDE Not Deep Enough

-3150 Line of Equal Elevation of USDW in Feet (relative to mean sea level)

-3065 Elevation Base of USDW

PCI Nitrogen Facility Boundary

Base Map Source: P2 Energy Solutions (Tobin Distribution), 2017

STATE OF TEXAS
STEPHANIE K. WILLIAMS
GEOLOGY
NO. 11198
LICENSED
PROFESSIONAL GEOSCIENTIST

Stephanie K. Williams
2/23/2024

N

1,000 0 1,000 2,000 FEET

FIGURE V-18

STRUCTURE MAP
BASE OF USDW
(Underground Source of Drinking Water)

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

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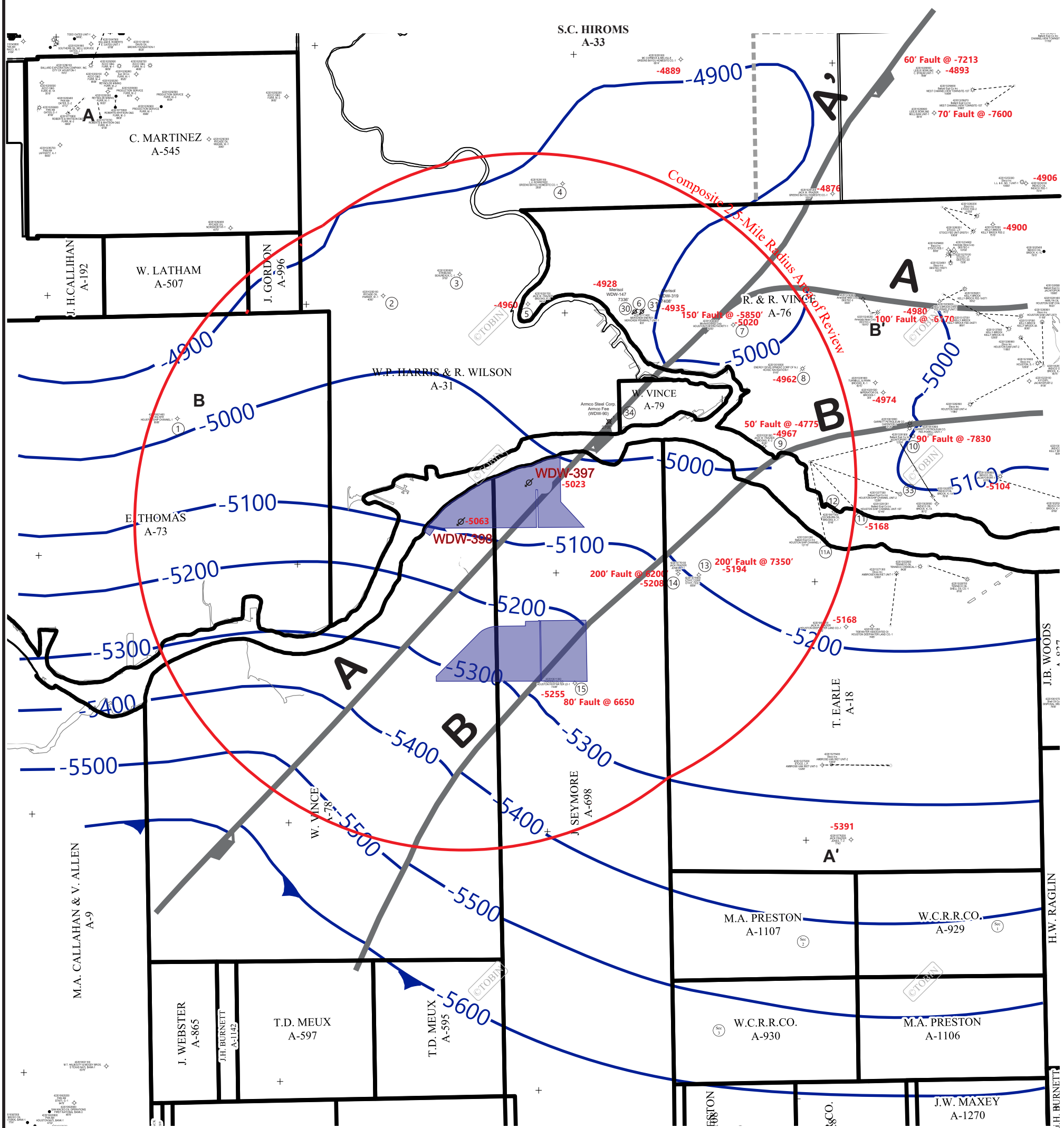
Drawn By: HKD	Drawing No.: Figure V-19
Designed By: TDM	Date: 01/30/24
Checked By: SKW	Job No.: 23-141



MAP EXPLANATION

- Location
- Location Abandoned
- Rig Up
- Drilling
- Dry & Abandoned
- Oil Well
- Oil Well Abandoned
- Gas Well
- Gas Well Abandoned
- Well Abandoned-Show of Oil & Gas
- Well Abandoned-Show of Oil
- Well Abandoned in Salt
- Well Abandoned in Cap Rock
- Core Test Well
- Wet Gas Or Condensate Well
- Wet Gas or Condensate Well Abnd
- Producing Oil & Gas
- Injection Well

Contour Interval = 100 feet

- Grant Or Section Line
- County Line
- State Line
- Line Visible On Aerial Photo

(16) Map ID Number

NDE Not Deep Enough

-5500 Line of Equal Elevation of Anahuac Marker in Feet (relative to mean sea level)

-5300 Anahuac Marker Structure Top

PCI Nitrogen Facility Boundary

STATE OF TEXAS
STEPHANIE K. WILLIAMS
GEOLOGY
NO. 11198
LICENSED
PROFESSIONAL GEOSCIENTIST

2/23/2024

N

1,000 0 1,000 2,000 FEET

FIGURE V-19

STRUCTURE MAP
ANAHUAC MARKER
(NEAR TOP OF CONFINING ZONE)

PREPARED FOR

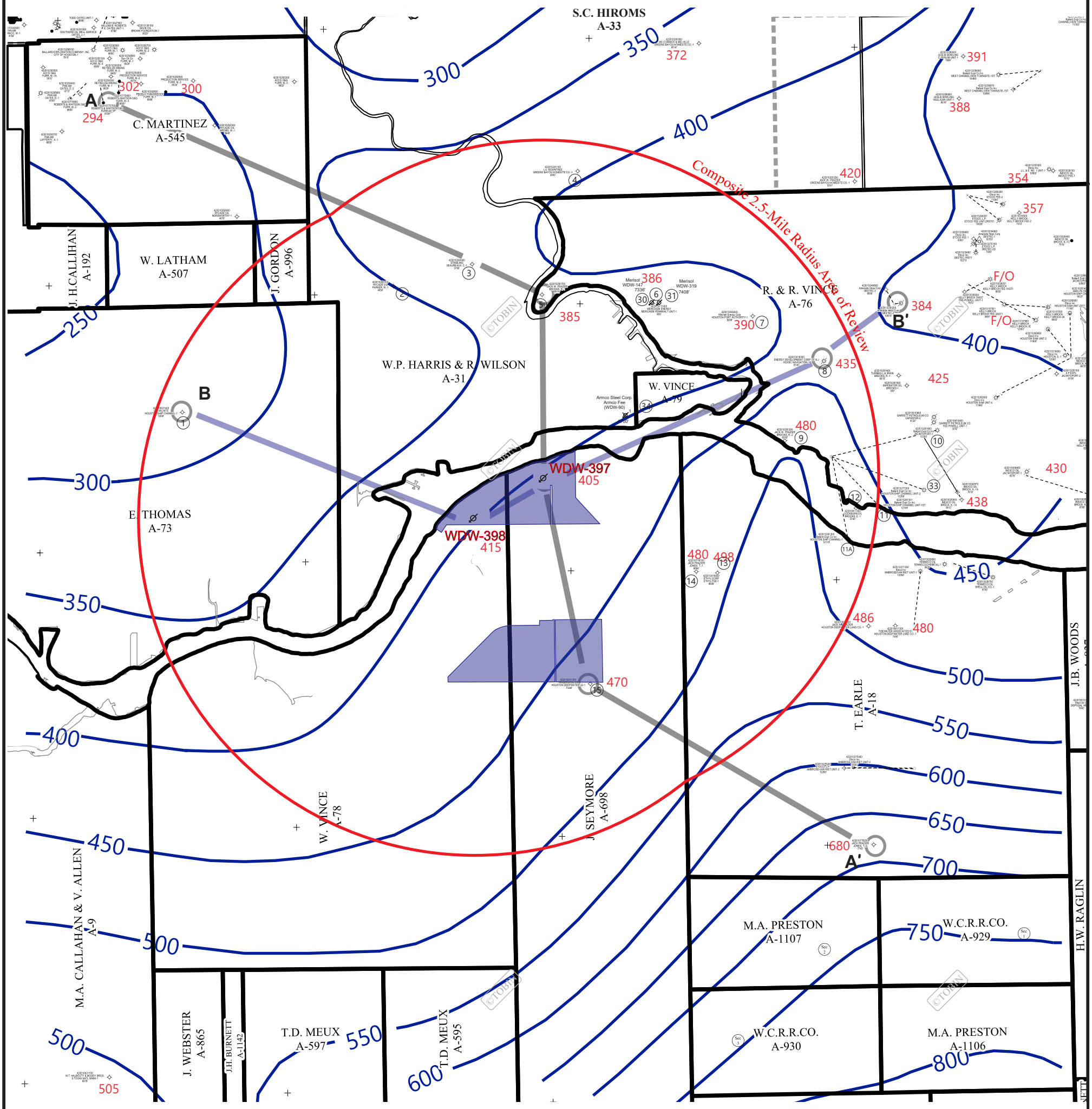
EXXON MOBIL CORPORATION
PASADENA, TEXAS

© 2024

TERRA DYNAMICS INC

Base Map Source: P2 Energy Solutions (Tobin Distribution), 2017

Drawn By: HKD	Drawing No.: Figure V-20
Designed By: TDM	Date: 01/29/2024
Checked By: SKW	Job No.: 23-141



MAP EXPLANATION

- Location
- Location Abandoned
- Rig Up
- Drilling
- Dry & Abandoned
- Oil Well
- Oil Well Abandoned
- Gas Well
- Gas Well Abandoned
- Well Abandoned-Show of Oil & Gas
- Well Abandoned-Show of Oil
- Well Abandoned in Salt
- Well Abandoned in Cap Rock
- Core Test Well
- Wet Gas Or Condensate Well
- Wet Gas or Condensate Well Abnd
- Producing Oil & Gas
- Injection Well

Contour Interval = 50 feet

- Grant Or Section Line
- County Line
- State Line
- Line Visible On Aerial Photo
- (16) Map ID Number
- NDE Not Deep Enough
- F/O Horizon Faulted Out
- 500 Line of Equal Thickness of Confining Zone in Feet (relative to mean sea level)
- 500 Thickness of Confining Zone
- PCI Nitrogen Facility Boundary

STATE OF TEXAS
STEPHANIE K. WILLIAMS
GEOLOGY
NO. 11198
LICENSED
PROFESSIONAL GEOSCIENTIST

Stephanie K. Williams
2/23/2024

N

1,000 0 1,000 2,000 FEET

FIGURE V-20

ISOPACH MAP
ANAHUAC CONFINING ZONE

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

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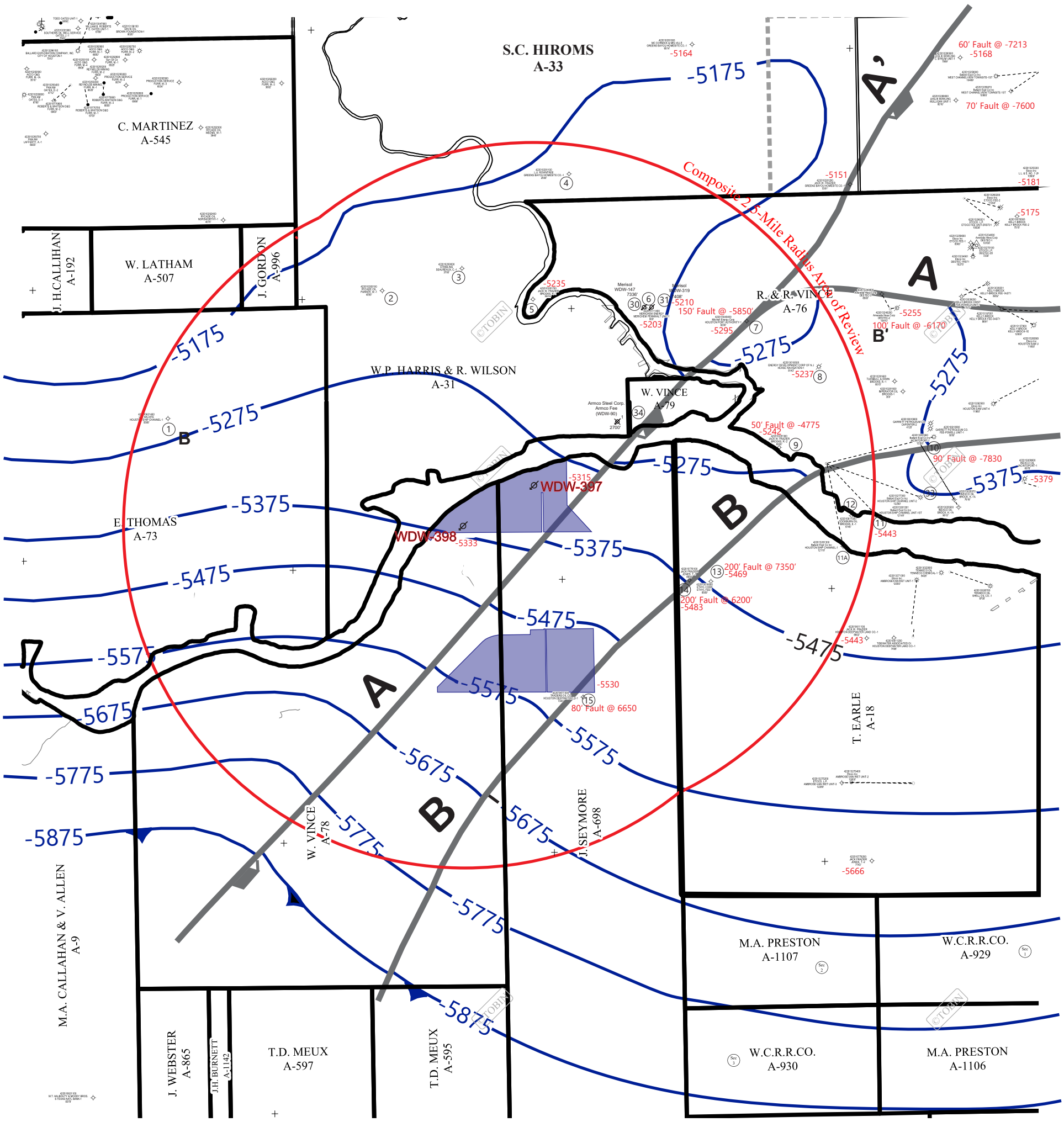
TERRA DYNAMICS INC

Base Map Source: P2 Energy Solutions (Tobin Distribution), 2017

Drawn By: HKD	Drawing No.: Figure V-21
Designed By: TDM	Date: 01/30/2024
Checked By: SKW	Job No.: 23-141



MAP EXPLANATION

- Location
- Location Abandoned
- Rig Up
- Drilling
- Dry & Abandoned
- Oil Well
- Oil Well Abandoned
- Gas Well
- Gas Well Abandoned
- Well Abandoned-Show of Oil & Gas
- Well Abandoned-Show of Oil
- Well Abandoned in Salt
- Well Abandoned in Cap Rock
- Core Test Well
- Wet Gas Or Condensate Well
- Wet Gas or Condensate Well Abnd
- Producing Oil & Gas
- Injection Well

Contour Interval = 100 feet

Grant Or Section Line
County Line
State Line
Line Visible On Aerial Photo

(16) Map ID Number

NDE Not Deep Enough

-5375 Line of Elevation of Injection Zone in Feet (relative to mean sea level)

5400 Elevation of Injection Zone

PCI Nitrogen Facility Boundary

STATE OF TEXAS
STEPHANIE K. WILLIAMS
GEOLOGY
NO. 11198
LICENSED
PROFESSIONAL GEOSCIENTIST

2/23/2024

1,000 0 1,000 2,000 FEET

FIGURE V-21

STRUCTURE MAP
TOP OF INJECTION ZONE

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

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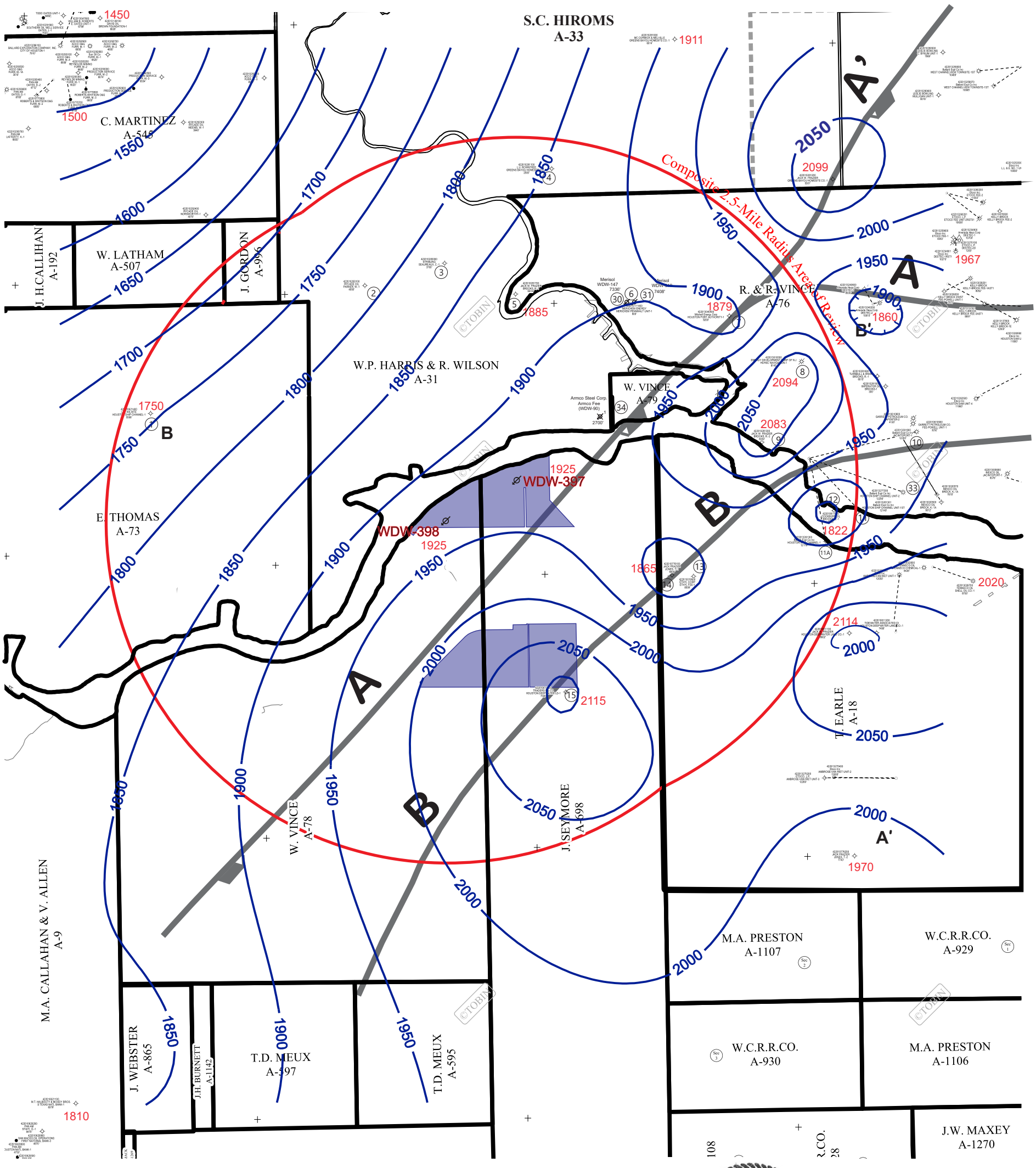
TERRA DYNAMICS INC

Base Map Source: P2 Energy Solutions (Tobin Distribution), 2017

Drawn By: HKD	Drawing No.: Figure V-22
Designed By: TDM	Date: 01/30/24
Checked By: SKW	Job No.: 23-141



MAP EXPLANATION

- Location
- Location Abandoned
- Rig Up
- Drilling
- Dry & Abandoned
- Oil Well
- Oil Well Abandoned
- Gas Well
- Gas Well Abandoned
- Well Abandoned-Show of Oil & Gas
- Well Abandoned-Show of Oil
- Well Abandoned in Salt
- Well Abandoned in Cap Rock
- Core Test Well
- Wet Gas Or Condensate Well
- Wet Gas or Condensate Well Abnd
- Producing Oil & Gas
- Injection Well

Contour Interval = 50 feet

Grant Or Section Line
County Line
State Line
Line Visible On Aerial Photo

(16) Map ID Number

NDE Not Deep Enough

1700 Line of Equal Thickness of Injection Zone in Feet (relative to mean sea level)

1810 Gross Thickness of Injection Zone

PCI Nitrogen Facility Boundary

STATE OF TEXAS
STEPHANIE K. WILLIAMS
GEOLOGY
NO. 11198
LICENSED
PROFESSIONAL GEOSCIENTIST

2/23/2024

N

1,000 0 1,000 2,000 FEET

FIGURE V-22

GROSS THICKNESS MAP OF INJECTION ZONE

PREPARED FOR

EXXON MOBIL CORPORATION PASADENA, TEXAS

© 2024

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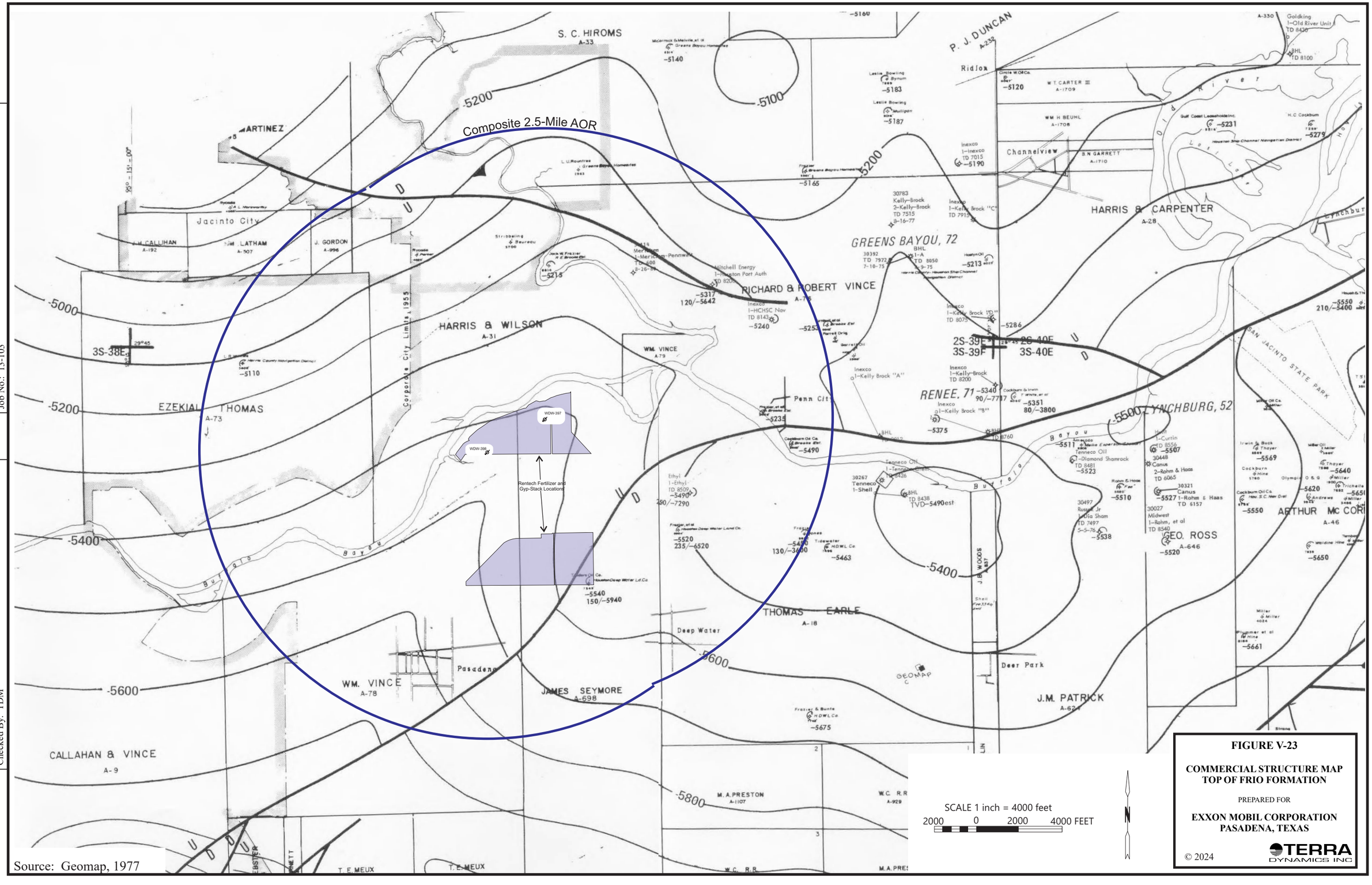
Base Map Source: P2 Energy Solutions (Tobin Distribution), 2017

Drawing No.: Figure V-23
Date: 1/29/2024
Job No.: 13-103

Drawn By: HKD
Designed By: TDM
Checked By: TDM



Source: Geomap, 1977

FIGURE V-23

COMMERCIAL STRUCTURE MAP
TOP OF FRIO FORMATION

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

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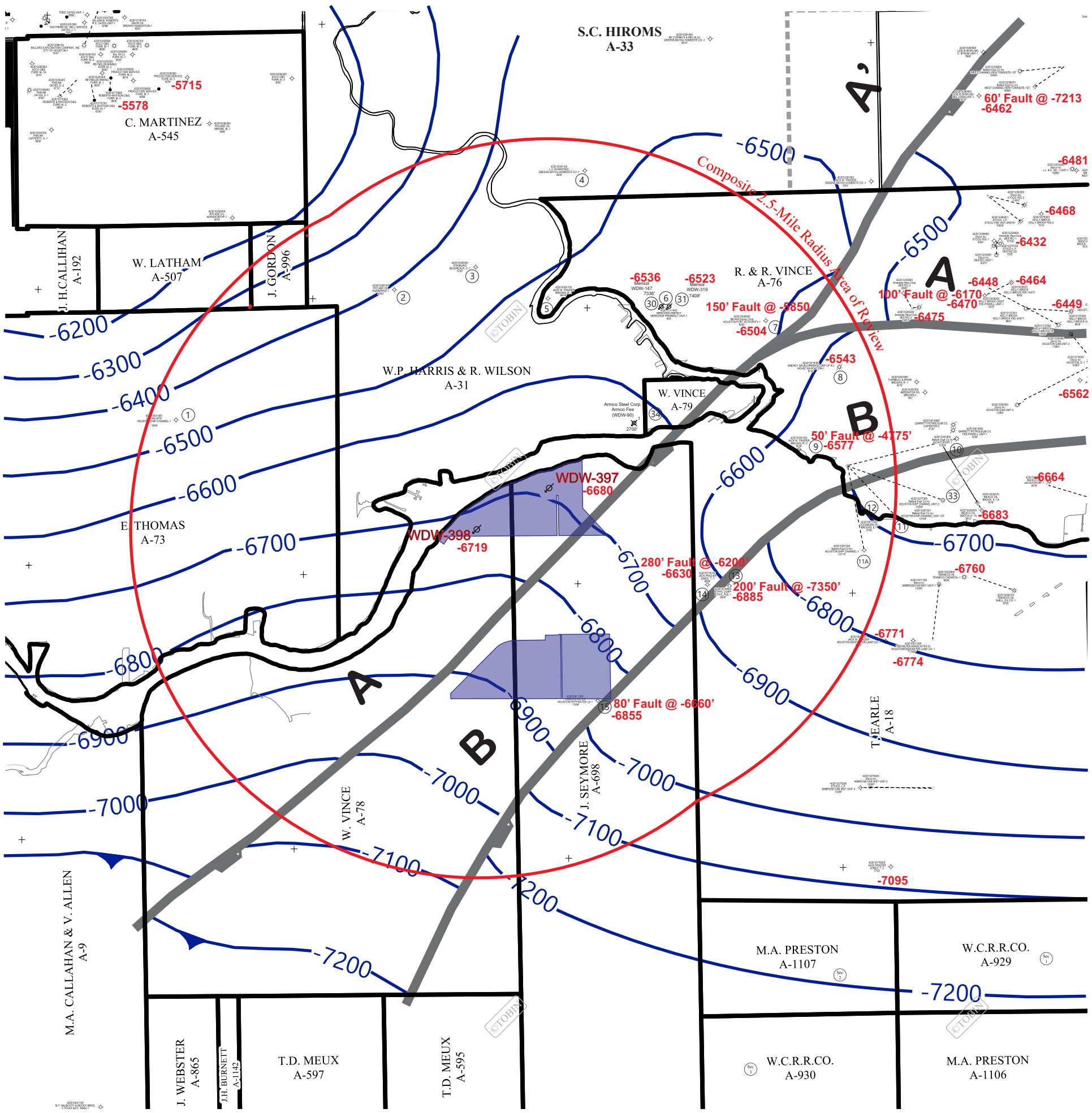
Drawn By: HKD	Drawing No.: Figure V-24
Designed By: SKW	Date: 01/30/2024
Checked By: SKW	Job No.: 23-141



MAP EXPLANATION

- Location
- Location Abandoned
- Rig Up
- Drilling
- Dry & Abandoned
- Oil Well
- Oil Well Abandoned
- Gas Well
- Gas Well Abandoned
- Well Abandoned-Show of Oil & Gas
- Well Abandoned-Show of Oil
- Well Abandoned in Salt
- Well Abandoned in Cap Rock
- Core Test Well
- Wet Gas Or Condensate Well
- Wet Gas or Condensate Well Abnd
- Producing Oil & Gas
- Injection Well

Contour Interval = 100 feet

Grant Or Section Line
County Line
State Line
Line Visible On Aerial Photo

(16) Map ID Number

NDE Not Deep Enough

-7100 Line of Equal Elevation of Frio E & F Sand in Feet (relative to mean sea level)

-6800 Frio E & F Sand Structure Top

PCI Nitrogen Facility Boundary

STATE OF TEXAS
STEPHANIE K. WILLIAMS
GEOLOGY
NO. 11198
LICENSED
PROFESSIONAL GEOSCIENTIST

Stephanie K. Williams
2/23/2024

N

1,000 0 1,000 2,000 FEET

FIGURE V-24

STRUCTURE MAP
TOP OF FRIO E & F SAND

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

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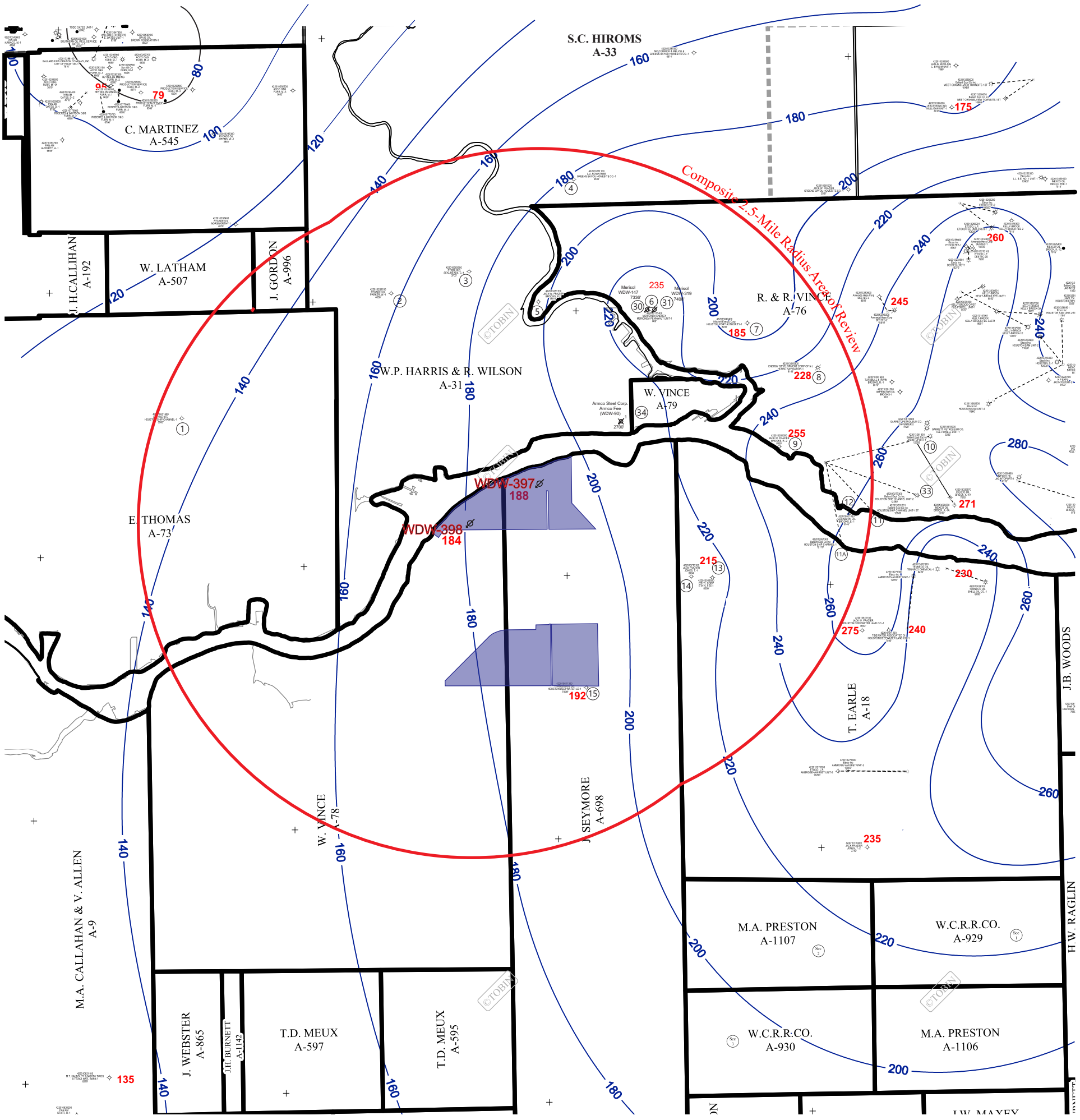
TERRA DYNAMICS INC

Base Map Source: P2 Energy Solutions (Tobin Distribution), 2017

Drawn By: HKD	Drawing No.: Figure V-25
Designed By: TDM	Date: 01/30/2024
Checked By: SKW	Job No.: 23-141



MAP EXPLANATION

- Location
- Location Abandoned
- Rig Up
- Drilling
- Dry & Abandoned
- Oil Well
- Oil Well Abandoned
- Gas Well
- Gas Well Abandoned
- Well Abandoned-Show of Oil & Gas
- Well Abandoned-Show of Oil
- Well Abandoned in Salt
- Well Abandoned in Cap Rock
- Core Test Well
- Wet Gas Or Condensate Well
- Wet Gas or Condensate Well Abnd
- Producing Oil & Gas
- Injection Well

Contour Interval = 20 feet

Grant Or Section Line
County Line
State Line
Line Visible On Aerial Photo

(16) Map ID Number

NDE Not Deep Enough

180 Line of Equal Thickness of Frio E&F Sand in Feet (relative to mean sea level)

250 Thickness of Frio E & F Sand

PCI Nitrogen
Facility Boundary

STATE OF TEXAS
STEPHANIE K. WILLIAMS
GEOLOGY
NO. 11198
LICENSED
PROFESSIONAL GEOSCIENTIST

2/23/2024

N

1,000 0 1,000 2,000 FEET

FIGURE V-25

NET SAND ISOPACH MAP
FRIO E&F SAND

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

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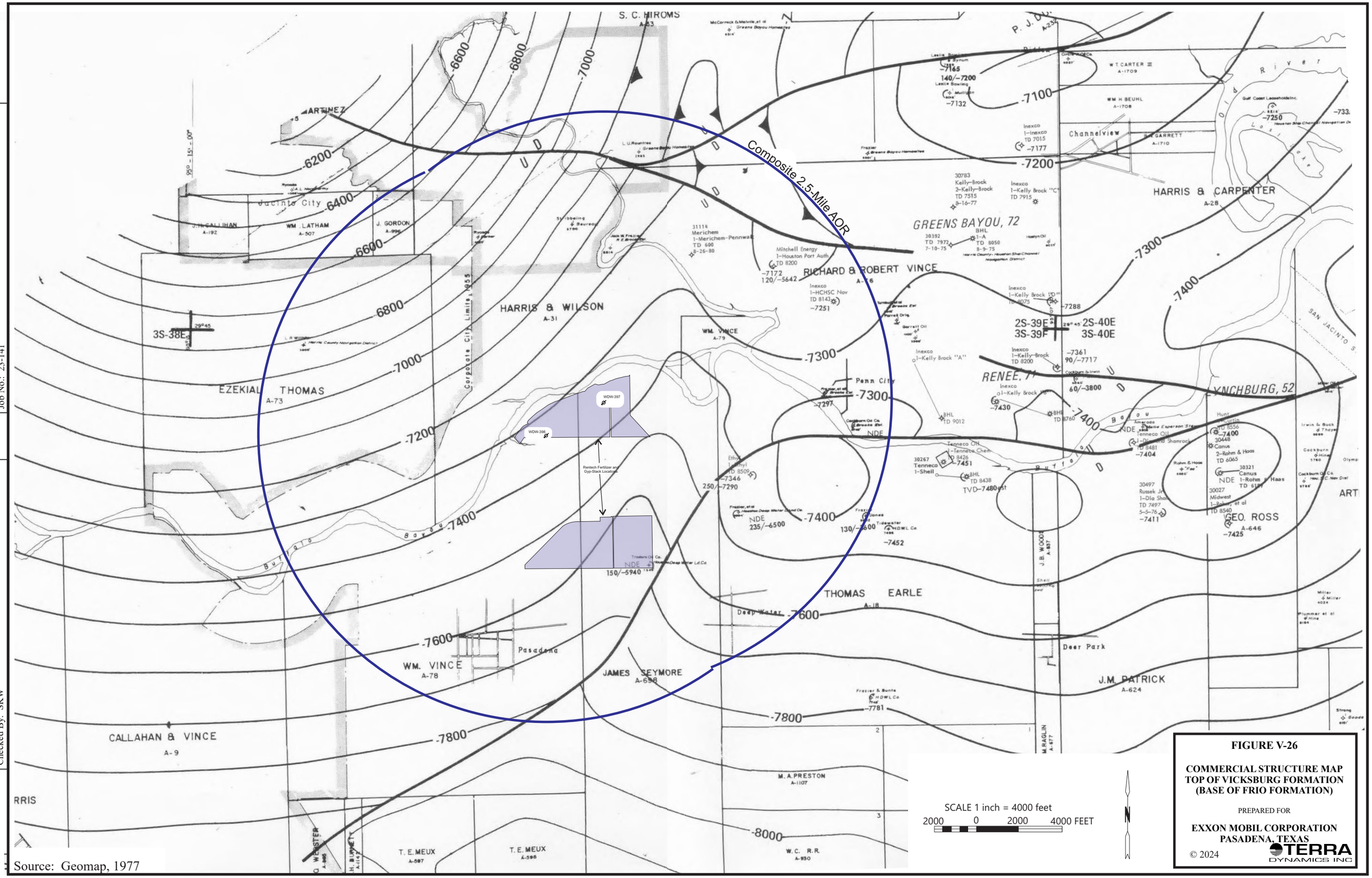
TERRA DYNAMICS INC

Base Map Source: P2 Energy Solutions (Tobin Distribution), 2017

Drawing No.: Figure V-26
Date: 01/29/2024
Job No.: 23-141

Drawn By: HKD
Designed By: TDM
Checked By: SKW



Source: Geomap, 1977

FIGURE V-26

COMMERCIAL STRUCTURE MAP TOP OF VICKSBURG FORMATION (BASE OF FRIO FORMATION)

PREPARED FOR

EXXON MOBIL CORPORATION PASADENA, TEXAS

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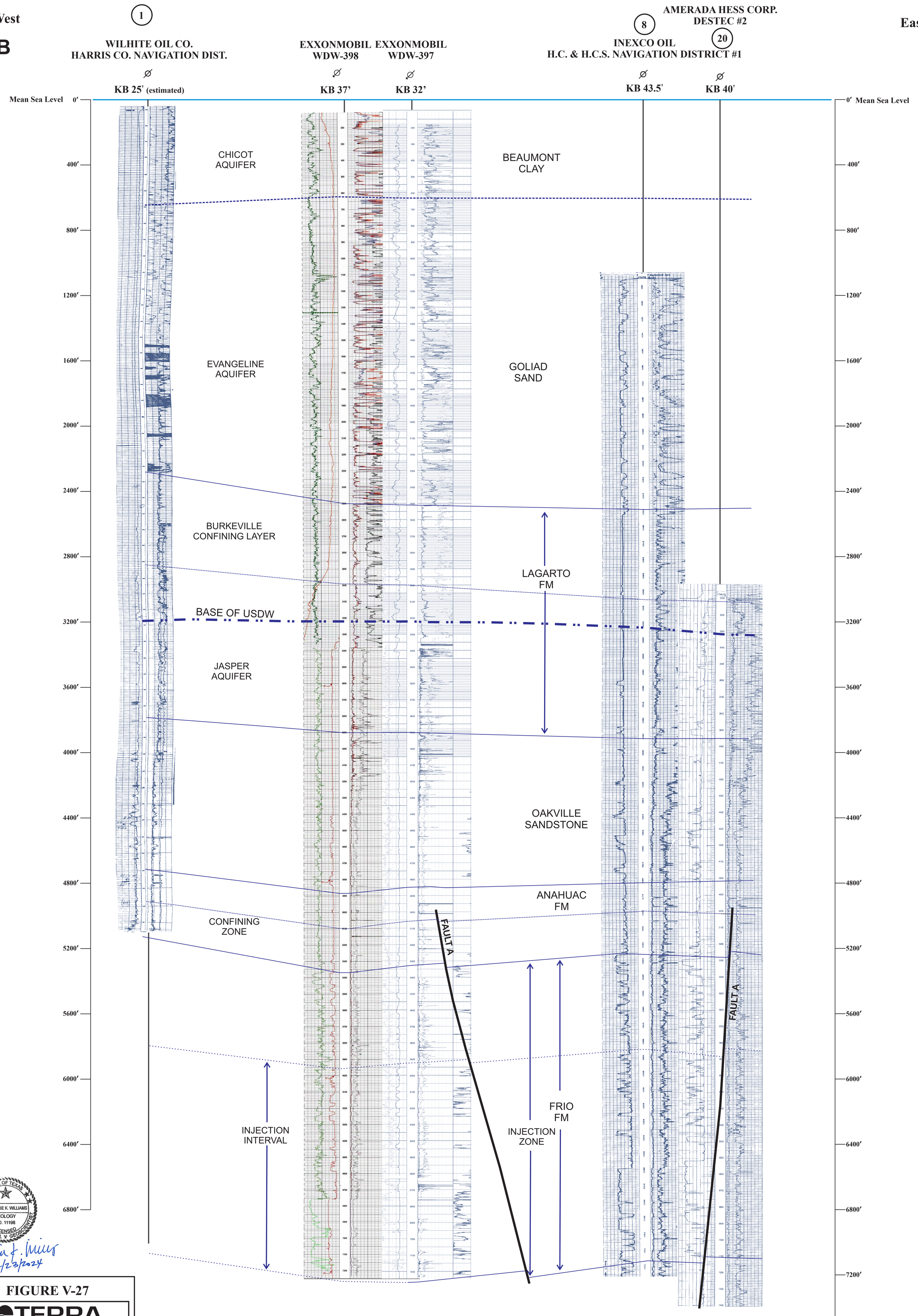

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Stephanie K. Williams
2/23/2024

FIGURE V-27

TERRA DYNAMICS INC

STRIKE-ORIENTED STRUCTURAL CROSS SECTION B-B′

PREPARED FOR

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PASADENA, TEXAS

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DESIGNED BY: TDM		JOB NO.: 23-141
CHECKED BY: SKW		

SCALE

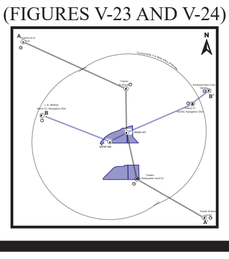
1″ = 250′

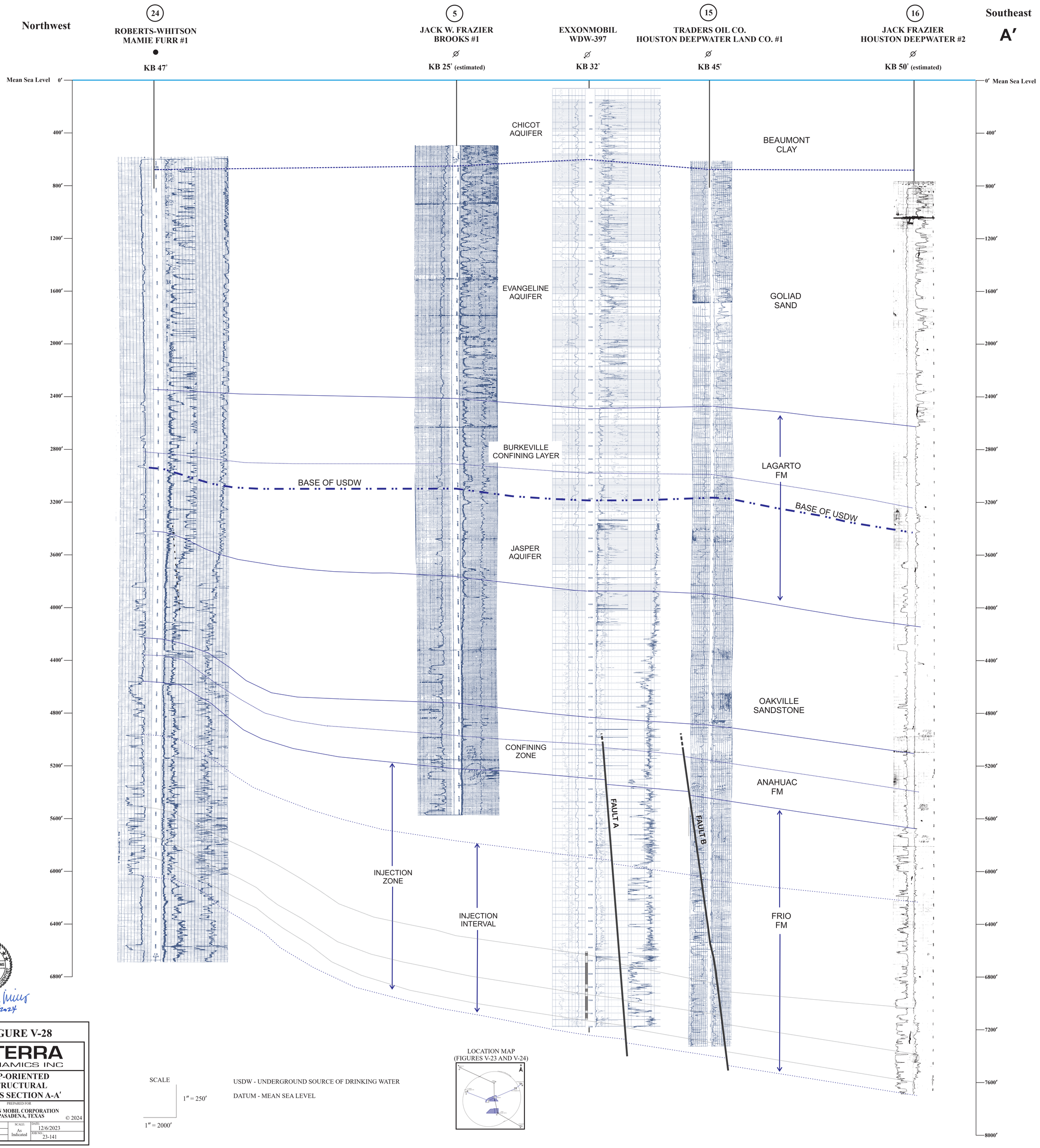
1″ = 2000′

USDW - UNDERGROUND SOURCE OF DRINKING WATER

DATUM - MEAN SEA LEVEL

LOCATION MAP
(FIGURES V-23 AND V-24)





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LICENSED
PROFESSIONAL GEOSCIENTIST

2/23/2024

LOCATION MAP
(FIGURES V-23 AND V-24)

SCALE
1" = 250'
1" = 2000'

USDW - UNDERGROUND SOURCE OF DRINKING WATER

DATUM - MEAN SEA LEVEL

FIGURE V-28

TERRA DYNAMICS INC

DIP-ORIENTED STRUCTURAL CROSS SECTION A-A'

PREPARED FOR

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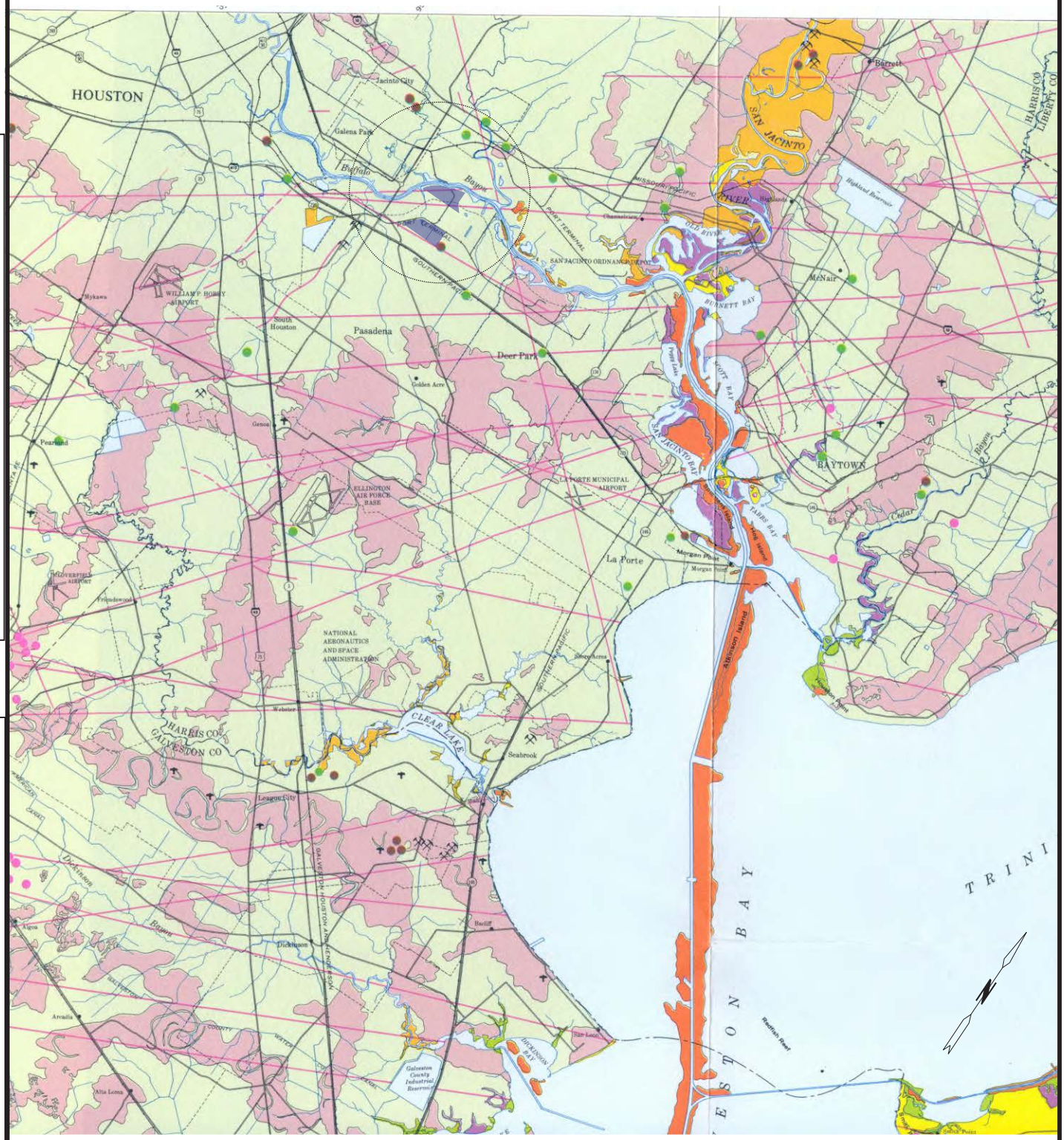
DESIGNED BY: TDM		JOB NO.: 23-141
CHECKED BY: SKW		

Drawing No.: Figure V-29
Date: 12/12/2023
Job No.: 23-141

Drawn By: TDM
Designed By: TDM
Checked By: SKW



Project Location and
Approximate 2.5-Mile Area of Review

SCALE 1:250,000
1 0 1 2 3 4 5 MILES

- Pit or quarry, commonly in fluvial deposits
- Sludge pit or miscellaneous waste disposal site, may be abandoned
- Sewage disposal site, liquid effluent, normally treated
- Solid waste disposal site, sanitary landfills, and open dumps
- Salt dome, shallow piercement, projected outline (approximate) of dome, normally surface expression
- Active or potentially active fault, based on lineament or grain displayed on aerial photographs, some faults near Houston from published sources

Source: Fisher and others, 1972

FIGURE V-29

SURFACE LINEAMENT MAP

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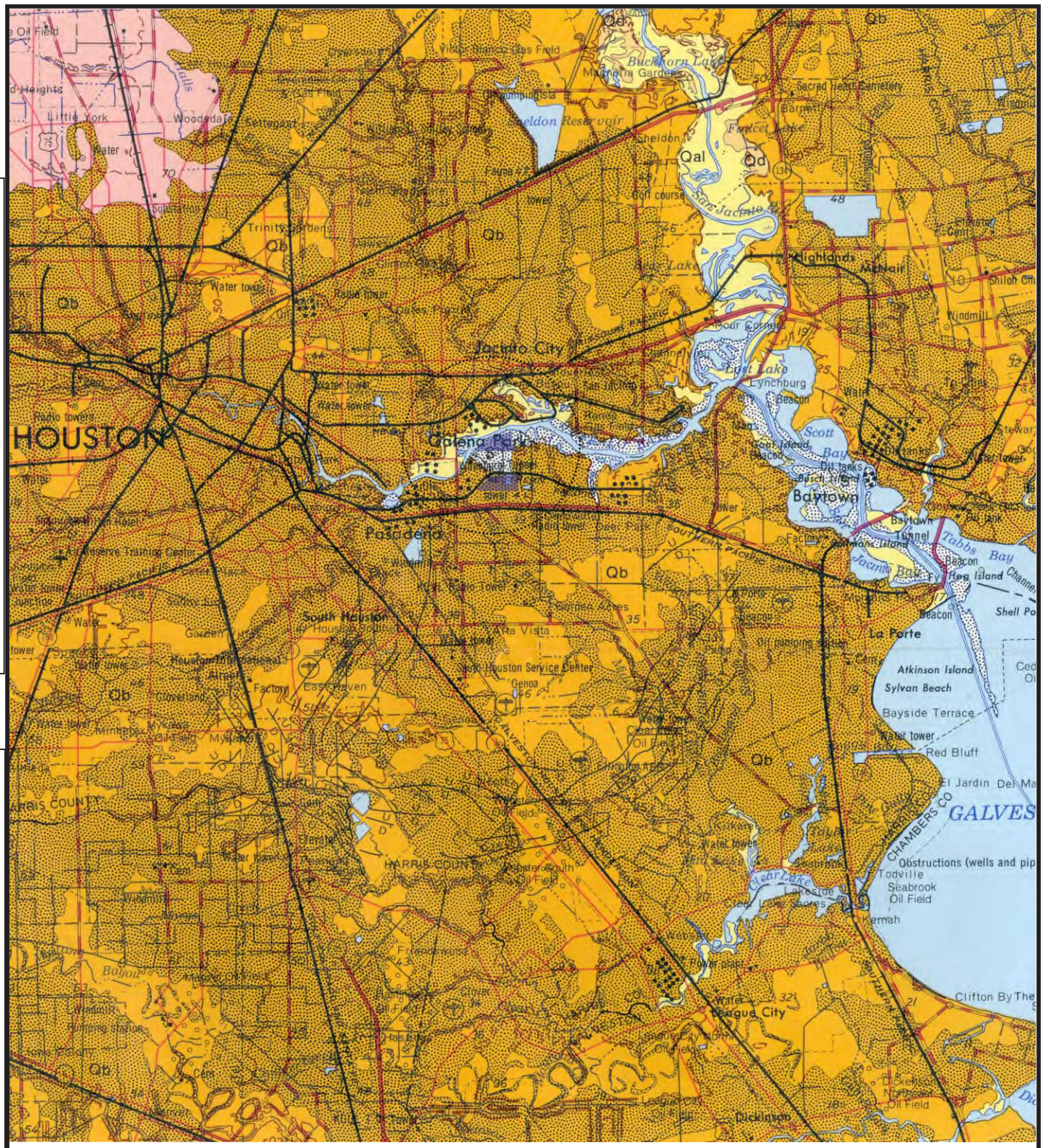
Drawing No.: Figure V-30
Date: 12/12/2023
Job No.: 23-141

Drawn By: TDM
Designed By: TDM
Checked By: SKW



EXPLANATION

FS — Fill and spoil

Qal — Alluvium

Qd — Deweyville Formation

Qbb, Qb, Qb — Beaumont Formation

Ql — Lissie Formation

SCALE 1:250,000

1 0 1 2 3 4 5 MILES

Project Location and Approximate 2.5-Mile Area of Review

N

Source: Fisher, 1982

FIGURE V-30

GEOLOGIC ATLAS OF PROJECT LOCATION

PREPARED FOR

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PASADENA, TEXAS

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10 mi

0 km 20 40 60 80 100 120

N

1956 Event (Magnitude of 3.8)

1925 Event (No reported magnitude or intensity)

ExxonMobil Facility Location

Source: USGS, 2024

FIGURE V-31

SEISMICITY WITHIN 80 KM OF EXXONMOBIL FACILITY

PREPARED FOR

EXXON MOBIL CORPORATION PASADENA, TEXAS

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TERRA DYNAMICS INC

Drawing No.: Figure V-31
Date: 12/14/2023
Job No.: 23-141

Drawn By: HKD
Designed By: SKW
Checked By: TDM

Engineering Seal

Signature by Texas Professional Engineer

I, Bryan K. Bell, the undersigned state: As an employee of Terra Dynamics Incorporated that I am authorized to prepare this document (***VI. Injection Well Engineering Report***) and that this document (***VI. Injection Well Engineering Report***) was prepared under my supervision and direction. All facts stated herein are true, correct and complete to the best of my knowledge. The specifications and recommendations attested to in this document (***VI. Injection Well Engineering Report***) were prepared in accordance with generally and currently accepted engineering principles and practices. The engineering drawings, specifications, and other related documents referenced herein are subject to revision based on workovers of the WDW-397 and WDW-398 injection wells.

2/28/2024

Signature Date

Registered Professional Engineer
#120310, State of Texas
Terra Dynamics Incorporated
Texas Registered Engineering Firm
F-3501

Document pages VI-1 to VI-44 and Table VI-1 are covered by the seal.

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VI. INJECTION WELL ENGINEERING REPORT

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VI. INJECTION WELL ENGINEERING REPORT

Exxon Mobil Corporation (ExxonMobil) currently operates two Class I injection wells at their Pasadena facility: WDW-397 and WDW-398. The WDW-397 and WDW-398 injection wells (the subjects of this permit renewal application) are constructed in accordance with provisions and specifications set forth in 30 TAC §331.62. ExxonMobil's compliance with existing regulatory requirements, and thorough logging, sampling and annual testing of WDW-397 and WDW-398 ensures that the wells' construction continues to prevent the migration of injected fluids into or between underground sources of drinking water (USDW).

VI.A Proposed New Well Construction and Completion Summary

This application is offered for a permit renewal for two existing injection wells, WDW-397 and WDW-398. No new injection wells are requested in this permit renewal application.

VI.B Existing Injection Wells

The following sections provide construction data related to this permit renewal application for WDW-397, which was constructed in 2006 and has been in operation since 2008; and WDW-398, which was constructed in 2009 and has been in operation since 2011.

VI.B.1 Engineering Schematics of Wells

Figures VI-1 and VI-2 are schematics illustrating the current construction details of WDW-397 and WDW-398, respectively. The diagrams include information on type, size, weight, grade and setting depths for tubings, casings, and the packers. All depths shown on the WDW-397 schematic are referenced to kelly bushing (KB) elevation, which is 22 feet above ground level. All depths shown on the WDW-398 schematic are referenced to KB elevation, which is 25 feet above ground level. Figures VI-3 and VI-4 are wellhead schematic drawings for WDW-397 and WDW-398, respectively.

VI.B.2 Well History

WDW-397

ExxonMobil constructed and tested the well at its facility located in Pasadena, Texas between December 18, 2005 (conductor installation date) and June 21, 2006 (completion of mechanical integrity and injectivity testing). The well was drilled to a depth of 7,238 feet below ground level (GL), or 7,260 feet KB, and was completed as an open hole screen and gravel pack completion within the Frio Formation. All depths in the following discussion for WDW-397 are referenced

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relative to log-measured KB elevation (22 feet above GL), and are reported to the nearest foot, unless otherwise specified and are approximately 10 feet shallower than pipe measurements.

Surface and Longstring Casing

Three casing strings were used to construct the well. A 20-inch outside diameter (od) conductor casing was driven to 158 feet GL (180 feet KB) in advance of rig mobilization. A 13 3/8-inch od surface casing was set at 3,366 feet in a 17 ½-inch borehole. The surface casing was cemented with a lead slurry of 2,031 sacks of Modified Light Standard cement with 3 percent salt, 0.25 percent HR-7 and ¼ pounds per sack of Phenoseal from approximately 2,766 feet to surface and tail slurry of 360 sacks of Standard cement with 0.1 percent HR-5 from approximately 3,366 to 2,766 feet.

After setting and cementing the surface casing, a 12 ¼-inch borehole was advanced to 6,634 feet. The 9 ⅝-inch od longstring casing was set at 6,634 feet. The 9 ⅝-inch longstring casing was cemented as follows: **First Stage:** 59 barrels EPSEAL synthetic cement from approximately 6,634 to 6,199 feet. **Second Stage:** Lead slurry: 495 sacks of Modified Light Premium with 3 percent salt, 0.30 percent HR-7 and ¼ pounds per sack of Phenoseal from approximately 3,002 feet to surface**.** Intermediate slurry: 2,050 sacks of 50/50 Premium Pozmix with 2 percent Gel, 0.4 percent Halad 334, 0.1 percent HR-5 and ¼ pounds per sack of Phenoseal from approximately 5,699 to 3,002 feet. Tail slurry: 330 sacks of Premium cement with 0.4 percent Halad 334 and 0.15 percent HR-5 from approximately 6,199 to 5,699 feet.

Completion Interval and Screen and Gravel Pack

A brine-based carbonate polymer drilling fluid was used to drill out the 9 ⅝-inch float shoe and the 8 ½-inch completion interval pilot borehole from 6,634 to 7,260 feet. The hole was cemented from 7,260 to 7,140 feet to serve as a base for the screen assembly, and it was underreamed to 16 inches. Afterwards, the 5 ½-inch Duplex 2507 screen assembly was run and gravel packed. The screen and gravel pack assembly was run into the well to bottom at 7,140 feet (top of fill) with the top of the polished nipple initially located at 6,449 feet. The depth to screen and blank intervals are shown in Figure VI-1.

After the screen had been located across the desired interval, sand control equipment was rigged up to gravel pack the screen assembly in place. After establishing circulation rates, the screen assembly was water packed with 67,250 pounds of 12-20 mesh sand. Gravel pack logging indicated a continuous pack across the logged section of the screen assembly from 7,136 to 6,514 feet. During completion operations, the gravel pack was topped off with 1,400 pounds of 12-20

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mesh sand. The post-topoff gravel pack density log indicated the top of sand to be at six feet below the polished nipple-to-blank connection.

Completion Interval Stimulation

The screened interval in WDW-397 was treated to "clean up" potential residual polymers and solids from the wellbore and to enhance the injectivity of the well. The first stage of the treatment consisted of a 3,000 gallon soak of open hole gravel pack interval from 7,136 to 6,640 feet with Schlumberger's SP Breaker containing 2,880 gallons of fresh water, 30 gallons of J503 (intermediate temperature enzyme breaker), 90 gallons of L064 (tetramethylammonium chloride) and 750 pounds sodium persulfate. After emplacement, the solution was allowed to soak across the open hole gravel pack interval for approximately 16 hours to break down any potential residual polymer wall cake remaining from the drilling fluid.

The second stage of the treatment consisted of a 15,000 gallon general matrix stimulation of 7 ½ percent iron sequestered, inhibited hydrochloric acid (FeHCl) containing 150 gallons of corrosion inhibitor, 30 gallons of intermediate temperature enzyme breaker, 300 pounds of iron stabilizer, 90 gallons of clay stabilizer, 750 pounds of potassium chloride (KCl) and 30 gallons of non-emulsifying agent. The acidizing chemicals were pumped down 1 ¼-inch coiled tubing while washing across the screened interval.

After retraction of the coiled tubing from the well, a total of 60,000 gallons of 3 percent KCl water containing 4 percent Clay Stabilizer, 2 gallons/1,000 gallons of scale inhibitor and 2 gallons/1,000 gallons water wetting agent were pumped at 92 gallons per minute (gpm).

Packer and Injection Tubing

A 9 ⅝-inch by 6 ⅝-inch GPS Model "12," Duplex 2507 disposal packer with Duplex 2507 integral polished bore profile sub and overshot was run on the 2 ⅞-inch workstring and landed over the 5 ½-inch od screen assembly polished nipple. The packer was set in the 9 ⅝-inch casing from 6,437 to 6,443 feet with the polished bore profile sub and overshot located from 6,443 to 6,453 feet. The well was pre-displaced with 420 barrels of the inhibited 9.0 lb/gal low-calcium/low-magnesium (LCM) brine system in advance of running the fiberglass injection tubing. A total of 217 full joints, an 11.75-foot pup joint, an 11.25-foot pup joint and one 3.10-foot double pin pup joint (top) of 6 ⅝-inch fiberglass tubing were run in addition to the 6 ⅝-inch by 9 ⅝-inch packer seal assembly and pre-tested 3.90-foot fiberglass pup joint made up to the seal assembly. A 7-inch od, 26 lb/ft, Duplex 2507 landing joint with Duplex 2507 crossover sub was then made up to the double pin pup joint on the top joint of fiberglass tubing. The seal assembly was latched into the packer at

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6,437 feet and the slips set against the Duplex 2507 landing joint in the wellhead with approximately 14,000 pounds tension (approximately 3.5 feet of stretch) over buoyed string weight applied to the injection tubing. The 9 ⅝-inch by 6 ⅝-inch annulus was then topped off with approximately 15 barrels of inhibited 9.0 lb/gal brine with Tetra corrosion inhibitor, oxygen scavenger and biocide. The Texas Commission on Environmental Quality (TCEQ) approved the well construction and completion in accordance with 30 TAC §§331.45 and 331.65(a)(4) on December 4, 2006 (TDI, 2006).

Casing Leak Repair

On January 10, 2018, an annulus pressure test (APT) was run on WDW-397. The APT was part of the annual mechanical integrity test (MIT) required by the TCEQ and United States Environmental Protection Agency (USEPA). The APT on WDW-397 began at 1,626 psi and the test pressure fell to 1,510 psi over a period of 30 minutes, for a loss of 7.2 percent. During the APT, the injection tubing pressure was approximately 30 pounds per square inch gauge (psig). The annulus test pressure loss suggested a mechanical failure of the annulus system.

Testing was performed on WDW-397 between February 19 through February 22, 2018, to determine the source and possible location of the annulus leak. The results of the pressure test indicated the injection tubing had mechanical integrity, but the annulus had an apparent leak in the casing and/or the packer. A LeakFinder log indicated there was a leak near the transition from Alloy SM2535-110 to L-80 carbon steel casing at the galvanic corrosion protection joint.

From September 13 through October 22, 2018, workover operations were performed in WDW-397 to repair the casing leak. WDW-397 was disassembled, the 6 5/8-inch injection tubing was retrieved, and the injection packer was released and retrieved. A straddle packer assembly was set from 6,181 to 6,315 feet. It consisted of two Delta P 9 5/8-inch by 7-inch packers connected by 7-inch, 26 lb/ft, LTC carbon steel (CS) casing made up to the upper packer and tagged into a seal receptacle in the lower packer. The well was reassembled and has been in operation since. Details of the workover activities were described in detail in the report *2018 Workover And Mechanical Integrity Testing of WDW-397* (TDI, 2018).

Acid Stimulation

WDW-397 was stimulated in September 2019 to improve injection efficiency. The total volume of treatment fluids pumped was 101,361 gallons. The treatment fluids included 15 percent hydrochloric (HCl) acid, a hydrofluoric acid solution (sandstone acid), clay stabilizers (Clayfix 5) and a post-acid job wellbore flush. The pre-acid job efficiency was 200 gpm at 500 psi. After

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performing the treatment, injection efficiency improved to 375 gpm at 270 psi. Details of the stimulation activities were described in the report *2019 Annual Injection Zone Report WDW-397 and WDW-398* (TDI, 2020).

WDW-398

ExxonMobil constructed and tested the well at its facility located in Pasadena, Texas between June 14, 2009 (spud date) and October 1, 2009 (completion of mechanical integrity and injectivity testing). The well was drilled to a depth of 7,200 feet GL, or 7,225 feet KB (accounting for the 25-foot elevation difference between GL and drill rig KB), and was completed as an openhole screen and gravel pack completion within the Frio Formation. All depths in the following discussion for WDW-398 are referenced relative to log-measured KB elevation (25 feet above GL).

Surface and Longstring Casing

Three casing strings were required to construct the well. A 20-inch od conductor casing was driven to 95 feet KB in advance of rig mobilization. A 13 3/8-inch od surface casing was set at 3,272 feet in a 17 ½-inch borehole. Surface casing was cemented with a lead slurry of 2,145 sacks of EconoCem cement with 3 percent salt, 0.6 percent HR-7 and ¼ pounds per sack of PhenoSeal calculated to cover the interval from approximately 2,770 feet to surface, and a tail slurry of 555 sacks of HalCem cement from approximately 3,372 to 2,770 feet. The surface casing/borehole cement was topped off to surface with 100 sacks of Standard cement.

After setting and cementing the surface casing, a 12 ¼-inch borehole was advanced to 6,826 feet. The 9 ⅝-inch od longstring casing was set at 6,762 feet. The 9 ⅝-inch longstring casing was cemented as follows: **First Stage:** 50 barrels of EPSEAL synthetic cement from approximately 6,760 to 6,540 feet. **Second Stage:** Lead slurry of 1,700 sacks of EconoCem with 0.4 percent Halad 334, 0.1 percent HR-7, 0.15 percent WG-17 and ¼ pounds per sack of PhenoSeal from approximately 6,040 feet to surface. Tail slurry of 385 sacks of HalCem cement with 0.4 percent Halad 334 and 0.3 percent HR-800 from approximately 6,540 to 6,040 feet.

Completion Interval and Screen and Gravel Pack

After setting and cementing of the 9 ⅝-inch casing, a brine-based 10.0 pound per gallon drilling fluid was used to drill out the 9 ⅝-inch float shoe from 6,760 to 7,225 feet using an 8 ½-inch bit. After the 8 ½-inch borehole had been drilled to a total depth of 7,225 feet, open hole wireline logging was conducted to gather lithologic information. After the 8 ½-inch hole wireline logging program had been completed, the lower portion of the borehole was plugged back with a densified

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cement plug from 7,216 to 7,165 feet log measurement to serve as a base for the screen assembly. After the cement plug was set, the hole was circulated to displace the previous mud. With the 8 ½-inch hole cleaned out to the plug back depth of 7,165 feet, a series of rock-type underreamers (RTU) were used to open the 8 ½-inch pilot hole to 16 inches in preparation for screen running and gravel packing operations. A caliper log was then run to determine the volume of sand necessary to gravel pack the screen assembly. The 5 ½-inch G3-110 corrosion-resistant alloy (CRA) wire-wrapped screen assembly was run and gravel packed. The screen and gravel pack assembly was run into the well to bottom at 7,165 feet with the top of the polished nipple initially located at 6,613 feet. The depth to the screen and blank intervals are shown in Figure VI-2.

The screen assembly was gravel packed with 41,400 pounds of 12-20 mesh sand. Gravel pack logging indicated a continuous pack across the logged section of the screen assembly from 7,084 to 6,794 feet. During completion operations, the gravel pack was topped off with 6,650 pounds of 12-20 mesh sand. The post-topoff gravel pack density log indicated the top of sand to be at 55 feet below the polished nipple-to-blank connection.

Completion Interval Stimulation

The screened interval in WDW-398 was treated to "clean up" potential residual polymers and solids from the wellbore and to enhance the injectivity of the well. The treatment was accomplished using coiled tubing to emplace the treating chemicals in two stages. The coiled tubing was run into the well and sand fill inside the screen assembly was washed down to 7,150 feet. The first stage of the treatment consisted of circulating 500 standard cubic feet per minute (scf/min) nitrogen and ½ bbl/min of Halliburton's SP (sodium persulfate) breaker containing 3 percent KCl water, 2 gallons/1,000 gallons ATMP scale inhibitor, 2 gallons/1,000 gallons water wetting surfactant, and 4 percent Clay Sta XP. This was followed by pumping two 3 bbl gel pills and additional 3 percent KCl water. Once the recovered fluids were clean with little formation sand, 3,000 additional gallons of SP breaker were washed across the screened interval from 7,150 to 6,760 feet. The pumped fluids were allowed to soak across the open hole gravel pack interval for approximately 16 hours to break down any potential residual polymer wallcake remaining from the drill-in fluid.

The second stage of the treatment consisted of a 7,500-gallon general matrix stimulation of 7 ½ percent FeHCl and a 5,000-gallon stimulation of 7 ½ percent iron sequestered, inhibited FeHCl plus 1 ½ percent hydrofluoric acid (HF). The acidizing chemicals were pumped down coiled tubing while washing across the screened interval from 7,165 to 6,700 feet at rates up to one barrel per minute (bpm) and displaced with 3 percent KCl water pumped at rates up to one bpm with no

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appreciable surface pressure indicated as measured on the 2 ⅞-inch by 1 ½-inch coiled tubing annulus.

After completely displacing the coiled tubing of treating acid, the coiled tubing was lowered to the bottom of the screen at 7,165 feet while pumping 3 percent KCl water to flush the interval clear of any residual treating chemicals. Additional 3 percent KCl was pumped down the 2 ⅞-inch by 1 ½-inch coiled tubing annulus while retracting the coiled tubing from the well. After retraction of the coiled tubing from the well, Halliburton continued pumping a total of 60,000 gallons of 3 percent KCl water down the 2 ⅞-inch work string to flush this interval clear of any residual treating chemicals.

Packer and Injection Tubing

The 9 ⅝-inch by 6 ⅝-inch Delta P Model 12, Duplex 2507 disposal packer with Duplex 2507 integral polished bore profile sub (5.0-inch ID) and overshot was run on the 2 ⅞-inch workstring and landed over the 5 ½-inch od screen assembly polished hook-up nipple. The packer was set in the 9 ⅝-inch Alloy SM2535 casing from 6,600 to 6,605 feet with the polished bore profile sub and overshot located from 6,605 to 6,615 feet. The packer was set by applying hydraulic pressure against a running tool run with the packer. After the packer had been set, a preliminary pressure test was applied to the 2 ⅞-inch work string by 9 ⅝-inch casing annulus above the packer to verify that the packer elements had properly sealed. The 9 ⅝-inch by 2 ⅞-inch annulus was topped off with 3 percent KCl water and the annulus was pressured up to approximately 1,000 psi. The preliminary packer/casing pressure test was conducted for 30 minutes with a final pressure drop of less than five psi.

After completion of the preliminary packer/casing pressure test, the running tool was released from the packer and pulled out of the hole. The 6 ⅝-inch Delta P Model 12, Duplex 2507 latching seal assembly and pre-tested 6 ⅝-inch FPI Red Box 2000 fiberglass pup joint was run on the first full joint of 6 ⅝-inch FPI Red Box 2000 fiberglass tubing. Each tubing connection was made up using a Torque Right power tong unit and torqued to approximately 600 lb-ft, per specifications of FPI for Teflon tape wrapped pin connections and the on-site FPI representative. Each connection was externally pressure tested for one minute by Gatorhawk to approximately 1,750 psi to check for leaks. A total of 223 full joints, a 6.71-foot pup joint, a 3.39-foot pup joint and one 2.03-foot combination collar (top) of 6 ⅝-inch fiberglass tubing were run in addition to the pre-tested 1.90-foot 6 ⅝-inch by 9 ⅝-inch packer seal assembly. A 7-inch od, 29 lb/ft, Duplex 2507 landing joint with Duplex 2507 crossover sub was then made up to the top joint of fiberglass tubing. Prior to latching the seal assembly to the packer, the 9 ⅝-inch casing by 6 ⅝-inch injection tubing annulus

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was displaced with 210 barrels of inhibited 3 percent KCl containing 10 gallons of Tetra HIB-Zinc Chloride corrosion inhibitor, 10 gallons of Oxban HB oxygen scavenger and 5 gallons of Spec-Cide 50 biocide. The seal assembly was latched into the packer at 6,600 feet and the slips were set against the Duplex 2507 landing joint in the wellhead. The 9 ⅝-inch by 6 ⅝-inch annulus was topped off with 100 gallons diesel and a preliminary APT was performed prior to BOP removal.

A successful preliminary annulus pressure test was conducted on the 9 ⅝-inch casing by 6 ⅝-inch injection tubing annulus on September 22, 2009 after allowing approximately 2.5 hours of stabilization following the annulus top-off operation. The TCEQ approved the well construction and completion in accordance with 30 TAC §§331.45 and 331.65(a)(4) on August 13, 2010 (TDI, 2009).

Acid Stimulation

WDW-398 was stimulated in September 2019 to improve injection efficiency. The total volume of pumped treatment fluids was 98,792 gallons. The pumped treatment fluids included HCl acid, sandstone acid, Clayfix 5 and a post-acid job wellbore flush. The pre-acid job efficiency was 300 gpm at 775 psi. After performing the treatment, injection efficiency improved to 600 gpm at 200 psi. Details of the stimulation activities were described in the report *2019 Annual Injection Zone Report WDW-397 and WDW-398* (TDI, 2020).

VI.B.3 Corrosion Monitoring, Annual Testing, and Condition of Tubulars

ExxonMobil has a corrosion monitoring plan in place for the WDW-397 and WDW-398 injection wells. ExxonMobil currently conducts corrosion monitoring using coupons in the waste stream to determine corrosion rates for materials of construction which are exposed to the waste fluids. The corrosion coupons include Duplex 2507 CRA, Alloy 825, SM2535 CRA, blue fiberglass, 304 and 316 stainless steels, and Alloy 625 materials. The corrosion coupons are continuously exposed to the ExxonMobil deep well injectate. ExxonMobil conducts corrosion monitoring according the Underground Injection Control (UIC) guidelines and the results are retained onsite for review during TCEQ audits.

The corrosion coupons are continuously exposed to the waste stream, except when the wells are taken out of service. The corrosion coupons are removed and examined quarterly to determine corrosion rates for the coupons, and new coupons are reinstalled in the corrosion loop.

Based on annual corrosion monitoring data from 2015 to 2023 (reported in Annual Injection Zone Reports [AIZR]), assessments of the present condition of the tubulars were performed. The

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average yearly rate of corrosion in mils/year (mpy) from 2015 to 2023 is summarized below for the seven coupons.

WDW-397 & WDW-398 Average Yearly Corrosion Rates for Coupons (mil/year)							
	Duplex 2507 CRA	Alloy 825	SM2535 CRA	Blue Fiberglass	304 Stainless Steel	316 Stainless Steel	Alloy 625
2015 – 2023	0.043	0.052	0.047	0.371	0.055	0.045	0.038

Given the results of the annual annulus pressure tests and the results of the recent corrosion monitoring data, it can be concluded that WDW-397 and WDW-398 are mechanically sound and have not recently been affected by any unusual or excessive corrosion. It is anticipated that the current injection wells tubulars should be able to withstand corrosive effects of the injected waste streams and subsurface environment for the remainder of the current and ten-year permit renewal period, assuming that the future corrosion rates remain relatively similar to the historical corrosion rates observed to the present.

Casing Strength Calculations

The following calculations are made using API Bulletin 5C3 (American Petroleum Institute, 1994) to determine the casing burst, collapse, joint and pipe body strengths using the estimated wall thickness in 2034 (ten years of future operation).

$$Burst\ Strength = 0.875\left[\frac{2Y_p t}{D}\right]$$

Collapse Modes Based on D/t Ratio				
Casing Grade	**"Yield"**	**"Plastic"**	**"Transition"**	**"Elastic"**
Q-125	0 – 12.11	12.11 – 19.63	19.63 – 24.46	> 24.46
L-80 / N-80	0 – 13.38	13.38 – 22.47	22.47 – 31.02	> 31.02
SM2535-110	0 – 12.44	12.44 – 20.41	20.41 – 26.22	> 26.22

$$Collapse\ Strength\ (\text{"Plastic"}) = Y_p\left[\frac{A}{D/t} - B\right] - C$$

$$Collapse\ Strength\ (\text{"Transition"}) = Y_p\left[\frac{F}{D/t} - G\right]$$

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$$Pipe\ Body\ Yield = \frac{\pi}{4}(D^2 - d^2)Y_p$$

where

$$A = 2.8762 + 0.10679x10^{-5}Y_p + 0.21301x10^{-10}{Y_p}^2 - 0.53132x10^{-16}{Y_p}^3$$

$$B = 0.026233 + 0.50609x10^{-6}Y_p$$

$$C = -465.93 + 0.030867Y_p - 0.10483x10^{-7}{Y_p}^2 + 0.36989x10^{-13}{Y_p}^3$$

$$F = \frac{46.95x10^6\left[\frac{3B/A}{2+B/A}\right]^3}{Y_p\left[\frac{3B/A}{2+B/A} - B/A\right]\left[1 - \frac{3B/A}{2+B/A}\right]^2}$$

$$G = FB/A$$

$$D = outer\ diameter\ of\ casing\ (inches)$$

$$d = inner\ diameter\ of\ casing\ (inches)$$

$$t = wall\ thickness\ (inches)$$

$$Y_p = minimum\ yield\ strength\ of\ casing$$

The following assessment is made for the tubing and the longstring casing in WDW-397 and WDW-398. This assessment uses the observed general (average) corrosion values, and does not take into account the effects of localized (crevice or pitting) corrosion that can cause higher levels of corrosion in a smaller area, potentially resulting in accelerated loss of integrity. No corrosive attack is expected to occur in the packer mandrel or landing joint given the results of the historical corrosion rates observed from 2015 through 2023.

WDW-397 Casing and Tubing Burst, Collapse and Tensile Considerations

The 9 5/8-inch casing in WDW-397 consists of a combination of carbon steel and SM2535-110 Corrosion Resistant Alloy (CRA). The 9 5/8-inch, 47 lb/ft, L-80, LTC carbon steel casing is over the interval from surface to 6,264 feet, and the 9 5/8-inch SM2535-110 CRA, VAM FJL casing is at 6,264 feet to 6,644 feet.

In WDW-397, the 5-inch injection tubing is constructed of Alloy G-3, VAM ACE and SM2550 material, with a Duplex 2507 CRA latching seal assembly and landing joint crossover. The GPS injection packer is constructed of carbon steel with Duplex 2507 CRA flow wetted parts. In 2018, the 5-inch injection tubing in WDW-397 was replaced and a straddle packer system was added.

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Remaining Longstring Casing Wall Thickness

Nominal wall thickness of new API 9 5/8-inch, 47 lb/ft, L-80 carbon steel casing is 0.472 inches. The 9 5/8-inch, 47 lb/ft, SM2535-110 CRA casing has the same wall thickness (0.472 inches) as the carbon steel casing. Corrosion monitoring has been conducted by ExxonMobil over the well's lifetime but does not include carbon steel since no portion of the carbon steel casing comes in contact with the injected waste stream. Furthermore, the annulus is filled with inhibited brine packer fluid which was designed to minimize corrosion on the inside surface of the casing and the outside surface of the CRA injection tubing.

A casing inspection log was completed during the 2018 workover operations in WDW-397 (TDI, 2018). The minimum wall thickness noted on the log was 0.385 inches. The same joint had a wall thickness of 0.393 inches when the well was constructed (TDI, 2006). The loss of 0.008 inches in 12 years of exposure is a rate of 0.00067 inches per year (ipy). Assuming 10 future years of operation (approximately 28 years of exposure), by 2034, the total loss in wall thickness (assuming a 0.00067 ipy corrosion rate) of the 9 5/8-inch, 47 lb/ft, L-80 LTC casing will be 0.019 inches (28 years x 0.00067 inches/year) for a remaining wall thickness of 0.374 inches.

Assuming 10 future years of operation (approximately 28 years of exposure), by 2034, the total loss in wall thickness (assuming a 0.00047 ipy corrosion rate) of the 9 5/8-inch, 47 lb/ft, SM2535-110 CRA casing will be 0.0132 inches (28 years x 0.00047 inches/year) for a remaining wall thickness of 0.459 inches.

Remaining Injection Tubing Wall Thickness

Nominal wall thickness of new API 5-inch, 18 lb/ft, SM2550 and Alloy G-3 tubing is 0.362 inches. The tubing was installed in 2018. Assuming 10 more years of operation for the permit renewal period (total of 16 years of exposure), by 2034, the total loss in wall thickness (assuming a 0.000052 ipy corrosion rate) of the 5-inch, 18 lb/ft injection tubing will be 0.00083 inches (16 years exposure x 0.000052 ipy) for a remaining wall thickness of 0.361 inches. The corrosion rate of the materials is assumed to be similar to the Alloy 828, since they are all austenitic nickel based alloys within the same group (Group 4, ISO 13680).

9 5/8-inch, 47 lb/ft, L-80 LTC Longstring Casing

As stated above, the estimated wall thickness (t) in 2034 is 0.374 inches. The outer diameter (D) is 9.625 inches and the inner diameter (d) is 8.877 inches. The minimum yield strength (Y_p) for L-80 casing is 80,000 psi. The D/t ratio is 25.74, therefore the casing would fail under the "transition" collapse mode.

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$$Burst\ Strength = 0.875\left[\frac{2(80{,}000\ psi)(0.374\ in)}{9.625\ in}\right] = 5{,}440\ psi$$

$$A = 2.8762 + 0.10679x10^{-5}(80{,}000\ psi) + 0.21301x10^{-10}(80{,}000\ psi)^2 - 0.53132x10^{-16}(80{,}000\ psi)^3 = 3.071$$

$$B = 0.026233 + 0.50609x10^{-6}(80{,}000\ psi) = 0.067$$

$$B/A = 0.0217$$

$$F = \frac{46.95x10^6\left[\frac{3(0.0217)}{2+0.0217}\right]^3}{(80{,}000\ psi)\left[\frac{3(0.0217)}{2+0.0217} - 0.0217\right]\left[1 - \frac{3(0.0217)}{2+(0.0217)}\right]^2} = 1.998$$

$$G = \frac{FB}{A} = 1.998(0.0217) = 0.0434$$

$$Collapse\ Strength\ (\text{"Transition"}) = 80{,}000\ psi\left[\frac{1.998}{25.74} - 0.0434\right] = 2{,}737\ psi$$

Pipe body yield and joint strength calculations are unnecessary as the casing is cemented in place, therefore the axial loads are supported by the cement and formation closure.

9 5/8-inch, 47 lb/ft, SM2535-110 CRA Longstring Casing

As stated above, the estimated wall thickness (t) in 2034 is 0.459 inches. The outer diameter (D) is 9.625 inches and the inner diameter (d) is 8.707 inches. The minimum yield strength (Y_p) for SM2535-110 casing is 110,000 psi. The D/t ratio is 20.97, therefore the casing would fail under the "transition" collapse mode.

$$Burst\ Strength = 0.875\left[\frac{2(110{,}000\ psi)(0.459\ in)}{9.625\ in}\right] = 9{,}180\ psi$$

$$A = 2.8762 + 0.10679x10^{-5}(110{,}000\ psi) + 0.21301x10^{-10}(110{,}000\ psi)^2 - 0.53132x10^{-16}(110{,}000\ psi)^3 = 3.181$$

$$B = 0.026233 + 0.50609x10^{-6}(110{,}000\ psi) = 0.082$$

$$B/A = 0.0258$$

$$F = \frac{46.95x10^6\left[\frac{3(0.0258)}{2+0.0258}\right]^3}{(110{,}000\ psi)\left[\frac{3(0.0258)}{2+0.0258} - 0.0258\right]\left[1 - \frac{3(0.0258)}{2+(0.0258)}\right]^2} = 2.066$$

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$$G = \frac{FB}{A} = 2.066(0.0258) = 0.0532$$

$$Collapse\ Strength\ (\text{"Transition"}) = 110{,}000\ psi \left[\frac{2.066}{20.97} - 0.0532\right] = 4{,}985\ psi$$

Pipe body yield and joint strength calculations are unnecessary as the casing is cemented in place, therefore the axial loads are supported by the cement and formation closure.

5-inch, 18 lb/ft, Alloy G-3 and SM2550 Injection Tubing

As stated above, the estimated wall thickness (t) in 2034 is 0.361 inches. The outer diameter (D) is 5.000 inches and inner diameter (d) is 4.278 inches. The minimum yield strength (Y_p) for Alloy G-3 and SM2550 tubing is 110,000 psi. The D/t ratio is 13.85, therefore casing would fail under the "plastic" collapse mode.

$$Burst\ Strength = 0.875\left[\frac{2(110{,}000\ psi)(0.361\ in)}{5.000\ in}\right] = 13{,}899\ psi$$

$$A = 2.8762 + 0.10679x10^{-5}(110{,}000\ psi) + 0.21301x10^{-10}(110{,}000\ psi)^2 - 0.53132x10^{-16}(110{,}000\ psi)^3 = 3.181$$

$$B = 0.026233 + 0.50609x10^{-6}(110{,}000\ psi) = 0.082$$

$$C = -465.93 + 0.030867(110{,}000\ psi) - 0.10483x10^{-7}(110{,}000\ psi)^2 + 0.36989x10^{-13}(110{,}000\ psi)^3 = 2{,}803$$

$$Collapse\ Strength\ (\text{"Plastic"}) = 110{,}000\ psi\left[\frac{3.181}{13.85} - 0.082\right] - 2{,}803 = 13{,}441\ psi$$

$$Pipe\ Body\ Yield = \frac{\pi}{4}((5.000\ in)^2 - (4.278\ in)^2)110{,}000\ psi = 578{,}728\ lb$$

Joint strength is calculated by using the ratio of the pipe body yield for the 5-inch, 18 lb/ft, Alloy G-3 and SM2550, 110ksi, VAM ACE tubing estimated in 2034 to new 5-inch, 18 lb/ft, Alloy G-3 and SM2550, 110ksi, VAM ACE tubing and multiplying the joint strength rating for new 5-inch, 18 lb/ft, Alloy G-3 and SM2550, 110ksi, VAM ACE tubing. Pipe body yield strength for new 5-inch, 18 lb/ft, Alloy G-3 and SM2550, 110ksi, VAM ACE tubing is 580,000 lb and joint strength for new 5-inch, 18 lb/ft, Alloy G-3 and SM2550, 110ksi, VAM ACE tubing is 401,000 lb (Vallourec, 2020).

$$Joint\ Strength = \frac{578{,}728\ lb}{580{,}000\ lb}401{,}000\ lb = 400{,}120\ lb$$

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Operational Pressures and Loads

The burst pressure used in casing design is the differential pressure of the internal fluid forces acting on the casing less the external fluid forces. For worst-case casing differentials under operation, it is assumed that the internal pressure acting on the casing is the sum of the hydrostatic pressure due to the casing being full of inhibited 9.0 lb/gal annulus fluid from the depth of the packer to surface, plus an applied 1,600 psig surface pressure required by permit operating parameters for the annulus pressure test. For the external pressure, it is assumed that the casing is cemented, but that the cement sheath contains a continuous mud channel from the depth of the injection packer to the top of the casing. For casing burst calculations, it is assumed that the mud used during drilling prior to cementing the longstring casing was 9.5 lb/gal. This is a conservative assumption because it disregards external pressure on the casing due to lithostatic stress and assumes the presence of an assumed 9.5 lb/gal mud-filled channel behind the pipe rather than continuous cement from surface to the packer. Both factors would increase the presence of external back-up pressure on the casing, thus decreasing the maximum potential differential burst pressure across the 9 5/8-inch longstring casing above the packer.

For tubing, it is assumed that the internal pressure acting on the tubing is the hydrostatic pressure resulting from the tubing being full to surface with the heaviest permitted wastewater (1.05 sp.gr. = 8.75 lb/gal) and the well is operated at the maximum permitted surface injection pressure (1,500 psig). For the external pressure, it is assumed that the annulus is full from the depth of the packer to surface with inhibited 9.0 lb/gal brine, with no annulus pressure (assuming the annulus monitoring system experiences a temporary loss of pressure). This is a conservative assumption because it disregards any additional pressure due to positive pressure on the annulus at the surface. This factor would increase the presence of external burst-backup pressure on the tubing, thus decreasing the maximum potential differential pressure across the 5-inch injection string. For purposes of the tubing burst calculation, it is assumed that corrosion loss will occur only on the inside of the 5-inch injection string. The annulus is currently filled with inhibited brine (9.0 lb/gal brine containing corrosion inhibitor) to minimize corrosive effects on the exterior of the injection tubing and the interior of the longstring casing.

The collapse pressure used in casing design is the differential of pressure exerted on the outside of the casing to the internal pressure. It is assumed that the external pressure results from the casing being cemented but that the cement sheath contains a continuous mud channel from the depth of the packer to the top of the casing. For the casing collapse calculations, it is assumed that the mud used during drilling before cementing the longstring casing was 9.5 lb/gal. For a worst-case collapse assumption, the greatest external pressure would occur during a well cleanout during

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which nitrogen jetting is utilized to "lift" material out of the well. It is assumed during nitrogen jetting operations, that the internal pressure acting on the casing is a column of fresh water from 3,322 feet to the packer. This depth represents a case in which 50-percent of the well is evacuated from the uppermost open screen to surface. The worst-case casing collapse condition is examined at the packer depth as this depth experiences the largest pressure differential.

For tubing collapse calculations, it is assumed that the internal pressure acting on the tubing is the hydrostatic pressure resulting from the tubing being evacuated to 3,322 feet, a case in which 50-percent of the well is evacuated from the top of the screen to surface during nitrogen jetting operations. For the external pressure, it is the hydrostatic pressure resulting from the annulus being full from the depth of the packer to surface with inhibited 9.0 lb/gal brine and also the regulatory-driven pressure which is imposed for conducting an annulus pressure test (1,600 psig).

Pipe body and joint strength tests only apply to the tubing under operating conditions since the casings have already been cemented which supports the load along their lengths. For tubing pipe body and joint strength yield, the maximum tensile load is normally taken to be the weight of the pipe hanging in air for a worst-case basis and neglects the effect of buoyancy.

The following calculations use worst-case assumptions to determine the maximum pressures and loads for the various casing strings. Of note, the value 0.052 (psi/ft)/(lb/gal) include in the calculations on the following pages is the conversion factor from lb/gal to psi/ft. Also, these calculations assume a maximum requested injection pressure in this permit renewal application to be 1,500 psig.

WDW-397 Longstring Casing

Collapse Worst Case Assumptions: Casing cemented with inclusion of a continuous 9.5 lb/gal mud channel from surface to 6,446 feet (depth to injection packer). During nitrogen jetting activities, the casing is evacuated to 3,322 feet with fresh water (8.33 lb/gal) from 3,322 to 6,446 feet.

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Longstring Casing Collapse Calculations

Depth (ft)	External Pressure (psi)	Internal Pressure (psi)	Differential Pressure (psi)	Calculation
0	0	0	0	9.5 ppg * 0 ft * 0.052 (psi/ft)/(ppg)
3,322	1,641	0	1,641	9.5 ppg * 3,322 ft * 0.052 (psi/ft)/(ppg)
6,264	**3,094**	**1,274**	**1,820**	**(9.5 ppg * 6,264 ft – 8.33 ppg * [6,264 ft – 3,322 ft]) * 0.052 (psi/ft)/(ppg)**
6,446	**3,184**	**1,353**	**1,831**	**(9.5 ppg * 6,446 ft – 8.33 ppg * [6,446 ft – 3,322 ft]) * 0.052 (psi/ft)/(ppg)**

The maximum collapse pressure differential of 1,820 psi occurs at 6,264 feet in the carbon steel casing and 1,831 psi occurs at 6,446 feet in the CRA casing.

Burst Worst Case Assumptions: Casing cemented with inclusion of a continuous 9.5 lb/gal mud channel from surface to 6,446 feet (depth to injection packer). 9 5/8-inch by 5-inch annulus (excluding straddle packer assembly to be conservative) full of 9.0 lb/gal inhibited brine and maintaining 1,600 psig on annulus (100 psi in excess of the maximum surface injection pressure of 1,500 psig) in accordance with TCEQ permit requirements.

Longstring Casing Burst Calculations

Depth (ft)	Internal Pressure (psi)	External Pressure (psi)	Differential Pressure (psi)	Calculation
0	**1,600**	**0**	**1,600**	**1,600 psi + (9.0 ppg - 9.5 ppg) * 0 ft * 0.052 (psi/ft)/(ppg)**
6,264	**4,532**	**3,094**	**1,438**	**1,600 psi + (9.0 ppg - 9.5 ppg) * 6,264 ft * 0.052 (psi/ft)/(ppg)**
6,446	4,617	3,184	1,433	1,600 psi + (9.0 ppg - 9.5 ppg) * 6,446 ft * 0.052 (psi/ft)/(ppg)

The maximum burst pressure differential of 1,600 psi occurs at surface in the carbon steel casing and 1,438 psi occurs at 6,264 feet in the CRA casing.

Joint and Pipe Body Strength: No additional test required as casing presumed to be cemented and supported by cement and formation closure forces.

WDW-397 Injection Tubing

Collapse Worst Case Assumptions: Annulus full to surface with 9.0 lb/gal inhibited brine with 1,600 psi surface pressure (100 psi over maximum surface injection pressure of 1,500 psi). During nitrogen jetting activities, the tubing is evacuated to 3,322 feet with 8.33 lb/gal fresh water.

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Injection Tubing Collapse Calculations

Depth (ft)	External Pressure (psi)	Internal Pressure (psi)	Differential Pressure (psi)	Calculation
0	1,600	0	1,600	1,600 psi + 9.0 ppg * 0 ft * 0.052 (psi/ft)/(ppg)
3,322	3,155	0	3,155	1,600 psi + 9.0 ppg * 3,322 ft * 0.052 (psi/ft)/(ppg)
6,446	**4,617**	**1,353**	**3,264**	**1,600 psi + (9.0 ppg * 6,446 ft – 8.33 ppg * [6,446 ft – 3,322 ft]) * 0.052 (psi/ft)/(ppg)**

The maximum collapse pressure differential of 3,264 psi occurs at 6,446 feet.

Burst Worst Case Assumptions: Annulus full to surface with 9.0 lb/gal inhibited brine and maintaining zero psi on annulus with heaviest permitted waste stream (8.75 lb/gal, 1.05 sp.gr.) while injecting at the maximum surface injection pressure of 1,500 psi. Note that annulus pressure must be maintained at 100 psi above injection pressure, thus this calculation is overly conservative.

Injection Tubing Burst Calculations

Depth (ft)	Internal Pressure (psi)	External Pressure (psi)	Differential Pressure (psi)	Calculation
0	**1,500**	**0**	**1,500**	**1,500 psi + (8.75 ppg * 0 ft – 9.0 ppg * 0 ft) * 0.052 (psi/ft)/(ppg)**
6,446	4,433	3,017	1,416	1,500 psi + (8.75 ppg * 6,446 ft – 9.0 ppg * 6,446 ft) * 0.052 (psi/ft)/(ppg)

The maximum burst pressure differential of 1,500 psi occurs at surface.

For pipe body and joint strength yield, the maximum tensile load is taken to be the weight of the 6,446 feet of pipe hanging in air prior to engaging the packer for a worst-case basis and neglects the effects of buoyancy.

Injection Tubing Tensile Calculations

Depth (ft)	Load (lbf)	Calculation
0	**116,028**	**18.0 lb/ft * 6,446 ft**
6,446	0	18.0 lb/ft * 0 ft

The maximum tensile load of 116,028 lbf occurs at the surface.

WDW-397 Casing and Tubing Safety Factor Calculations

Industry standards for design safety factors for this application are as follows:

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Collapse: 1.0 to 1.125 based on minimum collapse pressures.
Internal Yield (Burst): 1.0 to 1.1 based on minimum yield values.
Tension: 1.8 based on minimum joint strength. 1.5 based on minimum pipe body strength.

The following minimum safety factors are required for each casing string.

Collapse:	1.125
Internal Yield (Burst):	1.1
Tension:	1.8

The safety factors are calculated by dividing the rated strength of the tubular by the maximum pressure differential (for collapse and burst) or tensile loading.

Calculated Safety Factors

Tubular	Collapse Loading	Burst Loading	Tensile Loading (Joint)	Tensile Loading (Pipe Body)
Longstring Casing (Carbon Steel)	1.504	3.400	N/A	N/A
Longstring Casing (CRA)	2.723	6.384	N/A	N/A
Injection Tubing	4.118	9.266	3.448	4.988

This analysis suggests the portion of the longstring casing (above the packer assembly) should be able to withstand the maximum probable burst and collapse pressures to which it may be exposed through the end of the permit renewal period (2034) short of a premature failure resulting from a connection leak or leak resulting from an external corrosion mechanism.

This analysis suggests the injection tubing should be able to withstand the maximum probable burst and collapse pressures and axial loads to which it may be exposed through the end of the permit renewal period (2034) short of a premature failure resulting from a connection leak or mechanical failure.

WDW-398 Casing and Tubing Burst, Collapse and Tensile Considerations

The 9 5/8-inch casing in WDW-398 consists of a combination of Q-125 carbon steel and SM2535-110 CRA. The 9 5/8-inch, 53.5 lb/ft, Q-125 carbon steel casing is over the interval from surface to 6,547 feet, and the 9 5/8-inch, 53.5 lb/ft, SM2535-110 CRA, VAM TOP casing is at 6,547 to 6,760 feet.

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In WDW-398, the 6 5/8-inch injection tubing is constructed of Future Pipe Red Box 2000 fiberglass tubing with Nexus Veil lining; with a Duplex 2507 CRA latching seal assembly and landing joint crossover. The Delta P injection packer is constructed of carbon steel with Duplex 2507 CRA flow wetted parts.

Remaining Longstring Casing Wall Thickness

Nominal wall thickness of new API 9 5/8-inch, 53.5 lb/ft, Q-125 carbon steel casing is 0.545 inches. The 9 5/8-inch, 53.5 lb/ft, SM2535-110 CRA casing has the same wall thickness (0.545 inches) as the carbon steel casing. Corrosion monitoring has been conducted by ExxonMobil over the well's lifetime but does not include carbon steel since no portion of the carbon steel casing comes in contact with the injected waste stream. Furthermore, the annulus is filled with inhibited brine packer fluid which was designed to minimize corrosion on the inside surface of the casing and the outside surface of the fiberglass injection tubing.

WDW-398 has not had a caliper log run on the well since construction. From the baseline caliper log, the minimum wall thickness in the carbon steel was 0.48 inches and the CRA was 0.59 inches (TDI, 2009). Since there is no data available to substantiate a corrosion rate for mild carbon steel in this inhibited environment, the corrosion rate determined from the caliper logs from WDW-397 will be assumed. A corrosion rate of 0.67 mil per year (0.00067 ipy) will be used. Assuming 10 future years of operation (approximately 25 years of exposure), by 2034, the total loss in wall thickness (assuming a 0.00067 ipy corrosion rate) of the 9 5/8-inch, 53.5 lb/ft, Q-125 casing will be 0.017 inches (25 years x 0.00067 inches/year) for a remaining wall thickness of 0.463 inches.

Assuming 10 future years of operation (approximately 25 years of exposure), by 2034, the total loss in wall thickness (assuming a 0.00047 ipy corrosion rate) of the 9 5/8-inch, 53.5 lb/ft, SM2535-110 CRA casing will be 0.0118 inches (25 years x 0.00047 inches/year) for a remaining wall thickness of 0.578 inches.

9 5/8-inch, 53.5 lb/ft, Q-125 Longstring Casing

As stated above, the estimated wall thickness (t) in 2034 is 0.463 inches. The outer diameter (D) is 9.625 inches and the inner diameter (d) is 8.699 inches. The minimum yield strength (Y_p) for Q-125 casing is 125,000 psi. The D/t ratio is 20.788, therefore the casing would fail under the "transition" collapse mode.

$$Burst\ Strength = 0.875\left[\frac{2(125{,}000\ psi)(0.463\ in)}{9.625\ in}\right] = 10{,}523\ psi$$

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$$A = 2.8762 + 0.10679x10^{-5}(125{,}000\ psi) + 0.21301x10^{-10}(125{,}000\ psi)^2 - 0.53132x10^{-16}(125{,}000\ psi)^3 = 3.239$$

$$B = 0.026233 + 0.50609x10^{-6}(125{,}000\ psi) = 0.089$$

$$B/A = 0.0276$$

$$F = \frac{46.95x10^6 \left[\frac{3(0.0276)}{2+0.0276}\right]^3}{(125{,}000\ psi)\left[\frac{3(0.0276)}{2+0.0276} - 0.0276\right]\left[1 - \frac{3(0.0276)}{2+(0.0276)}\right]^2} = 2.106$$

$$G = \frac{FB}{A} = 2.106(0.0276) = 0.0582$$

$$Collapse\ Strength\ (\text{"Transition"}) = 125{,}000\ psi\left[\frac{2.106}{20.79} - 0.0582\right] = 5{,}388\ psi$$

Pipe body yield and joint strength calculations are unnecessary as the casing is cemented in place, therefore the axial loads are supported by the cement and formation closure.

9 5/8-inch, 53.5 lb/ft, SM2535-110 CRA Longstring Casing

As stated above, the estimated wall thickness (t) in 2034 is 0.578 inches. The outer diameter (D) is 9.625 inches and the inner diameter (d) is 8.469 inches. The minimum yield strength (Y_p) for SM2535-110 casing is 110,000 psi. The D/t ratio is 16.65, therefore the casing would fail under the "plastic" collapse mode.

$$Burst\ Strength = 0.875\left[\frac{2(110{,}000\ psi)(0.578\ in)}{9.625\ in}\right] = 11{,}560\ psi$$

$$A = 2.8762 + 0.10679x10^{-5}(110{,}000\ psi) + 0.21301x10^{-10}(110{,}000\ psi)^2 - 0.53132x10^{-16}(110{,}000\ psi)^3 = 3.181$$

$$B = 0.026233 + 0.50609x10^{-6}(110{,}000\ psi) = 0.082$$

$$C = -465.93 + 0.030867(110{,}000\ psi) - 0.10483x10^{-7}(110{,}000\ psi)^2 + 0.36989x10^{-13}(110{,}000\ psi)^3 = 2{,}803$$

$$Collapse\ Strength\ (\text{"Plastic"}) = 110{,}000\ psi\left[\frac{3.181}{16.65} - 0.082\right] - 2803 = 9{,}150\ psi$$

Pipe body yield and joint strength calculations are unnecessary as the casing is cemented in place, therefore the axial loads are supported by the cement and formation closure.

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6 5/8-inch Future Pipe Red Box 2000 Fiberglass Injection Tubing

The fiberglass tubing is lined with Nexus Veil for added corrosion protection. Given the demonstrated mechanical integrity of the tubing (through yearly testing), it is assumed that little to no corrosion has occurred in the tubing. Therefore, the pressure ratings provided by the manufacturer are still considered valid. However, fiberglass tubular manufacturers typically de-rate their product's mechanical performance specifications such that safety factors need not be applied.

$$Burst\ Strength = 2{,}000\ psi$$

$$Collapse\ Strength = 2{,}300\ psi$$

$$Axial\ Tension\ Rating = 80{,}500\ lb$$

<u>Operational Pressures and Loads</u>

The burst pressure used in casing design is the differential pressure of the internal fluid forces acting on the casing less the external fluid forces. For worst-case casing differentials under operation, it is assumed that the internal pressure acting on the casing is the sum of the hydrostatic pressure due to the casing being full of inhibited 9.0 lb/gal annulus fluid from the depth of the packer to surface, plus an applied 1,100 psig surface pressure required by permit operating parameters for the annulus pressure test. For the external pressure, it is assumed that the casing is cemented, but that the cement sheath contains a continuous mud channel from the depth of the injection packer to the top of the casing. For casing burst calculations, it is assumed that the mud used during drilling prior to cementing the longstring casing was 9.5 lb/gal. This is a conservative assumption because it disregards external pressure on the casing due to lithostatic stress and assumes the presence of an assumed 9.5 lb/gal mud-filled channel behind the pipe rather than continuous cement from surface to the packer. Both factors would increase the presence of external back-up pressure on the casing, thus decreasing the maximum potential differential burst pressure across the 9 5/8-inch longstring casing above the packer.

For tubing, it is assumed that the internal pressure acting on the tubing is the hydrostatic pressure resulting from the tubing being full to surface with the heaviest permitted wastewater (1.05 sp.gr. = 8.75 lb/gal) and the well is operated at the maximum permitted surface injection pressure (1,000 psig). For the external pressure, it is assumed that the annulus is full from the depth of the packer to surface with inhibited 9.0 lb/gal brine, with no annulus pressure (assuming the annulus monitoring system experiences a temporary loss of pressure). This is a conservative assumption

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because it disregards any additional pressure due to positive pressure on the annulus at the surface. This factor would increase the presence of external burst-backup pressure on the tubing, thus decreasing the maximum potential differential pressure across the 6 5/8-inch injection string.

The collapse pressure used in casing design is the differential of pressure exerted on the outside of the casing to the internal pressure. It is assumed that the external pressure results from the casing being cemented but that the cement sheath contains a continuous mud channel from the depth of the packer to the top of the casing. For the casing collapse calculations, it is assumed that the mud used during drilling before cementing the longstring casing was 9.5 lb/gal. For a worst-case collapse assumption, the greatest external pressure would occur during a well cleanout during which nitrogen jetting is utilized to "lift" material out of the well. It is assumed during nitrogen jetting operations, that the internal pressure acting on the casing is a column of fresh water from 3,386 feet to the packer. This depth represents a case in which 50 percent of the well is evacuated from the uppermost open screen to surface. The worst-case casing collapse condition is examined at the packer depth as this depth experiences the largest pressure differential.

For tubing collapse calculations, it is assumed that the internal pressure acting on the tubing is the hydrostatic pressure resulting from the tubing being evacuated to 3,386 feet, a case in which 50 percent of the well is evacuated from the top of the screen to surface during nitrogen jetting operations. For the external pressure, it is the hydrostatic pressure resulting from the annulus being full from the depth of the packer to surface with inhibited 9.0 lb/gal brine with engineering controls in place to keep the maximum annulus pressure below 300 psi.

Pipe body and joint strength tests only apply to the tubing under operating conditions since the casings have already been cemented which supports the load along their lengths. For tubing pipe body and joint strength yield, the maximum tensile load is normally taken to be the weight of the pipe hanging in air for a worst-case basis and neglects the effect of buoyancy.

The following calculations use worst-case assumptions to determine the maximum pressures and loads for the various casing strings. Of note, the value 0.052 (psi/ft)/(lb/gal) include in the calculations on the following pages is the conversion factor from lb/gal to psi/ft. Also, these calculations assume a maximum surface injection pressure of 1,000 psig.

WDW-398 Longstring Casing

Collapse Worst Case Assumptions: Casing cemented with inclusion of a continuous 9.5 lb/gal mud channel from surface to 6,600 feet (depth to injection packer). During nitrogen jetting

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activities, the casing is evacuated to 3,386 feet with fresh water (8.33 lb/gal) from 3,386 to 6,600 feet.

Longstring Casing Collapse Calculations

Depth (ft)	External Pressure (psi)	Internal Pressure (psi)	Differential Pressure (psi)	Calculation
0	0	0	0	9.5 ppg * 0 ft * 0.052 (psi/ft)/(ppg)
3,386	1,673	0	1,673	9.5 ppg * 3,386 ft * 0.052 (psi/ft)/(ppg)
6,547	**3,234**	**1,369**	**1,865**	**(9.5 ppg * 6,547 ft – 8.33 ppg * [6,547 ft – 3,386 ft]) * 0.052 (psi/ft)/(ppg)**
6,600	**3,260**	**1,392**	**1,868**	**(9.5 ppg * 6,600 ft – 8.33 ppg * [6,600 ft – 3,386 ft]) * 0.052 (psi/ft)/(ppg)**

The maximum collapse pressure differential of 1,865 psi occurs at 6,547 feet in the carbon steel casing and 1,868 psi occurs at 6,600 feet in the CRA casing.

Burst Worst Case Assumptions: Casing cemented with inclusion of a continuous 9.5 lb/gal mud channel from surface to 6,600 feet (depth to injection packer). 9 5/8-inch by 6 5/8-inch annulus full of 9.0 lb/gal inhibited brine and maintaining 1,100 psig on annulus (100 psi in excess of the maximum surface injection pressure of 1,000 psig) in accordance with TCEQ permit requirements.

Longstring Casing Burst Calculations

Depth (ft)	Internal Pressure (psi)	External Pressure (psi)	Differential Pressure (psi)	Calculation
0	**1,100**	**0**	**1,100**	**1,100 psi + (9.0 ppg - 9.5 ppg) * 0 ft * 0.052 (psi/ft)/(ppg)**
6,547	**4,164**	**3,234**	**930**	**1,100 psi + (9.0 ppg - 9.5 ppg) * 6,547 ft * 0.052 (psi/ft)/(ppg)**
6,600	4,189	3,260	929	1,100 psi + (9.0 ppg - 9.5 ppg) * 6,600 ft * 0.052 (psi/ft)/(ppg)

The maximum burst pressure differential of 1,100 psi occurs at surface in the carbon steel casing and 930 psi occurs at 6,547 feet in the CRA casing.

Joint and Pipe Body Strength: No additional test required as casing presumed to be cemented and supported by cement and formation closure forces.

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WDW-398 Injection Tubing

Collapse Worst Case Assumptions: Annulus full to surface with 9.0 lb/gal inhibited brine with 300 psi surface pressure. During nitrogen jetting activities, the tubing evacuated to 3,386 feet with 8.33 lb/gal fresh water.

Injection Tubing Collapse Calculations

Depth (ft)	External Pressure (psi)	Internal Pressure (psi)	Differential Pressure (psi)	Calculation
0	300	0	300	300 psi + 9.0 ppg * 0 ft * 0.052 (psi/ft)/(ppg)
3,386	1,885	0	1,885	300 psi + 9.0 ppg * 3,386 ft * 0.052 (psi/ft)/(ppg)
6,600	**3,389**	**1,392**	**1,997**	**300 psi + (9.0 ppg * 6,600 ft – 8.33 ppg * [6,600 ft – 3,386 ft]) * 0.052 (psi/ft)/(ppg)**

The maximum collapse pressure differential of 1,997 psi occurs at 6,600 feet.

Burst Worst Case Assumptions: Annulus full to surface with 9.0 lb/gal inhibited brine and maintaining zero psi on annulus with heaviest permitted waste stream (8.75 lb/gal, 1.05 sp.gr.) while injecting at the maximum surface injection pressure of 1,000 psi. Note that annulus pressure must be maintained at 100 psi above injection pressure, thus this calculation is overly conservative.

Injection Tubing Burst Calculations

Depth (ft)	Internal Pressure (psi)	External Pressure (psi)	Differential Pressure (psi)	Calculation
0	**1,000**	**0**	**1,000**	**1,000 psi + (8.75 ppg * 0 ft – 9.0 ppg * 0 ft) * 0.052 (psi/ft)/(ppg)**
6,600	4,003	3,089	914	1,000 psi + (8.75 ppg * ft – 9.0 ppg * 6,600 ft) * 0.052 (psi/ft)/(ppg)

The maximum burst pressure differential of 1,000 psi occurs at surface.

For pipe body and joint strength yield, the maximum tensile load is taken to be the weight of the 6,600 feet of pipe hanging in air prior to engaging the packer for a worst-case basis and neglects the effects of buoyancy.

Injection Tubing Tensile Calculations

Depth (ft)	Load (lbf)	Calculation
0	**50,820**	**7.7 lb/ft * 6,600 ft**
6,600	0	7.7 lb/ft * 0 ft

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The maximum tensile load of 50,820 lbf occurs at the surface.

WDW-398 Casing and Tubing Safety Factor Calculations

Industry standards for design safety factors for this application are as follows:

Collapse: 1.0 to 1.125 based on minimum collapse pressures.

Internal Yield (Burst): 1.0 to 1.1 based on minimum yield values.

Tension: 1.8 based on minimum joint strength. 1.5 based on minimum pipe body strength.

The following minimum safety factors are required for each casing string.

Collapse:	1.125
Internal Yield (Burst):	1.1
Tension:	1.5

The safety factors are calculated by dividing the rated strength of the tubular by the maximum pressure differential (for collapse and burst) or tensile loading.

Calculated Safety Factors

Tubular	Collapse Loading	Burst Loading	Tensile Loading (Pipe Body)
Longstring Casing (Carbon Steel)	2.889	8.318	N/A
Longstring Casing (CRA)	5.633	12.430	N/A
Injection Tubing	1.152	2.000	1.584

This analysis suggests the portion of the longstring casing (above the packer assembly) should be able to withstand the maximum probable burst and collapse pressures to which it may be exposed through the end of the permit renewal period (2034) short of a premature failure resulting from a connection leak or leak resulting from an external corrosion mechanism.

This analysis suggests the injection tubing should be able to withstand the maximum probable burst and collapse pressures and tensile loading to which it may be exposed through the end of the permit renewal period (2034) short of a premature failure resulting from a connection leak or mechanical failure.

Packer Condition

The packer for WDW-397 and WDW-398 is composed of materials described in Section VI.B.3.

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Given the results of the recent corrosion monitoring data, and that the packers for WDW-397 and WDW-398 are composed of similar materials to the construction materials in the wellbores, it can be concluded that the WDW-397 and WDW-398 packers have not recently been affected by any unusual or excessive corrosion. It is anticipated that the current packers should be able to withstand corrosive effects of the currently-injected waste stream and subsurface environment for the remaining life expectancy of the injection well (assumed to be 10 years) assuming that the future corrosion rates remain relatively similar to the historical corrosion rates observed from 2015 to 2023.

Wellhead Condition

The wellhead for WDW-397 and WDW-398 is composed of materials described in Section VI.B.3. Given the results of the recent corrosion monitoring data, and that the wellheads for WDW-397 and WDW-398 are composed of similar materials to the construction materials in the wellbores, it can be concluded that the WDW-397 and WDW-398 wellheads have not recently been affected by any unusual or excessive corrosion. It is anticipated that the current wellheads should be able to withstand corrosive effects of the currently-injected waste stream and subsurface environment for the remaining life expectancy of the injection well (assumed to be 10 years) assuming that the future corrosion rates remain relatively similar to the historical corrosion rates observed from 2015 to 2023.

VI.B.4 Future Design Changes

Future changes to the design and construction of WDW-397 and WDW-398 are not anticipated.

VI.B.5 Surface Equipment Engineering Drawings

Figures VI-3 and VI-4 are schematics illustrating the existing wellhead configuration of WDW-397 and WDW-398, respectively. The drawings illustrate the type and size of valves, flanges, fittings, etc. which currently exist on the WDW-397 and WDW-398 injection wellheads. The pre-injection units operated in association with the WDW-397 and WDW-398 injection wells are authorized and operated under a RCRA permit and are considered separate from this permit renewal application.

The materials of construction for the WDW-397 wellhead were detailed in the Drilling and Completion Report of WDW-397 (TDI, 2006). The flow cross is composed of carbon steel with Alloy 625 weld-clad flow-wetted internals. The valves are composed of carbon steel with Alloy 625 weld-clad flow-wetted internals with Alloy 718 and Tungsten Carbide trim. The landing joint is composed of 7-inch, 26 lb/ft, 110 ksi Duplex 2507.

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The materials of construction for the WDW-398 wellhead were detailed in the Drilling and Completion Report of WDW-398 dated December 14, 2009 (TDI, 2009). The flow cross is composed of carbon steel with Alloy 625 weld-clad flow-wetted internals. The valves are composed of carbon steel with Alloy 625 weld-clad flow-wetted internals with Alloy 718 and Tungsten Carbide trim. The landing joint is composed of 7-inch, 26 lb/ft, 110 ksi Duplex 2507.

Engineering drawings of the annulus monitoring systems are provided as Figures VI-5 and VI-6 for WDW-397 and VI-7 and VI-8 for WDW-398.

The pre-injection units for WDW-397 and WDW-398 are authorized by the United States Environmental Protection Agency's approval of a Work Plan for modifying the pre-injection facilities to be in accordance with the improvements specified in ExxonMobil's letter to EPA and TCEQ dated February 2008, as required by Item 68 of the RCRA Section 7003 Administrative Order on Consent in the matter of Agrifos Fertilizer, Inc. (formerly Rentech, now PCI Nitrogen) and Exxon Mobil Corporation (U.S. EPA Docket No. RCRA-06-2007-0919). The authorization is included in Section XII of this document.

VI.C. Well Operation, Monitoring and Maintenance

During normal operation, WDW-397 and WDW-398 will operate continually except when mechanical integrity tests, workovers, maintenance or possible emergency shutdowns occur. All operating parameters will be closely monitored to prevent exceeding TCEQ permit limits. A tabulation of monitored operating parameters is included as Table VI-1.

VI.C.1 Maximum Instantaneous Injection Rate

The requested maximum instantaneous rate of injection for each well is listed below.

Injection Well(s)	Maximum Instantaneous Injection Rate (gpm)
WDW-397	1,200
WDW-398	1,200

The requested maximum cumulative instantaneous rate of injection is 1,200 gpm.

VI.C.2 Average Injection Rates and Volumes

Anticipated average injection rates and volumes per well for the two wells are summarized below:

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Rate/Volume Category	Rate/Volume
Average Injection Rate for each well	1,200 gpm
Average Injection Rate (Cumulative)	1,200 gpm
Average Monthly Injection Volume for each well	53,568,000 gallons(1)
Annual Injection Volume for each well	630,720,000 gallons(2)
Average Monthly Injection Volume (Cumulative)	53,568,000 gallons(1)
Annual Injection Volume (Cumulative)	630,720,000 gallons(2)

(1) equivalent to 1,200 gpm over 31 days
(2) equivalent to 1,200 gpm over 365 days

During normal operation of WDW-397 and WDW-398, the injection wells operate continually except when mechanical integrity tests, maintenance work or possible emergency shutdowns occur.

VI.C.3 Projected Average and Maximum Daily Rates and Volumes

The rate of injection for WDW-397 varies from 0 to 1,200 gpm during normal operations. The historical average rate of injection for WDW-397 is approximately 289 gpm. The maximum injection rate is no more than 1,200 gpm (for either well or as a cumulative of the two wells). The total cumulative volume of waste disposed of into WDW-397 through December 31, 2022 is approximately 2,139,049,632 gallons. The currently projected remaining operational life of WDW-397 is ten years (permit renewal period). Therefore, the anticipated volume to have been injected over the life of the well is 3,658,033,632 gallons (based on the cumulative volume injected through December 31, 2022 and an average projected injection rate of 289 gpm for a remaining life of ten years [2,139,049,632 gal + 1,518,984,000 gal]).

The rate of injection for WDW-398 varies from 0 to 1,200 gpm during normal operations. The historical average rate of injection for WDW-398 is approximately 341 gpm. The maximum injection rate is no more than 1,200 gpm (for either well or as a cumulative of the two wells). The total cumulative volume of waste disposed of into WDW-398 through December 31, 2022 is approximately 2,082,911,077 gallons. The currently projected remaining operational life of WDW-398 is ten years (permit renewal period). Therefore, the anticipated volume to have been injected over the life of the well is 3,875,007,077 gallons (based on the cumulative volume injected through December 31, 2022 and an average projected injection rate of 341 gpm for a remaining life of 10 years [2,082,711,077 gal + 1,792,296,000 gal]).

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VI.C.4 Average and Maximum Surface Injection Pressures

The 2023 average monthly maximum surface injection pressure for WDW-397 was 729 psi with the highest surface injection pressure observed in January 2023 (850 psi). The 2023 average monthly maximum surface injection pressure for WDW-398 was 573 psi with the highest surface injection pressure observed in December 2023 (795 psi). The requested maximum surface injection pressure for each well is listed below.

Injection Well(s)	Maximum Surface Injection Pressure (psig)
WDW-397	1,500
WDW-398	1,000

This is consistent with the fracture pressure calculations made using the MASIP computer program which is discussed in Section VII.A.5.

VI.C.5 Well Operation and Injection Procedures

ExxonMobil operates the injection wells and the injection pump system to ensure the permitted operating parameters, as reviewed, approved, and permitted by the TCEQ, are not exceeded. The operation and injection procedures will prevent the movement of fluids that could result in pollution of the USDW. There will be no injection between the outermost casing and the wellbore.

The instrumentation and pressure gauges for the injection wells are located in weatherproof enclosures at the wellheads. Recording devices are located in the control room which records well operating parameters. These instruments measure and continuously monitor and record the injection pressure, flow rate and temperature of the injected fluids, tubing-to-longstring casing annulus pressure, and volume injected into the injection well.

Annulus pressure and injection pressure gauges are installed at the wellheads to allow visual monitoring of operating conditions. Additionally, alarms are provided to alert operators to high flow rates, low annulus pressure, and low level in the annulus fluid tanks. All gauges, pressure sensing and recording devices are, and will continue to be, tested and calibrated quarterly. In the event an alarm sounds, facility personnel notify a trained operator who investigates and corrects the problem.

Appropriate action will be taken if pressure or flow rates exceed the limits set forth in the injection well permits. ExxonMobil will notify the TCEQ within 24 hours of any significant change in monitoring parameters or any other observations which could reasonably be attributed to a leak or

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other failure of the well equipment or Injection Zone integrity. Table VI-1 (Injection Well Monitoring and Reporting Requirements) summarizes the functions of the injection wells which are monitored, and the measurement frequencies and reporting schedules, as required by UIC rules of the TCEQ.

ExxonMobil operates the WDW-397 and WDW-398 injection wells and the injection pump system to ensure the maximum allowable surface injection pressures, as reviewed and permitted by the TCEQ, are not exceeded. This operational practice prevents any potential pressure increases in the Injection Zone which could potentially fracture the Injection Zone and the Confining Zone present below the ExxonMobil facility. The fluids in the annulus of the ExxonMobil wells consist of brine containing a corrosion inhibitor, oxygen scavenger, and biocide. The annulus fluid is non-corrosive to carbon steel, CRA and fiberglass. ExxonMobil will maintain an annulus pressure that is at least 100 psi greater than the injection tubing pressure measured at the surface to prevent leaks from the well into unauthorized zones and to detect well malfunctions. This operating procedure demonstrates that mechanical integrity of the well is maintained at all times per 30 TAC §331.63(1).

WDW-397 has been in operation since 2008 and WDW-398 has been in operation since 2011. During this operational period, no adverse reaction has been observed between the waste stream and the injection formation. There does not appear to be any potential for reactivity between the injected fluid and the formation to generate gas, as the pH of the waste streams have pH values normally between 1.4 and 3 (see Section IX.A.5). The Frio Formation Injection Interval consists of sands and clays, which are not reactive with the ExxonMobil waste stream to generate a gas. The lack of a carbonate Injection Interval negates the potential for subsurface gas generation due to injection of the ExxonMobil waste stream.

Waste Analysis Plan

ExxonMobil annually samples and tests its injectate to obtain a detailed chemical and physical analysis of the fluid to be disposed of in its injection wells. Analysis of the injection fluid is currently performed following the guidelines set forth in the waste analysis plan (Table IX.C) and is done with a frequency to yield representative samples regarding the characteristics of the fluid. This monitoring assures that permit limits are not exceeded. The plan describes the procedures for chemical and physical analysis of a representative sample of the waste. ExxonMobil will continue to analyze the injected waste following the applicable guidelines as long as Class I injection wells are operated at the facility. In addition, ExxonMobil will conduct continuous or periodic monitoring of parameters specified or required by the permit and the chemical and physical

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characteristics of the injected fluids will be maintained within specified permit limits. ExxonMobil will, at all times, properly operate and maintain all facilities and systems of treatment and control which are installed and/or used to achieve compliance with the conditions of the permit. Monitoring activity records will include the following information:

1) date, time and place of sample measurement;
2) identity of individual who collected the sample or made the measurement;
3) date of analysis;
4) identity of individual in laboratory who performed the analysis;
5) technique and method of analysis; and,
6) the results of the analysis or measurement.

Workover Operations

ExxonMobil will notify the TCEQ before commencing any workover operation. The notification will be in writing and include plans for the proposed work. The workover will not begin until TCEQ approval has been obtained. An exception to the prior written notification and permission requirements may be granted by TCEQ when immediate action is required to prevent movement of fluids into the USDW and to prevent leaks from the well into unauthorized zones. In addition, pressure control equipment will be installed and maintained during workovers which involve the removal of tubing.

Notification of Resuming Injection

If injection operations have ceased in an ExxonMobil well for more than two years and the well is subject to closure as described in 30 TAC §305.154(a)(7), ExxonMobil will notify the TCEQ in writing 30 days prior to resuming operation of the well(s).

Operations Record Maintenance

ExxonMobil maintains a written operating record at the facility. This operating record contains a description and an account of the quantity of hazardous waste disposed of in WDW-397 and WDW-398.

ExxonMobil maintains complete and accurate records of all monitoring required by the permit, all periodic well tests, all shut-in periods and times that emergency measures were used for handling injection fluid, and all additional information on conditions that might reasonably affect the operation of WDW-397 and WDW-398. ExxonMobil retains all monitoring and reporting records at the facility site for a period of at least three years from the date of the record or sample. ExxonMobil will also retain, for a period of five years following closure of WDW-397 or WDW-

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398, records of all information resulting from any monitoring activities or other records required by that permit. ExxonMobil will make available to the TCEQ all records, upon request, that are required to be kept by each permit.

VI.C.6 Well Monitoring Plans

ExxonMobil will operate the injection well and the injection pump systems to ensure the permitted operating parameters, as permitted by the TCEQ, are not exceeded.

VI.C.6.a Wellhead Pressure Gauges (30 TAC §331.64(c))

Pressure gauges installed on the WDW-397 and WDW-398 wellheads are maintained in proper operating conditions at all times. The gauges monitor the injection tubing pressure and the annulus pressure between the injection tubing and longstring casing. Schematics of the wellhead annulus monitoring system for WDW-397 and WDW-398 are included as Figures VI-5 through VI-8. A sight gauge is installed on the annulus fluid tanks for visual inspection. Additionally, visual and audible alarms are provided to alert operators to high flow rates, low annulus pressure, and low level in the annulus fluid tanks. All gauges, pressure sensing and recording devices are tested and calibrated quarterly.

VI.C.6.b Continuous Recording Devices (30 TAC §331.64(d))

Computerized recording instrumentation for WDW-397 and WDW-398 are housed at their wellheads. These instruments measure and continuously monitor the injection pressure, flow rate and temperature of the injected fluids, and tubing/longstring casing annulus pressure, and volume injected into the injection well. The data for these parameters is sent to the ExxonMobil control room where each measured parameter is displayed and recorded. This provides the operator with the opportunity to visually monitor the required operating and monitoring parameters. In addition, ExxonMobil operators can warn the control room operator if something appears unusual.

<u>Alarms and Shutdown Response (30 TAC §331.64(d)(3))</u>

High- and low-level alarms for the pre-injection holding tanks sound in the control room when high and low tank level limits are exceeded. Additionally, visual and audible alarms occur at the control room to alert operators when established operating parameters are exceeded. The alarms are set to sound at the following parameters, as approved in the UIC permit for the existing injection well:

1) Longstring casing/tubing annulus pressure is less than 150 psig greater than the injection pressure.

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2) Injection pressure is greater than 1,500 psig for WDW-397 or 1,000 psig for WDW-398.
3) Flow rate exceeds 1,200 gpm for WDW-397, 1,200 gpm for WDW-398, or 1,200 gpm combined between the wells.
4) pH Limits: pH < 1.0 or pH > 8.0.

In the event an alarm sounds on one of the injection wells, facility personnel will be instructed to contact a trained operator to investigate and correct the problem. If upon investigation, it is determined the well is lacking mechanical integrity, or if continued monitoring otherwise indicates the well may be lacking mechanical integrity, ExxonMobil will: (1) cease injection of waste fluids (unless authorized by the TCEQ executive director to continue or resume injection; (2) take the steps necessary to determine the presence or absence of a leak; and (3) notify the TCEQ within 24 hours after the alarm or shutdown occurs.

Loss of Mechanical Integrity (30 TAC §331.64(d)(4))

If it is determined the WDW-397 or WDW-398 injection well has suffered a loss of mechanical integrity either by monitoring or during periodic mechanical integrity testing, ExxonMobil will: (1) immediately cease injection of waste fluid; (2) take the steps reasonably necessary to determine whether there may have been a release of injected fluids into any unauthorized zone; and (3) notify the TCEQ within 24 hours after the loss of mechanical integrity is discovered. Once a solution, remedy or course of action has been determined, ExxonMobil will (1) notify the TCEQ regarding when injection can be expected to resume and will (2) restore and demonstrate mechanical integrity to the satisfaction of the TCEQ prior to resuming injection of waste fluids.

Release of Wastes into Unauthorized Zone (30 TAC §331.64(d)(5))

If ExxonMobil discovers that there may have been a release of injected wastes into an unauthorized zone, ExxonMobil will immediately cease injection of wastes. ExxonMobil will then: (1) notify the TCEQ within 24 hours of obtaining evidence of the unauthorized release; (2) take all necessary steps to identify and characterize the extent of any release; (3) propose a remediation plan for TCEQ review and approval; (4) comply with any remediation plan specified by the TCEQ and (5) implement the remediation plan approved by the TCEQ. If the release is into a USDW or freshwater aquifer currently serving as a water supply, ExxonMobil will, within 24 hours, notify the local health authority, place a notice in a newspaper of general circulation, and send notification by mail to the adjacent landowners. ExxonMobil understands that the TCEQ may allow ExxonMobil to resume injection prior to completing cleanup action if ExxonMobil demonstrates that the injection operation will not endanger USDW or freshwater aquifers.

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VI.C.6.c Continuous or Periodic Monitoring Devices (30 TAC §331.64(b)(3))

ExxonMobil will analyze the injected waste following the applicable guidelines. ExxonMobil will conduct continuous or periodic monitoring of parameters specified or required by the permit and the chemical and physical characteristics of the injected fluids will be maintained within specified permit limits. In addition, ExxonMobil will, at all times, properly operate and maintain all facilities and systems of treatment and control which are installed and/or used to achieve compliance with the conditions of the permits.

Annulus pressure and injection pressure gauges are installed at the wellhead to allow visual monitoring of operating conditions. Additionally, alarms are provided to alert operators to high flow rates, low annulus pressure and, low level in the annulus fluid tank. All gauges, pressure sensing, and recording devices are tested and calibrated quarterly.

Pressure gauges are installed on the WDW-397 and WDW-398 wellheads and are maintained in proper operating conditions at all times. The gauges monitor the injection tubing pressure and the annulus pressure between the tubing and longstring casing. Drawings which show the wellbore annulus monitoring system for the WDW-397 and WDW-398 injection wells are included as Figures VI-5 through VI-8. A sight gauge is installed on the WDW-397 and WDW-398 annulus fluid tanks for visual inspection. Additionally, visual and audible alarms are provided to alert operators to high flow rates, low annulus pressure and, low level in the annulus fluid tanks for the WDW-397 and WDW-398 injection wells.

ExxonMobil will maintain complete and accurate records of all monitoring required by the permits, all periodic well tests, all shut in periods and times that emergency measures were used for handling injection fluid, and all additional information on conditions that might reasonably affect the operation of the injection wells. ExxonMobil will retain all monitoring and reporting records at the facility site for a period of at least three years from the date of the record or sample. ExxonMobil will also retain for a period of five years following abandonment of the injection wells, records of all information resulting from any monitoring activities or other records required by the permits. ExxonMobil will make available to the TCEQ all records, upon request, that are required to be kept by the permits.

VI.C.6.d Annual Mechanical Integrity Testing (30 TAC §331.64(e))

ExxonMobil will conduct annual MIT of the WDW-397 and WDW-398 wells in accordance with the requirements of 30 TAC §331.64(e). The MIT procedures will include an APT and a radioactive tracer survey (RTS). Results of the APT demonstrate the injection wells have

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maintained pressure integrity in the longstring casing, tubing, packer and wellhead seal. The RTS is used to confirm there has been no upward movement of wastewater above the perforated interval or permitted Injection Zone. A temperature log, noise log, oxygen activation log or other approved log will be run once every five years to test for fluid movement along the borehole. Additionally, a casing inspection, casing evaluation, or other approved log will be run whenever a workover is conducted during which the injection tubing is pulled. This requirement may be waived by the TCEQ due to well construction or other factors which limit the test's reliability, or based upon the satisfactory results of a casing inspection log run within the previous five years.

VI.C.6.e Corrosion Monitoring (30 TAC §331.64(g))

The well annulus monitoring systems for the ExxonMobil injection wells are specifically designed to detect any annulus leaks, should they occur. This would include leaks that resulted from corrosion. It is in ExxonMobil's best interest to minimize corrosion and have well construction materials that are compatible with injected wastes.

ExxonMobil has installed a corrosion loop in the injection well facility and has coupons representing selected flow-wetted materials of construction in the loop. These coupons are continuously exposed to the waste stream and are removed from the loop and examined quarterly to determine corrosion rates for the coupons.

The corrosion loop is designed so the subject test materials are also continuously exposed to the operating pressures, temperatures (measured at the wellhead) and flow rates of the injection operation. ExxonMobil will continue to monitor the test materials for loss of mass, thickness, cracking, pitting and other signs of corrosion on a quarterly basis to ensure that the well components meet the minimum standards for material strength and performance set forth in 30 TAC §331.62(l).

Corrosion tests were conducted to examine the compatibility of the ExxonMobil waste stream with materials that might be considered for use in the construction of these wells. The materials tested during this program included Alloy 825, Alloy 20, Alloy 28, Alloy G-30, Alloy 625, Alloy 904L, Alloy C-22, Alloy C-276, Duplex 2507, Duplex 2205, 316L Stainless Steel, K-55, N-80 and 4140 grade carbon steels and 13 Chrome for possible use in flow-wetted portions of this well (lower portion of casing, screen and packer) and Tubular Fiberglass Corporation's (Future Pipe Industries) fiberglass material for use as the injection tubing. Compatibility testing of cement is not being performed. In areas of the well where cements may come in contact with the injected waste, EPSEAL synthetic sealant has been utilized in the lower portion of the well adjacent to the

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CRA casing and carbon steel casing up to a depth of approximately 6,210 feet in WDW-397 and 6,542 feet in WDW-398. EPSEAL is a highly corrosive-resistant sealant and should be immune to any deleterious effects caused by contact with the injected waste.

Metals Testing

Corrosion tests for duplicates of the candidate materials coupons specified above were run using 100 percent liquid from the phosphogypsum ponds at test temperatures of approximately 170 ºF (approximating the static bottomhole temperature of the well(s) at total depth). The test method utilized followed NACE Standard TM-01-69 procedures.

Cement Testing

Cement/injection fluid corrosion tests were not performed. EPSEAL sealant has been utilized in those portions of the well which may come in contact with the waste stream. EPSEAL is a highly corrosive-resistant sealant and should be immune to any deleterious effects caused by contact with the injected waste.

Results of Materials Testing

Results of the materials compatibility testing are summarized in the following table (Possible Construction Materials Corrosion Test Results). Examination of these results indicates that any of the alloys and fiberglass coupons tested should be adequate for use in constructing flow-wetted surfaces of the ExxonMobil injection wells as corrosion caused by contact with waste is minimal and well within acceptable values for corrosion rates.

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POSSIBLE CONSTRUCTION MATERIALS CORROSION TEST RESULTS

MATERIAL TYPE	TEST MEDIUM	TEST CONDITION	AVERAGE GENERAL CORROSION RATE (mpy)	LOCALIZED CORROSION
K-55	Phosphogypsum Pond Water	Fully Immersed	66.55	Heavy Pitting and Corrosion
N-80	Phosphogypsum Pond Water	Fully Immersed	69.75	Heavy Pitting and Corrosion
4140	Phosphogypsum Pond Water	Fully Immersed	47.40	Heavy Pitting and Corrosion
13 Chrome	Phosphogypsum Pond Water	Fully Immersed	56.55	Moderate Pitting and Corrosion
316L	Phosphogypsum Pond Water	Fully Immersed	0.035	No Localized Attack
Alloy 20	Phosphogypsum Pond Water	Fully Immersed	0.035	No Localized Attack
Alloy 825	Phosphogypsum Pond Water	Fully Immersed	0.015	No Localized Attack
Duplex 2205	Phosphogypsum Pond Water	Fully Immersed	0.035	No Localized Attack
Alloy 904L	Phosphogypsum Pond Water	Fully Immersed	0.030	No Localized Attack
Alloy 28	Phosphogypsum Pond Water	Fully Immersed	0.020	No Localized Attack
Duplex 2507	Phosphogypsum Pond Water	Fully Immersed	0.025	No Localized Attack
Alloy G-30	Phosphogypsum Pond Water	Fully Immersed	0.010	No Localized Attack
Alloy 625	Phosphogypsum Pond Water	Fully Immersed	0.010	No Localized Attack
Alloy C-22	Phosphogypsum Pond Water	Fully Immersed	0.015	No Localized Attack
Alloy C-276	Phosphogypsum Pond Water	Fully Immersed	0.055	No Localized Attack
TFC Coated	Phosphogypsum Pond Water	Fully Immersed	N/A	No Localized Attack
TFC Uncoated	Phosphogypsum Pond Water	Fully Immersed	N/A	No Localized Attack

The table depicts change in physical weight in terms of corrosion rates. The corrosion rates are expressed in mils per year (mpy), the standard unit for reporting corrosion rates for steel and alloy material.

Mils per year (mpy), or thousandths of an inch per year, is the standard method of reporting corrosion rate for steel and alloy materials. The following scale offers a rating standard which is widely accepted for use in the chemical engineering field.

Excellent	Less than 2 mpy
Good	2 mpy to 10 mpy
Satisfactory	Over 10 mpy to 20 mpy
Borderline	Over 20 mpy to 50 mpy
Unsatisfactory	More than 50 mpy

Comparison results of the corrosion testing (as shown on the table with the rating standard shown above) indicate that the generalized and localized corrosion rates of all of the tested alloys fall in the excellent category. All of the carbon steel materials (up to and including the 13 Chrome materials) were determined to be unsuitable for use in this application with generalized corrosion rates of approximately 50 mpy and higher, and moderate-to-heavy pitting and corrosion (localized

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corrosion).

Additionally, all the pond water vertical turbine transfer pumps at the PCI Nitrogen facility (site where the ExxonMobil injection wells are located) are constructed of 316L Stainless Steel. Furthermore, discussions with representatives from the phosphogypsum industry have stated that 316L Stainless Steel is commonly utilized for pump and pipe materials for use with phosphogypsum process wastewater (pond water).

Since compatibility testing, in addition to site-specific applications, suggests that 316L Stainless Steel or higher grade alloys should be acceptable for use in this construction, the lower portion of the casing string consists of SM2535-110 corrosion resistant alloy steel. The injection packer in each well was fabricated using Duplex 2507 alloy material due to its yield strength of approximately 65,000 psi versus the yield strength of 316L Stainless Steel, which is approximately 28,000 psi. The screen was manufactured using Duplex 2507 material for the base pipe with Alloy 825 for the screen wire wrap.

VI.C.6.f Annual Pressure Buildup Monitoring (30 TAC §331.64(h)(2))

The pressure buildup in the Injection Zone will be monitored annually by means of a static gradient survey, static bottomhole pressure measurements, and pressure buildup and falloff testing, consistent with the requirements of 30 TAC §331.64(h)(2).

VI.C.7 Wellhead and Associated Facilities Painting and Maintenance

The wellhead and associated facilities have been painted and are maintained in good working order without leaks, consistent with the requirements of 30 TAC §331.66(b)(3).

VI.C.8 Secondary Containment Demonstration

A 12-foot by 13-foot reinforced concrete pad with curbs were installed to enclose the base of WDW-397 and WDW-398. The diked, impermeable pads surrounding the base of wellheads protects the ground surface from spills and releases from the wellhead and ancillary equipment. Any liquid that is collected in 8-foot deep sump within the wellhead pad area is drained back to the system to be disposed of in an appropriate manner.

VI.C.9 All Weather Road Demonstration

An all-weather road is maintained from the ExxonMobil control room to the injection wells to allow easy access to the injection wells and related facilities, consistent with the requirements of 30 TAC §331.66(b)(2).

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VI.C.10 Signage at Well Location

Signs are posted at the wellsites showing the company name, company well number, and TCEQ permit number. The sign identification is in the English language, clearly legible and composed of numbers and letters at least 1-inch high.

VI.C.11 Contingency Plans

If WDW-397 or WDW-398 suffers a mechanical failure and can no longer be used for injection, an alarm and automatic shutdown will be triggered, and a trained operator will immediately investigate and identify as expeditiously as possible the cause of the alarm and shutdown to prevent migration of wastes into USDW or fresh water aquifers. If necessary, waste stream flow will be diverted from the shut-in well to the other operating injection well. If, upon investigation, ExxonMobil believes either injection well has lost mechanical integrity, ExxonMobil will comply with applicable requirements of 30 TAC §331.44 and 30 TAC §305.152.

ExxonMobil developed a Contingency Plan for the ExxonMobil Pasadena Pre-Injection Treatment Facility (PITF) and WDW 397 and WDW 398 in accordance with the requirements of 40 CFR 264.52. In addition, the plan was developed to assist ExxonMobil, its PITF operations and maintenance staff and emergency response agencies to prevent, prepare for and respond to site emergencies such as well failure and 100-year/24-hour storm events as well as other emergencies.

VI.D. Well Closure, Post-Closure Care and Cost Estimates Plans

The following sections discuss the plugging and abandonment procedures to be implemented once the existing and proposed injection wells reach the end of their useful life. Post-closure plans have also been developed for the existing injection wells.

VI.D.1 Closure Plan

At the end of service, WDW-397 and WDW-398 will be plugged and abandoned following the requirements of applicable regulations. Prior to closing each well, ExxonMobil will observe and record the pressure decay for a time specified by the TCEQ. In addition, appropriate mechanical integrity testing shall be conducted to ensure the integrity of that portion of the longstring casing and cement that will be left in the ground after closure to ensure that no fluids move into or between USDW.

Prior to plugging, each well to be closed will be in a state of static equilibrium with the mud or fluid weight equalized top to bottom, either by circulating the mud or fluid in the well at least once or by a comparable method prescribed by the Executive Director.

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Notice of intent to plug and abandon the subject disposal well will be given at least 60 working days prior to closure of each disposal well. A closure report certifying that the well or wells were closed in accordance with applicable requirements, will be submitted to the proper agencies within 30 days of plugging each well. The report will include any newly constructed or discovered wells within the Area of Review. When plugging and abandonment is complete, ExxonMobil will submit certification to the TCEQ (by ExxonMobil and by a licensed, professional engineer with current registration pursuant to the Texas Engineering Practice Act, who is knowledgeable and experienced in practical drilling engineering and who is familiar with the special conditions and requirements of injection well construction) that the injection well has been closed in accordance with 30 TAC §331.46.

ExxonMobil will accomplish plugging of the existing injection wells by cementing the well from total depth to surface. The procedures utilized for the closure of each injection well is described on the following pages:

Proposed Closure Plan for Injection Well WDW-397

1. Notify the TCEQ at least 60 days prior to commencement of closure according to the following closure plan (once approved).

1. Prepare location for closure operations.

3. Install a digital pressure recorder on the annulus. Pressure test the 9 5/8-inch by 5-inch casing annulus to 1,600 psi for 30 minutes with TCEQ inspector present. Record test results.

4. Move in and rig up a wireline unit with mast.

5. Perform and record a pressure decay test for a length of time specified by TCEQ using non-hazardous buffer fluid.

6. Run logging program to include a radioactive tracer survey to verify the external mechanical integrity of the well.

7. Rig down and move out wireline unit and mast trailer and/or move in and rig up well service unit and support equipment.

8. Pump two tubing volumes of brine water of sufficient density to kill well. Steps 5 and 8 serve to flush the well with non-hazardous buffer fluid as required by 30 TAC §331.46(d).

9. Break down the tree valving and bonnet; nipple up BOP stack to tubing head.

10. Release seal assembly from packer and recover 5-inch injection tubing. If seal assembly does not release from packer, arrange to sever tubing above seal assembly, recover tubing and abandon with seal assembly and packer in place.

11. Make up and run in hole with packer retrieving tool, engage to packer, release and recover packers (straddle packers and injection packer). If any packer does not release, abandon with packer in place.

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12. Rig up wireline unit and run casing inspection log from approximately 6,446 feet to surface.

13. Run in hole with 9 5/8-inch cement retainer on workstring and set immediately above where the top straddle packer was set at approximately 6,180 feet in WDW-397.

14. Sting back into retainer and pump 155 sacks of Premium Plus (Class C) neat cement to fill the screened interval from 6,180 feet to TD in WDW-397.

15. Un-sting from retainer and pump 20 sacks of Premium Plus cement on top of retainer. Pull up hole and reverse circulate tubing to clear it of cement. The cement above and below the retainer will serve as the lowermost cement plug.

16. Wait on cement for 12 hours.

17. Tag plug and record depth. Pressure test plug and casing for seal and stability to 1,000 psi or as required.

18. Rig up and circulate 500-foot stages (approximately 160 sacks per stage) of Premium Plus cement from top of lower cement plug to surface for an estimated total of 1,925 sacks of cement. Wait 12 hours for cement to cure; if necessary, circulate additional cement from top of upper cement plug to surface.

19. Rig down BOP stack and cut off tubing head and 9 5/8-inch and 13 3/8-inch casings below grade.

20. Weld ½-inch steel plate to inside of longstring casing and weld ¼-inch steel plate over 13 3/8-inch and 9 5/8-inch casing strings.

21. Set marker with Facility Well No., TCEQ Permit No., years of operation and injected volume.

22. Release workover rig and support equipment. Restore location.

Proposed Closure Plan for Injection Well WDW-398

1. Notify the TCEQ at least 60 days prior to commencement of closure according to the following closure plan (once approved).

2. Prepare location for closure operations.

3. Install a digital pressure recorder on the annulus. Pressure test the 9 5/8-inch by 6 5/8-inch casing annulus to 1,100 psi for 30 minutes with TCEQ inspector present. Record test results.

4. Move in and rig up a wireline unit with mast.

5. Perform and record a pressure decay test for a length of time specified by TCEQ using non-hazardous buffer fluid.

6. Run logging program to include a radioactive tracer survey to verify the external mechanical integrity of the well.

7. Rig down and move out wireline unit and mast trailer and/or move in and rig up well service unit and support equipment.

8. Pump two tubing volumes of brine water of sufficient density to kill well. Steps 5 and 8 serve to flush the well with non-hazardous buffer fluid as required by 30 TAC §331.46(d).

9. Break down the tree valving and bonnet; nipple up BOP stack to tubing head.

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10. Release seal assembly from packer and recover 6 5/8-inch fiberglass injection tubing. If seal assembly does not release from packer, arrange to sever tubing above seal assembly, recover tubing and abandon with seal assembly and packer in place.

11. Make up and run in hole with packer retrieving tool, engage to packer, release and recover packer. If packer does not release, abandon with packer in place.

12. Rig up wireline unit and run casing inspection log from approximately 6,600 feet to surface.

13. Run in hole with 9 5/8-inch cement retainer on workstring and set immediately above where the original packer was set at approximately 6,600 feet in WDW-398.

14. Sting back into retainer and pump 80 sacks of Premium Plus (Class C) neat cement to fill the screened interval from 6,668 feet to TD in WDW-398.

15. Un-sting from retainer and pump 20 sacks of Premium Plus cement on top of retainer. Pull up hole and reverse circulate tubing to clear it of cement. The cement above and below the retainer will serve as the lowermost cement plug.

16. Wait on cement for 12 hours.

17. Tag plug and record depth. Pressure test plug and casing for seal and stability to 1,000 psi or as required.

18. Rig up and circulate 500-foot stages (approximately 160 sacks per stage) of Premium Plus cement from top of lower cement plug to surface for an estimated total of 2,032 sacks of cement. Wait 12 hours for cement to cure; if necessary, circulate additional cement from top of upper cement plug to surface.

19. Rig down BOP stack and cut off tubing head and 9 5/8-inch and 13 3/8-inch casings below grade.

20. Weld ½-inch steel plate to inside of longstring casing and weld ¼-inch steel plate over 13 3/8-inch and 9 5/8-inch casing strings.

21. Set marker with Facility Well No., TCEQ Permit No., years of operation and injected volume.

22. Release workover rig and support equipment. Restore location.

VI.D.2 Well Closure Cost Estimate

In 2024 dollars, the closure plan and plugging procedure is expected to cost approximately $488,359 for WDW-397, and approximately $465,564 for WDW-398.

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WDW-397 Closure Cost Estimate

	Estimated Cost
Upfront Engineering Cost	7,200
Well Service Unit	109,000
Wireline – Casing Inspection Log/Cement Retainer	16,558
Wireline Mechanical Integrity Testing	25,000
Rental Equipment	37,260
Casing Services	10,669
Fluids, Pumping, Vacuum Trucks and Hauling	12,931
Cementing and Abandonment	127,677
Supervision	30,550
TCEQ Closure Report	9,600
Estimated Taxes	17,780
Subtotal	404,225
Contingency (20%)	84,134
Total	**$488,359**

WDW-398 Closure Cost Estimate

	Estimated Cost
Upfront Engineering Cost	7,200
Well Service Unit	100,000
Wireline – Casing Inspection Log/Cement Retainer	16,750
Wireline Mechanical Integrity Testing	25,000
Rental Equipment	34,260
Casing Services	10,900
Fluids, Pumping, Vacuum Trucks and Hauling	12,842
Cementing and Abandonment	123,452
Supervision	28,200
TCEQ Closure Report	9,600
Estimated Taxes	17,000
Subtotal	385,203
Contingency (20%)	80,361
Total	**$465,564**

The closure costs assume that all closure activities will be conducted by a third party with no operable on-site equipment. See Attachment I for financial assurance carried by ExxonMobil for plugging and abandonment of WDW-397 and WDW-398.

VI.D.3 Post-Closure Plan for Hazardous Waste Injection Wells

In WDW-397, static bottomhole pressure (BHP) at the time of completion was 2,874 psig at 6,633 feet KB. In WDW-398, the static BHP was 2,925 psig at 6,750 feet KB at the time of completion. The anticipated pressure in the Injection Zone at this depth at the time of closure (last active day

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of injection) was calculated using the PRESS2 analytical solution to be approximately 3,472 psia in WDW-397. The anticipated pressure in the Injection Zone at this depth at the time of closure (last active day of injection) was calculated using the PRESS2 analytical solution to be approximately 3,519 psia in WDW-398. The predicted time until pressure in the Injection Zone decays to near native reservoir pressure is less than one year. The predicted position of the waste front is expected to be no farther than 2,219 feet from WDW-397 and 2,837 feet from WDW-398 after 10 years of maximum, continuous operation.

ExxonMobil has prepared, and will maintain and comply with, the following post-closure care plan. ExxonMobil will, if applicable:

1. Continue and complete any cleanup action required under 30 TAC §331.68.
2. Continue to conduct any groundwater monitoring required under the permit until pressure in the Injection Zone decays to the point that the well's Cone of Influence no longer intersects the base of the lowermost USDW.
3. Submit a survey plat to the local zoning authority as designated by the TCEQ, and to the Regional Administrator of EPA Region VI as designated by the Director.
4. Provide appropriate notification and information to the Texas Railroad Commission and local authorities to enable the Texas Railroad Commission and local authorities to impose appropriate conditions on subsequent drilling activities that may penetrate the well's Confining or Injection Zone.
5. Retain, for a period of three years following well closure, records reflecting the nature, composition and volume of all injected fluids.
6. Record a notation on the deed within 60 days after approval of the Closure Plan by the TCEQ, which is normally examined during a title search, which will perpetually provide any potential purchaser of the property the following information:
    a. The fact that the land has been used to manage hazardous, non-hazardous and municipal wastes;
    b. The name and address of the state agency or local authority with which the plat was filed, as well as the Austin address of the UIC Unit of the TCEQ to which the Closure Report was submitted;
    c. The type and volume of waste injected, the Injection Interval(s) into which it was injected, and the time period over which injection occurred.

VI.D.4 Post-Closure Care Cost Estimate

ExxonMobil estimates that no additional expenditures beyond those required to plug the wells will be necessary to carry out the currently applicable post-closure requirements. Therefore, the estimated cost for post-closure care will be updated annually and as part of ExxonMobil's annual injection well report.

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TABLE VI-1

INJECTION WELL MONITORING AND REPORTING REQUIREMENTS

Exxon Mobil Corporation
Pasadena, Texas

Condition	Measurement Frequency	Specific Measurements to be Reported	When Reported to TCEQ
Annulus Pressure	Continuously Recorded	Instantaneous Minimum, Minimum Differential	Quarterly
Analysis of Fluid Injected	Annually Sampled	pH; Specific Gravity; Total Dissolved Solids; Cu, Ni, Ca, Na, SO_4, Cl; TOC; n-Butanol, Methanol, Progargyl, Vinyl Acetate, Methylpyrrolidone, and Formaldehyde	Annually
Injection Tubing Pressure	Continuously Recorded	Instantaneous Maximum, Monthly Average	Quarterly
Injection Flow Rate	Continuously Recorded	Instantaneous Maximum, Monthly Average	Quarterly
Cumulative Volume of Fluid Injected	Continuously Recorded	Monthly and Yearly Totals	Quarterly
Temperature of Fluid Injected	Continuously Recorded		Upon Request
Hours Operated	Continuously Recorded	Total Hours of Operation During Month	Quarterly
Corrosion	Coupons Monitored Quarterly	Percent Weight Loss; Corrosion Rate	Upon Request
Injected Fluid Specific Gravity and pH	Continuously or by Daily Grab Sample	Specific Gravity pH	Upon Request
Exceedance of Annulus Pressure or Injection Pressure Limits	Every Incident	Description of Event	Quarterly
Any Alarm or Shutdowns	Each Occurrence	Any Event Which Results in Significant Failure	Within 24 Hours of Incident if Well Integrity is Suspect
Changes in Volume of Annular Fluid	Continuously Recorded		Upon Request
Bottomhole Pressure	Annually	Direct Measurement or Calculated	Annually

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TABLE VI-1 (cont.)

INJECTION WELL MONITORING AND REPORTING REQUIREMENTS

Exxon Mobil Corporation
Pasadena, Texas

Condition	Measurement Frequency	Specific Measurements to be Reported	When Reported to TCEQ
Pressure Falloff	Annually as Part of MIT	Pressure Falloff Over Sufficient Time Span to Generate Curve	Annually
Newly Constructed/Newly Discovered Wells in AOR	Annually	Location and Tabulation of Data as Required in 30 TAC §331.121(a)(2)(B)	Annually
Mechanical Integrity of:			
a) Longstring Casing, Injection Tubing, and Annular Seal	Annually	Results of Pressure Test	Within 30 Working Days of Test Completion
b) Bottomhole Cement by RTS	Annually	RTS Log Evaluation	Within 30 Working Days of Test Completion
c) Fluid Movement Along Borehole	Every 5 years	Temperature, Noise or Other Approved Logging Methods	Within 30 Working Days of Test Completion
d) Casing Inspection Logs	Every 5 years or During Workover	Casing Inspection Log Interpretations	Within 30 Working Days of Test Completion
Any Well Workover	Time of Work	Workover Report of Field Activities and Reason for Workover	Within 30 Working Days of Test Completion or Quarterly Report, Whichever is First
Any other Required Test of the Injection Well	Time of Work	Test Results	Within 30 Working Days of Test Completion

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2/28/2024

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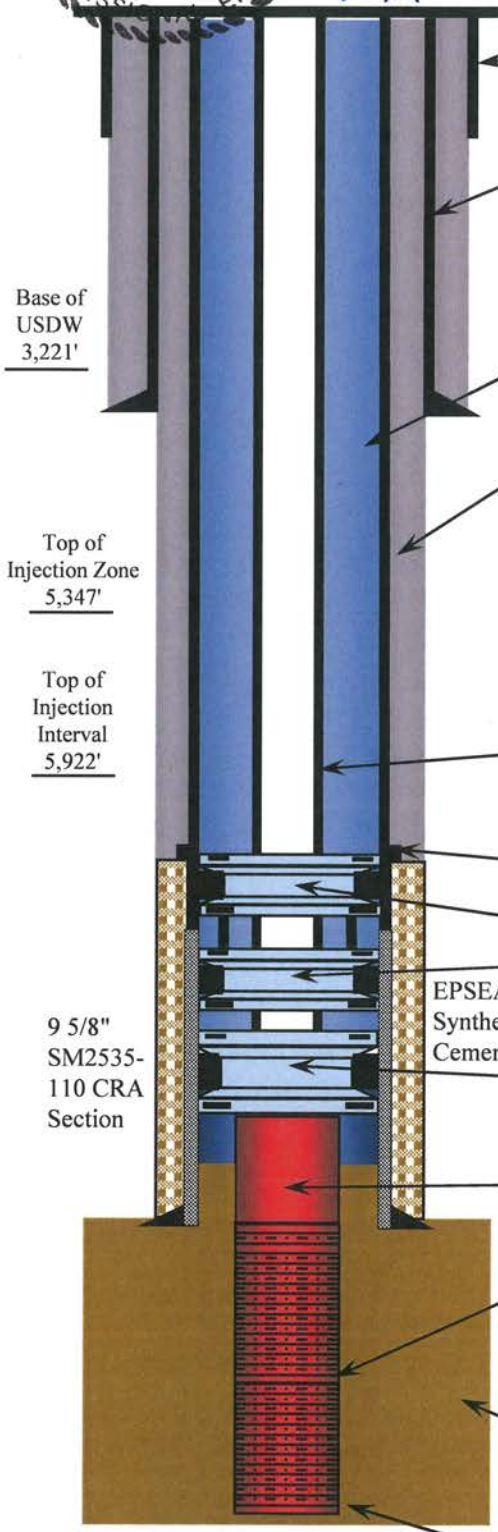
F-3501

FIGURE VI-1

Construction Schematic of ExxonMobil WDW-397

Pasadena, Texas

All Depths Reflect KB Elevation = 22' AGL for H&P Rig 146



Total Depth = Approx. 7,260'
PBTD = Approx. 7,150' Pipe, 7,140' Log

Conductor Pipe: 20" driven to approximately 180'.

Surface Casing: 13 3/8", 68 lb/ft, K-55, STC and BTC CS from surface to approx. 3,366' in 17 ½" hole. Cemented with lead slurry of 2,031 sx Modified Light Standard cement with 3% salt, 0.25% HR-7 and ¼ lb/sx Phenoseal from approx. 2,766' to surface and tail slurry of 360 sx Standard cement with 0.1% HR-5 from approx. 3,366' to 2,766'.

Annulus Fluid: Inhibited 9.0 lb/gal LCM NaCl brine packer fluid containing Tetra corrosion inhibitor, oxygen scavenger and biocide.

Longstring Casing: 9 5/8", 47 lb/ft, L-80, LTC CS from surface to approx. 6,264' pipe (**6,254' log**) and 9 5/8", 47 lb/ft, SM2535-110 (110 ksi) CRA with VAM FJL connections from approx. 6,264' to 6,644' pipe (**6,254' to 6,634' log**). Cemented as follows:
First Stage: 59 barrels EPSEAL synthetic cement from approx. 6,644' to 6,209' pipe **(6,634' to 6,199' log).**
Second Stage: Lead slurry: 495 sx Modified Light Premium with 3% salt, 0.30% HR-7 and ¼ lb/sk Phenoseal from approx. 3,012' to surface pipe **(3,002' to surface log).** Intermediate slurry: 2,050 sx 50/50 Premium Pozmix with 2% Gel, 0.4% Halad 334, 0.1% HR-5 and ¼ lb/sk Phenoseal from approx. 5,709' to 3,012' pipe **(5,699' to 3,002' log)**. Tail slurry: 330 sx Premium cement with 0.4% Halad 334 and 0.15% HR-5 from approx. 6,209' to 5,709' pipe **(6,199' to 5,699' log)**.

Injection Tubing: 5", 18 lb/ft, Alloy G-3, 110 ksi, VAM ACE and 5", 18 lb/ft, SM2550, 110 ksi, VAM ACE combined string with Delta P Duplex 2507 CRA latching seal assembly (w/ 3.750" integral polished bore profile) into top of packer at 6,446' pipe. 7", 26 lb/ft, Duplex 2507 landing joint crossed over to 5" VAM ACE.

Stage Tool: 9 5/8" from approx. 6,209' to 6,211' pipe (**6,199' to 6,201' log**).

Straddle Packer Assembly: Delta P 9 5/8" x 7" CS retrievable upper and lower packers connected by 7", 26 lb/ft, LTC CS casing made up to upper packer and tagged into seal receptacle in lower packer. Overall assembly set from 6,181' to 6,315' pipe.

Injection Packer: Groundwater Protection Systems 9 5/8" x 4 1/2" Duplex 2507 CRA retrievable packer and Duplex 2507 CRA sealing overshot from 6,446' to 6,462' pipe.

Blank Riser & Screen: 5 ½" Duplex 2507 CRA blank/base pipe and 25 gauge Alloy 825 wire-wrapped screen assembly gravel packed in 16" open hole with 67,250 lb of 12/20 mesh sand and topped off with 1,400 lb of 12/20 mesh sand on 5/18/06 with top of sand at 6,460'. Screen assembly relative to **log** depth is as follows:

P/N	**6,449' to 6,459'**	**Blank**	**6,883' to 6,918'**
Blank	**6,459' to 6,477'**	**Screen**	**6,918' to 6,937'**
UTT Jt	**6,477' to 6,497' (UTT Screen f/ 6,492' to 6,495')**	**Blank**	**6,937' to 6,955'**
Blank	**6,497' to 6,606'**	**LTT Jt**	**6,955' to 6,975'**
ITT Jt	**6,606' to 6,626' (ITT Screen f/ 6,621' to 6,624')**	**(LTT Screen f/ 6,971' to 6,974')**	
Blank	**6,626' to 6,644'**	**Screen**	**6,975' to 7,082'**
Screen	**6,644' to 6,665'**	**Blank**	**7,082' to 7,100'**
Blank	**6,665' to 6,721'**	**Screen**	**7,100' to 7,139'**
Screen	**6,721' to 6,883'**	**Bull Plug**	**7,139' to 7,140'**

Open Hole: Drilled and underreamed to 16" from approx. 6,644' to 7,150' pipe (**6,634' to 7,140' log**). Cement plug for screen base from approx. 7,260' to 7,150' pipe (**7,250' to 7,140' log**).

Fill Depth: 7,097' on 11/29/23 during RTS.

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2/28/2024

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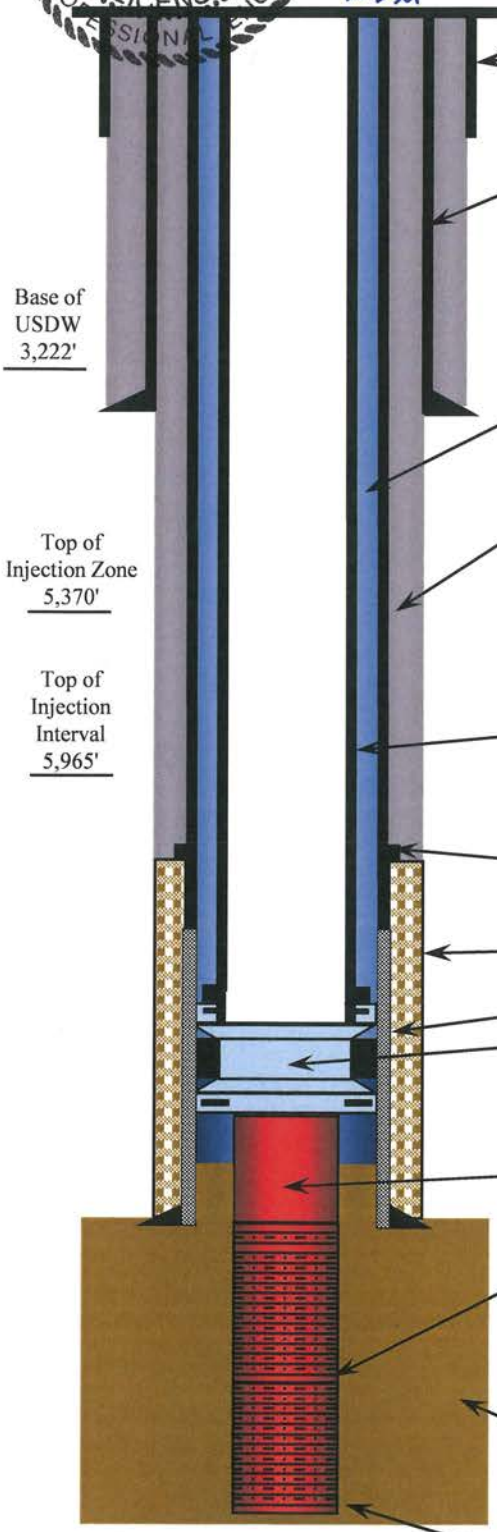
FIGURE VI-2
Construction Schematic of ExxonMobil WDW-398
Pasadena, Texas

All Depths Reflect KB Elevation = 25' AGL for H&P Rig 226



Conductor Pipe: 20" driven to approximately 95'.

Surface Casing: 13 3/8", 61 lb/ft, J-55, BTC CS from surface to approx. 3,372' in 17 ½" hole. Cemented with lead slurry of 2,145 sx EconoCem cement with 3% salt, 0.6% HR-7 and ¼ lb/sx PhenoSeal calculated to cover the interval from approx. 2,770' to surface and tail slurry of 555 sx HalCem cement from approx. 3,372' to 2,770'. Top off with 100 sx Standard cement.

Annulus Fluid: 3% KCl fluid containing Tetra corrosion inhibitor, oxygen scavenger and biocide. Topped with 100 gallons diesel.

Longstring Casing: 9 5/8", 53.5 lb/ft, Q125, Hydril 563, CS from surface to approx. 6,547' and 9 5/8", 53.5 lb/ft, SM2535-110, Vam Top, chrome alloy casing from 6,547' to approx. 6,760'. Cemented as follows:
First Stage: 50 barrels EPSEAL synthetic cement from approx. 6,760' to 6,540'.
Second Stage: Lead slurry: 1,700 sx EconoCem with 0.4% Halad 334, 0.1% HR-7, 0.15% WG-17 and ¼ lb/sx PhenoSeal from approx. 6,040' to surface. Tail slurry: 385 sx HalCem cement with 0.4% Halad 334 and 0.3% HR-800 from approx. 6,540' to 6,040'.

Injection Tubing: 6 5/8" Future Pipe Red Box 2000 fiberglass tubing with Nexus Veil lining and Delta P Duplex 2507 CRA latching seal assembly (w/ 5.125" integral polished bore profile) into top of packer at approx. 6,600'. Crossed over from 6 5/8" FG to 7", 26 lb/ft, Duplex 2507 landing joint at the surface.

Stage Tool: 9 5/8" from approx. 6,540' to 6,543'.

EPSEAL Synthetic Cement

9 5/8" SM2535 CRA Section

Packer: Delta P Model 12, 9 5/8" x 6 5/8" Duplex 2507 CRA retrievable packer (w/ 5.0" integral polished bore profile) and Duplex 2507 CRA sealing overshot from 6,600' to 6,615'.

Blank Riser & Screen: 5 ½" G3-110 CRA blank/base pipe and G3-110, 25 gauge Alloy 825 wire-wrapped screen assembly gravel packed in 16" open hole with 41,400 lb of 12/20 mesh sand and topped off with 6,650 lb of 12/20 mesh sand on 8/20/09 and 9/2/09 with top of sand at 6,668'. Screen assembly relative to **log** depth is as follows:

P/N	6,613' to 6,623'		Screen	6,870' to 6,904'
Blank	6,623' to 6,652'		Screen	6,904' to 6,937'
UTT Jt	6,652' to 6,683'	(with 10 ft of Screen)	Screen	6,937' to 6,969'
Blank	6,683' to 6,713'		Screen	6,969' to 7,000'
Blank	6,713' to 6,743'		Screen	7,000' to 7,033'
Blank	6,743' to 6,771'		Screen	7,033' to 7,065'
Screen	6,771' to 6,804'		Screen	7,065' to 7,098'
Screen	6,804' to 6,837'		Screen	7,098' to 7,131'
Screen	6,837' to 6,870'		Screen	7,131' to 7,164'
			Bull Plug	7,164' to 7,165'

Total Depth = 7,225'
PBTD = 7,165'

Open Hole: Drilled and underreamed to 16" from approx. 6,760' to 7,225'. Cement plug for screen base from approx. 7,225' to 7,165'.

Fill Depth: 6,925' on 6/29/23 CWS RTS Log.

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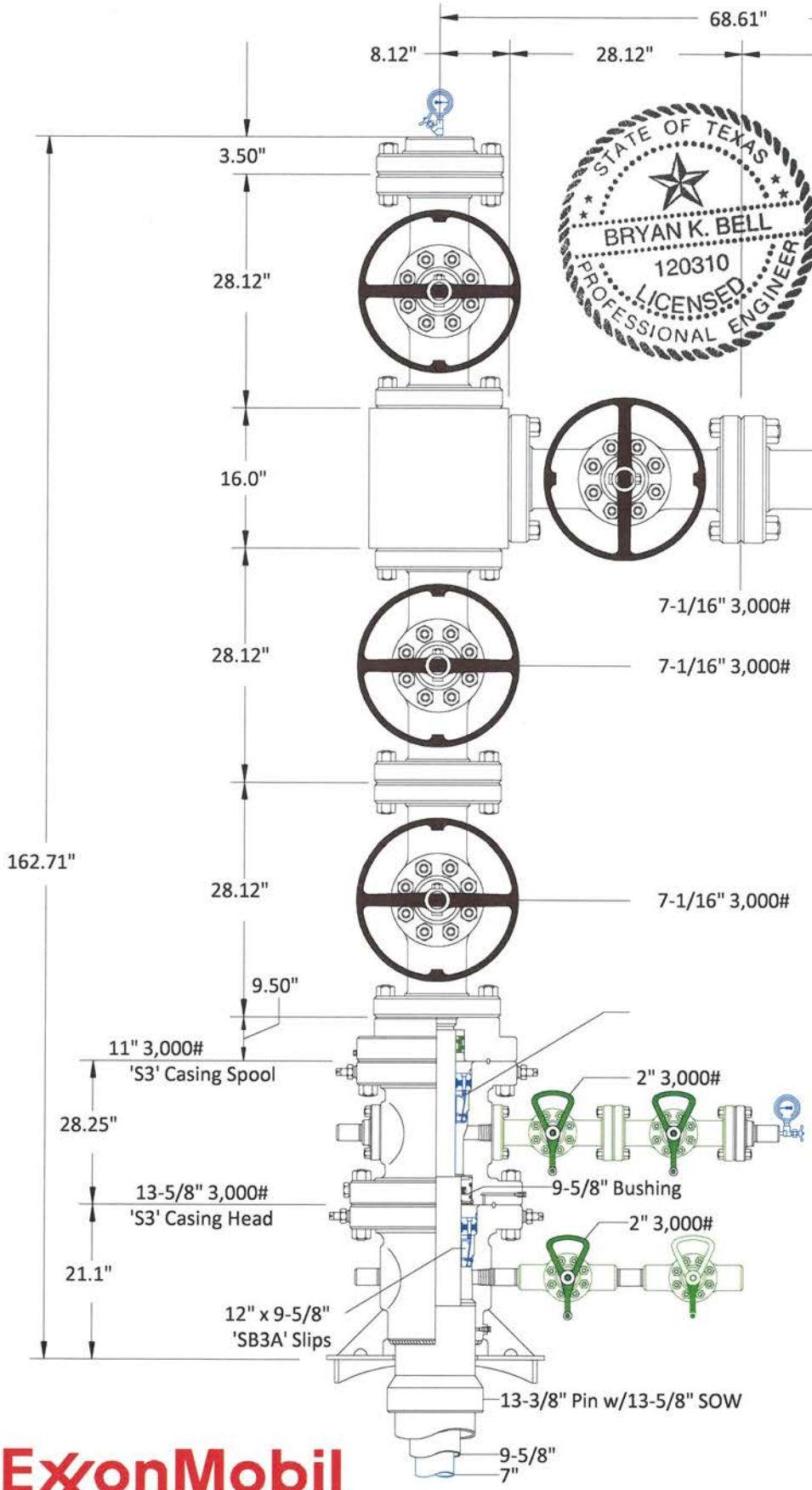

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CAMERON

Figure VI-3
WDW-397 Wellhead and Tree Schematic

Name:	Jeanette	Date:	6/3/2013	Working Pressure:	#	20056868-03A

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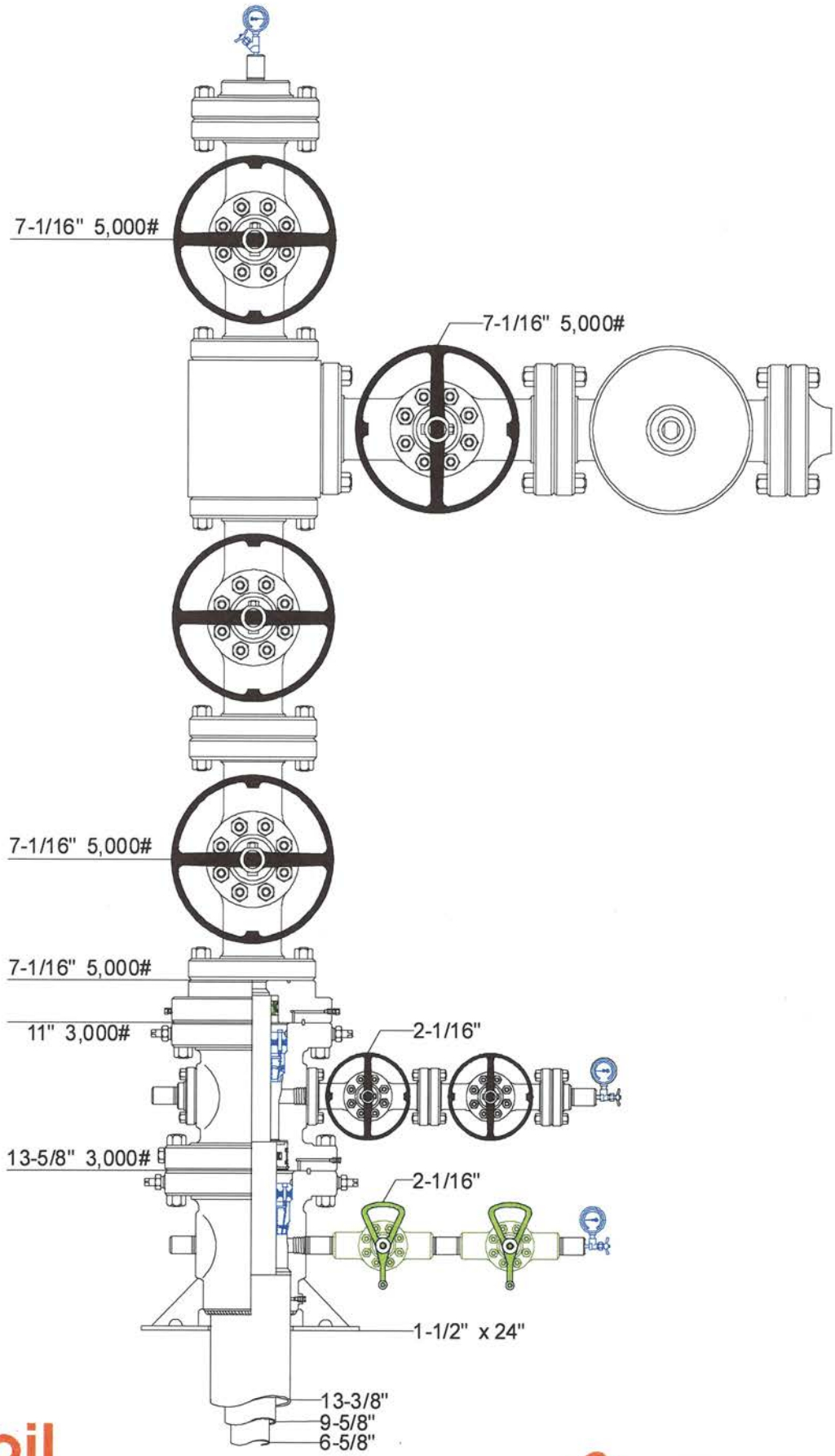

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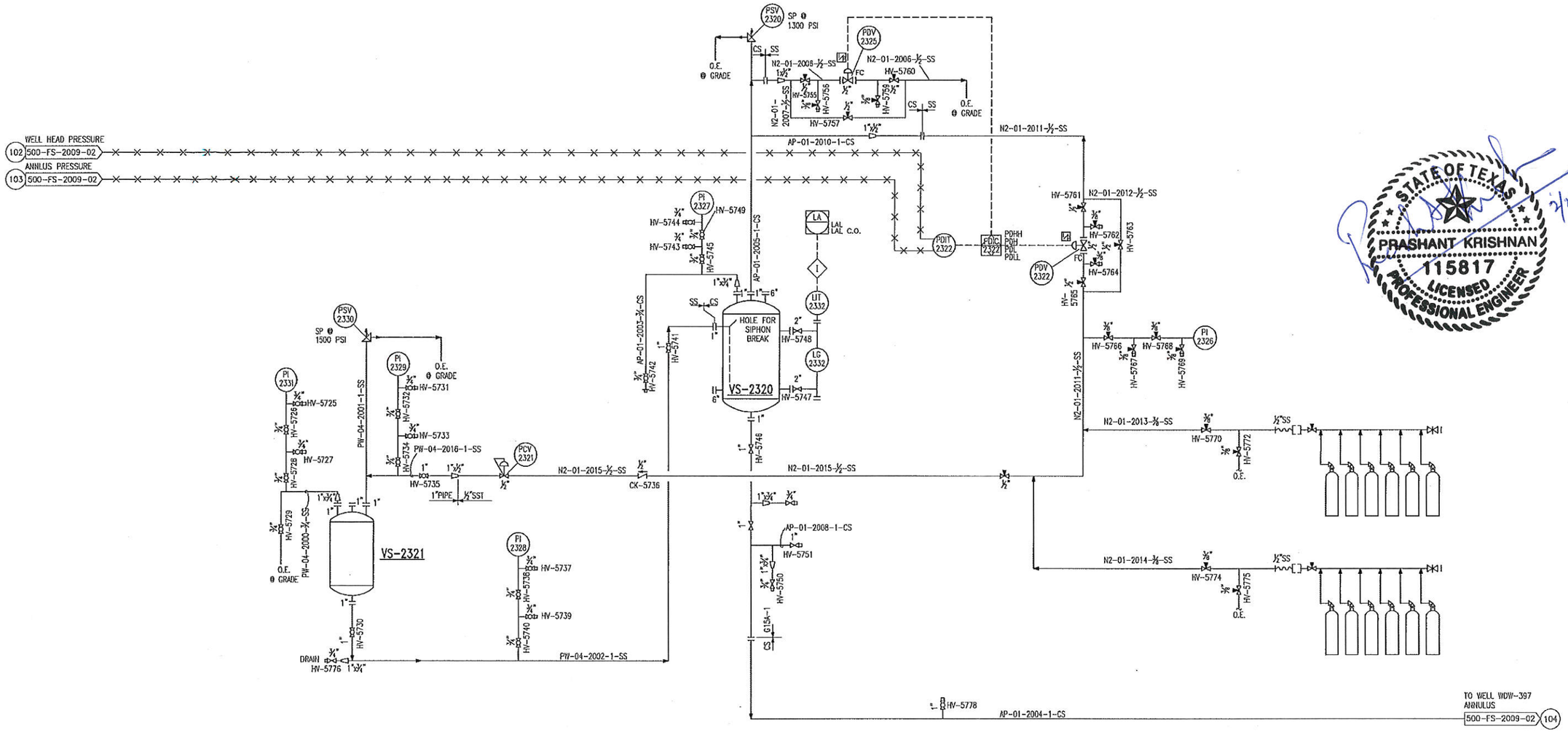
Figure VI-4
WDW-398 Wellhead and Tree Schematic

CAMERON

Name:	Jeanette	Date:	10-13-08	Working Pressure:	#	20476383

TAG No.: VS-2321	
DESCRIPTION: ANNULUS CHEM. MAKEUP VESSEL	
CAPACITY: 9 GAL	
MANUFACTURER: McIVER AND SMITH FAB. INC.	
MODEL:	
TEMPERATURE DESIGN:	150°F
PRESSURE DESIGN:	1500
VACUUM: FULL	
MAT'L: SA-312 TP 316L	
REMARKS:	

TAG No.: VS-2320	
DESCRIPTION: ANNULUS BRINE VESSEL	
CAPACITY: 300 GAL	
MANUFACTURER: McIVER AND SMITH FAB. INC.	
MODEL:	
TEMPERATURE DESIGN:	150°F
PRESSURE DESIGN:	1300
VACUUM: FULL	
MAT'L: SA-516 GR. 70	
REMARKS:	



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	ELEC.					ELEC.					ELEC.					ELEC.					ELEC.	
	CIVIL/STR.					CIVIL/STR.					CIVIL/STR.					CIVIL/STR.					CIVIL/STR.	
	FLEX.					FLEX.					FLEX.					FLEX.					FLEX.	
	MECH.					MECH.					MECH.					MECH.					MECH.	
	APPROVED:		DATE:			APPROVED:		DATE:			APPROVED:		DATE:			APPROVED:		DATE:			APPROVED:	DATE:
	PROJ. ENGR.:		PHONE:			PROJ. ENGR.:		PHONE:			PROJ. ENGR.:		PHONE:			PROJ. ENGR.:		PHONE:			PROJ. ENGR.:	PHONE:
	PROJ. ENGR. ACCEPTANCE:					PROJ. ENGR. ACCEPTANCE:					PROJ. ENGR. ACCEPTANCE:					PROJ. ENGR. ACCEPTANCE:					PROJ. ENGR. ACCEPTANCE:	
	DATE:					DATE:					DATE:					DATE:					DATE:	

DESIGN REFERENCES:

ExxonMobil
PASADENA PRE-INJECTION TREATMENT FACILITY

INJECTION WELL #397
VS-2320, VS-2321
ANNULUS PRESSURIZATION SYSTEM
PIPING & INSTRUMENTATION DIAGRAM

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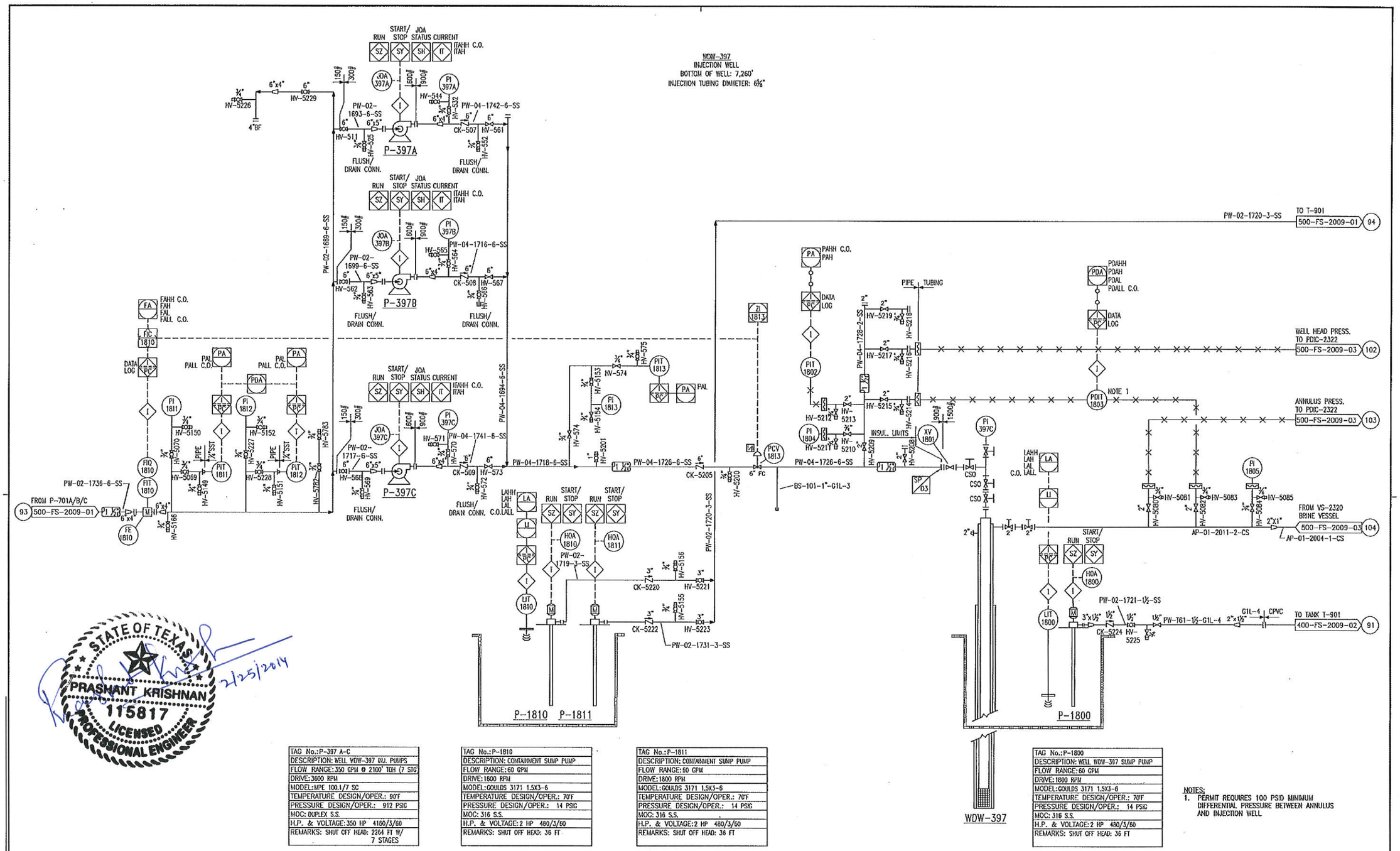
SHEET: 1 OF 1
REV. 0



TAG No.: P-397 A-C
DESCRIPTION: WELL WDW-397 INJ. PUMPS
FLOW RANGE: 350 GPM @ 2100' TDH (7 STG)
DRIVE: 3600 RPM
MODEL: MPE 100.1/7 SC
TEMPERATURE DESIGN/OPER.: 90°F
PRESSURE DESIGN/OPER.: 912 PSIG
MOC: DUPLEX S.S.
H.P. & VOLTAGE: 350 HP 4160/3/60
REMARKS: SHUT OFF HEAD: 2264 FT W/ 7 STAGES

TAG No.: P-1810
DESCRIPTION: CONTAINMENT SUMP PUMP
FLOW RANGE: 60 GPM
DRIVE: 1800 RPM
MODEL: GOULDS 3171 1.5X3-6
TEMPERATURE DESIGN/OPER.: 70°F
PRESSURE DESIGN/OPER.: 14 PSIG
MOC: 316 S.S.
H.P. & VOLTAGE: 2 HP 480/3/60
REMARKS: SHUT OFF HEAD: 36 FT

TAG No.: P-1811
DESCRIPTION: CONTAINMENT SUMP PUMP
FLOW RANGE: 60 GPM
DRIVE: 1800 RPM
MODEL: GOULDS 3171 1.5X3-6
TEMPERATURE DESIGN/OPER.: 70°F
PRESSURE DESIGN/OPER.: 14 PSIG
MOC: 316 S.S.
H.P. & VOLTAGE: 2 HP 480/3/60
REMARKS: SHUT OFF HEAD: 36 FT

TAG No.: P-1800
DESCRIPTION: WELL WDW-397 SUMP PUMP
FLOW RANGE: 60 GPM
DRIVE: 1800 RPM
MODEL: GOULDS 3171 1.5X3-6
TEMPERATURE DESIGN/OPER.: 70°F
PRESSURE DESIGN/OPER.: 14 PSIG
MOC: 316 S.S.
H.P. & VOLTAGE: 2 HP 480/3/60
REMARKS: SHUT OFF HEAD: 36 FT

NOTES:
1. PERMIT REQUIRES 100 PSID MINIMUM DIFFERENTIAL PRESSURE BETWEEN ANNULUS AND INJECTION WELL

CLASS:

REVISION	AR#	L#
DRAWN		
CHECK		
INSTR.		
ELEC.		
CIVIL/STR.		
FLEX.		
MECH.		

REVISION DESCRIPTION:

APPROVED: DATE:
PROJ. ENGR.: PHONE:
PROJ. ENGR. ACCEPTANCE:
DATE:

DESIGN REFERENCES:

ELEV. LOC. BENCH MK. SURVEY NO.

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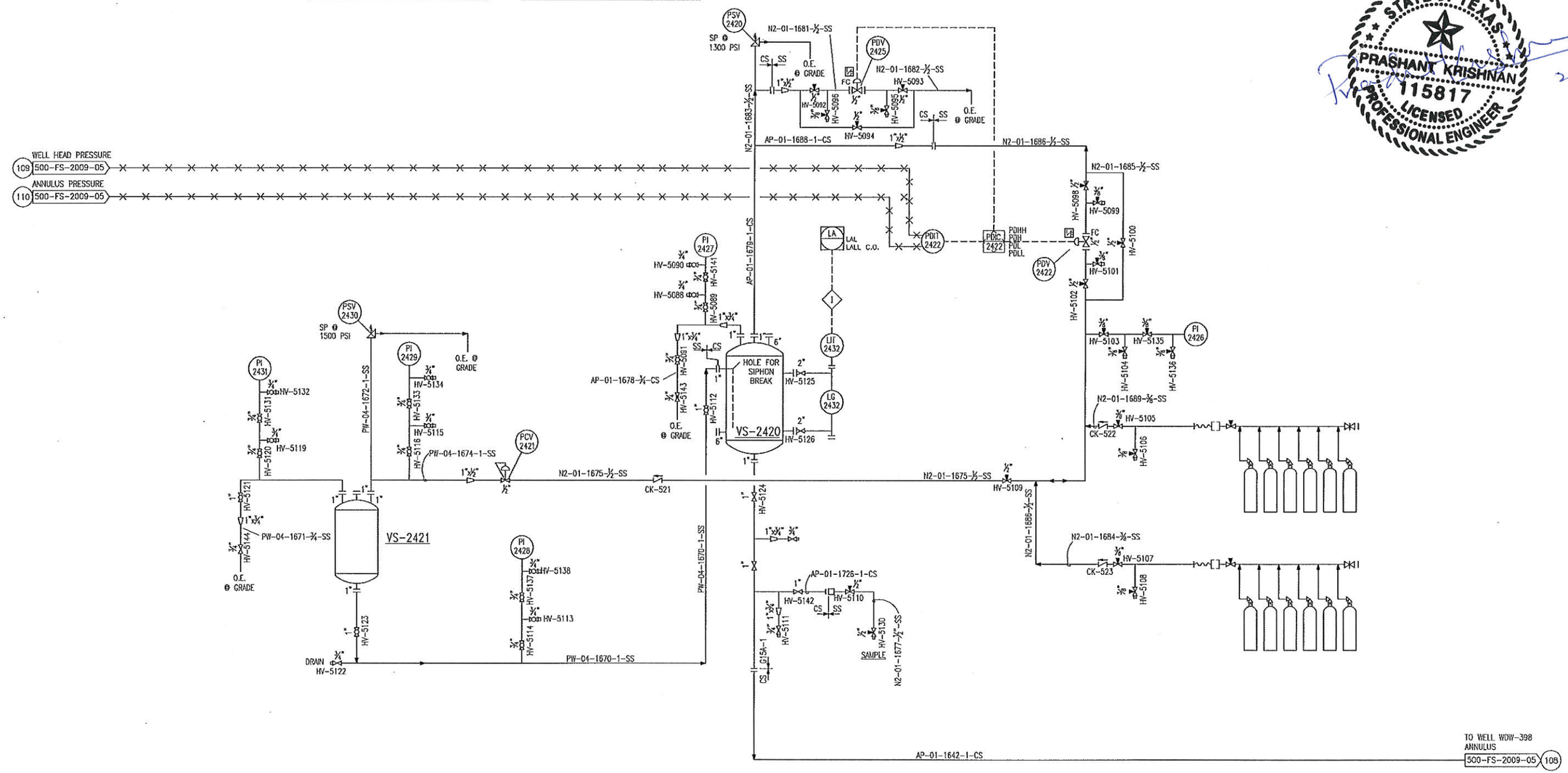
PASADENA PRE-INJECTION TREATMENT FACILITY

INJECTION WELL 397
P-397A/B/C, P-1810/1811,
P-1800, WDW-397
PIPING & INSTRUMENTATION DIAGRAM

DRAWING NO. 500-FS-2009-02
SCALE: NONE
SHEET: 1 OF 1
REV. 0

TAG No.: VS-2421	
DESCRIPTION: ANNULUS CHEM. MAKEUP VESSEL	
CAPACITY: 9 GAL	
MANUFACTURER:	
MODEL:	
TEMPERATURE DESIGN:	150°F
PRESSURE DESIGN:	1500
VACUUM:	
MAT'L: STAINLESS STEEL	
REMARKS:	

TAG No.: VS-2420	
DESCRIPTION: ANNULUS BRINE VESSEL	
CAPACITY: 300 GAL	
MANUFACTURER:	
MODEL:	
TEMPERATURE DESIGN:	150°F
PRESSURE DESIGN:	1300
VACUUM:	
MAT'L: CARBON STEEL	
REMARKS:	



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DESIGN REFERENCES:

CLASS:	REVISION		AR#	L#	REVISION DESCRIPTION:	REVISION		AR#	L#	REVISION DESCRIPTION:	REVISION		AR#	L#	REVISION DESCRIPTION:	REVISION		AR#	L#	REVISION DESCRIPTION:	AR#		LOG #
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	MECH.					MECH.					MECH.					MECH.					MECH.		
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	DATE:					DATE:					DATE:					DATE:					DATE:		

ELEV. LOC. BENCH MK. SURVEY NO.

ExxonMobil
PASADENA PRE-INJECTION TREATMENT FACILITY

INJECTION WELL #398
VS-2420, VS-2421
ANNULUS PRESSURIZATION SYSTEM
PIPING & INSTRUMENTATION DIAGRAM

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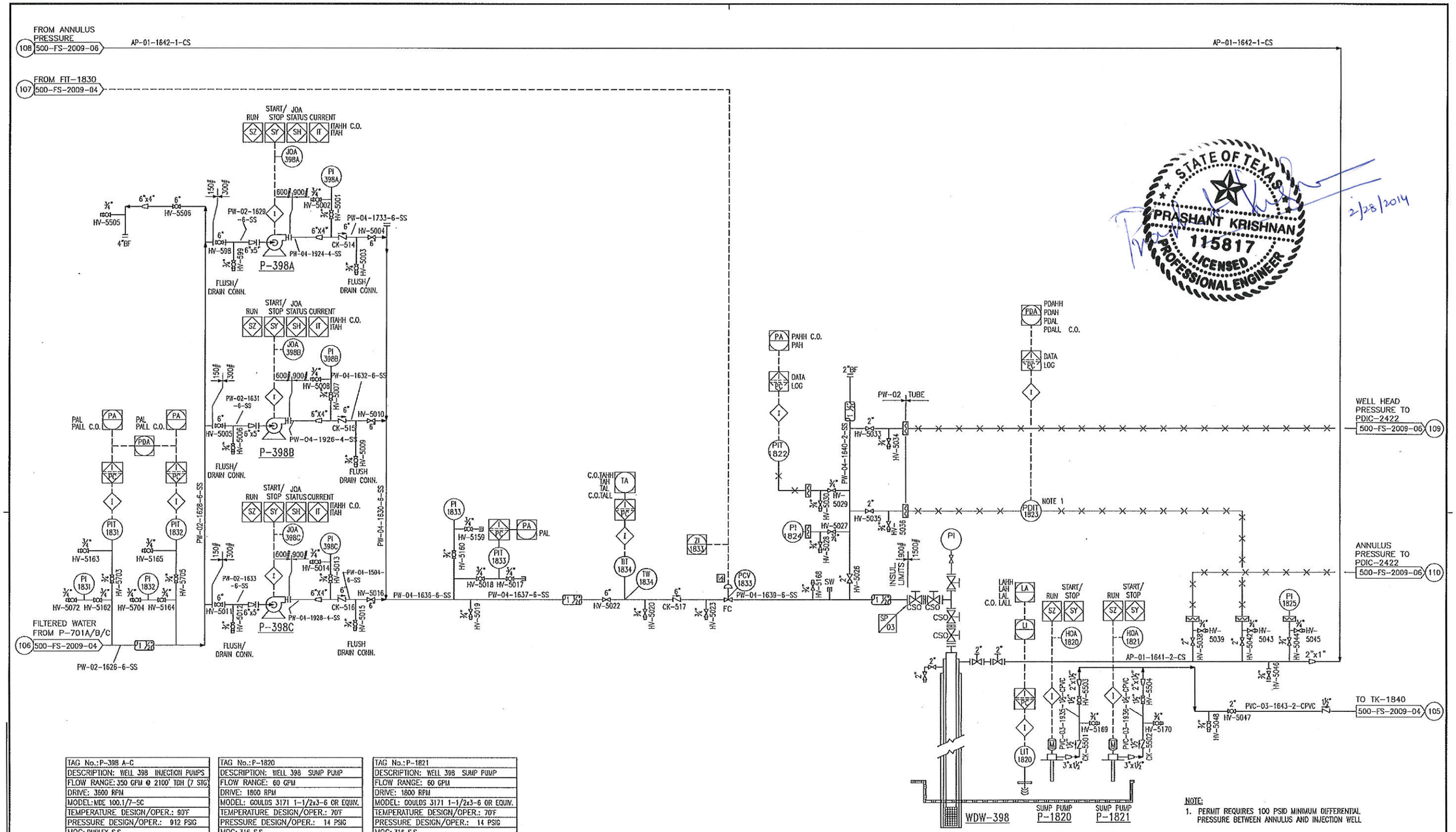
500-FS-2009-06	SHEET: 1 OF 1	REV. 0



TAG No.: P-398 A-C
DESCRIPTION: WELL 398 INJECTION PUMPS
FLOW RANGE: 350 GPM @ 2100' TDH (7 STG)
DRIVE: 3600 RPM
MODEL: MDE 100.1/7-SC
TEMPERATURE DESIGN/OPER.: 90'F
PRESSURE DESIGN/OPER.: 912 PSIG
MOC: DUPLEX S.S.
H.P. & VOLTAGE: 350 HP 4160/3/60
REMARKS: SHUT OFF HEAD: 2264 FT W/ 7 STAGES

TAG No.: P-1820
DESCRIPTION: WELL 398 SUMP PUMP
FLOW RANGE: 60 GPM
DRIVE: 1800 RPM
MODEL: GOULDS 3171 1-1/2x3-6 OR EQUIV.
TEMPERATURE DESIGN/OPER.: 70'F
PRESSURE DESIGN/OPER.: 14 PSIG
MOC: 316 S.S.
H.P. & VOLTAGE: 2 HP 480/3/60
REMARKS: SHUT OFF HEAD: 36 FT

TAG No.: P-1821
DESCRIPTION: WELL 398 SUMP PUMP
FLOW RANGE: 60 GPM
DRIVE: 1800 RPM
MODEL: GOULDS 3171 1-1/2x3-6 OR EQUIV.
TEMPERATURE DESIGN/OPER.: 70'F
PRESSURE DESIGN/OPER.: 14 PSIG
MOC: 316 S.S.
H.P. & VOLTAGE: 2 HP 480/3/60
REMARKS: SHUT OFF HEAD: 36 FT

NOTE:
1. PERMIT REQUIRES 100 PSID MINIMUM DIFFERENTIAL PRESSURE BETWEEN ANNULUS AND INJECTION WELL

CLASS:
REVISION | AR# | LI# | REVISION DESCRIPTION:
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PROJ. ENGR. ACCEPTANCE:
DATE:

DESIGN REFERENCES:

ExxonMobil
PASADENA PRE-INJECTION TREATMENT FACILITY

INJECTION WELL #398
P-398A/B/C, P-1820, P-1821
INJECTION WELL-WDW-398
PIPING & INSTRUMENTATION DIAGRAM

DRAWING NO. 500-FS-2009-05
SCALE: NONE
SHEET: 1 OF 1
REV. 0

Geoscientist Seal

Signature by Texas Professional Geoscientist

I, Moonsoo (Brian) Shin, the undersigned state: As an employee of Terra Dynamics Incorporated that I am authorized to prepare this document (***VII. Reservoir Mechanics***) and that this document (***VII. Reservoir Mechanics***) was prepared under my supervision and direction. All facts stated herein are true, correct and complete to the best of my knowledge. The geosciences information, calculations and analyses attested to in this document (***VII. Reservoir Mechanics***) were prepared in accordance with generally and currently accepted geosciences principles and practices. The information specifically covered by this seal includes Pages VII-1 to VII-22, Figures VII-1 through VII-4 and Tables VII-1 through VII-6.

Signature

2/26/2024

Date

Licensed Professional Geoscientist #15260
State of Texas
Terra Dynamics Incorporated
Texas Registered Engineering Firm F-3501

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VII. RESERVOIR MECHANICS

The Injection Interval has sufficient permeability, porosity, thickness and areal extent to prevent migration of constituents from the Injection Zone into a USDW or freshwater aquifer. A summary of the reservoir parameters, bottomhole pressure (BHP) and bottomhole temperature (BHT), fracture gradient, Cone of Influence and pressure buildup calculations is provided in the following sections. The following is a discussion of the reservoir mechanics and hydrology of the injection reservoir.

VII.1 Injection Zone Stratigraphy and Lithology

The Injection Zone for the two ExxonMobil injection wells is found within the Frio Formation. The Frio Formation consists of massive sands interbedded with thick layers of shale with a minor degree of interbedded sand, shale and sandy shale. The upper part of the Frio Formation contains a greater degree of shale interbedded with comparatively thin beds of sand and sandy shale, while the lower portion of the Frio Formation consists primarily of massive sands. In the area of interest, the Frio Formation has a gross thickness of about 1,900 feet with the Lower Frio being the prime horizon for injection. Figure V-23 is a structure map on the top of the Frio Formation and Figure V-22 is a gross thickness map of the Injection Zone.

VII.2 Injection Reservoir Parameters

Stratigraphy

The lower portion of the Frio Formation comprises the Injection Interval for the two ExxonMobil injection wells. The net sand within the Injection Interval is approximately 710 feet at the injection well site. The defined **Injection Zone** depths for WDW-397 are 5,347 to 7,272 feet KB and for WDW-398 are 5,370 to 7,295 feet KB. The defined **Injection Interval** depths for WDW-397 are 5,922 to 7,272 feet KB and for WDW-398 are WDW-5,965 to 7,295 feet KB.

Across the AOR, the upper portion of the Frio Formation serves as a containment interval for the Injection Interval. The containment interval lies between the top of the Injection Interval and the top of the Injection Zone. The **containment interval** depths for the two ExxonMobil injection wells are from 5,347 to 5,922 feet KB. The containment interval provides additional low permeability strata which prevents upward movement of injected fluids.

The Injection Interval includes multiple sand layers, however, the lower portion of the Injection Interval below about 6,450 feet contains more massive sands and is utilized for injection. The

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structure on top of the Injection Interval is relatively flat, except where disrupted by the presence of faulting. Figure V-24 is a structure map on top of the Injection Interval and Figure V-25 is a net sand thickness map of the Injection Interval.

Within the Injection Interval, select sands are utilized for the injection of waste. These sands are identified as the Frio D Sand, Frio E&F Sand and the Frio A/B Sand. The Frio sands of interest to this demonstration are found at the following depths in the WDW-397 and WDW-398 injection wells:

Frio Sands	**WDW-397**	**WDW-398**
Frio D Sand	6,635 feet to 6,664 feet KB	6,670 feet to 6,715 feet KB
Frio E&F Sand	6,712 feet to 6,930 feet KB	6,756 feet to 6,940 feet KB
Frio A/B Sand	6,960 feet to 7,126 feet KB	6,991 feet to 7,155 feet KB

Although the Frio D Sand is present at the location of WDW-398, it is poorly developed. Therefore, WDW-398 has not been completed for use of injection into the Frio D Sand.

Lithology

Petrographic analysis was performed on whole and sidewall cores collected during the drilling of nearby Lyondell Chemicals WDW-148, which is located in Channelview, Texas (eight miles to the northeast of the ExxonMobil facility). WDW-148 is also completed into the Frio Formation. Petrographic analyses of the core material showed a clean, well-sorted, medium-grained feldspathic litharenite. The Injection Interval core samples were composed of approximately 85 percent quartz, 12 percent feldspar, and minor amounts of chert and clay minerals. The quartz grains were generally monocrystalline, free of inclusions, and showed optically continuous overgrowth at grain boundaries. Orthoclase was the most common feldspar, but plagioclase and microcline were also present. The samples were essentially devoid of matrix material, with secondary quartz overgrowths, secondary feldspar overgrowths and authigenic pyrite acting as a weak, patchy cementing agent. Reported porosity values ranged from about 26 percent to 34 percent and permeability values ranged from about 450 to 3,450 milliDarcies (mD).

During the drilling and completion of the nearby Akzo Nobel WDW-343 injection well, sidewall cores were collected. Particle size analyses indicate that the Frio sands are composed of fine-grained to very fine-grained sand which is slightly shaley. Reported porosity values ranged from about 26 to 32 percent. Reservoir testing was conducted after well completion and a permeability value of about 2,950 mD was derived for the completed Frio interval.

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Shales in the Injection Zone are alumino-silicates, primarily composed of clays and quartz, with smaller amounts of feldspar, carbonates and miscellaneous oxides. A typical Frio shale is composed of approximately 60 percent (or greater) clay minerals and 25 to 30 percent quartz, with the remaining portion composed of feldspars, carbonates and iron oxides (Pettijohn, 1975).

Reservoir Thickness

The defined Injection Interval depths and net sand for the ExxonMobil injection wells are as follows:

Well No.	Injection Interval	Net Permeable Thickness
WDW-397	5,922 to 7,272 feet KB	710 feet
WDW-398	5,965 to 7,295 feet KB	710 feet

The ExxonMobil injection wells are not perforated across every sand within the Injection Interval. The initial completion intervals for each well are as follows:

Well No.	Screened Interval	Net Permeable Thickness
WDW-397	6,644 to 7,139 feet KB	309 feet
WDW-398	6,771 to 7,164 feet KB	184 feet

Although the Injection Interval is approximately 710 feet thick in net permeable sand, a smaller portion of the Injection Interval (lower Injection Interval) will be utilized for active injection. The net receiving interval thickness in WDW-397 was determined to be 309 feet based on information recorded during the spinner survey performed on November 30, 2022 during the annual Mechanical Integrity Testing. The net receiving interval thickness in WDW-398 was determined to be 184 feet based on the information recorded during the Radioactive Fluid Velocity Survey performed on July 28, 2023 during the annual Mechanical Integrity Testing.

Although the Injection Interval is screened over a greater thickness, for purposes of this application and calculations associated with determinations of reservoir pressure buildup and waste plume dimensions, a reservoir thickness of **150 feet** is assumed to be representative of the thickness of the completion interval.

Porosity

During the drilling and completion of WDW-397, four whole cores were collected between 5,596 and 6,857 feet KB from the permitted Injection Zone and permitted Injection Interval in WDW-397. In addition, a total of 39 quantifiable sidewall core samples from 5,350 to 7,124 feet KB, were collected from the permitted Injection Zone and permitted Injection Interval in WDW-

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397. During the drilling and completion of WDW-398, a total of 33 quantifiable sidewall core samples from 6,639 to 7,155 feet KB, were collected from the permitted Injection Zone and permitted Injection Interval in WDW-398. The core samples were sent to Core Laboratories in Houston, Texas for routine whole core and standard sidewall analysis. The WDW-397 Core Lab sidewall core and whole core analyses for WDW-397 and WDW-398 are included in Appendix B.

Whole core analysis provided porosity values ranging from 25.68 to 33.91 percent across the Frio E&F Sand with the highest porosity being observed at 6,843.55 feet. No whole cores were collected from either the Frio D Sand or the Frio A/B Sand. The average porosity for the sand portions of the whole core-sampled Frio E&F Sand is 30.82 percent. Since whole core test results are considered more reliable than sidewall core results (due to the percussive nature of sidewall core extraction resulting is some degree of sample crush), the average porosity value obtained from whole core testing is accepted as a representative value of the average porosity of the Frio E&F Sand.

Sidewall cores were collected from both the Frio E&F Sand and the Frio A/B Sand. The sidewall core analysis from the Frio E&F Sand collected in WDW-397 provides porosity values ranging from 27.2 to 29.5 percent. The highest porosity exists within the interval at 6,785 feet. The average porosity for the sand portions of the sidewall core-sampled Frio E&F Sand in WDW-397 is 28.4 percent. The sidewall core analysis from the Frio A/B Sand in WDW-397 provides porosity values ranging from 28.3 to 29.6 percent. The highest porosity exists within the interval at 7,045 feet. The average porosity for the sand portions of the sidewall core-sampled Frio A/B Sand in WDW-397 is 29.0 percent.

The sidewall core analysis from the Frio E&F Sand collected in WDW-398 provides porosity values ranging from 23.6 to 32.9 percent. The highest porosity exists within the interval at 6,795 feet. The average porosity for the sand portions of the sidewall core-sampled Frio E&F Sand in WDW-398 is 28.6 percent. The sidewall core analysis from the Frio A/B Sand in WDW-398 provides porosity values ranging from 25.5 to 33.3 percent. The highest porosity exists within the interval at 7,095 feet. The average porosity for the sand portions of the sidewall core-sampled Frio A/B Sand in WDW-398 is 31.6 percent.

The porosity of the Injection Interval sands in the WDW-397 and WDW-398 injection wells were confirmed by comparison to the porosity determined from analyses of whole and sidewall core samples taken from Sasol Chemicals (USA), LLC (Sasol) (formerly Merisol Company)

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WDW-147 and WDW-319 at the time of completion. Whole core porosity from cores collected from WDW-319 averages 32 percent in the Frio E&F Sand and 31 percent in the Frio A/B Sand. Average porosity of the whole cores taken in the Frio E&F Sand during construction of Sasol's WDW-147 injection well is 31 percent.

To be conservative in the modeling of both pressure buildup and plume transport, a porosity of **28 percent** is assigned to all sands in the WDW-397 and WDW-398 Injection Interval.

Bottomhole Temperature

The bottomhole temperature (BHT) of the Injection Interval was estimated based on the temperatures recorded on the original open-hole logs ran in WDW-397 at the time of completion, the temperature survey ran in WDW-397 on May 23, 2006 and temperature data collected in nearby Class I injection wells and artificial penetrations. A BHT of 160°F at a depth of 6,638 feet KB was recorded on the February 9, 2006, Halliburton Array Induction Spectral Density Dual Spaced Neutron log. At the time of logging, 10.3 hours had elapsed since the well was last circulated. A BHT of 160 °F at a depth of 7,246 feet KB was also recorded on the February 27, 2006, Halliburton Array Induction Spectral Density Dual Spaced Neutron log. At the time of logging, 10 hours had elapsed since the well was last circulated. Given the short time duration between last circulation and the running of the subject logs, the BHT recorded on the logs had probably not returned to the native BHT.

A temperature survey was run in WDW-397 on May 23, 2006, approximately five days after setting the gravel pack in the well. The following data are taken from the May 23, 2006 temperature log from WDW-397.

Facility Well	Surface Temperature (°F)	Average Temperature Gradient (°F/100 feet)	Temperature at Frio D Sand* (°F)	Temperature at Frio E&F Sand* (°F)	Temperature at Frio A/B Sand* (°F)
ExxonMobil WDW-397	77	1.47	164	169	168

* Reference Depth = 6,618 feet subsea (6,628 feet GL or 6,650 feet KB) (Frio D Sand)
* Reference Depth = 6,755 feet subsea (6,765 feet GL or 6,787 feet KB) (Frio E&F Sand)
* Reference Depth = 6,990 feet subsea (7,000 feet GL or 7,022 feet KB) (Frio A/B Sand)

An examination of the May 23, 2006, Weatherford Temperature Log indicates a constant temperature gradient of 1.47 °F/100 feet from 630 feet KB to about 6,800 feet KB, and 1.74 °F/100 feet from 4,000 feet KB to 6,800 feet KB. Below 6,800 feet KB, the temperature remains constant at approximately 168.3 °F, before beginning to increase at a depth of 7,085 feet KB. The "flat" temperature gradient below 6,800 feet KB is attributed to the installation of the gravel pack across

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this estimated interval approximately five days prior to running the temperature log. The temperature data recorded for the reference depth in the Frio D Sand and Frio E&F Sand are consistent with the calculated temperature gradient. However, the temperature recorded at the reference depth for the Frio A/B Sand is inconsistent (appears to be low). Using the temperature gradient of 1.74 °F/100 feet (temperature gradient from 4,000 feet KB to 6,800 feet KB), the calculated BHT at the reference depth in the Frio A/B Sand is 173 °F (temperature of 120 °F at 4,000 feet KB plus [7,022 feet KB - 4,000 feet KB][1.74 °F/100 feet]).

The following data are taken from the December 2, 2021, temperature log from the five-year MIT performed at WDW-397. WDW-397 had been shut in for approximately 41 hours prior to conducting the differential temperature survey.

Facility Well	Surface Temperature (°F)	Average Temperature Gradient (°F/100 feet)	Temperature at Frio D Sand* (°F)	Temperature at Frio E&F Sand* (°F)	Temperature at Frio A/B Sand* (°F)
ExxonMobil WDW-397	73	0.60	76.3	76.6	80.2

* Reference Depth = 6,618 feet subsea (6,628 feet GL or 6,650 feet KB) (Frio D Sand)
* Reference Depth = 6,755 feet subsea (6,765 feet GL or 6,787 feet KB) (Frio E&F Sand)
* Reference Depth = 6,990 feet subsea (7,000 feet GL or 7,022 feet KB) (Frio A/B Sand)

For WDW-398, a temperature survey was run on September 28, 2009. No fluids had been pumped into WDW-398 over the six days preceding the performance of the temperature survey and the well had been shut in for three days prior to running the temperature survey. An examination of the Gulf Coast Well Analysis (now known as Coastal Wireline Services) Differential Temperature Log indicates a constant temperature gradient of 1.43 °F/100 feet from 300 feet KB to about 6,700 feet KB. Between 6,760 feet and 6,800 feet KB, marked cooling is observed and is attributed to the significant volume of fluids pumps during gravel packing of the well. Below 6,800 feet KB, the temperature increases until a depth of 7,000 feet KB is reached. Below roughly 7,000 feet KB, the temperature remains constant at approximately 166.6 °F to near total log depth of 7,100 feet. The "flat" temperature gradient below 7,000 feet KB is attributed to the installation of the gravel pack. Using the temperature gradient of 1.43 °F/100 feet (temperature gradient from 300 feet KB to 6,700 feet KB), the calculated BHT at the reference depth in the Frio D Sand, Frio E&F Sand and Frio A/B Sand at the horizon mid-point depths are:

Facility Well	Surface Temperature (°F)	Average Temperature Gradient (°F/100 feet)	Temperature at Frio D Sand* (°F)	Temperature at Frio E&F Sand* (°F)	Temperature at Frio A/B Sand* (°F)
ExxonMobil WDW-398	82	1.43	164	167	170

* Mid Point Depth = 6,648 feet subsea (6,660 feet GL or 6,685 feet KB) (Frio D Sand)
* Mid Point Depth = 6,795 feet subsea (6,806 feet GL or 6,831 feet KB) (Frio E&F Sand)
* Mid Point Depth = 7,016 feet subsea (7,028 feet GL or 7,053 feet KB) (Frio A/B Sand)

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The following data are taken from the December 12, 2019 temperature log from the five-year MIT performed at WDW-398. WDW-398 had been shut in for approximately 42 hours prior to conducting the differential temperature survey.

Facility Well	Surface Temperature (°F)	Average Temperature Gradient (°F/100 feet)	Temperature at Frio D Sand* (°F)	Temperature at Frio E&F Sand* (°F)	Temperature at Frio A/B Sand* (°F)
ExxonMobil WDW-398	43	1.14	121	104	-

* Mid Point Depth = 6,648 feet subsea (6,660 feet GL or 6,685 feet KB) (Frio D Sand)
* Mid Point Depth = 6,795 feet subsea (6,806 feet GL or 6,831 feet KB) (Frio E&F Sand)
* Mid Point Depth = 7,016 feet subsea (7,028 feet GL or 7,053 feet KB) (Frio A/B Sand); top of fill at 6,928 feet KB in 2019

The BHT collected in WDW-397 provided the basis for estimating the BHT at a reference depth for each sand interval of interest. The reference temperature for the Frio D Sand is **164 °F** at the reference depth of 6,618 feet subsea (6,628 feet GL or 6,650 feet KB). The reference temperature for the Frio E&F Sand is **169 °F** at the reference depth of 6,755 feet subsea (6,765 feet GL or 6,787 feet KB).

Permeability

Falloff test data were collected from WDW-397 on November 30 2022, as part of the annual reservoir test requirements. An analysis of the post-completion pressure falloff test was performed to determine the pertinent Injection Interval characteristics, namely flow capacity. The net receiving interval thickness (h) of 309 feet was based on the information recorded on the November 30, 2022 flowmeter profile survey. The fluid viscosity for the reservoir brine in the Frio E&F Sand was previously determined to be 0.487 centipoise (cP) at 169 °F. The analysis yields a kh/μ parameter (permeability-thickness product) of 231,591 milliDarcy-feet/cP (mD-ft/cP). Assuming 309 feet for the thickness, the derived permeability is 365 mD.

Falloff test data were collected from WDW-398 in July 2022 as part of the annual reservoir test requirements. Based on the results of the 2022 WDW-398 radioactive fluid velocity survey, the net receiving interval thickness (h) is 184 feet. The fluid viscosity for the reservoir brine in the Frio E&F Sand was previously determined to be 0.487 cP at 169 °F. The analysis yields a kh/μ parameter (permeability-thickness product) of 433,741 milliDarcy-feet/cP (mD-ft/cP) for the Frio E&F Sand. Assuming 184 feet for the thickness, the derived permeability for WDW-398 Injection Interval is 1,148 mD.

Annual falloff test data from WDW-397 and WDW-398 are summarized as follows:

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Summary of Historical Well Test Analysis Results at WDW-397

Date	Test Type	Analysis Technique	k (mD)	h (ft)	μ (/cP)	Transmissivity kh/μ (mD-ft/cP)
Jun-06	Falloff	Radial Flow	1,161	351	0.487	836,778
Oct-08	Falloff	Radial Flow	701	309	0.487	444,884
Aug-09	Falloff	Radial Flow	520	309	0.487	330,089
Sep-10	Falloff	Radial Flow	520	309	0.487	330,041
Sep-11	Falloff	Radial Flow	408	309	0.487	258,875
Oct-12	Falloff	Radial Flow	350	309	0.487	221,896
Dec-13	Falloff	Radial Flow	319	309	0.487	202,405
Oct-14	Falloff	Radial Flow	304	309	0.487	192,887
Oct-15	Falloff	Radial Flow	398	309	0.487	252,530
Aug-16	Falloff	Radial Flow	425	309	0.487	269,661
Jan-18	Falloff	Radial Flow	345	309	0.487	218,901
Nov-19	Falloff	Radial Flow	683	309	0.487	433,196
Dec-20	Falloff	Radial Flow	397	309	0.487	251,895
Dec-21	Falloff	Radial Flow	908	175	0.487	326,283
Dec-22	Falloff	Radial Flow	365	309	0.487	231,591

Summary of Historical Well Test Analysis Results at WDW-398

Date	Test Type	Analysis Technique	k (mD)	h (ft)	μ (/cP)	Transmissivity kh/μ (mD-ft/cP)
Sep-09	Falloff	Radial Flow	1,225	184	0.487	462,834
May-13	Falloff	Radial Flow	1,532	184	0.487	578,826
May-14	Falloff	Radial Flow	1,507	184	0.487	569,482
June-15	Falloff	Radial Flow	1,450	184	0.487	547,844
Apr-16	Falloff	Radial Flow	1,331	184	0.487	502,883
Apr-17	Falloff	Radial Flow	1,141	184	0.487	430,980
Dec-18	Falloff	Radial Flow	1,155	184	0.487	436,434
Dec-19	Falloff	Radial Flow	1,150	184	0.487	434,451
Jul-20	Falloff	Radial Flow	1,336	184	0.487	504,722
Aug-21	Falloff	Radial Flow	1,152	184	0.487	435,263
Jul-22	Falloff	Radial Flow	1,148	184	0.487	433,741

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The average permeability values from the historical falloff testing at WDW-397 and WDW-398 are estimated to be approximately 520 mD and 1,284 mD. To be conservative in the modeling of both pressure buildup and plume transport, a permeability of **750 mD** is assigned to all sands in the WDW-397 and WDW-398 Injection Interval.

VII.3 Injection Reservoir Fluid

Due to substantial fluid loss of 9.0 lb/gal completion brine into the WDW-397 Injection Interval that occurred early in the completion of the well, it was not possible to obtain a representative formation fluid sample from WDW-397. In addition, due to the large volume of 9.0 lb/gal completion brine utilized when gravel packing the WDW-398 screened interval, it was not possible to obtain a representative formation fluid sample from WDW-398. However, native formation fluid samples were obtained from a number of Class I injection wells completed into the Frio Formation Injection Interval in the Houston, Texas area. The analytical data is included in Appendix B. The analyses of these samples are summarized here:

	Sasol WDW-147 mg/L	**Sasol WDW-319 mg/L**	**Lyondell WDW-148 mg/L**	**Equistar WDW-36 mg/L**	**Texas Molecular WDW-169 mg/L**	**Dow Hampshire WDW-222 mg/L**
Sample Depth (ft)	6,700 - 6,780	6,850 - 7,260	6,881 - 7,167	6,590 - 6,650	7,103 - 7,415	7,194 - 7,508
Sand Interval	Frio E&F	Frio A/B/C	Frio A/B/C	Frio F	Frio E/F/A/B	Frio E/F/A/B
Calcium	22,500*	1,610	2,740	6,400	2,400	2,200
Magnesium	475	214	340	1,400	480	457
Barium	66	49	44	190	60	63
Strontium	150	85	160	-	110	112
Sodium	-	45,700	39,200	55,664	43,000	39,400
Chloride	60,247	82,000	70,000	63,548	70,400	-
Sulfate	18	654	5	12	<100	-
Iron	-	1,170	-	5	35	61
Alkalinity (HCO_3)	-	<5	115	99	-	80
Ph	7.0	-	7.2	6.7	6.9	6.7
Specific Gravity	1.073 at 21 °C	-	1.074	1.074	-	1.059 at 150 °F

*NOTE: The value for calcium reported for Sasol WDW-147 is highly suspect. The laboratory reports a value of 22,500 mg/L, but the value is an order of magnitude higher in concentration when compared to the values reported for other nearby injection wells. The actual value may be 2,250 mg/L rather than 22,250 mg/L.

Samples of Frio Formation brine were collected at the time of completion of the Lyondell WDW-148 injection well. The brine sample was obtained from the Frio A/B Sand (depth of approximately 6,900 feet) during nitrogen backflow operations after perforating the sands. As reported by Sandia (2000), formation fluid total dissolved solids (TDS) and specific gravity of the recovered sample was measured to be 112,604 mg/L TDS (109,200 mg/L NaCl) and 1.074 sp.gr. Sandia (2000) also determined a conservative Injection Interval sand formation fluid viscosity of 0.53 centipoise (cP) from graphical analysis using formation fluid salinities and formation temperatures (156 °F).

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Assuming a temperature of 170 °F for the BHT, the resulting formation fluid viscosity decreases to 0.48 centipoise and the specific gravity decreases to 1.049 sp.gr.

Salinity

Based on the analyses of Frio Formation brine samples collected from nearby injection wells, it is assumed that a brine sample having a NaCl content of 11.03 weight percent is representative of the formation fluid contained within the WDW-397 and WDW-398 completion interval.

Density

Assuming a temperature of 166.7 °F for the BHT, the resulting formation fluid density is **66.23 lb/ft^3** and the specific gravity is **1.061** sp.gr.

Viscosity

Assuming a temperature of 166.7 °F for the BHT, the resulting formation fluid viscosity is **0.49 cP** for a formation brine having a NaCl content of 11.03 weight percent.

pH

The pH of the Frio Formation brine is estimated to be approximately **6.8** based on formation fluid samples collected at the time of completion of other nearby Frio Formation injection wells (Sasol WDW-147, Equistar WDW-36, Lyondell WDW-148 and Texas Molecular WDW-169).

VII.4 Static Reservoir Pressures

Static BHP data were collected from WDW-397 at the time of completion. On May 30, 2006, static BHP data were collected after the well had been stimulated. The static BHP was 2,874 psig at 6,633 feet KB. The average wellbore fluid gradient at the time of measurement was 0.4416 psi/ft. At 6,785 feet subsea, the calculated static BHP was 2,956 psig, or 2,970 psia. On June 20, 2006, static BHP data were collected after the well had been completed to its current configuration. The static BHP was 2,906 psia at 6,700 feet KB. The average wellbore fluid gradient at the time of measurement was 0.4376 psi/ft. At 6,785 feet subsea, the calculated static BHP was 2,942 psig, or 2,957 psia.

In December 2022, static BHP data were collected during the annual ambient pressure monitoring. The static BHP was 3,036 psia at 6,787 feet KB (2,950 psig, or 2,965 psia at 6,613 feet BGL). The average wellbore fluid gradient at the time of measurement was 0.437 psi/ft.

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The static BHP at the reference depth for each of the Frio sands of interest are summarized on the following table. The static BHP was depth corrected using the fluid gradient measured at the time of pressure data collection.

Frio Formation Injection Interval
Frio D, E&F and A/B Sands (WDW-397 Injection Well)

Date	Bottom Fluid Gradient (psi/ft)	Gauge Depth (ft KB)	BHP @ Depth (psia)	D Sand Static BHP (psia) @ Reference Depth (6,650 ft KB)	E&F Sand Static BHP (psia) @ Reference Depth (6,787 ft KB)	A/B Sand Static BHP (psia) @ Reference Depth (7,022 ft KB)
May-06	0.442	6,633	2,889	2,896	2,957	3,061
Jun-06	0.438	6,700	2,906	2,884	2,944	3,047
Oct-08	0.442	6,789	2,959	2,898	2,958	3,062
Aug-09	0.442	6,787	2,966	2,905	2,966	3,070
Sep-10	0.443	6,787	2,987	2,926	2,987	3,091
Sep-11	0.448	6,787	2,985	2,924	2,985	3,090
Oct-12	0.442	6,787	2,981	2,920	2,981	3,085
Dec-13	0.441	6,787	3,004	2,944	3,004	3,108
Oct-14	0.441	6,787	3,000	2,940	3,000	3,104
Oct-15	0.439	6,787	2,991	2,931	2,991	3,094
Aug-16	0.437	6,787	3,004	2,946	3,004	3,107
Jan-18	0.438	6,787	3,009	2,949	3,009	3,112
Nov-19	0.438	6,787	3,021	2,961	3,021	3,124
Dec-20	0.437	6,789	3,050	2,989	3,049	3,152
Dec-21	0.440	6,787	3,068	3,008	3,068	3,171
Dec-22	0.437	6,787	3,036	2,976	3,036	3,139
Petition	**- -**	**- -**	**- -**	**2,884**	**2,944**	**3,047**

Static BHP data were collected from WDW-398 at the time of completion. On September 28, 2009, static BHP data were collected after the well had been stimulated. The static BHP was 2,925 psig at 6,750 feet KB. The average wellbore fluid gradient at the time of measurement was 0.4393 psi/ft. On September 30, 2009, static BHP data were collected at the conclusion of the reservoir test. The static BHP was 2,926 psig at 6,750 feet KB. The average wellbore fluid gradient at the time of measurement was 0.4393 psi/ft.

In July 2022, static BHP data were collected at the conclusion of the annual ambient pressure monitoring. The static BHP was 2,986 psig at 6,731 feet KB (2,976 psig, or 2,991 psia at 6,731 feet BGL). The average wellbore fluid gradient at the time of measurement was 0.439 psi/ft.

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The static BHP recorded in WDW-398 are summarized on the following table. BHP was depth corrected using the fluid gradient measured at the time of pressure data collection.

Frio Formation Injection Interval
Frio E&F and A/B Sands (WDW-398 Injection Well)

Date	Bottom Fluid Gradient (psi/ft)	Depth (ft KB)	BHP @ Depth (psia)	Static BHP (psia) @ E&F Sand Reference Depth (6,831 ft KB)	Static BHP (psia) @ A/B Sand Reference Depth (7,054 ft KB)
Sep-09	0.439	6,750	2,925	2,961	3,059
Sep-09	0.439	6,750	2,926	2,962	3,060
May-12	0.443	6,733	2,939	2,982	3,081
May-13	0.442	6,731	2,946	2,990	3,089
May-14	0.443	6,731	2,954	2,999	3,097
June-15	0.439	6,731	2,960	3,004	3,102
Apr-16	0.439	6,731	2,973	3,016	3,114
Apr-17	0.438	6,731	2,977	3,021	3,118
Dec-18	0.438	6,731	2,975	3,019	3,116
Dec-19	0.439	6,731	2,974	3,028	3,126
Jul-20	0.437	6,731	2,981	3,025	3,122
Aug-21	0.439	6,733	3,003	3,046	3,144
Jul-22	0.439	6,731	2,986	3,030	3,127

VII.5 Fracture Gradient

The fracture gradient for the Frio Formation sands at the reference depth in the Injection Interval was calculated using the methods outlined in the Maximum Allowable Surface Injection Pressure (MASIP) program. The input parameters and results for WDW-397 and WDW-398 are presented on Table VII-1 and Table VII-2, respectively.

For the MASIP calculation, the reservoir depth for each well was selected as the top of the permitted Injection Interval. The reservoir depth of 5,922 ft KB was selected for WDW-397 and the reservoir depth of 5,965 feet KB was selected for WDW-398. The reservoir pressure was calculated for these depths using the reservoir pressure data from the 2022 annual mechanical integrity testing.

The calculated fracture gradient for WDW-397 is 0.814 psi/ft or 4,821 psi at the reference depth of 5,922 feet KB. This is equivalent to a surface injection pressure of 2,027 psi. In WDW-398, the calculated fracture gradient is 0.813 psi/ft or 4,850 psi at the reference depth of 5,965 feet KB. This is equivalent to a surface injection pressure of 2,037 psi. The permitted maximum surface injection pressure is 1,500 psig for WDW-397. The permitted maximum surface injection pressure in WDW-398 was reduced during a minor amendment issued on June 5, 2018, and is permitted to be 1,000 psig.

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VII.6 Other Substance Disposal Operations

Sasol operates two class I injection wells located approximately 1.5 miles to the northeast of the WDW-397 injection well. Sasol WDW-147 (AOR Map ID #30) and WDW-319 (AOR Map ID #31) are permitted to inject in the Frio Formation at 750 gpm per well, as long as each well is completed into separate sand packages. These wells are completed into the same Injection Interval as that utilized by the WDW-397 and the WDW-398 injection well. Sasol WDW-147 is completed across the Frio E&F Sand within the Injection Interval and Sasol WDW-319 is completed across the Frio A/B Sand. WDW-397 and WDW-398 are both completed across both of these intervals. The reservoir pressure effects due to injection into a common reservoir are considered in Section VII.7 and Section VII.8. With respect to reservoir pressurization, the subject reservoir pressure modeling suggests that reservoir pressures at each location are affected by injection activities at the offset location.

The distance from ExxonMobil WDW-397 to Sasol WDW-319 is approximately 8,000 feet and 11,000 feet from WDW-398. Waste plume calculations (at 1,200 gpm) suggest a waste plume radius of 2,837 feet at the end of ten-year operations for WDW-397. Similarly, the estimated waste plume radius at the Sasol WDW-147 injection well may be as large at 1,889 feet (estimated with injecting 180 gpm into at 150-foot thick reservoir [Frio E&F Sand] for ten years plus 21 years of the past injection; see table VII-6). Historical operations at both facilities suggest that actual injection rates are less than half of the permitted injection rates. These data suggest that the waste plume radii would not overlap at the historical and current injection rates.

At the time of preparation of this application, there are no municipal waste injection wells or waterflood wells completed into the ExxonMobil Injection Interval within the 2.5-mile AOR.

VII.7 Pressure Buildup Predictions

The PRESS2 pressure model was used to calculate maximum pressure increases which could occur in the Injection Interval at the end of one year and ten years of maximum injection in the ExxonMobil injection wells. The maximum cumulative requested injection rate is 1,200 gpm.

The computed Injection Interval reservoir pressure increases are a conservative approximation for the purposes of predicting pressure increases within the AOR and potential endangerment of USDW. Upper and lower aquifer limits are modeled as no-flow boundaries and thus do not allow pressure dissipation vertically. Projected monthly and annual maximum injection rates in the model are assumed to be at a continuous rate, whereas injection rates actually will fluctuate and will be effectively lower during the injection lives of the ExxonMobil wells. In addition,

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ExxonMobil estimates that injection well activities will cease within ten years of future operations. These model parameters thus conservatively represent the conditions at ExxonMobil and the resultant predictions are more than satisfactory for the purposes of determining pressure increases within the AOR.

The PRESS2 numerical modeling was run three times in order to demonstrate the reservoir pressure increases of the permitted 1,200 gallon per minute (gpm) cumulative injection rate for WDW-397 and WDW-398. The first scenario shows the entire permitted injection rate (1,200 gpm) being injected into WDW-397 for one and ten years into the future. The second scenario shows the entire permitted injection rate (1,200 gpm) being injected into WDW-398 for the same time period into the future. In the final scenario, the cumulative permitted injection rate is equally divided between the two wells and WDW-397 and WDW-398 are each utilized for 600 gpm for one and ten years into the future.

In all three scenarios, the historical injection of the wells was input into the model. WDW-397 was put into service on December 11, 2008 and as of December 31, 2022, had a lifetime injection of 2,139,049,632 gallons. The historical injection of WDW-397 was modeled with 14.06 years of injection at a rate of 289 gpm. WDW-398 was put into service on May 24, 2011 and has injected 2,082,426,528 gallons as of December 31, 2022. The historical injection of WDW-398 was modeled with 11.61 years of injection at a rate of 341 gpm. Two additional injection wells within the AOR are also included in the model; Sasol operates two Class I injection wells (WDW-147 and WDW-319) which have a maximum permitted cumulative injection rate of 750 gpm. However, WDW-147 has been designated as a backup well and not been in use since WDW-319 was built. WDW-147 has been temporarily removed from the pressure model since 2000. WDW-319 has injected both hazardous and nonhazardous wastes generated by the facility at an average injection rate of 166 gpm since December 2000 (see Table VII-6). Thus, the two wells are modeled as one well injecting conservatively at the average operating rate of 180 gpm for ten years into the future.

The results of the PRESS2 numerical pressure modeling are shown on Tables VII-3, VII-4 and VII-5. For the WDW-397 Injection Interval, the pressure model results indicate that after ten years of maximum future injection, the injection reservoir pressure increase is 324 psi one foot from WDW-397. In WDW-398, the pressure model indicates that after ten years of maximum future injection, the injection reservoir pressure increase is 323 psi one foot from WDW-398. In the third scenario, with the maximum cumulative injection split equally between the two wells,

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after ten years of future injection, the model indicates a pressure increase of 225 psi one foot from WDW-397 and 224 psi one foot from WDW-398.

After ten years of maximum injection, the pressure increases around WDW-397 and WDW-398 decreases radially to approximately 89 psi at a distance of 2.5 miles from each well, respectively (see Table VII-3 and Table VII-4). Figure VII-1 illustrates the pressure buildup in the Injection Interval at the end of operations after ten years of maximum cumulative injection (1,200 gpm) in WDW-397. The pressure isopleths are centered around WDW-397, with additional isopleths centered around nearby the nearby Sasol injection wells. Figure VII-2 illustrates the pressure buildup in the Injection Interval at the end of operations after ten years of maximum cumulative injection (1,200 gpm) in WDW-398. In this scenario, the pressure isopleths are centered around WDW-398. Figure VII-3 illustrates the pressure buildup in the Injection Interval at the end of operations after ten years of maximum cumulative injection divided equally between WDW-397 and WDW-398. In this third scenario, the pressure isopleths are elliptical around WDW-397 and WDW-398, and the pressure buildup is lower than the previous two scenarios.

VII.8 Cone of Influence Calculations

In order to determine whether artificial penetrations within the AOR surrounding the ExxonMobil wells meet standards so as to prevent endangerment of the USDW due to increased Injection Interval pressures, reservoir pressure increases are calculated. The PRESS2 model determines the effects of injection assuming all historical and future injection occurred at actual historical and projected maximum rates, and predicts the maximum Injection Interval reservoir pressure increase that would be expected at artificial penetrations within the AOR. These expected reservoir pressures are then compared to the calculated reservoir pressure increase that would be required to displace a mud or weighted fluid column in an abandoned wellbore such that fluids would be driven into a USDW.

Drilling mud in an abandoned wellbore is a barrier to vertical migration of native or injected fluids from the Injection Zone because of the hydrostatic pressure differential between the mud column and the Injection Zone reservoir pressure. One purpose of drilling mud is to control or overcome the formation pressures of the geologic stratum penetrated. To accomplish this, the hydrostatic gradient of the mud column must be equal to or greater than the equivalent of the formation pressure encountered. To determine the pressure or gradient exerted by a column of mud, a reported or estimated value of the mud weight in the wellbore is required. A review of available data indicates a range of mud weights were used for drilling and plugging wells within ExxonMobil 2.5-mile radius AOR and the local geologic study area. For the purposes of this

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demonstration, a mud weight of 9.0 lb/gal is employed. The pressure gradient increases in direct proportion with the weight of the fluid. A mud weight of 9.0 lb/gal would result in a pressure gradient of approximately 0.468 psi/foot of depth. Before vertical migration of fluids from an abandoned wellbore can occur, the injection reservoir pressure at the abandoned wellbore (plugged only with mud) would have to increase to that pressure necessary to displace a 9.0 lb/gal mud column. This is considered to be a very conservative figure since the gel strength of the mud, the resistance of the mud to flow, borehole conditions and other factors have not been considered.

The top of Injection Interval for the ExxonMobil WDW-397 injection well is at 5,922 feet KB. The pressure exerted by a mud column of that height (less 50 feet of fall back) at a well plugged and abandoned only with 9.0 lb/gal fluid (mud) in the borehole would be 2,748 psi ([5,922 feet – 50 feet) x 0.468 psi/ft). The mud column gradient was determined to be 0.468 psi /ft {[(9.0 lb/gal) / (8.345 lb/gal)] x 0.4335 psi/ft}.

The static BHP at the top of Injection Interval at 5,922 feet KB is estimated as 2,658 psia (2,643 psig). The Cone of Influence will be determined for both wells using this pressure in the Injection Interval. Before vertical migration of fluids from an abandoned wellbore can occur, the injection reservoir pressure at the abandoned wellbore (plugged only with fluid [mud]) would have to increase to that pressure necessary to displace a 9.0 lb/gal fluid (mud) column. This is considered to be a very conservative figure since the gel strength of the fluid (mud), the resistance of the fluid (mud) to flow, borehole conditions, and other factors have not been considered. The formation pressure increase at 5,922 feet KB would have to exceed **105 psi** (2,748 psi - 2,643 psi) before any upward movement of fluid would be possible.

Another mechanism which contains waste fluid in the Injection Zone at an abandoned well is borehole collapse. It is well documented that the geologically young and unconsolidated sediments of the Gulf Coast Basin tend to slough and swell, and that uncased wells in this region of Texas commonly squeeze shut within a matter of hours or days (Johnston and Kanpe, 1986; Clark and others, 1991). In order to be conservative, however, no borehole collapse is assumed for abandoned boreholes.

The first scenario for the pressure model projects future pressure buildup for ten years using the maximum cumulative injection rate of 1,200 gpm into WDW-397. The pressure model results indicate that after ten years of future injection (indicated on the model as 24.06 years of injection), the injection reservoir pressure increase is a maximum of 324 psi one foot from

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WDW-397. This is approximately 234 psi greater than the calculated pressure necessary to potentially displace drilling mud from an abandoned wellbore. The 105 psi of Cone of Influence extends approximately 7,450 feet from WDW-397. The projected pressure buildup, however, is conservatively high and assumes maximum injection into WDW-397 and historical average injection into the Sasol injection wells located nearby.

There are no artificial penetrations located within this distance from the two injection wells besides the Sasol injection wells, which are permitted as Class I injection wells and would be plugged with appropriate procedures to prevent displacement. An additional artificial penetration is near the Cone of Influence and was drilled by Merichem Company (AOR Map ID #6). This artificial penetration, however, is shallow at 600 feet and does not penetrate the ExxonMobil Injection Zone or Injection Well. The results of the PRESS2 numerical pressure modeling are shown on Table VII-3

The second scenario for the pressure model projects future pressure buildup for ten years of using the maximum cumulative injection rate of 1,200 gpm into WDW-398. The pressure model results indicate that after a total of ten years of future injection (indicated on the model as 24.06 years of injection), the injection reservoir pressure increase is a maximum of 323 psi one foot from WDW-398. This is approximately 233 psi greater than the calculated pressure necessary to potentially displace drilling mud from an abandoned wellbore. The 105 psi Cone of Influence extends approximately 6,950 feet from WDW-398. The projected pressure buildup, however, is conservatively high and assumes maximum injection into WDW-397 and historical average injection into the Sasol injection wells located nearby. There are no artificial penetrations located within this distance from WDW-397 or WDW-398. The results of the PRESS2 numerical pressure modeling are shown on Table VII-4

The third scenario for the pressure model projects future pressure buildup for ten years dividing the maximum cumulative injection rate of 1,200 gpm into the two wells, with WDW-397 injecting 600 gpm and WDW-398 injecting 600 gpm. The pressure model results indicate that after ten years of future injection life (indicated on the model as 24.06 years of injection), the injection reservoir pressure increase is a maximum of 225 psi one foot from WDW-397 and 224 psi one foot from WDW-398. This is approximately 135 psi and 134 psi greater than the calculated pressure necessary to potentially displace drilling mud from an abandoned wellbore. In this scenario, the 105 psi Cone of Influence is elliptical and extends approximately 6,570 feet from WDW-397 and 7,450 feet from WDW-398. The projected pressure buildup in this scenario (with both wells sharing the permitted maximum cumulative injection) is more probable and

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indicates lower pressure increases and a smaller radius of the Cone of Influence. There are no artificial penetrations located within this distance from the two injection wells. The results of the PRESS2 numerical pressure modeling are shown on Table VII-5.

There are three wells that are located within the Cone of Influence in one scenario. Two of those wells are the Class I injection wells operated by Sasol WDW-147 (AOR Map ID #30) and WDW-319 (AOR Map ID #31). The third well is a shallow, plugged well which is 600 feet deep. Merichem Company's Merichem-Pennwalt well No. 1 (AOR Map ID #6) does not penetrate the Injection Zone or Injection Interval. The three wells are shown on Figure VII-1. Since these are the only wells located within the Cone of Influence, there appears to be no potential for vertical movement of fluid from an abandoned wellbore into a USDW.

Actual operations of WDW-397 and WDW-398 typically include shut down periods which allow for reservoir pressure recovery cycles that reduce the maximum build up pressures. In addition, it is not anticipated that ExxonMobil will operate the injection wells at maximum permitted injection rates.

VII.9 Injection Zone Pressure Effects

Reservoir pressure buildup in the ExxonMobil injection zone is discussed in the previous sections. Given the transmissivity and storativity of the Injection Interval, the PRESS2 model suggests that the increased reservoir pressure due to injection will dissipate rapidly after the injection wells cease operation.

VII.10 Potentiometric Surface Map of the Injection Zone

Regional potentiometric surface maps of the Frio Formation (ExxonMobil Injection Zone) were prepared by Kreitler and Akhter (1987). Kreitler and Akhter mapped regional trends in pressure regimes and the potential, direction and velocity of fluid migration in the Texas Gulf Coast Tertiary formations. The report focused on the Frio Formation and suggested that regional Frio formation water flow across Harris County is southeast toward the coast. Based on deep-reservoir volume, recharge and discharge rates, a regional flow rate for formation brine through the Frio Formation was derived using Darcy's Law. The maximum flow rate is no greater than 1.6 feet/year, using the maximum value of the head gradient under ideal assumed conditions (clean Gulf Coast sand with high permeability [1,000 mD] and porosity [28 percent]). In reality, when permeability barriers such as sands and lithofacies changes are taken into account, the actual flow rate would actually be much lower than this.

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VII.11 Waste Plume Geometry

Subsurface mapping of the Frio Formation Injection Zone indicates that the Injection Interval sands are laterally continuous across the Area of Review and maintain relatively constant thickness. In addition, the Frio Formation sands of interest to this application are unlithified and are devoid of fractures in the Area of Review. Two faults have been mapped within the AOR. Maximum displacement along either fault is no more than about 200 feet at the top of the Injection Interval. The completion interval is approximately 460 feet thick, of which net sand totals about 309 feet. On either side of the faults, sand-to-sand contact is maintained. However, to account for possible loss in thickness near the faults, the assumed reservoir thickness for purposes of reservoir calculations was assumed to be no more than 100 feet thick. Because sand-to-sand contact is maintained across the subject fault planes, the waste plume geometry is expected to be radial in nature and dimensions.

VII.12 Extent of the Waste Plume

The current position of the waste front for the injection wells was calculated assuming the maximum cumulative injection rate of 1,200 gpm. The predicted positions of the one-year and ten-year waste fronts were calculated for each well, assuming that 100 percent of the maximum injection rate will be injected in the future. The radial distance of displacement was calculated using the following equation:

$$r = \sqrt{\frac{Q}{\pi h \phi}} \quad \text{(TWDB, 1983)}$$

where:

r = radial distance of fluid front from well, feet;
Q = cumulative volume of fluid injected, cubic feet (ft^3)
ϕ = porosity of receiving; and
h = thickness of formation, feet.

For WDW-397:

The historical injection (as of December 31, 2022) of WDW-397 is 2,139,049,632 gallons. One year of injection at 1,200 gpm will total 631,152,000 gallons injected

Q = (2,139,049,632 gal)(0.1337 ft^3/gal) = 285,990,936 ft^3
ϕ = 0.28 porosity (Frio Formation)
h = 309 feet (net reservoir thickness)

Thus,

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$$r = \sqrt{\frac{285{,}990{,}936 \text{ ft}^3}{(\pi)(309 \text{ ft})(0.28)}} = 1{,}026 \text{ ft}$$

An estimate of the influence of dispersion was made with the following equation:

$$r' = r + 2.3\sqrt{Dr}$$

where

r' = radial distance of travel with dispersion
D = dispersion coefficient; three feet for sandstone aquifer.

Thus, for one year into the future, operating at maximum injection,

$$r' = 1{,}026 + 2.3\sqrt{(3)(1{,}026)}$$
$$r' = 1{,}154 \text{ ft}$$

For the ten-year projected future operational period (at permitted maximum 1,200 gpm):
Ten years of injection at 1,200 gpm will total 6,311,520,000 gallons injected

$$Q = (6{,}311{,}520{,}000 \text{ gal} + 2{,}139{,}049{,}632 \text{ gal})(0.1337 \text{ ft}^3/\text{gal}) = 1{,}129{,}841{,}160 \text{ ft}^3$$

Thus,

$$r = \sqrt{\frac{1{,}129{,}841{,}160 \text{ ft}^3}{(\pi)(309 \text{ ft})(0.28)}} = 2{,}039 \text{ ft}$$

Correcting for dispersion, for the ten-year projected future operation of the injection wells,

$$r' = 2{,}039 + 2.3\sqrt{(3)(2{,}039)}$$
$$r' = 2{,}219 \text{ ft}$$

For WDW-398:

The historical injection (as of December 31, 2022) of WDW-398 is 2,082,426,528 gallons. One year of injection at 1,200 gpm will be total 631,152,000 gallons injected:

$$Q = (2{,}082{,}426{,}528 \text{ gal})(0.1337 \text{ ft}^3/\text{gal}) = 278{,}420{,}427 \text{ ft}^3$$

ϕ = 0.28 porosity (Frio Formation)
h = 184 feet (net reservoir thickness)

Thus,

$$r = \sqrt{\frac{278{,}420{,}427 \text{ ft}^3}{(\pi)(184 \text{ ft})(0.28)}} = 1{,}312 \text{ ft}$$

An estimate of the influence of dispersion was made with the following equation:

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$$r' = r + 2.3\sqrt{Dr}$$

where

r' = radial distance of travel with dispersion
D = dispersion coefficient; three feet for sandstone aquifer.

Thus, for one year into the future, operating at maximum injection,

$$r' = 1{,}312 + 2.3\sqrt{(3)(1{,}312)}$$
$$r' = 1{,}456 \text{ ft}$$

For the ten-year projected future operational period (at permitted maximum 1,200 gpm):
Ten years of injection at 1,200 gpm will total 6,311,520,000 gallons injected

$$Q = (6{,}311{,}520{,}000 \text{ gal} + 2{,}082{,}426{,}528 \text{ gal})(0.1337 \text{ ft}^3/\text{gal}) = 1{,}122{,}270{,}651 \text{ ft}^3$$

Thus,

$$r = \sqrt{\frac{1{,}122{,}270{,}651 \text{ ft}^3}{(\pi)(184 \text{ ft})(0.28)}} = 2{,}633 \text{ ft}$$

Correcting for dispersion, for the ten-year projected future operation of the injection wells,

$$r' = 2{,}633 + 2.3\sqrt{(3)(2{,}633)}$$
$$r' = 2{,}837$$

The extent of the calculated waste plumes are summarized here:

Injection Well	Waste Plume	Without Dispersion (feet)	With Dispersion (feet)
WDW-397	One Year Future	1,026	1,154
	Ten Year Future	2,039	2,219
WDW-398	One Year Future	1,312	1,456
	Ten Year Future	2,633	2,837

Figure VII-4 graphically depicts the position of the one and ten year waste plumes (with dispersion).

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TABLE VII-1

MAXIMUM ALLOWABLE SURFACE PRESSURE (MASIP) FOR WDW-397

Waste Disposal Well
Maximum Allowable Surface Injection Pressure (MASIP)

Date:	1/25/2024 10:30:00 AM
Permit Number:	WDW-397
Permittee:	ExxonMobil
Analyst:	MBS

Reservoir Characteristics

Reservoir Depth (ft)	5922
Reservoir Pressure (psig)	2643
Pressure Gradient (psi/ft)	0.4463
Poisson's Ratio	0.436
Overburden Gradient	0.922

----------*Calculated Results*----------

Fracture Gradient (psi/ft)	0.814
Hydraulic Pressure Head (psi)	2693

Fracture Pressure (psig) 4821

Frictional Pressure Loss in Tubing

Injected Fluid Density (lb/gal)	8.7465
Specific Gravity	1.05
Fluid Viscosity (cp)	1.0
Tubing ID (inches)	5.43
Tubing Length (ft)	6447
Relative Roughness (inch/inch)	1.50E-04
Injection Rate (gpm)	1200

----------*Calculated Results*----------

Reynolds Number	7.33E+05
Friction Factor	1.45E-02

Frictional Pressure Loss (psi) 404

Maximum Allowable Surface Injection Pressure (psi) 2027
Includes 100 psi Factor of Safety
Excludes tubing friction loss

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TABLE VII-2

MAXIMUM ALLOWABLE SURFACE PRESSURE (MASIP) FOR WDW-398

Date: 1/25/2024 10:39:00 AM
Permit Number: WDW-398
Permittee: Exxon Mobil
Analyst: MBS

Reservoir Characteristics

Reservoir Depth (ft)	5965
Reservoir Pressure (psig)	2635
Pressure Gradient (psi/ft)	0.4417
Poisson's Ratio	0.436
Overburden Gradient	0.922

----------Calculated Results----------

Fracture Gradient (psi/ft)	0.813
Hydraulic Pressure Head (psi)	2713

Fracture Pressure (psig) 4850

Frictional Pressure Loss in Tubing

Injected Fluid Density (lb/gal)	8.7465
Specific Gravity	1.05
Fluid Viscosity (cp)	1.0
Tubing ID (inches)	5.43
Tubing Length (ft)	6600
Relative Roughness (inch/inch)	1.50E-04
Injection Rate (gpm)	1200

----------Calculated Results----------

Reynolds Number	7.33E+05
Friction Factor	1.45E-02

Frictional Pressure Loss (psi) 414

Maximum Allowable Surface Injection Pressure (psi) 2037
Includes 100 psi Factor of Safety
Excludes tubing friction loss

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TABLE VII-3

PRESSURE INCREASE DUE TO INJECTION IN WDW-397 WITH 1,200 GPM INJECTION RATE

Pressure Increase Due to Injection (PRESS2 Program Results)

Date	1/29/24 11:00	Permeability (md)	750	Specific Gravity	1
Permit Number	WDW-397	Porosity (fraction)	0.28	Viscosity (cp)	0.48
Permittee Name	ExxonMobil	Rock Compressibility (1/psi)	0.000003	Zone Thickness (ft)	150
Permit Reviewer	MBS	Fluid Compressibility (1/psi)	0.000003		

Inj Well ID	X Coord (ft)	Y Coord (ft)	Injection Rate (gpm) 2.5 Years	14.06 Years	15.06 Years	24.06 Years	0.0 Years	0.0 Years	0.0 Years	0.0 Years
WDW-397	2578	1510	406	289	1200	1200	0	0	0	0
WDW-398	0	0	0	341	0	0	0	0	0	0
Sasol	6770	8250	166	166	180	180	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0

Observ Well ID	X Coord (ft)	Y Coord (ft)	Pressure Increase (psi) 2.5 Years	14.06 Years	15.06 Years	24.06 Years	0.0 Years	0.0 Years	0.0 Years	0.0 Years
1	2578	1511	106	117	306	324				
2	2578	1750	60	84	171	188				
3	2578	2010	54	80	152	170				
4	2578	2810	47	73	129	147				
5	2578	4150	41	68	112	130				
6	2578	8960	34	58	88	105				
7	2578	14710	27	50	71	89				

Transmissivity (gpd/ft) 4804.688 Storage Coefficient 1.091916E-04

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TABLE VII-4

PRESSURE INCREASE DUE TO INJECTION IN WDW-398 WITH 1,200 GPM INJECTION RATE

Pressure Increase Due to Injection (PRESS2 Program Results)

Date	1/29/24 12:35	Permeability (md)	750	Specific Gravity	1
Permit Number	WDW398	Porosity (fraction)	0.28	Viscosity (cp)	0.48
Permittee Name	ExxonMobil	Rock Compressibility (1/psi)	0.000003	Zone Thickness (ft)	150
Permit Reviewer	MBS	Fluid Compressibility (1/psi)	0.000003		

			Injection Rate (gpm)							
Inj Well ID	X Coord (ft)	Y Coord (ft)	2.5 Years	14.06 Years	15.06 Years	24.06 Years	0.0 Years	0.0 Years	0.0 Years	0.0 Years
WDW-397	2578	1510	406	289	0	0	0	0	0	0
WDW-398	0	0	0	341	1200	1200	0	0	0	0
Sasol	6770	8250	166	166	180	180	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0

			Pressure Increase (psi)							
Observ Well ID	X Coord (ft)	Y Coord (ft)	2.5 Years	14.06 Years	15.06 Years	24.06 Years	0.0 Years	0.0 Years	0.0 Years	0.0 Years
1	0	1	38	125	305	323				
2	0	500	39	82	151	169				
3	0	2640	39	71	111	129				
4	0	5280	36	63	94	112				
5	0	6950	34	60	88	105				
6	0	13200	27	51	71	89				

Transmissivity (gpd/ft) 4804.688 Storage Coefficient 1.091916E-04

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TABLE VII-5

PRESSURE INCREASE DUE TO INJECTION IN WDW-397 AND WDW-398 WITH 600 GPM INJECTION RATE IN EACH WELL

Pressure Increase Due to Injection (PRESS2 Program Results)

Date	1/29/23 13:05	Permeability (md)	750	Specific Gravity	1
Permit Number	WDW-397, WDW398	Porosity (fraction)	0.28	Viscosity (cp)	0.48
Permittee Name	ExxonMobil	Rock Compressibility (1/psi)	0.000003	Zone Thickness (ft)	150
Permit Reviewer	MBS	Fluid Compressibility (1/psi)	0.000003		

			Injection Rate (gpm)							
Inj Well ID	X Coord (ft)	Y Coord (ft)	2.5 Years	14.06 Years	15.06 Years	24.06 Years	0.0 Years	0.0 Years	0.0 Years	0.0 Years
WDW-397	2578	1510	406	289	600	600	0	0	0	0
WDW-398	0	0	0	341	600	600	0	0	0	0
Sasol	6770	8250	166	166	180	180	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0

			Pressure Increase (psi)							
Observ Well ID	X Coord (ft)	Y Coord (ft)	2.5 Years	14.06 Years	15.06 Years	24.06 Years	0.0 Years	0.0 Years	0.0 Years	0.0 Years
1	2578	1511	106	117	207	225				
2	0	1	38	125	206	224				
3	2578	8080	35	60	88	105				
4	0	7450	33	59	88	105				
5	2578	14710	27	50	70	88				
6	0	13200	27	51	72	90				

Transmissivity (gpd/ft) 4804.688 Storage Coefficient 1.091916E-04

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TABLE VII-6
Historical Injection Data at Sasol WDW-319

Exxon Mobil Corporation
Pasadena, Texas

Sasol WDW-319			
Year	Total Injection Volume (MG)	Total Estimated Injection Volume (MG)	Cumulative Injected Volume (MG)
2000	1.561338	1.561338	1.561338
2001	124.645897	124.645897	126.207235
2002	119.514620	119.514620	245.721855
2003	114.090193	114.090193	359.812048
2004	113.525136	113.525136	473.337184
2005	114.175100	114.175100	587.512284
2006	90.715102	90.715102	678.227386
2007	65.958014	65.958014	744.185400
2008	57.762301	57.762301	801.947701
2009	49.746900	49.746900	851.694601
2010	47.360298	47.360298	899.054899
2011	58.160076	58.160076	957.214975
2012	71.234185	71.234185	1,028.449160
2013	72.657706 (a)	79.262952	1,107.712112
2014	152.856700	152.856700	1,260.568812
2015	77.980485	77.980485	1,338.549297
2016	83.849422	83.849422	1,422.398719
2017	22.152602 (b)	88.610408	1,511.009127
2018	82.639036	82.639036	1,593.648163
2019	80.389291	80.389291	1,674.037454
2020	62.199013 (a)	67.85346873	1,741.890923
2021*	--	90.000000	1,831.890923
2022*	--	90.000000	1,921.890923

(a) December report missing. Total volume up to November.

(b) Total volume up to March.

* Records unavailable online; Total injection volume estimated to 90 MG

MG: Million gallons

Average Injection Rate for 20 years between 2001 and 2020 = **165.59** gpm
Estimated Average Injection Rate for 20 years between 2001 and 2020 = **166.09** gpm

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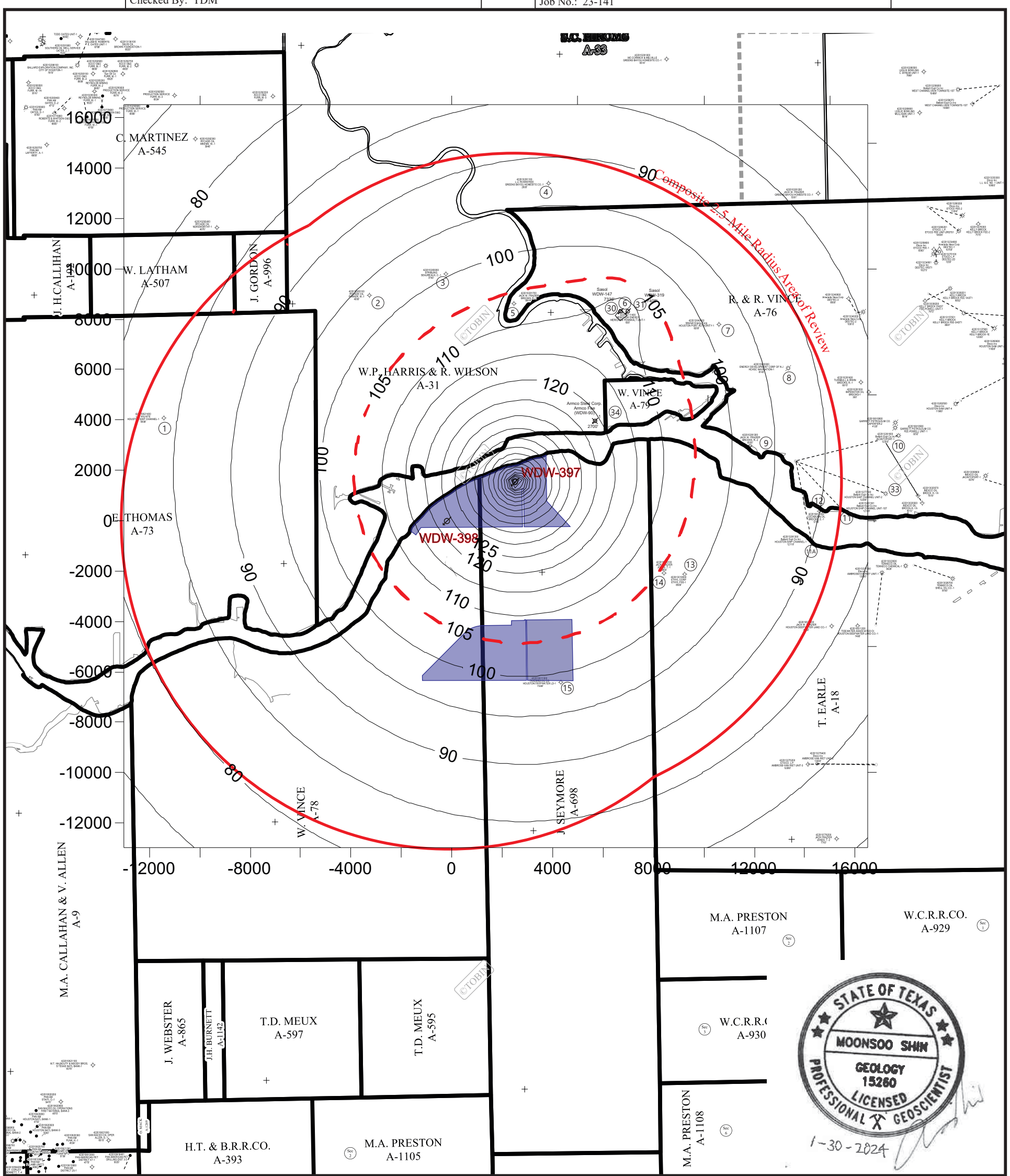
Drawn By: MBS	Drawing No.: Figure VII-1
Designed By: TDM	Date: 1-30-2024
Checked By: TDM	Job No.: 23-141



MAP EXPLANATION

- Location
- Location Abandoned
- Rig Up
- Drilling
- Dry & Abandoned
- Oil Well
- Oil Well Abandoned
- Gas Well
- Gas Well Abandoned
- Well Abandoned-Show of Oil & Gas
- Well Abandoned-Show of Oil
- Well Abandoned in Salt
- Well Abandoned in Cap Rock
- Core Test Well
- Wet Gas Or Condensate Well
- Wet Gas or Condensate Well Abnd
- Producing Oil & Gas
- Injection Well

Rentech Fertilizer and Gyp-Stack Locations

Line of Equal Pressure

Contour Interval = 5 psi

Grant Or Section Line
County Line
State Line
Line Visible On Aerial Photo

N

SCALE 1 inch = 4000 feet

2000 0 2000 4000 FEET

FIGURE VII-1

PRESSURE INCREASE AT END OF OPERATIONS (10 YEARS) WITH 1,200 GPM INJECTION IN WDW-397

PREPARED FOR

EXXON MOBIL FACILITY
PASADENA, TEXAS

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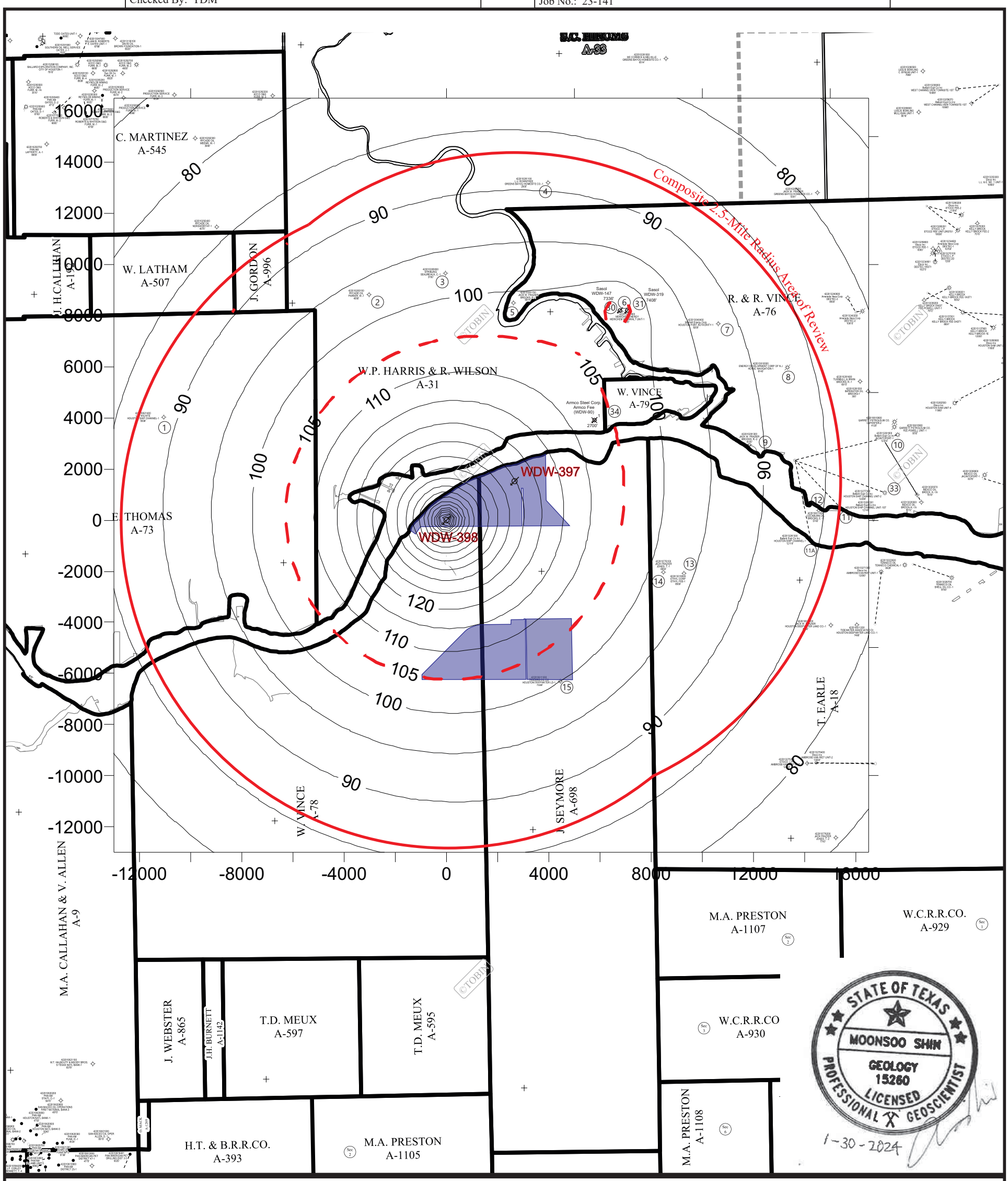
P2 Energy Solutions (Tobin Distribution), 2017

Drawn By: MBS	Drawing No.: Figure VII-2
Designed By: TDM	Date: 1-30-2024
Checked By: TDM	Job No.: 23-141



MAP EXPLANATION

- Location
- Location Abandoned
- Rig Up
- Drilling
- Dry & Abandoned
- Oil Well
- Oil Well Abandoned
- Gas Well
- Gas Well Abandoned
- Well Abandoned-Show of Oil & Gas
- Well Abandoned-Show of Oil
- Well Abandoned in Salt
- Well Abandoned in Cap Rock
- Core Test Well
- Wet Gas Or Condensate Well
- Wet Gas or Condensate Well Abnd
- Producing Oil & Gas
- Injection Well

Rentech Fertilizer and Gyp-Stack Locations

Line of Equal Pressure (100)

Contour Interval = 5 psi

Grant Or Section Line
County Line
State Line
Line Visible On Aerial Photo

N

SCALE 1 inch = 4000 feet
2000 0 2000 4000 FEET

FIGURE VII-2

PRESSURE INCREASE AT END OF OPERATIONS (10 YEARS) WITH 1,200 GPM INJECTION IN WDW-398

PREPARED FOR

EXXON MOBIL FACILITY
PASADENA, TEXAS

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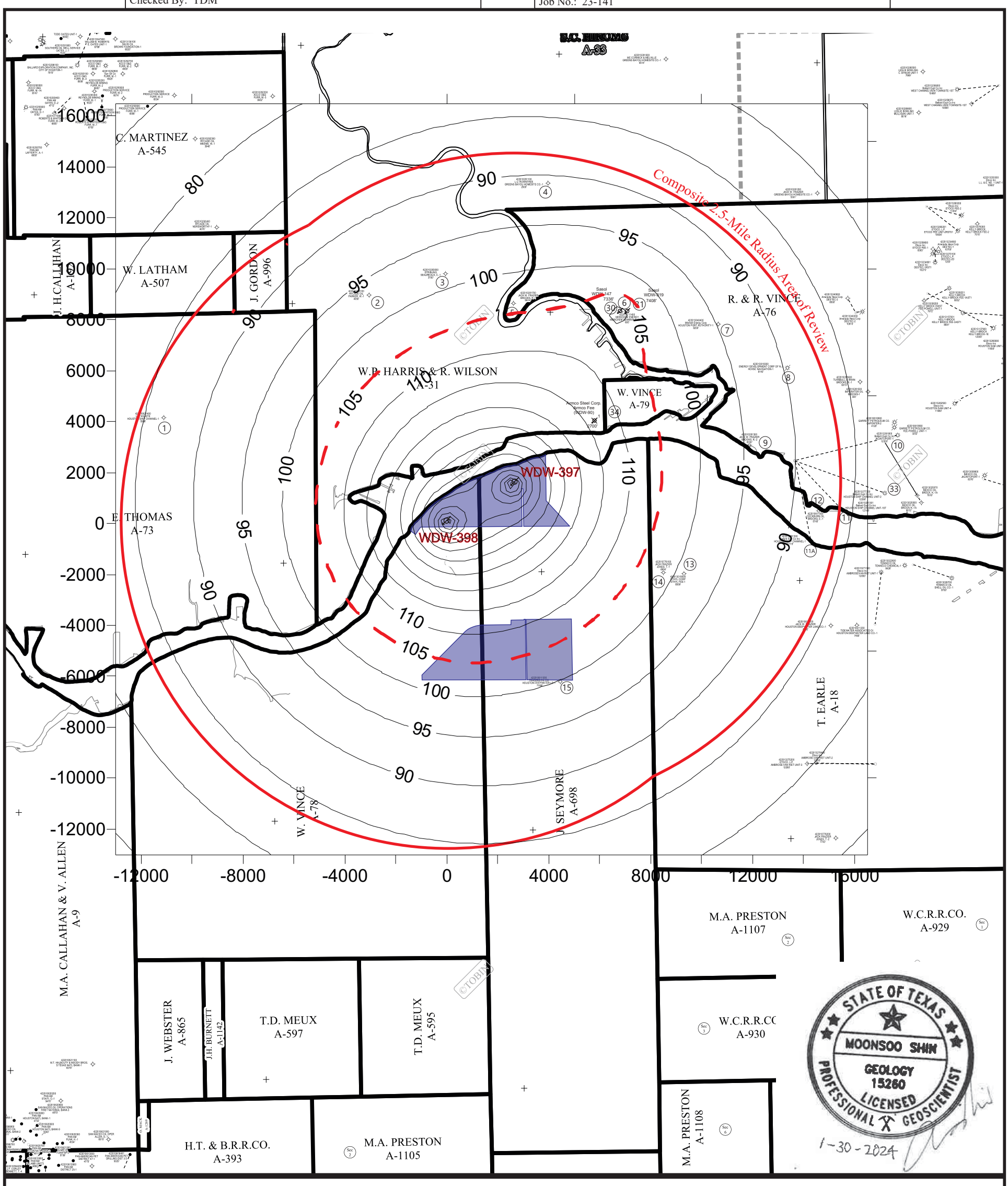
P2 Energy Solutions (Tobin Distribution), 2017

Drawn By: MBS	Drawing No.: Figure VII-3
Designed By: TDM	Date: 1-30-2024
Checked By: TDM	Job No.: 23-141



MAP EXPLANATION

- Location
- Location Abandoned
- Rig Up
- Drilling
- Dry & Abandoned
- Oil Well
- Oil Well Abandoned
- Gas Well
- Gas Well Abandoned
- Well Abandoned-Show of Oil & Gas
- Well Abandoned-Show of Oil
- Well Abandoned in Salt
- Well Abandoned in Cap Rock
- Core Test Well
- Wet Gas Or Condensate Well
- Wet Gas or Condensate Well Abnd
- Producing Oil & Gas
- Injection Well

Rentech Fertilizer and Gyp-Stack Locations

Line of Equal Pressure (100)

Contour Interval = 5 psi

Grant Or Section Line
County Line
State Line
Line Visible On Aerial Photo

N

SCALE 1 inch = 4000 feet
2000 0 2000 4000 FEET

FIGURE VII-3

PRESSURE INCREASE AT END OF OPERATIONS (10 YEARS) WITH 600 GPM INJECTION IN WDW-397 AND WDW-398

PREPARED FOR

EXXON MOBIL FACILITY PASADENA, TEXAS

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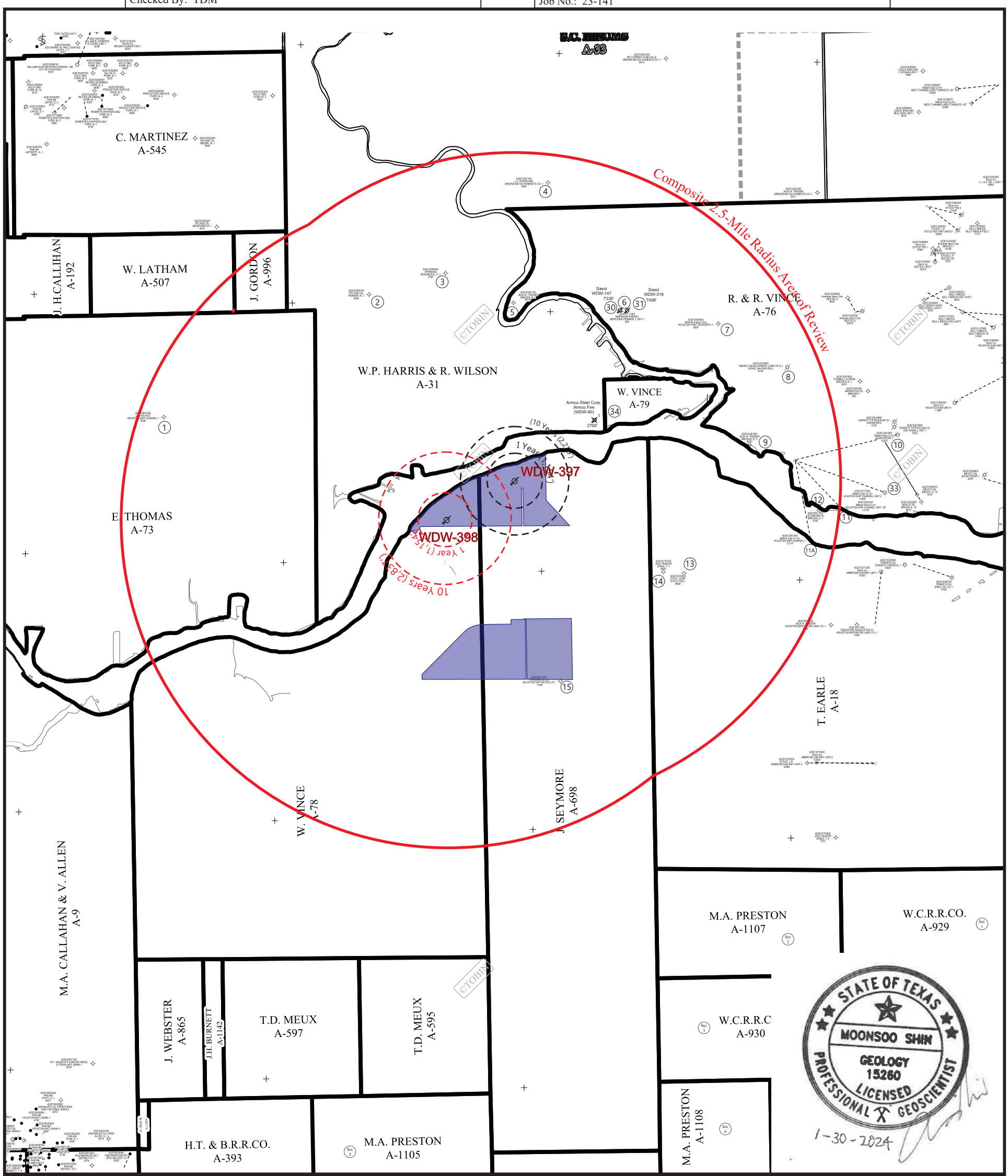
P2 Energy Solutions (Tobin Distribution), 2017

Drawn By: MBS	Drawing No.: Figure VII-4
Designed By: TDM	Date: 1-30-2024
Checked By: TDM	Job No.: 23-141



MAP EXPLANATION

- Location
- Location Abandoned
- Rig Up
- Drilling
- Dry & Abandoned
- Oil Well
- Oil Well Abandoned
- Gas Well
- Gas Well Abandoned
- Well Abandoned-Show of Oil & Gas
- Well Abandoned-Show of Oil
- Well Abandoned in Salt
- Well Abandoned in Cap Rock
- Core Test Well
- Wet Gas Or Condensate Well
- Wet Gas or Condensate Well Abnd
- Producing Oil & Gas
- Injection Well

Rentech Fertilizer and Gyp-Stack Locations

Line of Equal Pressure

Grant Or Section Line
County Line
State Line
Line Visible On Aerial Photo

N

SCALE 1 inch = 4000 feet
2000 0 2000 4000 FEET

WDW-397 Waste Plume Front Position Based on 1,200 gpm
WDW-398 Waste Plume Front Position Based on 1,200 gpm

P2 Energy Solutions (Tobin Distribution), 2017

FIGURE VII-4

EXTENT OF WASTE PLUME

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

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Geoscientist Seal

Signature by Texas Professional Geoscientist

I, Stephanie K. Williams, the undersigned state: As an employee of Terra Dynamics Incorporated that I am authorized to prepare this document (***VIII. Area of Review Report***) and that this document (***VIII. Area of Review Report***) was prepared under my supervision and direction. All facts stated herein are true, correct and complete to the best of my knowledge. The geosciences information, calculations and analyses attested to in this document (***VIII. Area of Review Report***) were prepared in accordance with generally and currently accepted geosciences principles and practices. The information specifically covered by this seal includes Pages VIII-1 to VIII-14, Tables VIII-1 to VIII-2 and Plates VIII-1 to VIII-2 as they relate to the Permit Renewal Application to Dispose of Waste in a Class I Injection Well [WDW-397 and WDW-398] for the Exxon Mobil Corporation, Pasadena Plant Facility, Pasadena, Texas.

Stephanie K. Williams 2/26/2024

Signature Date

Licensed Professional Geoscientist
#11198, State of Texas
Terra Dynamics Incorporated
Texas Registered Engineering Firm
F-3501

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VIII. AREA OF REVIEW

VIII.A. Area of Review Map

A base map showing the location, name, number and depth of the non-freshwater artificial penetrations in the Area of Review (AOR) is included as Plate VIII-1. Information regarding depths, well names and well numbers are keyed from the map to Table VIII-1, which is a tabulation of data on all non-freshwater penetrations within the 2.5-mile AOR. A USGS map showing the locations of the freshwater artificial penetrations is included as Plate VIII-2. Plate VIII-2 shows all surface bodies of water, springs, mines (surface and subsurface), quarries and other pertinent surface features, including residences, roads, and suspected surface faults. Information regarding depths, owners, and proposed use of the freshwater artificial penetrations are keyed from the map to Table VIII-2, which is a tabulation of data on all freshwater penetrations within the 2.5-mile AOR.

Non-Freshwater Artificial Penetrations

A total of 20 non-freshwater artificial penetrations (exploration, disposal, core test and oil and/or gas wells) have been identified within 2.5 miles of the two ExxonMobil facility injection wells. The protocol used to conduct the artificial penetrations identification, location and plugging adequacy review for the ExxonMobil AOR is included in Section VIII.B. The subject wells are plotted on Plate VIII-1, and information concerning the wells is summarized in Table VIII-1. Records for the 20 non-freshwater artificial penetrations are included in Appendix E.

Freshwater Artificial Penetrations

A total of 145 freshwater artificial penetrations have been identified within 2.5 miles of WDW-397 and WDW-398. The main source for water well information within the search area is the Texas Water Development Board (TWDB) maps and records. Table VIII-2 identifies the water wells within the 2.5-mile AOR depicted in Plate VIII-2. Records for the 145 freshwater artificial penetrations are included in Appendix E.

VIII.B. Non-Freshwater Artificial Penetrations

In accordance with 30 TAC §331.121(a)(2)(A), a search of the artificial penetrations within the ExxonMobil AOR was conducted by a records research company (D-B Associates, Austin, Texas) and updated with research performed by TDI personnel. The following sections describe the protocol used to conduct the artificial penetrations identification, location and plugging adequacy review for the ExxonMobil AOR.

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Protocol for Non-Freshwater Artificial Penetration Identification and Location

The records researcher utilized both public and private sources of data to identify artificial penetrations. The following sections describe the protocol used to conduct the artificial penetrations identification, location and plugging adequacy review for the ExxonMobil AOR.

P2 Tobin

P2 Tobin (P2 Energy Solutions) is a commercial data gathering company with provides upstream oil and gas industry with innovative solutions and high-quality geospatial data needed to maintain enterprise datasets, build interactive maps, and leverage business intelligence to make critical business decisions. The primary information of interest to this application is a current oil and gas well map from the study area. P2 Tobin was contacted and provided an oil and gas base map, which was compared against Railroad Commission of Texas (RRC) listings and commercially available well sources. This map serves as the base for the Area of Review Map and for the geologic structure and isopach maps discussed in Section V.

IHS Markit

IHS Markit (IHS Energy Portal by S&P Global) is a commercial data service with provides well logs, scout tickets and other data associated with the historical construction of oil and gas exploration wells. IHS Markit maintains a current interactive map which plots historical and new oil and gas exploration wells.

Railroad Commission of Texas

The Railroad Commission of Texas is the primary agency in which files are researched for oil and gas well records. The RRC is the state repository for oil and gas well records, as well as the state regulatory authority for the oil and gas industry. As the RRC records for the non-freshwater artificial penetrations within the ExxonMobil AOR were sufficiently complete and informative, it was unnecessary in most cases to go beyond the following RRC research protocol for well records and information.

Maps

Before the retrieval process can begin, it is necessary to know the operator, lease name and county in which the well is found. The preceding information is normally found on commercially prepared oil and gas base maps. The Railroad Commission of Texas maintains two types of maps, which are used by the researcher to determine the operator, well name, approximate drilling date, and field name. The following two types of maps are on file at the RRC.

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County Maps: These maps are produced by commercial firms who obtain the data to build the oil and gas base from "scout tickets" (completion information received from individual oil companies) in the early years and then, in later years, from the base maps, plotting incoming information filed by oil and gas operators. Changes in the status of existing wells are noted, as well as factual material on new wells.

Field Maps: These maps are prepared by RRC personnel from the commercial base maps. "Field maps" are prepared when there is an extremely high well concentration in an area and it is necessary to expand the scale of the area so that wells can be properly identified. All data including survey name, fee name, acreage configuration of tracts of land, operator name and well location data are taken from the county map and transposed onto the "field map." Once the "field map" is prepared, any wells drilled, deepened, plugged back, or plugged in the area encompassed are spotted on this map.

The researcher utilized both types of maps on file with the RRC as well as other available commercial oil and gas base maps. The information found on these various base maps is used to proceed to the next step of the research process.

Microfiche and Microfilm Records

All records filed with the Railroad Commission of Texas prior to 1973 are found on microfiche and microfilm. Records in some RRC districts are filmed through 1980. These microfiche and microfilm records are organized in several different systems, such as operator and lease name, district, field, and operator name, or district, field, and lease number. Within the aforementioned filing systems, there are a large number of exceptions to the filing procedures, which create additional filing systems within these categories.

The various types of standard film sets are as follows.

Unit Cards: These are microfiche records for wells which had records filed with the RRC prior to 1962. These "units" are filed sequentially by an operator number assigned by the Railroad Commission of Texas at the time the operator filed the required organization report with the agency. The operator number can be referenced in either the "county book" or the "county microfiche." There is a "county book" maintained for each county within the state. Within the "county book", the information is organized alphabetically by lease name, which cross-references to the operator name and corresponding operator number. The "county microfiche" is a recent addition to the RRC filing system. The agency took the "county books", reorganized the leases into alphabetic order, and microfilmed the information. Although the "county books" are not organized as neatly as the "county microfiche", they are the original system and are more accurate.

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Operator numbers can also be obtained from old copies of organization ledgers maintained by the RRC. These ledgers are in five separate sets which correspond to various time periods from the 1920s to the 1960s. These ledgers list only operator names, addresses, and numbers assigned by the agency and are used as a last resort, since they do not indicate lease names and often list multiple operators with the same name.

Once the operator name is matched to a lease name and an operator number is given, the unit card, if available, is pulled. The lease names are filed alphabetically within each operator number. Since there are exceptions to the filing system, if the desired information is not available or only partially available on the unit card, then the researcher must proceed to the next set of microfilm.

Well Records; Folder Rolls: Duplicate copies of unit cards, which sometimes contain information that was not included in the initial filming of the unit cards, are referenced on the folder rolls. The folder rolls are organized by operator number and folder number which appear on the unit card jacket. In addition, some folder rolls do not have a folder number given but only an operator number. These rolls are called "add-on rolls" and also contain records not included in the initial filming of the unit cards.

Well Records; Runs 20 to 30 and A to I: These rolls are organized by operator number and by specific periods of years. These rolls encompass a period from 1945 to 1960 and commonly have three to five rolls for a specific year and operator number. When information is not available on the unit cards, these are the next set of film to be researched for records.

Well Records; Major Runs: This is a special set of film that contains only information on records filed by major operators. These rolls are organized by operator and then alphabetically by lease name. It should be noted that there are very few unit cards for major companies and that if any information was filed on a lease or well, it will be found on this set of film. It should also be noted that major operators, even in the early years of the oil business, were very prudent about filing completions and plugs for wells which they operated.

Well Records; Old Warehouse Film: This set of film contains some of the very earliest information filed with the Railroad Commission of Texas and includes oil and gas well records filed from 1919 to 1939. There are only five rolls of this film, with three rolls organized numerically by operator number and two rolls organized alphabetically by operator name.

Well Records; K, L, and M Film: In March 1966, the Railroad Commission of Texas instituted a new filing system; however, before the system could be fully implemented, many well records which were filed during the period of transition were placed onto the K, L, and M film. The K Run covers portions of records filed from 1963 to 1964; the L Run covers portions of records filed from 1964 to 1965; and the M Run covers portions of records filed from 1965 to March 1966. The

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K, L, and M film sets are organized by operator number, with leases listed alphabetically within each operator number.

Potential Film: In March of 1966, the RRC filing system was converted to the "potential" filing system, which is currently used today. This film contains records of all wells that produced oil and/or gas and were placed in a designated oil or gas field. This film is organized by the Railroad Commission of Texas District, field name, and oil lease number or gas well identification number.

Wildcat and Suspense Film: The wells on this set of film differ in that they were to be drilled in wildcat fields or fields which were not producing at the time the Application to Drill was submitted to the RRC. This film is organized by district, county, and/or American Petroleum Institute (API) number. The API number system has been in effect since April 1966. The numbers are stored within the RRC computer system and noted on all forms filed for the well. The system allows information to be retrieved by computer, showing drilling status, operator, lease name, oil lease number or gas identification number, and field name. This is a very efficient system and allows quick and accurate retrieval of data filed since 1978.

Well Records Files: These are the hard copy files of data not yet placed on microfilm. These files are organized by district, field name, and oil lease number or gas identification number. These files contain the most recent data processed by the Central Records staff of the Railroad Commission of Texas. Inside these folders are references to data that has been placed onto potential film.

Suspense Files: These files contain the most recent information to be filed with the Central Records Department. This is the holding area for information to be placed into existing well record files or to have new oil lease or gas identification files prepared. The information is filed by district and API number. To obtain API numbers assigned to these records, it is necessary to search "suspense cards" that are filed by district, county, and alphabetically by lease name. Records that have not been placed in suspense files are usually found within the Map Department, where they are held until data is placed on the county oil and gas base maps or on field maps.

The aforementioned records sets are the primary file systems used to access records in the Railroad Commission of Texas. It is important to note that in the early years of the oil and gas industry in Texas, this agency was not the enforcement body it is today. Early operators sometimes tended to be less than diligent in filing required information with the Railroad Commission of Texas. This, in combination with the massive amount of data maintained by the agency, provided many opportunities for data gaps to occur, either due to no records being filed or records being misfiled within the agency. In retrieving information from the Railroad Commission of Texas, the researcher often has to examine every file system available in the search for a particular piece of

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information. After all avenues have been searched, the desired records may not be available in the filing system. This is normally due to operator omission or lost and misfiled records handled by the Railroad Commission.

Alternate Records Sources

In instances where complete well data are unavailable within the RRC filing system, the researcher then proceeds to various alternatives outside of this agency. These sources are as follows.

Balcones Research Center - University of Texas

The Balcones Research Center maintains a well sample library that contains approximately 750,000 drillers logs. These drillers logs were donated to the University from the 1920s to the early 1960s by various oil and gas operators and private log libraries. The records are organized by county and then alphabetically by operator name. These drillers logs contain well location data, formation record, casing record, initial production potential, and sometimes the plugging information.

This library has proved to be an excellent source in cases where base map information is incorrect. The researcher is able to go into a county and research by survey name to identify wells within an area that may not be on file with the RRC.

Commercial Log Libraries

When required data cannot be found from the two aforementioned sources, the researcher then purchases membership privileges with a commercial library. These libraries maintain extensive electric log collections as well as scout ticket files. Scout tickets often prove very valuable, since full operator name or alternative operator names are listed. These alternative operator names often allow D-B Associates to re-enter the RRC filing system with previously unknown record leads. Available scout tickets were gathered on all wells in the AOR.

County Deed Records

In some cases the available oil and gas base maps may indicate a well to have been drilled in an area, but the map does not indicate an operator or lease name. It may be necessary to determine the genealogy of the mineral ownership and various lessors on a specific tract of land. By examining deed records on file in the county of interest one is able to ascertain the names of various individuals and/or companies that once owned minerals or drilling rights to a tract of land. These names can be utilized to reexamine the records on file with the various aforementioned public and private information sources.

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Scout Tickets

Scout tickets originated as part of the scouting service that oil companies provided for their geological staffs in the earlier periods of the oil industry. Oil scouts for a company originally gathered drilling, completion, and other geologic data on their own company's wells and wrote this information on small summary cards, which were put in the appropriate well files and were available for intracompany use. Since the combined number of wells drilled by other companies were a potential for significantly greater amounts of data than those drilled by a single company, the oil scouts began the tradition of meeting weekly and exchanging information on their wells as a means of acquiring a better database. If an oil company was drilling a "tight" hole and would not release any information on the well, that company's scout was excluded from the weekly meetings of data exchange. The early scout tickets (1920s to 1940s) were often handwritten, usually on 5-inch by 7-inch cards.

As the number of wells drilled in an area grew and the database expanded, commercial scouting services were formed to keep track of and sell data to the oil companies. From the 1940s through the 1960s, as many as three to five companies competed in an area to provide this service. Today, however, there are usually only one to two companies with scout tickets of wells from a certain geographical area. IHS Energy Group and Dwight's Energy Data are the main companies providing scout ticket data today.

Scout tickets are today called "Completion Cards", as the data is not gathered in the same fashion as were the original scout tickets. The data gathered for the cards is usually gleaned from public information files at the Railroad Commission or appropriate regulatory agencies for other states. When a well is drilled and either completed as a producer or is dry and plugged, the operator must file certain forms. The commercial data-gathering company will then use these forms to put together a completion card for publication and sale.

There is certain information that is usually included on all scout tickets or completion cards. This includes well name, location, drilling dates, total depth, elevation of ground surface, casing records, results of well, and completion data if the well was completed. This completion data includes depth of perforations, well test pressures and flow rates, and initial potentials. Additional information which is at times available and included are geologic formation boundaries, sidewall and whole core results, drill-stem test results, and mud logging shows.

Not all wells, particularly older ones, will have scout tickets. There is no requirement for certain data to be included, nor is there a standard format that all companies follow in listing the data.

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Incorrect information is at times printed on the cards. The cards provide a valuable service to the oil industry, but correlating data from other sources is generally required before a major economic decision is made based on information from the cards, such as the drilling of a well to test for hydrocarbons.

Protocol for Determining Non-Freshwater Artificial Penetration Status

Records for artificial penetrations identified within the AOR were retrieved and reviewed to determine the actual location and status of each well, i.e., operating or plugged. In Texas, these wells are required by the Railroad Commission of Texas and/or the TCEQ to have surface casings set below the base of fresh water (< 3,000 TDS) and cemented to the ground surface. Surface casing provides a primary means of protecting groundwater penetrated by a wellbore. Wells that penetrated the Confining Zone and the Injection Zone were further reviewed. Casing and cementing data of the operating wells were reviewed to determine if sufficient cement is in place to adequately prevent upward migration of fluids. Plugged wells were reviewed to determine the adequacy of plugging.

VIII.C. Tabulation of Non-Freshwater Artificial Penetrations

A tabulation of data on all penetrations within the AOR which penetrate the Injection Zone and/or upper Confining Zone is included in Table VIII-1. The data included in Table VIII-1 includes operator or owner name, lease name, well number, date drilled, well depth, well type and current status. The Map ID No. depicted in Table VIII-1 are keyed to Plate VIII-1. Records for all the non-freshwater artificial penetrations within the ExxonMobil AOR are included in Appendix E.

VIII.D. Schematics and Records of Artificial Penetrations

There are 145 freshwater artificial penetrations within the ExxonMobil AOR. None of these freshwater wells penetrate the base of the USDW, the Confining Zone and/or the Injection Zone. Hence, freshwater artificial penetrations are not considered as possible paths for the movement of fluids into or between USDW which could be caused by pressures in the Injection Zone.

There are four non-freshwater artificial penetrations within the Cone of Influence as determined from Section VII.A.8 (Map ID No. 6, 30, 31 and 34). Records for the wells located within the 2.5-mile AOR are presented in Appendix E. These records include those required by the RRC (drilling, completion, sidetrack, surveys, plugging, etc.) and commercially available scout tickets. All of the wells meet the non-endangerment standards through sufficient mud or cement plugs.

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There are a total of 20 artificial penetration locations identified on Plate VIII-1 which are in the ExxonMobil 2.5-mile AOR for WDW-397 and WDW-398. Map ID No. 2, 3, 4, 6 and 34 do not penetrate into the Confining Zone. Map ID No. 1, 5 and 12 penetrate through the Confining Zone and into the Injection Zone, but do not penetrate to the top of the Injection Interval. All of the remaining artificial penetrations are either adequately plugged and abandoned or completed in such a manner that they pose no threat to the USDW. Well records indicate that at a minimum, each plugged and abandoned well is plugged with mud-laden fluid (minimum of 9.5 lb/gal mud) or is cased across the Injection Interval.

Producing Oil and/or Gas Wells

There are four producing gas wells located within the ExxonMobil AOR. There are no producing oil wells within the AOR. The gas wells produce hydrocarbons from the deeper Yegua Formation below 11,000 feet (more than 3,500 feet below the ExxonMobil Injection Zone).

Plugged and Abandoned Wells

There are 13 plugged wells within the ExxonMobil AOR. With the exception of Map ID No. 2, 3, 4 and 6, all of the subject wells penetrate into or through the ExxonMobil Injection Zone. The plugged wells which are subject to the plugging protocol review are considered to be properly and/or adequately plugged in a manner to prevent the upward migration of fluids and would not be affected by pressure increases in the Injection Zone due to injection operations at ExxonMobil.

As indicated previously, there are four artificial penetrations located within the Cone of Influence generated by the injection activities into the ExxonMobil injection wells. The four wells are shown on Plate VIII-1. Map ID No. 34 is a plugged Class I injection well operated by Armco Steel Corporation as WDW-90. However, WDW-90 is a shallow well (2,700 feet deep) that does not penetrate the Confining and/or the Injection Zone. An additional Cone of Influence is generated around the nearby injection wells operated by Merisol. Merisol operates two Class I injection wells which inject into the same Injection Zone as WDW-397 and WDW-398. At maximum injection over the lifetime of the ExxonMobil's wells, Merisol's WDW-147 (Map ID No. 30) and WDW-319 (Map ID No. 31) are included within ExxonMobil's Cone of Influence. A third well drilled and plugged by Merisol is also within this Cone of Influence. The third well is a shallow plugged well which is 600 feet deep. Merichem Energy Company's Merichem-Pennwalt well No. 1 (Map ID No. 6) does not penetrate the Injection Zone or Injection Interval. As two of the wells within the Cone of Influence are Merisol WDW-147 and WDW-319, which are active Class I injection wells that are permitted and operated under waste disposal well permits and guidelines,

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and the other two wells are shallow plugged wells which do not penetrate the Injection Zone or Confining Zone, none of the wells present any concerns with regard to the USDW.

The closest wells to WDW-397 and WDW-398 are Map ID No. 6, 13, 14, 15 and 34. The closest of the wells (Map ID No. 34) is located about 4,063 feet to the northeast. Each of these wells are plugged and abandoned. Map ID No. 6 has surface casing set above the base of the USDW and is cemented across the surface casing shoe. The wellbore below the cement plug is filled with 9.8 lb/gal mud-laden fluid. Plugging records were not located for Map ID No. 13, but completion records indicate the well is cased across the Injection Interval and the drilling mud behind pipe has a density of 12.9 lb/gal. Plugging records were not located for Map ID No. 14, but the available records indicate that the well never produced hydrocarbons (dry and abandoned). The drilling mud in the well when the well was completed had a density of 9.8 lb/gal. Map ID No. 15 has surface casing set above the base of the USDW and is cemented across the surface casing shoe. The wellbore below the cement plug is filled with 9.9 lb/gal mud-laden fluid. Map ID No. 34 also has surface casing set above the base of the USDW and was cemented across the surface casing shoe. Three cement plugs were used to abandon the well. Map ID No. 1, 5, 7, 8, 9 and 12 are plugged wells that penetrate the Confining Zone and/or the Injection Zone. These wells are filled with heavy mud (at least 9.5 lb/gal) and/or have cement plugs. Therefore, all of the wells within the ExxonMobil AOR are adequately plugged and/or completed and none of the wells present any concerns with regard to the USDW.

Area of Review Well Plugging and Abandonment History

This section summarizes the drilling history, mud weights used, and plugging methods and requirements for artificial penetrations drilled within and in the surrounding fields of the ExxonMobil AOR.

This information is very useful when reviewing the older artificial penetration records to determine if a particular well was adequately plugged. Typically, some of these earlier oil and gas records will contain limited or non-specific information as to the actual depths and volumes of cement plugs or mud weights used. This is, however, common to most of the United States and not just to Texas. Texas probably has maintained one of the better regulatory programs and records systems for oil and gas throughout the years and has recognized the need for proper plugging of abandoned wells since before 1900 (House Bill 542, 1899).

It is important to understand the plugging requirements that were in effect when a particular well was plugged. In cases where Texas plugging records are available but do not specifically identify

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the actual mud weight left in the hole or the specific locations of cement plugs, the plugging form usually asks if mud and/or cement plugs were used or if all abandoned wells in the field were plugged according to Railroad Commission of Texas (RRC) requirements. If a plugging form documents that RRC requirements were followed without additional details, then mud and cement plugs in the well would meet at least the minimum plugging requirements of the RRC.

History of Plugging Regulations and Activities in the AOR

The first legislation concerning plugging of abandoned oil and gas wells in Texas was passed in 1899 with House Bill 542. This bill, however, did not designate regulatory or enforcement authority to a particular branch of the state government. The Railroad Commission of Texas was given regulatory responsibility for proper well plugging in 1919 by Senate Bill 350.

Plugging requirements as set forth by the RRC did not change between 1934 and 1967 when Rule 14 of the RRC was adopted. This time period covers the drilling period of the Panhandle Field.

Texas Regulations for Plugging Non-Freshwater Artificial Penetrations

1934 to 1967: Basic RRC plugging requirements between 1934 and 1967 were:

1. If the well was hydrocarbon productive with cemented production casing in the well, the well had to be plugged back with cement to a point at least 50 feet above the production casing shoe. Following the placement of the cement plug, the well had to be filled from the top of the cement plug to the surface with 10.0 pounds per gallon mud.
2. If the well was hydrocarbon productive with uncemented production casing in the well, the entire producing formation had to be plugged off with cement before the casing seat was broken. After the unseated production casing was pulled from the well, the well had to be filled with 10.0 pounds per gallon mud from top of the cement to the ground surface.
3. If the well was hydrocarbon productive through an irretrievable screen or perforated liner, the well had to be plugged back to a point 10 feet above the top of the liner or screen. Following placement of the cement plug, it was required that the well be filled with 10.0 pounds per gallon mud from the top of the cement plug to the ground surface.
4. If the well was a dry hole, the hole had to be filled with 10.0 pounds per gallon mud from total depth to surface.

At the discretion of the RRC, cement plugs could be required across fresh water or gas sands. In all cases, cement plugs and mud had to be emplaced by the circulation method through tubing or

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drill pipe. Notices of "intention to plug" and "plugging record" were required of all operators. These records were to be completed and filed on RRC Form 2A and Form 4.

1967 to Present: On January 1, 1967, Rule 14 of the RRC was adopted. Rule 14 amended the plugging requirements and provided the detailed plugging requirements currently used for abandoned oil and gas wells in Texas. Rule 14 was later amended effective March 1, 1992. These amendments to previous plugging requirements and those additionally mandated by Rule 14 cover the drilling period in the area from 1956 to 1997. The TCEQ has basically followed the RRC requirements for wells (disposal, etc.) within their jurisdiction.

There are only two wells in the AOR that were drilled prior to 1934. Neither of these wells (Map ID No. 2 and 3) penetrate into the Confining Zone. Plugging requirements or practices prior to 1934 are not addressed and those after 1997 have not changed.

For properly plugged wells, Rule 14 specifies a combination of cement plugs and mud-laden fluid to confine oil, gas, or water to the strata in which they naturally occur. The RRC reviews all plugging plans for adequacy and requires modifications as appropriate. Rule 14 requirements cover the period from 1967 to the present and are summarized as follows:

1. Notice of intention to plug and abandon is required to be filed on Form W-3A.
2. Offset landowners and well operators are required to be notified of intention to plug.
3. Plugging of the well must begin within one year of the end of drilling or production operations. Extensions may be granted provided no pollution hazard exists and adequate financial assurance has been made.
4. A 100 foot cement plug is required immediately above the uppermost perforated zone or produced horizon.
5. In wells with irretrievable screen or perforated liners, a cement plug is required at least 100 feet above the top of the liner.
6. If the production casing was removed from the well, a cement plug is required from 50 feet below the surface casing shoe to 50 feet above the surface casing shoe.
7. If the removal or non-placement of production casing exposed fresh water horizons, a cement plug is required from 50 feet below the base of the deepest freshwater sand to 50 feet above the top of that sand.
8. A ten foot cement plug is required in the top of the well.
9. Mud weighing 9.5 pounds per gallon or more is required in all portions of the well not filled with cement.

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At the discretion of the RRC, additional cement plugs could be required. All cement and mud plugs are required to be emplaced by the circulation method.

VIII.E. Improperly Constructed or Abandoned Wells

Based on a review of available completion and/or plugging records, each well in the AOR is properly constructed, and adequately plugged and/or abandoned so as to prevent the movement of fluids into or between USDW which could be caused by pressures in the Injection Zone.

VIII.F. Corrective Action Plan

No corrective action plan is warranted for any of the artificial penetrations identified in the AOR as each of the subject artificial penetrations is properly constructed, plugged and/or abandoned so as to prevent the movement of fluids into or between USDW which could be caused by pressures in the Injection Zone.

VIII.G. Ambient Pressure Monitoring

Based on the assessment that there are no improperly constructed or abandoned wells within the AOR, no ambient monitoring plan is needed to monitor the potential for fluid movement from the well or the Injection Zone.

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TABLE VIII-1

NON-FRESHWATER ARTIFICIAL PENETRATIONS WITHIN THE 2.5-MILE RADIUS AREA OF REVIEW

ExxonMobil Corporation
Pasadena, Texas

Map ID No.	Owner/Operator	Well No.	Lease Name	Date Drilled	Date of P&A	Total Depth (feet)	Status	Casing Size & Depth Size (in)	Top (feet)	Bottom (feet)	Cement	Cement Plugs Depth (feet)	# Sacks	Plugging Mud Weight (lb/gal)	Top Confining Zone	Top Injection Zone	Top Injection Interval
WDW-397	ExxonMobil Corporation	N/A	WDW-397	6/21/2006	N/A	7,260	Class I Disposal Active	20	0	180	Driven	-	-	-	4,850	5,347	5,922
								13.375	0	3,366	2,391 sx						
								9.625	0	6,644	2,964 sx						
								6.625	0	6,447	-						
WDW-398	ExxonMobil Corporation	N/A	WDW-398	10/1/2009	N/A	7,225	Class I Disposal Active	20	0	95	Driven	-	-	-	4,885	5,370	5,965
								13.375	0	3,372	2,800 sx						
								9.625	0	6,760	2,160 sx						
								6.625	0	6,600	-						
1	Wilhite Oil Co. API 42-201-0621400	1	H.S.C. Navigation Dist	11/22/1939	11/22/1939	5,508	D & A	10.75	0	130	N/A	N/A	N/A	9.5	4,670	5,110	NDE
2	Rycade Oil Corp. API 42-201-0283100	1	W. R. Parker	6/22/1925	6/25/1925	4,050	P & A	12	240	514	N/A	Surface	N/A	Heavy Mud	NDE	NDE	NDE
3	J. C. Stribling & Co. API 42-201-0283000	1	C. E. Seureau	12/27/1922	12/27/1922	3,700	P & A	N/A	N/A	N/A	N/A	N/A	N/A	Heavy Mud	NDE	NDE	NDE
4	L U Rowntree API 42-201-0281100	1	Greens Bayou Homesite	4/21/1941	4/21/1941	2,500	D & A	8	0	518	N/A	N/A	N/A	N/A	NDE	NDE	NDE
5	Jack W. Frazier API 42-201-0281700	1	Brooks	2/5/1946	2/5/1946	5,614	D & A	10.75	0	529	300 sx	N/A	N/A	10.5	4,750	5,290	NDE
6	Merichem Energy Co. API 42-201-3111400	1	Merichem-Pennwalt	8/20/1980	8/26/1980	600	P & A	4.5	0	598	220 sx	0 - 25	10	9.8	NDE	NDE	NDE
												170 - 301	35				
7	Mitchell Energy Corp. API 42-201-3040400	1	Houston Port Authority	3/18/1975	3/18/1975	8,200	P & A	8.625	0	3,500	1105 sx	0 - 20	10	10.9	4,790	5,335	5,825
												3,428 - 3,550	35				
8	Inexco Oil Co. API 42-201-3018300	1	H.S.C. Navigation Dist	1/26/1972	2/4/1993	8,143	P & A	9.625	0	1,045	430 sx	3 - 53	10	9.8	4,750	5,260	5,880
								7	0	7,385	905 sx	990 - 1100	25				
								5	7,124	8,141	102 sx	2,600 - 2,775	35				
								2.375	3,860	7,884	-	3,630 - 3,830	40				
												6,947 - 7,088	50				
												7,730 - 7,750	1				
9	Jack W. Frazier API 42-201-0281300	2	R. E. Brooks Estate	11/19/1946	11/20/1946	8,330	P & A	10.75	0	1,451	750 sx	1,431 - 1,471	20	12.3	4,730	5,240	5,860
												Surface	20				
10	Ballard Exploration Co. API 42-201-3261900	1	Jacintoport	3/20/2001	-	12,355	Gas Well	13.375	0	3,453	2,530 sx	-	-	-	4,720	5,230	5,910
								9.625	0	9,111	900 sx						
								7	0	8,805	300 sx						
								5.5	8,805	12,355	440 sx						
								2.875	0	11,547	none						
11	Ballard Exploration Co. API 42-201-3261301	1st	H.S.C. Unit	2/9/2001	-	12,149	Gas Well	13.375	0	3,443	2,324 sx	-	-	-	4,725	5,230	5,915
								9.625	0	8,903	900 sx						
								5.5	8,540	12,146	430 sx						
								2.875	8,805	11,943	none						
11A	Ballard Exploration Co. API 42-201-3261300	1	Houston Ship Channel	10/24/2002	-	12,119	Gas Well	13.375	0	3,443	2,324 sx	-	-	-	4,800	5,468	5,270
								9.625	8,540	8,903	900 sx						
								5.5	8,540	12,146	430 sx						
								2.875	0	11,731	none						

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TABLE VIII-1

NON-FRESHWATER ARTIFICIAL PENETRATIONS WITHIN THE 2.5-MILE RADIUS AREA OF REVIEW

ExxonMobil Corporation
Pasadena, Texas

Map ID No.	Owner/Operator	Well No.	Lease Name	Date Drilled	Date of P&A	Total Depth (feet)	Status	Casing Size & Depth Size (in)	Top (feet)	Bottom (feet)	Cement	Cement Plugs Depth (feet)	# Sacks	Plugging Mud Weight (lb/gal)	Top Confining Zone	Top Injection Zone	Top Injection Interval
12	Cockburn Oil Co. API 42-201-0611000	1	R. E. Brooks Estate	8/22/1935	8/26/1935	5,745	D & A	10	0	842	N/A	N/A	N/A	9.9	4,915	5,490	NDE
13	Ethyl Corp. API 42-201-3019500	1	Ehtyl Fee	3/21/1972	3/21/1972	8,509	D & A	16 9.625 5.5	0 0 0	80 3,000 8,429	N/A N/A N/A	N/A	N/A	12.9	4,966	5,530	6,175
14	Bunte Prod. & J. W. Frazier API 42-201-0776100	1	Houston Deepwater Land Co.	6/6/1938	6/6/1938	6,904	D & A	10.75	0	850	N/A	N/A	N/A	9.8	4,915	5,480	6,125
15	Traders Oil Co. API 42-201-0611300	1	Houston Deepwater Land Co.	9/18/1945	11/7/1946	7,338	P & A	10.75	0	820	300 sx	830 - 840	N/A	9.9	5,020	5,570	6,200
30	Sasol Chemicals (USA), LLC	N/A	WDW-147	1978	-	7,336	Class I Disposal Active	20 10.75 7 4.5	0 0 0 0	83 2,728 7,290 6,491	Driven 1,700 sx 820 sx -	-	-	-	4,760	5,135	6,564
31	Sasol Chemicals (USA), LLC	N/A	WDW-319	2000	-	7,408	Class I Disposal Active	20 13.375 9.625 7	0 0 0 0	98.5 3,300 7,352 6,497	Driven N/A N/A -	-	-	-	4,758	5,134	6,580
33	Ballard Exploration Co. API 42-201-3277300	2	Houston Ship Channel	12/27/2006	-	12,290	Gas Well	13.375 9.625 5.5 2.875	0 0 8,771 0	3,430 8,992 12,250 11,800	2,435 sx 800 sx 575 sx -	-	-	-	4,775	5,250	5,270
34	Armco Steel Corporation	1	Armco Fee WDW-90	9/20/1971	3/8/1984	2,700	Class I Disposal P&A	13.375	0	2,700	N/A	0-50 1,600-1,700 2,520-2,620	40 76 76	N/A	NDE	NDE	NDE

N/A - Information Not Available

NDE - Not Deep Enough

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TABLE VIII-2

FRESHWATER ARTIFICIAL PENETRATIONS WITHIN THE 2.5-MILE RADIUS AREA OF REVIEW

Exxon Mobil Corporation
Pasadena, Texas

Water Well No. (Tracking/State Number)	Well Owner	Proposed Use	Date of Well Completion	Total Depth (feet)	Additional Tracking/State Number (if available)	Plug Date
113630	VoPak	Test Well	2/18/2006	25	80201	2/18/2006
113631	VoPak	Test Well	2/18/2006	20	80202	2/18/2006
204750	Eddie Valdez	Industrial	6/11/2009	200		
259669	Pasadena Refining System, Inc.	Test Well	4/26/2011	10		
327863	Troy Construction LLC.	Industrial	7/24/2013	300		
151396	Kinder Morgan	Injection	12/16/2013	25	401072	12/16/2013
151404	Kinder Morgan	Injection	12/16/2014	25	401130	12/16/2014
438610	Kinder Morgan	Other	10/4/2016	31		
458049	Foroni Metals of Texas, Inc	Domestic	8/15/2017	440		
487581	Robert Goolsby/Canal Barge Co	Domestic	8/22/2018	340		
189683	Geotest Engineering Inc	Other	4/23/2019	25	519529	7/12/2019
189685	Geotest Engineering Inc	Other	4/22/2019	25	519536	7/12/2019
189696	Geotest Engineering Inc	Other	4/17/2019	25	519563	7/12/2019
534061	LJA Rail LLC	Domestic	11/12/2019	350		
541359	Clough USA	Industrial	4/16/2020	460		
198069	CP & Y Inc.	Other	8/28/2019	50	541530	3/31/2020
198071	CP & Y Inc.	Other	11/15/2019	50	541546	3/31/2020
198072	CP & Y Inc.	Other	11/15/2019	50	541581	3/31/2020
198073	CP & Y Inc.	Other	8/29/2019	50	541587	4/1/2020
205888	Targa Midstream	Test Well	12/8/2020	20	563277	12/8/2020
205894	Targa Midstream	Test Well	12/8/2020	20	563279	12/8/2020
596977	Air Products, LLC	Injection	1/12/2022	37		
604806	EMS MANAGMENT	Other	4/14/2022	365		
623224	Geoscience Engineering and Testing	Other	11/8/2022	25		
623226	Geoscience Engineering and Testing	Other	11/8/2022	25		
9423	Kinder Morgan	Withdrawal of Water	N/A	700		11/8/2002
19429	GB Biosciences Corp.	Withdrawal of Water	12/8/1955	1,175		9/23/2004
92548	Ballard Exploration Company In	Rig Supply	11/10/2006	350	283466	1/14/2014
94033	AES Deepwater	Withdrawal of Water	N/A	400		5/1/2014
81642	ChevronPhillips Chemical Compl	Withdrawal of Water	N/A	1,416		6/7/2012
98818	ReCon Services	Withdrawal of Water	N/A	180		1/5/2015
62324	OCTG	Withdrawal of Water	N/A	1,706		3/6/2010
85511	Prince Minerals	Withdrawal of Water	N/A	60		12/18/2012
34241	Greens Port Industrial Park	Withdrawal of Water	N/A	425		8/22/2006
4765	Ballard Exploration	Withdrawal of Water	12/30/2000	335		5/2/2001
13322	Clark Chrisman	Withdrawal of Water	N/A	220		8/13/2003
22599	Brown and Root Inc	Withdrawal of Water	N/A	550		2/1/2005
22598	Brown and Root Inc.	Withdrawal of Water	5/1/1942	564	6515821	2/1/2005
22600	Brown and Root Inc.	Withdrawal of Water	N/A	360		2/1/2005
1631	ATOFINA	Withdrawal of Water	3/15/1973	1,141		4/26/2001
154891	City of Galena Park Well #1	Public Supply	2/6/1956	679	6523142	1/6/2016
170683	Foroni Metals of Texas, Inc	Domestic	N/A	40		8/16/2017
181583	Southern Tube Facility	Industrial	12/27/1949	1,102	6515812	10/18/2018
181584	Southern Tube Facility	Industrial	4/29/1968	1,706		10/18/2018
209852	GB Biosciences	Other	N/A	1,290		6/22/2021
6515804	Harris County WCID 36	Unused	7/11/1944	559		
6515810	Armco Steel Corp. #5	Industrial	1944	1,370		
6515838	Brown and Root, Inc Marine Operators	Industrial	1967	1,091		
6515835	Texaco Inc.	Industrial	1964	449		
6515814	Armco Steel Corp.	Other	1948	376		
6515807	City of Houston Woodland	Unused	1949	853		
6515818	Stauffer Chemical Co #4	Industrial	1951	1,242		
6515837	Armco Steel Corp	Industrial	1967	1,070		

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TABLE VIII-2

FRESHWATER ARTIFICIAL PENETRATIONS WITHIN THE 2.5-MILE RADIUS AREA OF REVIEW

Exxon Mobil Corporation
Pasadena, Texas

Water Well No. (Tracking/State Number)	Well Owner	Proposed Use	Date of Well Completion	Total Depth (feet)	Additional Tracking/State Number (if available)	Plug Date
6515811	Armco Steel Corp. #6	Industrial	1948	1,381		
6515813	ISK Biosciences Corp. Greens Bayou	Industrial	1/22/1968	1,290		
6515808	City of Houston Woodland	Public Supply	1958	1,208		
6515809	Armco Steel Corp. #4	Industrial	1945	1,400		
6515823	ISK Biosciences Corp. Greens Bayou	Industrial	12/8/1955	1,231		
6515824	Armco Steel Corp.	Industrial	1957	1,634		
6515827	Jefferson Lake Sulphur Co.	Industrial	1957	950		
6515817	Stauffer Chemical Co #3	Industrial	1945	1,224		
6515825	A.O.Smith Corp	Industrial	1968	1,706		
6515830	Armco Steel Corp. #3	Unused	10/17/1941	449		
6515819	Diamond Shamrock Corp.	Industrial	1951	1,224		
6515828	Pennsalt Chemical Co	Industrial	1962	735		
6515815	Tenn-Tex Alloy and Chemical Co.	Industrial	1951	733		
6515836	Greens Port Industrial Park	Industrial	11/26/1964	730		
6515801	City of Houston Greens Bayou	Unused	10/1/1948	825		
6515831	Armco Steel Corp. #2	Unused	9/20/1941	713		
6523118	Velsicol Chemical Co.	Industrial	1950	311		
6523227	Warren Petroleum Co.	Unused	1953	442		
6523132	U.S. Geological Service	Unused	1/16/1974	45		
6523229	General Amer. Tank Co. well #2	Industrial	1958	485		
6523233	Champion Papers	Industrial	1937	515		
6523115	Crown Central Petroleum Co.	Industrial	1944	922		
6523138	Houston Light & Power Deepwater Plant	Unused	1924	823		
6523205	Armco Steel Corp. well #1	Industrial	1943	1,385		
6523206	Armco Steel Corp. well #2	Industrial	1943	1,266		
6523228	Terminal Corp.	Industrial	1961	822		
6523251	Phosphate Chemical Co.	Industrial	1965	1,230		
6523317	Tenneco Chemical Co. well #4	Industrial	10/22/1963	1,240		
6523327	Aristech Chemicals Corp.	Public Supply	9/13/1982	490		
278332	East Houston Medical Center	Industrial	8/22/2006	358		
6515820	The Port at Greens Bayou	Industrial	4/8/1942	854		
6515921	Port Of Houston Authority Well # 3	Industrial	6/21/1988	925		
6523102	Texasco Inc	Industrial	12/1/1945	1,410		
6523119	Armco Steel Corp	Industrial	1970	1,711		
6523151	City of Pasadena	Unused	1930	834		
6523204	Crown Central Pet. Co. well #9	Industrial	1950	1,274		
6523216	Phillips 66 Co. Houston Chemical	Unused	6/9/1943	639		
6523214	Phillips 66 Co. Houston Chemical	Industrial	6/24/1952	1,967		
6523222	Texas Asphalt & Refin. Co.	Industrial	1956	707		
6523245	Air Products & Chemicals, Inc.	Industrial	10/12/1972	1,300		
6523105	City of Galena Park Well #5	Public Supply	2/1/1959	1,000		
6523123	Champion Papers	Industrial	1937	1,275		
6523219	Albemarle Corp.	Industrial	10/31/1951	1,252		
6523234	Champion Paper	Industrial	1937	1,481		
6523236	Champion Papers	Industrial	1937	1,840		
6523223	Lone Star Cement Co.	Industrial	1959	357		
6523232	Phillips Chemical Co. well #2	Unused	1941	607		
6523252	W D Haden Co.	Industrial	4/31/1967	521		
6523103	City of Galena Park Well #3	Public Supply	7/14/1949	1,201		
6523136	Houston Light. & Power Deepwater Plant	Industrial	1941	809		
6523137	Houston Light.&Power Deepwater Plant	Unused	1923	826		
6523207	Armco Steel Corp. well #3	Industrial	1943	1,255		
6523225	Mobil Mining & Mineral Co.	Industrial	1962	1,377		

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TABLE VIII-2

FRESHWATER ARTIFICIAL PENETRATIONS WITHIN THE 2.5-MILE RADIUS AREA OF REVIEW

Exxon Mobil Corporation
Pasadena, Texas

Water Well No. (Tracking/State Number)	Well Owner	Proposed Use	Date of Well Completion	Total Depth (feet)	Additional Tracking/State Number (if available)	Plug Date
6523226	Mobil Mining & Mineral Co.	Industrial	1958	1,112		
6523249	Premier Petroleum Co.	Industrial	5/24/1963	930		
6523250	Mobil Mining & Mineral Co.	Industrial	1/7/1965	1,325		
6523318	Port of Houston Authority	Industrial	1967	888		
6523110	Crown Central Petro.Co	Industrial	1969	1,827		
6523120	City of Pasadena	Unused	1935	834		
6523122	Champion Papers	Industrial	1937	974		
6523203	Crown Central Pet. Co. well #8	Industrial	1944	1,262		
6523215	Phillips 66 Co. Houston Chemical	Industrial	8/15/1952	1,220		
6523244	American Petroleum Co. well #2	Unused	1931	707		
6523246	Air Products & Chemicals, Inc.	Industrial	12/21/1972	1,300		
6523247	Port Terminal Railroad	Unused	2/1/1929	715		
6523221	Ethyl Corp.	Industrial	7/1/1951	1,740		
6523101	City of Pasadena	Public Supply	11/1/1950	1,262		
6523139	H. L. & P. Co. Deepwater Plant	Industrial	1929	836		
6523503	City of Pasadena	Public Supply	1950	1,264		
6515822	Diamond Shamrock Corp.	Unused	1950	680		
6515829	Pennsalt Chemical Co	Industrial	1953	342		
6523152	City of Galena Park Well #2	Public Supply	6/24/1942	740		
6523213	Phillips 66 Co. Houston Chemical	Industrial	9/1/1951	884		
6523106	Houston Light. & Power Deepwater Plant	Industrial	1/1/1949	940		
6523124	Champion Papers	Industrial	1937	1,927		
6523128	Lyondeel-Citgo Refin.	Industrial	1934	1,701		
6523235	Champion Papers	Industrial	1937	960		
6523237	Champion Papers	Unused	1937	1,399		
6523304	Tenneco Chemical Co.	Industrial	1962	1,200		
6523307	Port of Houston Authority	Unused	3/1/1960	675		
6523212	Olin Corp.	Industrial	1951	982		
6523224	Mobil Mining & Mineral Co.	Industrial	1961	1,230		
6523239	Phillips Petro.Co.	Plugged or Destroyed	1936	757		
6523220	Albemarle Corp.	Industrial	5/1/1951	477		
6523145	Gulf Oil Co.	Industrial	8/18/1922	752		
6523147	Texaco Inc.	Unused	1929	1,376		
6523104	City of Galena Park Well #4	Public Supply	8/1/1951	1,350		
6523218	Albemarle Corp.	Industrial	5/1/1951	453		
6523121	City of Pasadena	Unused	1941	350		
6523231	Phillips Chemical Co. well #1	Unused	4/15/1941	767		
6523148	Texas Inc.	Unused	3/1/1930	802		
6523303	Tenneco Chemical Co	Industrial	1962	802		

N/A - Information Not Available

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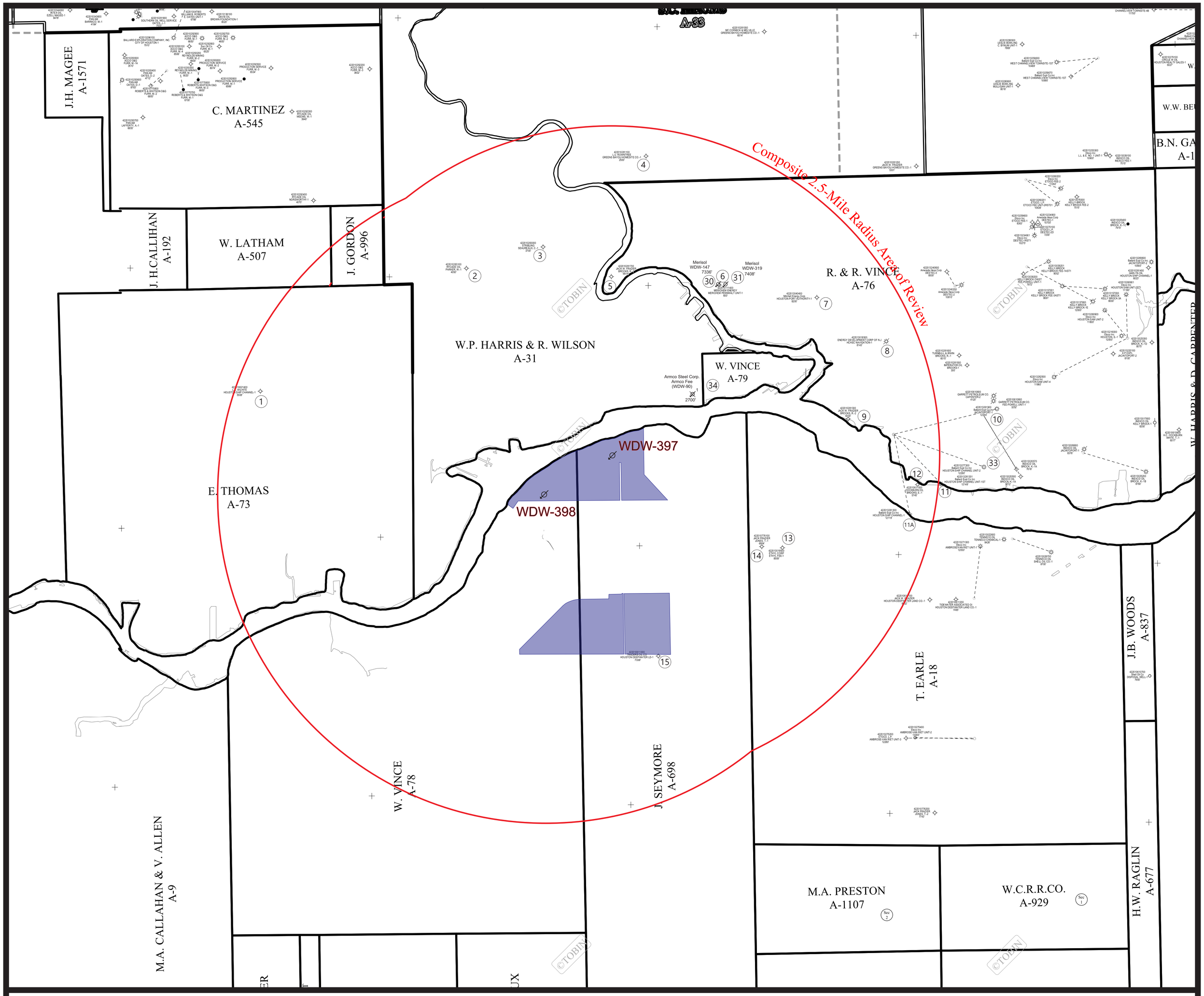

EXPLANATION

- Location
- Location Abandoned
- Rig Up
- Drilling
- Dry & Abandoned
- Oil Well
- Oil Well Abandoned
- Gas Well
- Gas Well Abandoned
- Well Abandoned-Show of Oil & Gas
- Well Abandoned-Show of Oil
- Well Abandoned in Salt
- Well Abandoned in Cap Rock
- Core Test Well
- Wet Gas Or Condensate Well
- Wet Gas or Condensate Well Abnd
- Producing Oil & Gas
- Injection Well

Grant Or Section Line
County Line
State Line
Line Visible On Aerial Photo

Map ID Number (16)

NDE - Not Deep Enough

Facility Boundary

STATE OF TEXAS
STEPHANIE K. WILLIAMS
GEOLOGY
NO. 11198
LICENSED
PROFESSIONAL GEOSCIENTIST

2/23/2024

N

1,000 0 1,000 2,000 FEET

Base Map Source: P2 Energy Solutions (Tobin Distribution), 2017

PLATE VIII-1

TERRA DYNAMICS INC

AREA OF REVIEW NON-FRESHWATER ARTIFICIAL PENETRATIONS

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

DRAWN BY: VASB	SCALE: As Indicated	DATE: 01/22/2024	
DESIGNED BY: VASB		JOB NO.: 23-141	
CHECKED BY: SKW			

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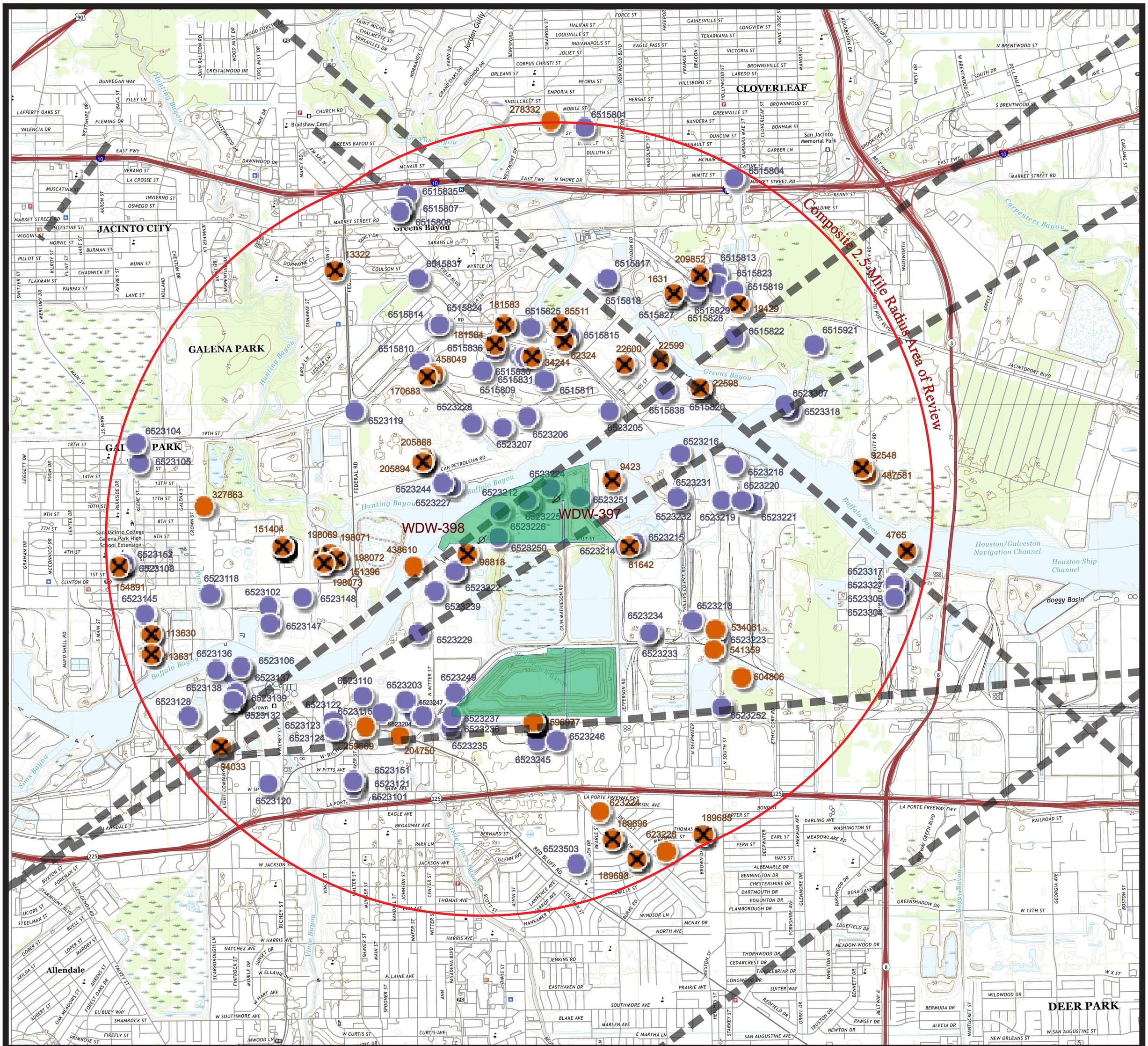

EXPLANATION

Water Wells

Plugged Water Wells

Facility Boundary

Injection Wells

Suspected Surface Faults

ROAD CLASSIFICATION

Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

KILOMETERS: 1 0.5 0 1 2
METERS: 1000 500 0 1000 2000
MILES: 1 0.5 0 1
FEET: 1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

CONTOUR INTERVAL 5 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

STATE OF TEXAS
STEPHANIE K. WILLIAMS
GEOLOGY
NO. 11198
LICENSED
PROFESSIONAL GEOSCIENTIST

2/23/2024

MN
GN
2°16'
40 MILS
1°5'
19 MILS

UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

Base Map Source: USGS 7.5 Minute Quadrangle Jacinto City, TX & Pasadena, TX (2022)

PLATE VIII-2

TERRA DYNAMICS INC

AREA OF REVIEW FRESHWATER ARTIFICIAL PENETRATIONS

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

DRAWN BY: VASB	SCALE: As Indicated	DATE: 01/22/2024	
DESIGNED BY: VASB		JOB NO.: 23-141	
CHECKED BY: SKW			

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IX. WASTES AND WASTE MANAGEMENT

The Pasadena Fertilizer Plant is currently owned and operated by PCI Nitrogen, LLC. The original Pasadena Fertilizer Plant was purchased by Mobil Mining and Minerals Company (Mobil) in 1979 and subsequently sold to Agrifos Fertilizer L.L.C (Agrifos) in 1998. The Pasadena Fertilizer Plant is now owned and operated by PCI Nitrogen, LLC. ExxonMobil has retained environmental responsibility for closure of the site.

The plant site is located along the Houston Ship Channel. The site is bounded by the Houston Ship Channel to the north, and industrial facilities to the east, west and south. The City of Houston operates two dredge soil storage basins located between the production plant area and the southern gypstacks (Attachment D). The site encompasses a total of approximately 509 acres of which approximately 360 acres are comprised of waste gypstacks. The remaining acreage is comprised of the production areas (71 acres), wetland treatment areas (35 acres), and administrative and miscellaneous facilities (43 acres).

Pursuant to a contractual agreement between the parties, ExxonMobil has assumed responsibility for certain environmental matters at the site, including the closure of existing gypsum stacks. The term "existing gypsum stacks" means the gypsum disposal sites in use or previously used by Mobil at the time of closing, including stacks 1, 2, 3 and 4, and the zone of consolidation between stacks 2 and 3, and otherwise limited to the existing footprint of the stacks at the time of closing. Under a Consent and Final Order Agreement (CAFO) executed between the USEPA and ExxonMobil in September 2010, ExxonMobil is responsible for closure of the existing gypsum stacks, proper disposal of the process wastewater, and certain sampling, analysis, and corrective action related to the closure of the gypsum stacks at the Pasadena Fertilizer Plant. The CAFO is provided in Appendix C

The ExxonMobil Class I injection wells (WDW-397 and WDW-398) and pre-injection treatment facilities (PITF) are located on property which is owned by Exxon Mobil Corporation. ExxonMobil owns the property on which the injection wells and PITF are located, and the subject properties are entirely surrounded by land owned by PCI Nitrogen, LLC.

Historically, the plant had the capacity to produce approximately 600,000 tons per year (TPY) of granular diammonium phosphate (DAP) and monoammonium phosphate (MAP) fertilizer, and approximately 60,000 TPY of liquid ammonium thiosulfate fertilizer. The plant operated both a

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sulfuric acid plant and phosphoric acid plant in the manufacture of these fertilizer products. The sulfuric and phosphoric acid plants had a capacity of approximately 600,000 TPY and 280,000 TPY, respectively.

IX.A Waste Generation and Management Activities

The analytical data evaluated for this permit renewal application was generated by a lab that the Texas Laboratory Accreditation Program has accredited under the National Environmental Laboratory Accreditation Conference (NELAC) standard for matrices, methods and parameters of analysis.

The production of fertilizer begins with mining and subsequent beneficiation of phosphate rock. The phosphate rock is ground into a fine uniform grain size; it is then reacted with sulfuric acid to release the phosphorus from its chemical bond with calcium and other elements. The reaction of the phosphate rock with the sulfuric acid produces phosphoric acid and hydrated calcium sulfate (phosphogypsum or gyp), the major waste by-product in the process. The phosphoric acid is then separated from the phosphogypsum and concentrated. The concentrated phosphoric acid is finally used to manufacture ingredients for inorganic fertilizer including DAP and MAP which are produced when phosphoric acid is reacted with anhydrous ammonia.

Water is added to the waste gyp to create slurry that is hydraulically pumped to holding lagoons or ponds. As the lagoons fill, the solids are scooped out to build up the side walls. The side walls of the lagoons are continually built up allowing the gyp to settle out thus raising the bottom of the lagoon to form the "gypstack". The process water ("pond water") that remains in the ponds after the gyp-solids settle out is reused in processing the phosphoric acid. This water has a pH of approximately 1.5 pH in an active production facility.

Closure of an active fertilizer facility will include management of the pond water during the closure of the gypstacks. Gypstacks are closed similar to landfills utilizing soil covers and vegetation. Pond water management will include treatment of the pond water for either disposal and/or irrigation on vegetated gypstacks.

IX.A.1 Waste Management Information Table

The following section includes a description of each individual waste stream to be disposed of in WDW-397 and WDW-398.

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The waste streams requested for authorization via this demonstration include the following:

1. Wastes generated during closure of the wells and associated facilities that are compatible with permitted wastes, Injection Zone and the wells;
2. Gypstack pond water;
3. Other associated wastes such as ground water and rainfall contaminated by the above authorized wastes, spills of the above authorized wastes, and wash waters and solutions used in cleaning and servicing the waste disposal well system equipment which are compatible with the permitted waste streams, Injection Zone and well materials.

Waste stream for Injection: Gypstack Pond Water

The primary waste stream for injection into the ExxonMobil injection wells is the process water, known as "pond water," that remains in the ponds after the gyp-solids settle out and process water collected in the moats surrounding the gypstacks. The process wastewater from the ponds and moats surrounding the gypstacks will vary in pH from 1.4 to 3.0.

The process wastewater also contains 2,4-dinitrotoluene (2,4-DNT) at concentrations above the toxicity characteristic of 0.13 milligrams per liter (mg/L). The source of the 2,4-DNT is sulfuric acid purchased from an adjacent chemical processing facility. As a result of the fertilizer manufacturing process, the process wastewater contains 2,4-DNT at concentrations above the toxicity characteristic.

ExxonMobil has a contractual agreement for the closure of the existing gypsum stacks, and a CAFO, executed between USEPA and ExxonMobil, for ExxonMobil to remain responsible for closure of the existing gypsum stack, proper disposal of the process wastewater, and certain sampling, analysis, and corrective action related to the closure of the gypsum stacks at the Pasadena Fertilizer Plant. The exact point of generation is gypstacks 1, 2, 3 and 4. A process flow diagram is provided in Figure IX-1.

Waste stream for Injection: Well Closure Wastes

Several very minor wastes (in terms of percent of the total injected volume) are requested as part of this permit application. These include wastes generated during closure of the wells and associated facilities that are compatible with permitted wastes, Injection Zone and the wells. These are wastes that will be generated as part of the plugging and abandonment of the injection wells and closure of any injection well related surface facilities. The volume of facility closure wastes will represent a very small portion of the wastes injected over the lifetime of the injection wells.

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The well closure wastes will be produced on site as a one-time discharge during the plugging and abandonment of the injection wells. The source of the waste stream is waste water produced during plugging activities. The generator is the owner operator of the well, ExxonMobil, during plugging activities. The exact point of generation is at the well site. The waste stream will be stored in on site frac tanks and rig supply tanks placed temporarily at the well site during plugging activities.

Waste stream for Injection: Other Associated Wastes

The additional very minor wastes (in terms of percent of the total injected volume) requested as part of this permit application are other associated wastes such as groundwater and rainfall contaminated by the permitted wastes, spills of the permitted wastes, and wash waters and solutions used in cleaning and servicing the waste disposal well system equipment which are compatible with the permitted waste streams, Injection Zone and well materials. These are wastes that will be generated during any necessary treatment or stimulation of the injection wells, and the "clean up" of leaks and/or spills of the permitted wastes. The volume of other wastes will represent a very small portion of the wastes injected over the lifetime of the injection wells.

Other associated waste stream will be produced on site as a minor waste. The source of the waste stream is minor associated wastes such as groundwater and rainfall contaminated by the permitted wastes, spills of the permitted wastes, and wash waters and solutions used in cleaning and servicing the waste disposal well system equipment. The generator is the owner operator of the well, ExxonMobil. The exact point of generation is at the facility and/or well site associated with the wells. The waste stream is not stored prior to injection.

Table IX.A provides a list waste streams which are currently permitted for injection into WDW-397 and WDW-398. The volumes shown for each individual waste stream are based on the permitted maximum injection rate and the minor waste streams.

IX.A.2 Injected Waste Streams Table

Table IX.B provides a description for each waste to be injected; any appropriate EPA waste codes, EPA hazard codes, TCEQ waste classifications, and TCEQ waste codes are shown. No additional waste codes beyond those already permitted are requested in this permit renewal application.

On Table IX.B, waste stream No. 1 gypstack pond water is the only continuous waste stream. Waste stream No. 2 and No. 3, well closure wastes and other associated wastes, respectively, are non-continuous. A blended waste stream is not included in Table IX.B.

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IX.A.3 Description and Analysis of Waste Streams

The wastewater injected into the ExxonMobil injection wells predominately consists of gypsum-stack pondwater, which is waste stream No. 1 as shown on Tables IX.A and IX.B. Wastes generated from closure activities (specified as waste stream No. 2 on Tables IX.A and IX.B) would be from a one-time only waste production. Other associated wastes such as ground water and rainfall contaminated by the above authorized wastes, spills of the above authorized wastes, and wash waters and solutions used in cleaning and servicing the waste disposal well system equipment which are compatible with the permitted waste streams, Injection Zone and well materials (waste stream No. 3 on Tables IX.A and IX.B) are small and projected at less than 5,000,000 gallons per year. The approximate percentages each individual waste stream comprises of the composite waste stream are as follows: No. 1—99 percent; No. 2--<<1 percent; No. 3--<1 percent.

Appendix F contains a Texas Laboratory Accreditation Program (TLAP) and NELAC-approved lab analysis of the waste stream for injection. Appendix F contains the annual waste stream analysis for the year 2023.

Figure IX-2 is a plot of viscosity at various temperatures and salinities. Given a waste stream with a specific gravity of between 1.0 (fresh water) to 1.05 (5% NaCl brine), the viscosity of the waste stream can vary from 0.37 at 170 ºF to 1.09 at 68 ºF. Although the waste stream is better described as a calcium sulfate ($CaSO_4$) brine rather than a NaCl brine, Figure IX-2 provides a reasonable approximation for purposes of estimating waste stream viscosity. The various temperature, viscosity and salinity correlations are indicated on Figure IX-2.

Table IX-1 is a representative chemical analysis of the injectate waste stream at the ExxonMobil facility. The table summarizes actual analyses of wastewaters collected from the process ponds and moats surrounding the gypstacks. Different gypstack water samples were collected and analyzed for inorganics and heavy metal content. Annual injection fluid analyses are submitted to the TCEQ annually as part of the Annual Injection Zone Report for WDW-397 and WDW-398.

The pH of the injected waste streams ranges between 1.4 and 3.0.

The chemical and physical properties and characteristics are described in this section. The thermal, organic, bacteriological and radiological properties and characteristics are not applicable.

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IX.A.4 Demonstration of Compatibility for New Waste Streams

Waste streams No. 1-3 listed in Tables IX.A and IX.B are currently permitted for ExxonMobil's WDW-397 and WDW-398 and are not requested as an amendment to add a new waste stream or change the characteristics of an approved waste stream. ExxonMobil has operated WDW-397 and WDW-398 were placed in service in 2008 and 2011, respectively. During that period, no evidence of waste stream to cement incompatibility has been observed via annual mechanical integrity testing radioactive tracer surveys. In addition, ExxonMobil currently conducts corrosion monitoring using coupons in the waste stream to determine corrosion rates for materials of construction which are exposed to the waste fluids. The corrosion coupons include Duplex 2507 CRA, Alloy 825, SM2535 CRA, 304 and 316 stainless steels, and fiberglass materials. The corrosion coupons are continuously exposed to the ExxonMobil deep well injectate. These coupons are evaluated on a quarterly basis according to Underground Injection Control (UIC) guidelines. Corrosion rates for these test materials have been acceptable since the installation of the coupons indicating that the tubulars are appropriate and compatible with the injected waste stream.

The results of the materials of construction compatibility testing are included in Appendix D and detailed in Section VI.A.13.

IX.A.5 Waste Stream pH and Specific Gravity

The waste stream varies from predominantly fresh water to moderately saline water with minor amounts of various inorganic constituents. TDS concentrations of up to 42,000 mg/L have been reported for the process pond water. The specific gravity of the wastewater for injection ranges from 1.00 to 1.05 sp. gr. at a temperature of 20 ºC (68 ºF). WDW-397 and WDW-398 are currently permitted for an injected waste specific gravity of 1.00 to 1.05 at 68 ºF.

The pH of the injected waste streams ranges between 1.4 and 3.0. The acids present in the waste stream include sulfuric acid, phosphoric acid and flourosilic acid. WDW-397 and WDW-398 are currently permitted for an injected waste pH of greater than 1.0 and less than 8.0.

IX.A.6 Waste Analysis Plan

Table IX.C provides a listing of sampling and analytical methods which are employed in testing the injected waste stream for various chemical constituents. The table includes sampling location, sampling method, sample frequency, analytical method and desired accuracy level for each waste constituent analyzed. The waste analyses utilized for waste identification and other analyses for

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environmental monitoring are performed in accordance with methods specified in the current editions of EPA SW-846, ASTM or other approved methods.

ExxonMobil will use a TCEQ-accredited laboratory to assure that matrix, analyte and procedures for analysis are followed correctly. All analytical data submitted to the TCEQ will be generated by a lab that the Texas Laboratory Accreditation Program (TLAP) has accredited under the National Environmental Laboratory Accreditation Conference (NELAC) standard for matrices, methods, and parameters of analysis.

IX.A.7 Hazardous Wastes Subject to 40 CFR 148 Subpart B

Waste No. 1 through 3 listed above are considered hazardous by characteristic (C and T codes), and are subject to federal land disposal restrictions under 40 CFR 148. These waste streams have received an exemption from the land ban restrictions by the EPA through the approval of a "no-migration" petition demonstration and are authorized for disposal via injection into WDW-397 and WDW-398. The "no-migration" petition authorization was originally issued on June 13, 2011 and was reissued on October 29, 2019 and is provided in Appendix C.

IX.A.8 Hazardous Wastes Not Subject to 40 CFR 148

Waste streams No. 1-3 are classified as potentially hazardous and are subject to federal land disposal restrictions (see Table IX.B.).

IX.A.9 Injection Well Summary Table

Table IX.D provides the status, total injected volume, maximum permitted injection rate, number of years utilized and date placed in service for WDW-397 and WDW-398.

IX.B. Waste Management

ExxonMobil has successfully operated the two injection wells at the Pasadena Facility since WDW-397 and WDW-398 were placed in service in 2008 and 2011, respectively. Deep well injection has been demonstrated as the method of disposal for ExxonMobil's aqueous waste streams that is most protective of the human health and the environment. The composite waste stream currently permitted for the WDW-397 and WDW-398 injection wells can be most satisfactorily disposed of through continued deep well injection.

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IX.B.1. Dates Wells Were Operated

WDW Number	Date Placed in Service	Status
WDW-397	December 11, 2008	Active
WDW-398	May 24, 2011	Active

IX.B.2. Specification of Wastes Injected

Each of the ExxonMobil injection wells was constructed specifically for the purpose of disposing of wastes generated at the Pasadena Facility during the closing of the gypsum stack ponds. Only those waste streams identified on Table IX.A have been injected into the WDW-397 and WDW-398 injection wells.

IX.B.3. Release of Hazardous Wastes

As of the date of this permit renewal application, there have not been any confirmed or suspected releases of hazardous or constituents from any of the active hazardous waste injection wells present and in service at the ExxonMobil facility.

IX.B.4. Preliminary Site Investigations

There have not been confirmed or suspected releases of hazardous or constituents from any of the active hazardous waste injection wells present and in service at the ExxonMobil facility. There have been no preliminary site investigations conducted at the ExxonMobil facility to discern whether a release is occurring, has occurred, or is likely to have occurred from either the WDW-397 or WDW-398 injection wells.

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TABLE IX-1

CHEMICAL ANALYSES OF GYPSTACK POND WATER

Exxon Mobil Corporation
Pasadena, Texas

General Parameters	Pond Water	Pond Water	Pump Pond #4	Pump Pond #4	Siphon Pond #2/3	Pump Pond #2/3	Gyp Stack #4	Injection Fluid	Injection Fluid	Injection Fluid
Sample Date	**3/28/2002**	**5/30/2002**	**2/3/2003**	**2/3/2003**	**2/3/2003**	**2/3/2003**	**2/3/2003**	**1/13/2009**	**12/14/2009**	**12/13/2012**
Parameter			Sample #1	Sample #2	Sample #3	Sample #4	Sample #5	Sample Port	Sample Port	Sample Port
pH (units)	1.67	1.90	1.83	1.29	1.62	1.71	1.71	1.90	1.90	2.00
Total dissolved solids	38,300	40,702	9,730	16,030	10,220	9,350	9,550	30,600	28,100	32,000
Total suspended solids	38.0	0.1	21.0	22.0	36.0	63.0	22.0	206.0	3.6	33.2
Arsenic	2.0	2.3	-	-	-	-	-	2.20	2.01	3.17
Barium	-	-	<0.25	<0.25	0.30	<0.25	<0.25	-	-	-
Cadmium	0.94	1.14	1.10	0.94	0.93	0.80	0.91	1.16	0.88	1.72
Calcium	1,030	1,176	1,170	1,160	1,420	1,130	1,160	1,310	1,090	1,730
Chromium (hexavalent)	0	<0.01	2.7	2.4	4.2	3.0	2.3	<0.0250	0.0137	<0.280
Cobalt	-	-	0.43	0.37	0.28	0.31	0.35	-	-	-
Copper	0.84	0.83	0.56	0.49	0.87	0.66	0.47	0.64	0.81	1.47
Iron (total)	-	-	ND	ND	ND	ND	ND	-	-	-
Iron (dissolved)	-	-	48	49	92	85	48	-	-	-
Lead	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-
Magnesium	198	271	225	225	255	245	230	174	121	263
Manganese	-	-	13	12	10	11	11	-	-	-
Mercury	ND	0.36	-	-	-	-	-	<0.00015	<0.00010	<0.000110
Molybdenum	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-
Nickel	1.89	2.06	1.8	1.6	1.7	1.5	1.5	2.1	1.97	2.92
Potassium	-	-	310	350	265	300	235	-	-	-
Sodium	1,730	1,850	2,450	2,440	2,300	2,180	2,350	2,060	1,490	2,110
Strontium	-	-	55	54	51	44	55	-	-	-
Vanadium	-	-	4.0	3.5	4.7	3.9	3.3	-	-	-
Zinc	6.8	11.3	6.6	5.9	8.3	6.6	5.6	9.98	8.14	14.60
Ammonia-N	895	1,343	800	800	1,100	800	800	733	691	352
Chloride	100	109	105	6,410	165	110	100	98.7	<3,000	6,220
Fluoride	7,300	7,075	6,850	7,400	9,200	7,450	6,950	0.93 ?	2,800	5,330
Sulfate	6,100	5,789	5,370	5,340	5,660	5,260	5,370	5,060	3,930	3,940
Phosphorous	7,780	84	7,150	6,990	8,560	7,650	7,720	6,720	3,900	7,380
Aluminum	-	-	16	16	72	58	16	-	-	-
Boron	-	-	1.0	1.1	1.3	1.2	1.3	-	-	-
Lithium	-	-	<0.05	0.41	0.49	0.49	0.43	-	-	-
Silicon	-	-	1,720	1,700	2,150	1,670	1,660	-	-	-

General Parameters	Pump Pond #4	Pump Pond #4	Pump Pond #4	Pump Pond #4	Pump Pond #4	Pump Pond #4	Pump Pond #4	Injection Fluid	Injection Fluid	Injection Fluid
Sample Date	**5/3/2004**	**5/19/2004**	**5/19/2004**	**12/20/2004**	**1/13/2005**	**1/13/2005**	**1/13/2005**	**1/13/2009**	**12/14/2009**	**12/14/2009**
Parameter	Collection Pond	Collection Pond	Top Pond	Collection Pond	Top Pond North	Top Pond South	Collection Pond	Sample Port	Sample Port	Sample Port
2,4 dinitrotoluene	0.295	0.279	0.299	0.430	0.370	0.290	0.360	0.265	<0.0033	0.188
o-cresol	ND	-	-	-	-	-	-	-	-	-
m-cresol	ND	-	-	-	-	-	-	-	-	-
p-cresol	ND	-	-	-	-	-	-	-	-	-

Note: all concentrations expressed in mg/L or mg/Kg
ND - not detected
- not analyzed
? Suspected to be incorrect value

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TABLE IX.A.

WASTE MANAGEMENT SUMMARY FOR WDW-397 AND WDW-398

Exxon Mobil Corporation
Pasadena, TX

Individual Waste Stream	Source	Volume * (gallons/year)
Gypsum stack pond Gypstacks #1, #2, #3, #4 and #5	Off-site	630,720,000 (1,200 gpm)
Wastes generated during the closure of the wells and associated facilities that are compatible with permitted waste, Injection Zone and the wells.	On-site	(see note below)
Other associated wastes such as groundwater and rainfall contaminated by the above authorized wastes, spills of the above authorized wastes, and wash waters and solutions used in cleaning and servicing the waste disposal well system equipment which are compatible with the permitted waste streams, Injection Zone and well materials.	On-site	<5,000,000

Note: The total cumulative annual volume for all gyp-stacks will not exceed 630,720,000 gallons per year. The generation of waste stream No. 2 will occur as a one-time-only waste and the volume of waste generated will be miniscule in comparison to the other wastes injected

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TABLE IX.B.

WASTE STREAM SUMMARY

Exxon Mobil Corporation
Pasadena, Texas

Waste Number	Waste Stream	EPA Waste Codes	EPA Hazard Codes (I, C, R, E, H, T)	TCEQ Waste Classifications[1] (H, 1, 2 or 3)	TCEQ Waste Codes
1.	Gypstack pond water	D002, D004, D005, D006, D007, D008, D009, D023, D024, D025, D030 and F039	C, T	H	0015105H
2.	Compatible closure wastes	D002, D004, D005, D006, D007, D008, D009, D023, D024, D025, D030 and F039	C, T	H	0015105H
3.	Other associated wastes	D002, D004, D005, D006, D007, D008, D009, D023, D024, D025, D030 and F039	C, T	H	0015105H

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TABLE IX.C.

WASTE STREAM SAMPLING AND ANALYSIS SUMMARY

Exxon Mobil Corporation
Pasadena, Texas

Waste Number (From Table IX.B)	Sampling Location	Sampling Method	Frequency	Parameter	Test Method
1, 2 and/or 3	wellhead	Grab	Weekly	pH	150.1
1, 2 and/or 3	wellhead	Grab	Weekly	Specific gravity	gravimetric
1, 2 and/or 3	wellhead	Grab	Annual	Ammonia nitrogen	350.2 or 350.3
1, 2 and/or 3	wellhead	Grab	Annual	Fluoride	340.2 or 300.0
1, 2 and/or 3	wellhead	Grab	Annual	Phosphorus	365.2
1, 2 and/or 3	wellhead	Grab	Annual	Sulfate	375.4 or 300.0
1, 2 and/or 3	wellhead	Grab	Annual	Chloride	325.2 or 325.3
1, 2 and/or 3	wellhead	Grab	Annual	Calcium	6010 or 200.7
1, 2 and/or 3	wellhead	Grab	Annual	Sodium	6010 or 200.7
1, 2 and/or 3	wellhead	Grab	Annual	Magnesium	6010 or 200.7
1, 2 and/or 3	wellhead	Grab	Annual	TDS	160.1
1, 2 and/or 3	wellhead	Grab	Annual	TSS	160.2
1, 2 and/or 3	wellhead	Grab	Annual	Arsenic	6010 or 200.7
1, 2 and/or 3	wellhead	Grab	Annual	Cadmium	6010 or 200.7
1, 2 and/or 3	wellhead	Grab	Annual	Hexavalent chromium	218.5
1, 2 and/or 3	wellhead	Grab	Annual	Copper	6010 or 200.7
1, 2 and/or 3	wellhead	Grab	Annual	Nickel	6010 or 200.7
1, 2 and/or 3	wellhead	Grab	Annual	Mercury	7470
1, 2 and/or 3	wellhead	Grab	Annual	Zinc	6010 or 200.7
1, 2 and/or 3	wellhead	Grab	Annual	2,4 dinitrotoluene	8270

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TABLE IX.D

INJECTION WELL SUMMARY

Exxon Mobil Corporation
Pasadena, Texas

WDW Number	Status[1]	Injected Volume[2]	Maximum Permitted Injection Rate[3]	Number of Years Utilized	Date in Service
WDW-397	Active	2,202,607,811	630,720,000	15	12/11/2008
WDW-398	Active	2,153,196,624	630,720,000	12	5/24/2011

[1] Indicate only one of the following: Active, Inactive, Closed, or Proposed
[2] Total volume (gallons) injected into the well through December 31, 2023
[3] Gallons per year (Cumulative between WDW-397 and WDW-398 not to exceed 630,720,000 gallons per year)

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Drawn By: SKW	Drawing No.: Figure IX-1
Designed By: ARCADIS	Date: 2/29/2024
Checked By: TDM	Job No.: 23-141

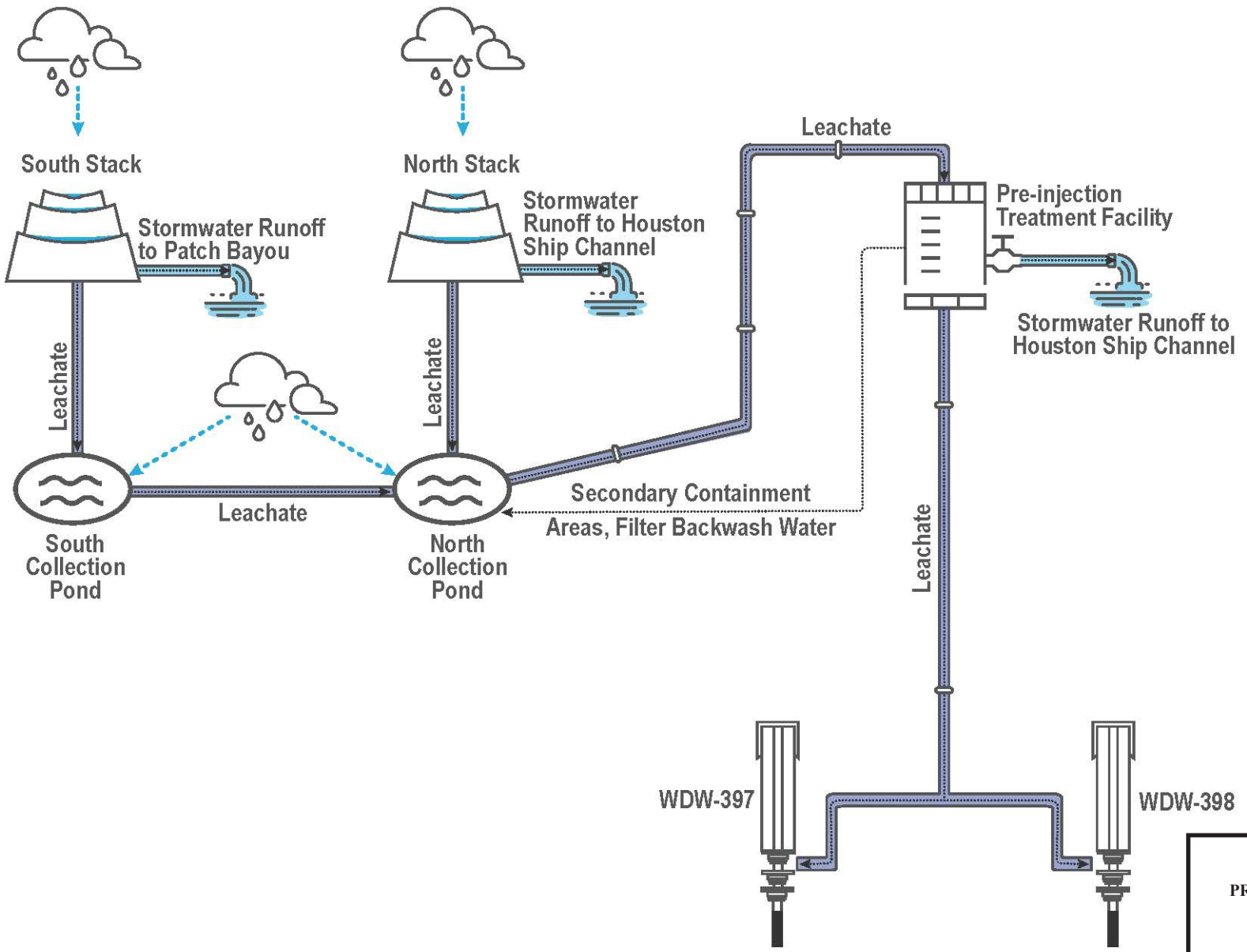

FIGURE IX-1

PROCESS FLOW DIAGRAM

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

© 2024

TERRA DYNAMICS INC

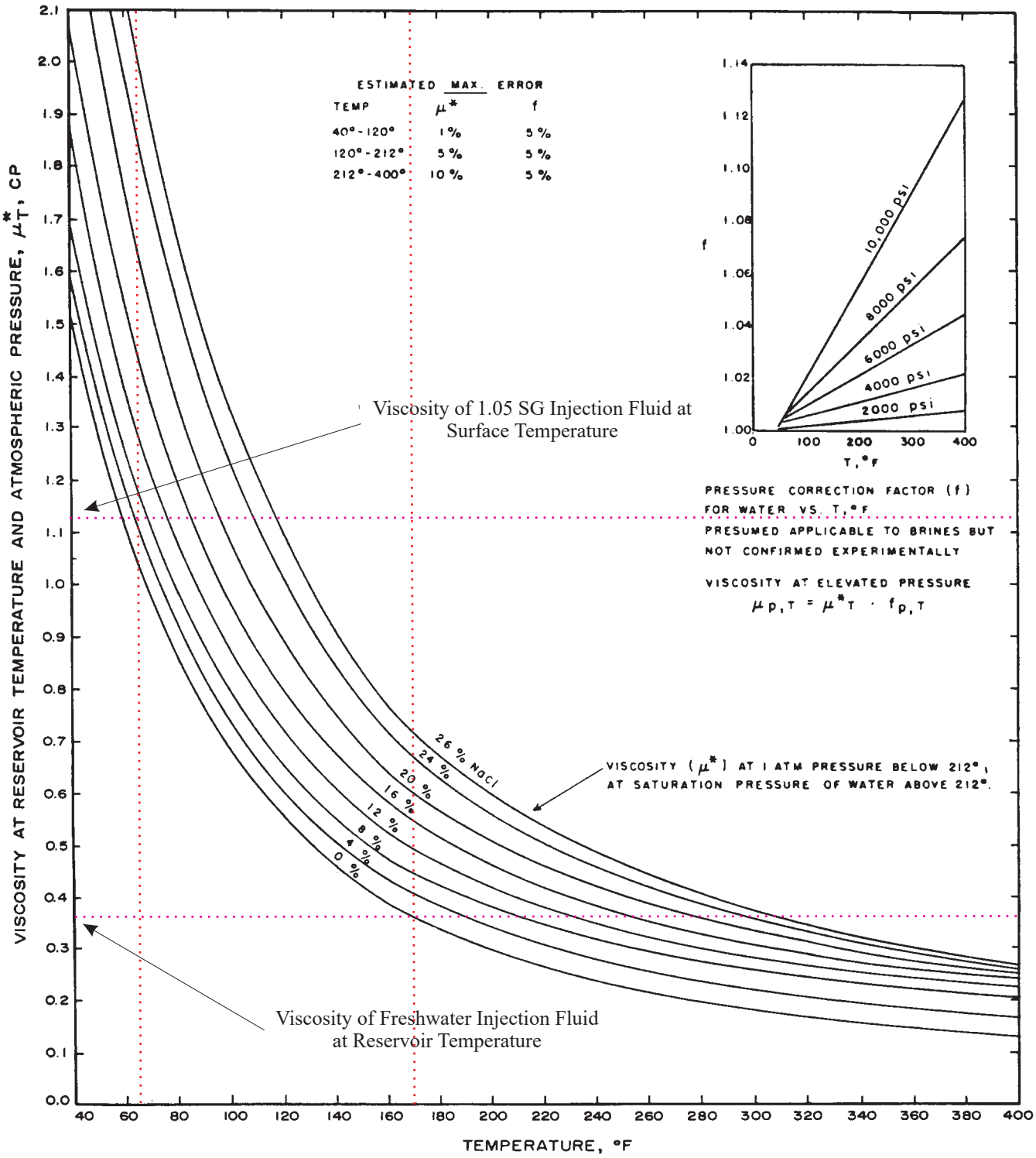

Fig. D. 35 Water viscosity at various salinities and temperatures.
After Mathews and Russell, data of Chesnut

Source: Earlougher, R. C., Jr., 1977, Advances in Well Test Analysis, American Institute of Mining, Metallurgical, and Petroleum Engineers, Inc., p. 241

FIGURE IX-2

VISCOSITY OF INJECTION FLUIDS AT VARIOUS TEMPERATURES

PREPARED FOR

EXXON MOBIL CORPORATION PASADENA, TEXAS

© 2024

TERRA DYNAMICS INC

Drawing No.: Figure IX-2.cdr
Date: 12/1/2023
Job No.: 23-141

Drawn By: SKW
Designed By: TDM
Checked By: TDM

X. RCRA PERMIT BY RULE

On December 16, 2009, a Preliminary Review Report – RCRA Facility Assessment (PRR-RFA) was submitted to the TCEQ for the two parcels acquired by ExxonMobil for installation and operation of Injection Wells WDW-397, WDW-398 and the associated pre-injection treatment facilities. On March 10, 2010, the TCEQ issued comments on the PRR-RFA requesting that soil samples be collected at the locations of several small spills of process water near Injection Well WDW-397 (described in the PRR-RFA), and reporting of the results in a RCRA Facility Investigation (RFI) report. ExxonMobil conducted the work and submitted the results to the TCEQ in an RFI letter report on August 5, 2010. On November 5, 2010, the TCEQ issued an RFI approval letter to ExxonMobil.

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Bryan W. Shaw, Ph.D., *Chairman*
Buddy Garcia, *Commissioner*
Carlos Rubinstein, *Commissioner*
Mark R. Vickery, P.G., *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

November 5, 2010

Received
NOV 12 2010
Terra Environmental Services, Inc.

Ms. Sara Morey
Project Manager
ExxonMobil Corporation
16945 Northchase Dr., CORP GP4-533
Houston, Texas 77060

Re: Approval _ "RCRA Facility Investigation Report", dated August 5, 2010
ExxonMobil, Pasadena Injection Wells
TCEQ SWR No. 87314
Class 1 Underground Injection Well Permit No. WDW397
EPA ID No. TXR000076828
CN No. 600123939 / RN No. 104151204

The Texas Commission on Environmental Quality (TCEQ) has reviewed the above referenced report. Based on the information contained in the report and other information available to staff, the TCEQ accepts cleanup of the phosphogypsum spills.

Please be aware that it is the continuing obligation of persons associated with a site to ensure that municipal hazardous waste and industrial solid waste are managed in a manner which does not cause the discharge or imminent threat of discharge of waste into or adjacent to waters in the state, a nuisance, or the endangerment of the public health and welfare as required by 30 Texas Administrative Code (TAC) §335.4. If the activities described in the report fail to comply with these requirements, please take any necessary and authorized action to correct such conditions. A TCEQ field inspector may conduct an inspection of the site to determine compliance with the report.

Questions concerning this letter should be directed to me at (512) 239-3119. When responding by mail, please submit an original and one copy of all correspondence and reports to the TCEQ Remediation Division at Mail Code MC-127 with an additional copy submitted to the local TCEQ Region Office.

XI. RADIOACTIVE MATERIALS

The TCEQ previously determined that the phosphogypsum stack pond water generated at the PCI Nitrogen facility in Pasadena, Texas is exempt under the provisions of Section (§) 336.5(c) of Title 30 Texas Administrative Code (TAC), 25 TAC §289.251(e)(12)(A), 25 TAC Section §289.2525 and TAC §289.251(m)(1). The TCEQ detailed this exemption in a letter dated August 19, 2008.

The letter from the TCEQ detailing the exemption (dated August 19, 2008) is included in Attachment J. Additionally, a letter from Terra Environmental Services requesting the exemption (dated August 8, 2008) is also included in Attachment J.

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XII. PRE-INJECTION UNITS

The pre-injection units for WDW-397 and WDW-398 are authorized by the United States Environmental Protection Agency's approval of a Work Plan for modifying the pre-injection facilities to be in accordance with the improvements specified in ExxonMobil's letter to EPA and TCEQ dated February 2008, as required by Item 68 of the RCRA Section 7003 Administrative Order on Consent in the matter of Agrifos Fertilizer, Inc. (formerly Rentech, now PCI Nitrogen) and Exxon Mobil Corporation (U.S. EPA Docket No. RCRA-06-2007-0919). Authorization for operation of the pre-injection facilities was received from Mr. Chuck Barnes of EPA in an e-mail to ExxonMobil on April 1, 2009.

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XIII. CONFIDENTIAL MATERIAL

ExxonMobil has not included information in the Technical Report of this permit renewal application which it deems confidential. Thus, no separate document labeled CONFIDENTIAL is included here.

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XIV. INDEX OF ATTACHMENTS

Description of Attachment	Part	Attachment	Included	Not Included	Not Applicable
Core Data Form	I.L	A	**X**		
Public Interest Demonstration	I.M	B	**X**		
Site Legal Description	I.P.5	C	**X**		
Facility Boundary and Topographic Map	I.P.6	D	**X**		
Plain-Language Summary	I.Q	E	**X**		
Public Involvement Plan	I.R	F			**X**
Affected Land and Mineral Owners	II.	G	**X**		
Letter from Railroad Commission	III.	H	**X**		
Financial Assurance, Liability, and Financial Capability	IV.	I	**X**		
Radioactive Waste Statement	XI.	J			**X**

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ATTACHMENT A

CORE DATA FORM

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☐ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☒ Renewal (*Core Data Form should be submitted with the renewal form*) ☐ Other

2. Customer Reference Number (*if issued*)	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number (*if issued*)
CN 600123939		RN 104151204

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	8/1/2024

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name (*If an individual, print last name first: eg: Doe, John*)	*If new Customer, enter previous Customer below:*
Exxon Mobil Corporation	

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number (*if applicable*)
	11354090059	135409005	

11. Type of Customer:	☒ Corporation	☐ Individual	Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other		☐ Sole Proprietorship	☐ Other:

12. Number of Employees	13. Independently Owned and Operated?
☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☒ 501 and higher	☒ **Yes** ☐ **No**

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☒ Owner ☐ Operator ☐ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant ☐ Other:

15. Mailing Address:								
	ExxonMobil Houston Campus - W3.2A.581							
	22777 Springwoods Village Pkwy							
	City	Spring	**State**	TX	**ZIP**	77389	**ZIP + 4**	

16. Country Mailing Information (*if outside USA*)	17. E-Mail Address (*if applicable*)
	breanna.j.jackson@exxonmobil.com

18. Telephone Number	19. Extension or Code	20. Fax Number (*if applicable*)

(201) 407-0462		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

Pasadena Injection Well

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	1933 Jackson Road							
	City	Pasadena	**State**	TX	**ZIP**	77506	**ZIP + 4**	
24. County	Harris							

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:	N on Jefferson Road from Pasadena Freeway (Highway 225), turn left after 1.6 miles onto 1st Street. Travel E 0.35 miles, turn N on Jackson Road. Travel 0.26 miles to facility.

26. Nearest City	**State**	**Nearest ZIP Code**
Pasadena	TX	77501

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:		29.740792	**28. Longitude (W) In Decimal:**		-95.189832
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	44	26.85234	-95	11	23.39634

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
4953		562211	

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

Disposal of liquid gypstack waste

34. Mailing Address:	**ExxonMobil Houston Campus - W3.2A.581**							
	22777 Springwoods Village Pkwy							
	City	**Spring**	**State**	**TX**	**ZIP**	**77389**	**ZIP + 4**	
35. E-Mail Address:	**breanna.j.jackson@exxonmobil.com**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(201) 407- 0462		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☒ Industrial Hazardous Waste
				WDW-397
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Stephanie K. Williams	**41. Title:**	Geologist

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(512) 795-8183		(512) 795-8602	swilliams@terradyn.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Exxon Mobil Corporation	**Job Title:**	Project Manager
Name *(In Print):*	Breanna Jackson	**Phone:**	(201)407 - 0462
Signature:	Breanna Jackson	**Date:**	7/24/2024

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☒ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☐ Renewal (*Core Data Form should be submitted with the renewal form*) ☐ Other

2. Customer Reference Number (*if issued*)	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number (*if issued*)
CN 600123939		RN

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	8/1/2024

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name (*If an individual, print last name first: eg: Doe, John*)	*If new Customer, enter previous Customer below:*
Exxon Mobil Corporation	

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number (*if applicable*)
	11354090059	135409005	

11. Type of Customer: ☒ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees

☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☒ 501 and higher

13. Independently Owned and Operated?

☒ **Yes** ☐ **No**

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☒ Owner ☐ Operator ☐ Owner & Operator ☐ Other:
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant

15. Mailing Address:								
	ExxonMobil Houston Campus - W3.2A.581							
	22777 Springwoods Village Pkwy							
	City	Spring	State	TX	ZIP	77389	ZIP + 4	

16. Country Mailing Information (*if outside USA*)	17. E-Mail Address (*if applicable*)
	breanna.j.jackson@exxonmobil.com

18. Telephone Number	19. Extension or Code	20. Fax Number (*if applicable*)

(201) 407-0462		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☒ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

Pasadena Injection Well WDW398

23. Street Address of the Regulated Entity: ***(No PO Boxes)***								
	City		**State**		**ZIP**		**ZIP + 4**	
24. County	Harris							

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:	The location of the well is approximately 1,200 feet west of the east line and 16,600 feet north of the south line of the William Vince Survey, Abstract-78.

26. Nearest City	**State**	**Nearest ZIP Code**
Pasadena	TX	77501

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:		29.736673	**28. Longitude (W) In Decimal:**		95.198069
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	44	12.02830	95	11	53.04753

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
4953		562211	

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

Disposal of liquid gypstack waste

34. Mailing Address:	**ExxonMobil Houston Campus - W3.2A.581**							
	22777 Springwoods Village Pkwy							
	City	**Spring**	**State**	**TX**	**ZIP**	**77389**	**ZIP + 4**	
35. E-Mail Address:	**breanna.j.jackson@exxonmobil.com**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(201) 407- 0462		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☒ Industrial Hazardous Waste
				WDW-398
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Stephanie K. Williams	**41. Title:**	Geologist

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(512) 795-8183		(512) 795-8602	swilliams@terradyn.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Exxon Mobil Corporation	**Job Title:**	Project Manager
Name *(In Print):*	Breanna Jackson	**Phone:**	(201) 407-0462
Signature:	Breanna Jackson	**Date:**	1/24/2024

ATTACHMENT B

PUBLIC INTEREST DEMONSTRATION

ATTACHMENT B

PUBLIC INTEREST DEMONSTRATION

Exxon Mobil Corporation
Pasadena, Texas

Section 27.051 of the Texas Water Code stipulates certain conditions that must exist for the Commission to grant an application and issue a permit. For this permit application, the following information is provided to address:

1. <u>That the use or installation of the injection well is in the public interest. [TWC §27.051(a)(1)]</u>

The major effort in the "closure" of a gypstack involves the management and disposal of the pond water held as ponded surface water on top of the gypstack, and phreatic water contained within the gypstack. The pond water in an operating facility typically has a pH of approximately 1.5 to 2.0. The pond water in an idle gypstack may vary from 1.5 to over 3.0 depending on how long the stack has set idle (no addition of fresh process wastewater). The pond water is collected from the gypstacks through an underdrain system in the stacks; the surface pond water seeps through the gypstacks and is collected in the underdrain systems that discharge into toe ditches surrounding the gypstacks, which then discharge into lined collection ponds.

Once the pond water is removed from the gypstack, they are closed similar to landfills; this includes grading the gypstack to allow positive stormwater run-off, use of liners (natural clay, geosynthetic clay, geomembranes, geocomposites, etc.), evapotransporation (ET) caps (soil and vegetative cover), and/or a combination a liner system and ET cap to reduce the vertical migration of stormwater through the gypstack. Clean stormwater run-off is collected and removed from the gypstack system. Pond water management at this facility includes surface treatment of the pond water for deep well injection into Class I injection wells. The Class I injection wells are located within the boundaries of the PCI Nitrogen Fertilizer Plant, on property which is owned by Exxon Mobil Corporation. Deep well disposal of the phreatic pond water from the gypstack will continue after the installation of a cap system on the gypstack until the quality of the seepage water improves to a level that will allow alternative disposal options.

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The installation and utilization of injection wells at the PCI Nitrogen Fertilizer Plant on property owned by Exxon Mobil Corporation (ExxonMobil) allows ExxonMobil to safely manage and dispose of the collected gypstack water. ExxonMobil considered several other disposal options, but in each case, legal, technical or associated costs were determined to be prohibitive. Key among the alternative methods of disposal were neutralization followed by surface discharge. Not only were these methods determined to be cost prohibitive, but significant amounts of additional solids would be generated from the neutralization process requiring land disposal and the discahrge of residual liquids into surface waters. ExxonMobil has determined the deep well injection of this particular waste is in the public interest in that deep well injection provides a safe and cost effective method of controlling and managing the gypstack fluids present at the PCI Nitrogen Fertilizer Plant. By injecting this wastewater into the subsurface, the wastewater is sealed thousands of feet below the earth's surface, far below the human environment and drinking water, resulting in no emissions to the surface.

2. That no existing rights, including, but not limited to, mineral rights, will be impaired [TWC§27.051(a)(2)]

ExxonMobil has determined that the operation and utilization of the injection wells will not impair existing rights, including, but not limited to, mineral rights. ExxonMobil owns the property on which the injection wells and pre-injection facilities are constructed. In addition, ExxonMobil and the Railroad Commission of Texas staff have determined that the geologic formations targeted for injection are not productive of hydrocarbons or other valuable resources within the Area of Review. Therefore, neither surface property ownership rights, nor mineral ownership rights will be impaired.

3. That, with proper safeguards, both ground and surface fresh water can be adequately protected from pollution; [TWC §27.051(a)(3)]

The ExxonMobil injection wells were designed, constructed and are operated in such a manner as to prevent pollution of both ground and surface fresh water. The injection wells were constructed with two cemented casing strings (one inside the other) across the underground sources of drinking water. In each well, a third string was installed and its annulus filled with liquid continuously monitored to ensure that no undetected leaks occur which could pollute ground and surface fresh water. The injection wellhead, pre-injection and surface associated injection well facilities are constructed and will be operated to minimize leaks and spills of injected wastes. The pre-injection facilities are constructed of materials resistant to corrosive attack, and designed in such a way as to allow both visual and mechanical inspection for the presence of wastewater leaks.

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Secondary containment structures are also present to prevent pollution of ground and surface fresh water in the event of a catastrophic leak in the surface facilities. ExxonMobil will maintain staffing at the facility on a 24-hour basis. These staff will continually monitor the injection well waste management operations and take proper steps to ensure that ground water and surface fresh water is not impaired or polluted due to the operation of the two injection wells and/or surface pre-injection units.

4. ***That the applicant has made a satisfactory showing of financial responsibility if required by Section 27.073 of this code; [TWC §27.051(a)(4)]***

Prior to construction of the injection wells and pre-injection units, ExxonMobil demonstrated financial assurance for operation and closure of the injection wells and associated facilities. The financial assurance demonstrations met the requirements as specified in 30 TAC §§331.142-144. The method by which ExxonMobil will meet financial responsibility for closure is outlined in Attachment I of this permit application.

5. ***That the compliance history of the applicant and related entities is acceptable. [TWC §27.051(d)(1). 30 TAC § 331.121(b)(1)]***

The current compliance rating (as of September 1, 2023) for Exxon Mobil Corporation in Texas is 6.35 and the classification is satisfactory. This rating and classification affirms the acceptable compliance history of Exxon Mobil Corporation.

6. ***That there is no practical, economic, and feasible alternative to an injection well reasonably available. Provide justification for subsurface disposal. Include results of treatability studies of alternate, practical, economic and feasible methods of waste disposal. Explain in detail why each method is considered to be less satisfactory in terms of environmental protection than the proposed subsurface disposal method. Indicate whether this waste is presently being produced and, if so, what method is used for disposal. Describe the manufacturing process(es) and product(s) which produce the waste(s). [TWC §27.051(d)(2). 30 TAC § 331.121(b)(2)]***

Seven alternatives including deep well injection were considered for disposal of the phosphogypsum pond water. Evaluation of each of the alternatives included technical feasibility, capital and operational costs, and long term environmental impacts based on a treatment flow rate of 1 million gallons per day. The seven alternatives are summarized below.

1. Deep Well Injection – requires addition of scale inhibitor, conventional multimedia filtration followed by cartridge filtration down to 1 micron particle size prior to injection. Waste products include multimedia backwash (< 3.0

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percent of total treated flow); the backwash from the multimedia filters is disposed back into the stack ponds. The pond water will be injected into the Frio Formation at a depth of approximately 6,500 feet. Deep well injection was chosen as the best available method of disposal of the subject waste waters.

2. Double Liming – requires two-stage liming to raise the pH up to 11.5, and biotreatement for ammonia removal. Waste products include first and second stage lime sludge, and bio residuals. The two stage liming process produces sludge at 40 percent by volume of treated pond water. Treatment and disposal of the two-stage lime sludge makes this alternative cost prohibitive.
3. Reverse Osmosis (RO) – requires pre-treatment of pond water including addition of scale inhibitor(s), conventional multimedia filtration followed by cartridge filtration down to 1 micron particle size prior to two-stage RO. Waste products include multimedia backwash, and RO reject. RO treatment produces a brine reject stream amounting to 50 to 70 percent of the pre-treated water, however the cost to provide enough pre-treatment feed to the RO, and the size of the RO to accommodate the flow necessary to allow closure of the phosphogypsum stack makes this alternative cost prohibitive. In addition, the RO reject must be disposed back into the phosphogypsum ponds which will ultimately concentrate the pond water to a point where RO treatment will not be technically feasible to accomplish.
4. Offsite Disposal at Commercial Disposal Facility (Trucking and/or via a Pipeline) – will require transfer of pond water offsite via trucking or through a transfer pipeline. No facility was identified that would accept this wastewater due to the radium, calciumand barium content.
5. Offshore Ocean Dumping – requires double liming as described above in Alternative 2, and transfer off-shore via barges for ocean dumping. The time required to barge the pond water offshore to a suitable location makes this alternative technically non-feasible. In addition, the cost to double lime and recover ammonia, dispose of the two stage lime sludge, and disposal of the ammonium sulfate liquor make this alternative cost prohibitive.
6. Discharge to Local Municipal Wastewater Treatment Facility – requires transfer to a municipal wastewater treatment facility via trucking or through a transfer pipeline. Local municipal wastewater treatment plants could not take the pond water due to the fluoride loadings in the pond water making this alternative technically not feasible.

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7. Industrial Water Reuse by Local Industrial Facilities – transfer of pond water off-site for reuse in an alternate industrial process. No industrial operations were identified in the area that could use the pond water making this alternative technically not feasible.

7. (for hazardous waste injection wells only) That the applicant has provided for the proper operation of the proposed hazardous waste injection well; [TWC §27.051(a)(5)]

The injection wells will continue to be operated properly according to the requirements in 30 TAC §§305 and 331. Instrumentation and electronic monitoring devices and alarm systems are installed on the injection wells to ensure proper operation and control of the injection wells. Annual mechanical integrity testing, annual ambient pressure monitoring and continuous monitoring of operational parameters demonstrates the integrity of the wells and the continued viability of the chosen injection reservoir.

8. (for hazardous waste injection wells only) That the applicant for a hazardous waste injection well not located in an area of industrial land use has made a reasonable effort to ensure that the burden, if any, imposed by the proposed hazardous waste injection well on local law enforcement, emergency medical or fire-fighting personnel, or public roadways, will be reasonably minimized or mitigated; [TWC §27.051(a)(6)]

The ExxonMobil injection wells are located in an area of industrial land use. The ExxonMobil property on which the injection wells are located is entirely surrounded by the PCI Nitrogen Fertilizer Plant manufacturing facility. The PCI Nitrogen facility is bounded to the north by the Houston Ship Channel, to the east by the Chevron Phillips Chemical Co. Pasadena Plastics Complex. Other nearby manufacturing facilities include Air Products & Chemicals Inc. (chemical manufacturing) and Kinder Morgan, Inc. Pasadena Terminal (oil refinery).

9. (for hazardous waste injection wells only) That the applicant owns or has made a good faith claim to, or has the consent of the owner to utilize, or has an option to acquire, or has the authority to acquire through eminent domain, the property or portions of the property where the hazardous waste injection well will be constructed. [TWC §27.051(a)(7)]

ExxonMobil is the owner of the property on which the wells are located.

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10. ***(for hazardous waste injection wells only) That the applicant will maintain sufficient public liability insurance for bodily injury and property damage to third parties that is caused by sudden and non-sudden accidents or will otherwise demonstrate financial responsibility in a manner adopted by the Commission in lieu of public liability insurance. [TWC §27.051(d)(3). 30 TAC § 331.121(b)(3)]***

Exxon Mobil Corporation has sufficient financial resources to operate the facility in a safe manner and in compliance with the permit and all applicable rules, and has sufficient financial resources to obtain financing for closure. Exxon Mobil Corporation will maintain sufficient public liability insurance for bodily injury and property damage to third parties that is caused by sudden and non-sudden accidents. ExxonMobil will demonstrate financial responsibility for liability coverage through the financial test specified in 30 TAC §37.541 (relating to Financial Assurance). Documentation is provided in Attachment I.

11. ***(for hazardous waste injection wells only) For on-site generated waste, provide certification by the owner/operator that (1) the generator of the hazardous waste has a program to reduce the volume or quantity and toxicity of the waste to the degree determined by the generator to be economically practicable and (2) injection of the waste is that practicable method of disposal currently available to the generator which minimizes the present and future threat to human health and the environment. [30 TAC §331.121(b)(4) and 40 CFR §146.70(d)]***

Waste Minimization Certification:

I am a large quantity generator, and certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree determined to be economically practicable. I have selected the practicable method of treatment, storage, or disposal (disposal via Class I injection well) currently available to me which minimizes the present and future threat to human health and the environment.

Breanna Jackson
Signature

02/20/2024
Date

Project Manager
Title

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ATTACHMENT C

SITE LEGAL DESCRIPTION

REVISED 8/1/2024

Please Return To: First American Title
3 Greenway Plaza, Suite 1100
Houston, TX 77046
Attn: Amy Pitzer
NCS No. 128724

Y471794
05/17/05 300621484 $50.00

Notice of confidentiality rights: if you are a natural person, you may remove or strike any of the following information from this instrument before it is filed for record in the public records: your social security number or your driver's license number.

SPECIAL WARRANTY DEED

STATE OF TEXAS §
§
COUNTY OF HARRIS §

AGRIFOS FERTILIZER, INC., a Delaware corporation ("Grantor"), for Ten Dollars ($10.00) and other good and valuable consideration paid to Grantor by EXXONMOBIL OIL CORPORATION, a New York corporation ("Grantee"), the receipt and sufficiency of which are hereby acknowledged, has GRANTED, SOLD and CONVEYED, and by these presents does GRANT, SELL and CONVEY, unto the Grantee the following described property:

> That certain real property situated in Harris County, Texas, more particularly described on Exhibit 1 attached hereto and made a part hereof (the "Property"),

together with any and all improvements and all and singular the rights, easements, interests, benefits, privileges, appurtenances, and hereditaments relating or pertaining thereto, including without limitation, all right, title, and interest of Grantor in and to the adjacent streets, roads, rights of way, and alleys.

This conveyance is made and accepted subject to the reservation below and the encumbrances and other matters described in Exhibit 2, which is attached to this deed and incorporated herein by reference, to the extent that they are validly existing and affect the Property. Grantor hereby reserves and shall continue to enjoy the right to use and occupy that portion of the property described on Exhibit 3, which is attached to this deed and incorporated herein by reference, ("Injection Well Tract 2") until the date specified in a written notice from Grantee that Grantee intends to construct an injection well on Injection Well Tract 2, which date

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shall be no sooner than three months following the date of such notice; provided, however, that Grantor shall not construct or allow the construction of any permanent structure on Injection Well Tract 2, with the following exceptions: (i) paving materials and improvements, excluding non-temporary buildings, associated with surface parking lots; and (ii) provided that the same is removed from Injection Well Tract 2 upon the termination of Grantor's use and occupancy right reserved hereunder, any other temporary, non-permanent structure. Grantor shall be responsible for and indemnify, defend, and hold harmless Grantee against any property damage or personal injury attributable to the use and occupancy of Injection Well Tract 2 by Grantor following the date this deed is executed. Grantor agrees that in exercising these reserved rights, Grantor will comply with, and shall not cause to be done anything that conflicts with, any applicable laws now in force or which may hereafter be enacted or promulgated. The rights reserved by Grantor in this deed shall inure to the benefit of, and be enforceable by, Grantor, its successors and assigns, and the owners of all or any part of the property more particularly described in Exhibit 4 attached hereto.

TO HAVE AND TO HOLD the Property, unto Grantee, and Grantee's successors and assigns forever, and Grantor does hereby bind Grantor and Grantor's successors and assigns to WARRANT AND FOREVER DEFEND, all and singular, the Property unto the Grantee, and Grantee's successors and assigns, against every person whomsoever claiming, or to claim the same, or any part thereof, by, though, or under Grantor but not otherwise.

FILED
05 MAY 17 AM 10:18
FRANKLIN CLERK
HARRIS COUNTY, TEXAS

RP 005-69-2777

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Grantee's Address: ExxonMobil Refining & Supply Co.
Attention: Forrest E. Hand
16825 Northchase Drive
CORP GP2 920
Houston, Texas 77060

Grantor's Address: Agrifos Fertilizer, Inc.
2001 Jackson Road
Pasadena, TX 77506
Fax (713) 920-5422
Attention: General Counsel

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GRANTOR:

AGRIFOS FERTILIZER, INC.,
a Delaware corporation

By: Margaret R. Smith
Name: Margaret R. Smith
Title: Vice President

STATE OF Texas §
§
COUNTY OF Harris §

FRANCISCA SALINAS
MY COMMISSION EXPIRES
May 15, 2006

This document was acknowledged before me this 20 day of January, 2005, by Margaret R. Smith Vice-President of AGRIFOS FERTILIZER, INC., a Delaware corporation, on behalf of said corporation.

Notary Public in and for the State of Texas

My commission expires 5-15-2006

AUS01:361636.9

EXHIBIT 1

to Special Warranty Deed

Property Description

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Injection Well Site No. 1

DESCRIPTION OF A TRACT OF LAND CONTAINING 0.8543 ACRES (37,212 SQUARE FEET) SITUATED IN THE JAMES SEYMOUR SURVEY, A-698, HARRIS COUNTY, TEXAS

Being a tract of land containing 0.8543 acres (37,212 square feet) situated in the James Seymour Survey, A-698 in Harris County, Texas, and also being located in Outlots 191 and 192 of the Plat of Deepwater, a subdivision plat recorded in Volume 75, Page 526 of the Deed Records of Harris County, Texas, and being located in a 231.4840-acre tract (Third Tract) as conveyed unto Agrifos Fertilizer, LP, by deed recorded under County Clerk's File No. T449286, Film Code No. 522-91-2299 of the Official Public Records of Real Property of Harris County, Texas. Said 0.8543-acre tract being more particularly described by metes and bounds as follows:

COMMENCING FOR REFERENCE at a found 1-1/2 inch iron pipe located in the south line of said 231.4840-acre tract for the intersection of the west right-of-way line of Jackson Street (60 feet wide) and the north right-of-way line of First Street (60 feet wide) and for the southeast corner of Outlot 138 of said Plat of Deepwater;

THENCE North 02° 51' 40" West with the west right-of-way line of said Jackson Street and the east line of Outlots 138, 137 and 191 of said Plat of Deepwater, a distance of 1436.26 feet to a point;

THENCE South 87° 08' 20" West, a distance of 48.56 feet to a set 5/8-inch iron rod with cap marked "Cobb, Fendley & Associates" for the southeast corner of said tract herein described and for the POINT OF BEGINNING;

THENCE South 88° 57' 24" West, a distance of 238.16 feet to a set 5/8-inch iron rod with cap marked "Cobb, Fendley & Associates" for the southwest corner of said tract herein described;

THENCE North 07° 39' 39" West, a distance of 128.76 feet to a set cotton spindle for the northwest corner of said tract herein described;

THENCE North 67° 25' 55" East, a distance of 160.10 feet to a set cotton spindle for an angle point if the north line of said tract herein described;

THENCE South 77° 47' 59" East, a distance of 55.98 feet to a set cotton spindle for the northeast corner of said tract herein described;

THENCE South 23° 33' 58" East, a distance of 42.03 feet to a set cotton spindle for an angle point in the east line of said tract herein described;

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THENCE South 17° 12' 18" East, a distance of 63.27 feet to a set cotton spindle for an angle point in the east line of said tract herein described;

THENCE South 13° 06' 13" East, a distance of 75.89 feet to the POINT OF BEGINNING and containing 0.8543 acres (37,212 square feet) of land, more or less.

Note: This metes and bounds description is referenced to a survey drawing prepared by Cobb, Fendley & Associates, Inc. dated October 25, 2004 and titled "EXHIBIT OF INJECTION WELL SITE NO. 1 LOCATED IN THE JAMES SEYMOUR SURVEY, A-698 IN HARRIS COUNTY, TEXAS".

Cobb, Fendley & Associates, Inc.
5300 Hollister, Suite 400
Houston, Texas 77040

Job No. 0402-020-00-02

October 25, 2004

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RP 005-60-2781

Injection Well Site No. 2

DESCRIPTION OF A TRACT OF LAND CONTAINING 0.3491 ACRES (15,206 SQUARE FEET) SITUATED IN THE WILLIAM VINCE SURVEY, A-78, HARRIS COUNTY, TEXAS

Being a tract of land containing 0.3491 acres (15,206 square feet) situated in the William Vince Survey, A-78 in Harris County, Texas, and also being located in Outlots 183 and 188 of the Plat of Deepwater, a subdivision plat recorded in Volume 75, Page 526 of the Deed Records of Harris County, Texas, and being located in a 231.4840-acre tract (Third Tract) as conveyed unto Agrifos Fertilizer, LP, by deed recorded under County Clerk's File No. T449286, Film Code No. 522-91-2299 of the Official Public Records of Real Property of Harris County, Texas. Said 0.3491-acre tract being more particularly described by metes and bounds as follows:

COMMENCING FOR REFERENCE at a found 1-1/2 inch iron pipe located in the south line of said 231.4840-acre tract for the intersection of the west right-of-way line of Jackson Street (60 feet wide) and the north right-of-way line of First Street (60 feet wide) and for the southeast corner of Outlot 138 of said Plat of Deepwater;

THENCE South 87° 01' 21" West with the north right-of-way line of said First Street and the south line of Outlots 138, 156, 188 and 183 of said Plat of Deepwater, a distance of 2848.32 feet to a point;

THENCE North 02° 58' 39" West, a distance of 58.61 feet to a point for the most southerly corner of said tract herein described and for the POINT OF BEGINNING from which a set 60d Nail with cap marked "Cobb, Fendley & Associates" bears North, 20.00 feet;

THENCE South 85° 41' 43" West, a distance of 75.06 feet to a point for the southwest corner of said tract herein described;

THENCE North 04° 17' 02" West, at 20.00 feet passing a set 5/8-inch iron rod with cap marked "Cobb, Fendley & Associates", continuing for a total distance of 70.37 feet to a set cotton spindle for the northwest corner of said tract herein described;

THENCE North 64° 28' 27" East, a distance of 142.72 feet to a set 5/8-inch iron rod with cap marked "Cobb, Fendley & Associates" for an angle point in the north line of said tract herein described;

THENCE North 88° 53' 05" East, a distance of 35.20 feet to a set cotton spindle for the northeast corner of said tract herein described;

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THENCE South 32° 03' 24" East, a distance of 54.13 feet to a set 5/8-inch iron rod with cap marked "Cobb, Fendley & Associates" for the southeast corner of said tract herein described;

THENCE South 54° 19' 30" West, a distance of 138.63 feet to the POINT OF BEGINNING and containing 0.3491 acres (15,206 square feet) of land, more or less.

Note: This metes and bounds description is referenced to a survey drawing prepared by Cobb, Fendley & Associates, Inc. dated October 25, 2004 and titled "EXHIBIT OF INJECTION WELL SITE NO. 2 LOCATED IN THE WILLIAM VINCE SURVEY, A-78 IN HARRIS COUNTY, TEXAS".

Cobb, Fendley & Associates, Inc.
5300 Hollister, Suite 400
Houston, Texas 77040

Job No. 0402-020-00-02

October 25, 2004

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RP 095-50-2783

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EXHIBIT 2

to Special Warranty Deed

Permitted Exceptions

1. Standby fees, taxes and assessments by any taxing authority for the year 2005, and subsequent years.

2. Restrictive Covenants filed under Clerk's File No. T269077, refiled in T449286 in Harris County, Texas.

3. Spoil Disposal Pipeline Permit, as set forth by instrument recorded in Volume 3419, Page 168 of the Deed Records of Harris County, Texas.

4. The following items reflect by instruments filed for record under Harris County Clerk's File No. J174987:

   Pipeline agreement between Olin Corporation and Air Products and Chemicals, Inc., by Agreement made June 28, 1973, and effective as of May 3, 1973.

   Agreement dated September 15, 1966, between Harris County Houston Ship Channel Navigation District, Olin Mathieson Chemical Corporation and Port Terminal Railroad Association concerning the use and maintenance of Olin's spur track.

   Spoil disposal easement granted by Olin Mathieson Chemical Corporation to the Harris County Houston Ship Channel Navigation District by instrument dated September 19, 1968.

   Right-of-way for electric distribution and communication lines granted by Olin Corporation to Houston Lighting & Power Company by instrument dated September 7, 1976, for the purpose of supplying electricity to the No. 3 Gypsum Pond.

   Permit to construct maintain and operate a 12 inch pipeline granted to Olin Mathieson Chemical Corporation to Seadrift Pipeline Corporation by instrument dated April 15, 1964.

   Dredge Pipeline Easement (unspecified width) (unrecorded).

5. Industrial Solid Waste Disposal Site Deed Recordation filed for record under Harris County Clerk's File No. G820692.

6. Amerada Hess Corporation pipeline easement(s) as set forth and defined by instrument(s) filed for record under Harris County Clerk's File No(s). J858766.

RP 065-56-2795

7. 1/2 of all oil, gas and other minerals as set forth by instrument(s) recorded in Volume 6823, Page 608 of the Deed Records of Harris County, Texas.

8. A pipe line right of way easement granted to Amerada Hess Corporation dated August 20, 1986.

9. Terms, conditions and stipulations of the Channel Area Industrial District Agreement dated 12/31/97 being City of Houston Ordinance No. 97-1459.

10. Easement Agreement dated September 10, 1998 filed under Harris County, Clerk's File No. T570115.

11. Assignment of Assigned Easements from Mobil Oil Corporation to Agrifos Fertilizer, L.P. by instrument(s) dated September 10, 1998 filed under Harris County Clerk's File No. T269080.

RP 005-60-2785

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EXHIBIT 3

to Special Warranty Deed

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RP 885-60-2786

Injection Well Site No. 2

DESCRIPTION OF A TRACT OF LAND CONTAINING 0.3491 ACRES (15,206 SQUARE FEET) SITUATED IN THE WILLIAM VINCE SURVEY, A-78, HARRIS COUNTY, TEXAS

Being a tract of land containing 0.3491 acres (15,206 square feet) situated in the William Vince Survey, A-78 in Harris County, Texas, and also being located in Outlots 183 and 188 of the Plat of Deepwater, a subdivision plat recorded in Volume 75, Page 526 of the Deed Records of Harris County, Texas, and being located in a 231.4840-acre tract (Third Tract) as conveyed unto Agrifos Fertilizer, LP, by deed recorded under County Clerk's File No. T449286, Film Code No. 522-91-2299 of the Official Public Records of Real Property of Harris County, Texas. Said 0.3491-acre tract being more particularly described by metes and bounds as follows:

COMMENCING FOR REFERENCE at a found 1-1/2 inch iron pipe located in the south line of said 231.4840-acre tract for the intersection of the west right-of-way line of Jackson Street (60 feet wide) and the north right-of-way line of First Street (60 feet wide) and for the southeast corner of Outlot 138 of said Plat of Deepwater;

THENCE South 87° 01' 21" West with the north right-of-way line of said First Street and the south line of Outlots 138, 156, 188 and 183 of said Plat of Deepwater, a distance of 2848.32 feet to a point;

THENCE North 02° 58' 39" West, a distance of 58.61 feet to a point for the most southerly corner of said tract herein described and for the POINT OF BEGINNING from which a set 60d Nail with cap marked "Cobb, Fendley & Associates" bears North, 20.00 feet;

THENCE South 85° 41' 43" West, a distance of 75.06 feet to a point for the southwest corner of said tract herein described;

THENCE North 04° 17' 02" West, at 20.00 feet passing a set 5/8-inch iron rod with cap marked "Cobb, Fendley & Associates", continuing for a total distance of 70.37 feet to a set cotton spindle for the northwest corner of said tract herein described;

THENCE North 64° 28' 27" East, a distance of 142.72 feet to a set 5/8-inch iron rod with cap marked "Cobb, Fendley & Associates" for an angle point in the north line of said tract herein described;

THENCE North 88° 53' 05" East, a distance of 35.20 feet to a set cotton spindle for the northeast corner of said tract herein described;

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THENCE South 32° 03' 24" East, a distance of 54.13 feet to a set 5/8-inch iron rod with cap marked "Cobb, Fendley & Associates" for the southeast corner of said tract herein described;

THENCE South 54° 19' 30" West, a distance of 138.63 feet to the POINT OF BEGINNING and containing 0.3491 acres (15,206 square feet) of land, more or less.

Note: This metes and bounds description is referenced to a survey drawing prepared by Cobb, Fendley & Associates, Inc. dated October 25, 2004 and titled "EXHIBIT OF INJECTION WELL SITE NO. 2 LOCATED IN THE WILLIAM VINCE SURVEY, A-78 IN HARRIS COUNTY, TEXAS".

Cobb, Fendley & Associates, Inc.
5300 Hollister, Suite 400
Houston, Texas 77040

Job No. 0402-020-00-02

October 25, 2004

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EXHIBIT 4

to Special Warranty Deed

ALL OF THE FOLLOWING REAL PROPERTY, SAVE AND EXCEPT THE REAL PROPERTY DESCRIBED ON EXHIBIT 1 TO THIS DEED:

PARCEL I:

Being a tract of land containing 96.7207 acres (4,213,153 square feet) (called 96.978 acres) out of the James Seymour Survey, Abstract No. 698 in Harris County, Texas, said tract of land being described as Tract I in deed recorded in Volume 2274, Page 661 of the Harris County Deed Records, and being more particularly described by metes and bounds as follows:

BEGINNING at a 1/2 inch iron rod set for the northwest corner of the herein described tract, said point being on the east line of a 30 foot drainage easement conveyed by Beck Cattle and Land Company to .Riverside Development Company and also being on the Port Terminal Railway Association right-of-way;

THENCE N 86 degrees 56 minutes 37 seconds E a distance of 1771.65 feet along the north line of the herein described tract and the south line of the Port Terminal Railway Association right-of-way to a point for the northeast corner of the herein described tract, said point being on the west right-of-way line of Jefferson Road (100' wide), said point being N 84 degrees 06 minutes 15 seconds E a distance of 10.89 feet from the southerly end of a concrete headwall used as reference;

THENCE S 02 degrees 57 minutes 40 seconds E a distance of 2391.59 feet along the west right-of-way line of Jefferson Road to a 1/2 inch iron rod set for the southeast corner of the herein described tract, said point being on the north line of a Houston Lighting and Power Company right-of-way;

THENCE S 87 degrees 33 minutes 46 seconds W a distance of 1773.69 feet (called 1775.10 feet) along the north line of the Houston Lighting and Power right-of-way to a 1/2 inch iron rod set for the southwest corner of the herein described tract, said point also being on the east line of the aforementioned 30 foot drainage easement conveyed to Riverside Development Company;

THENCE N 02 degrees 54 minutes 50 seconds W a distance of 2372.43 feet along the east line of the Riverside Development Company 30 foot drainage easement to the POINT OF BEGINNING of the herein described tract containing 96.7207 acres (4,213,153 square feet) of land more or less.

PARCEL 2:

Being a tract of land containing 153.8191 acres (6,700,362 square feet) out of the James Seymour Survey, Abstract No. 698, and the William Vince Survey, Abstract N. 78 in Harris County, Texas, said tract of land being described as tract 2 in deed recorded in Volume 2274, Page 661 of the Harris County Deed Records, and being more particularly described by metes and bounds as follows:

BEGINNING, at a 1/2 inch iron rod set for the northeast corner of the herein described tract, being the intersection of the west right-of-way line of Jackson Road (60 feet wide) and the south right-of-way line of the 30 foot drainage easement conveyed to Riverside Development Company which runs parallel with and adjacent to the Port Terminal Railway Association right-of-way;

THENCE S 2 degrees 54 minutes 50 seconds E a distance of 2341.49 feet along the west right-of-way line of Jackson Road to A 1/2 inch iron rod set for the southeast corner of the herein described tract, said point being the intersection of the west right-of-way line of Jackson Road and the north line of a Houston Lighting and Power right-of-way;

THENCE S 87 degrees 33 minutes 10 seconds W a distance of 3986.30 feet along the northerly Houston Lighting and Power Company right-of-way line to a concrete monument found for the southwest corner of the herein described tract;

THENCE N 2 degrees 35 minutes 50 seconds W a distance of 185.85 feet to a 1/2 inch iron rod found for corner on the southeasterly right-of-way line of the Port Terminal Railway Association Yards;

THENCE N 42 degrees 25 minutes 10 seconds E a distance of 2471.56 feet (called 2474.34 feet) along the southeasterly right-of-way line of the Port Terminal Railway Association Yards to a 1/2 inch iron rod set for the point of curvature of a non-tangent curve to the right;

THENCE along a curve to the right of a non-tangent curve, the center of said curve bears S 36 degrees 42 minutes 07 seconds E with a distance of 1181.93 feet from the point of curvature, said curve having a central angle of 33 degrees 34 minutes 55 seconds, a radius of 1181.93 feet, an arc length of 692.75 feet, a chord bearing of N 70 degrees 05 minutes 20 seconds E, and a chord distance of 682.87 feet to a 1/2 inch iron rod set for corner;

THENCE N 86 degrees 57 minutes 10 seconds E a distance of 1067.00 feet to a 1/2 inch iron rod set for corner;

THENCE N 3 degrees 02 minutes 50 seconds W a distance of 182.43 feet to a point for corner said point being on the south line of a 30 foot drainage easement conveyed to Riverside Development Company, said point being N 12 degrees 43 minutes 32 seconds W a distance of 26.18 feet from the corner of a wall used for reference;

THENCE N 86 degrees 57 minutes 10 seconds E a distance of 507.73 feet along the south line of the aforementioned 30 foot drainage easement to the POINT OF BEGINNING of the herein described tract and containing 153.8191 acres (6,700,362 square feet) of land more or less.

PARCEL 3:

Being a tract of land containing 231.4840 acres (10,083,444 square feet) of land out of the James Seymour Survey, Abstract No. 698 and the William Vince survey, Abstract No. 78 in Harris County, Texas, said tract being comprised of five tracts recorded under the following books: Volume 2220, Page 9, Volume 1323, Page 517, Volume 813, Page 350, Volume 1914, Page 114 (SAVE & EXCEPT Volume 2273, Page 583), Volume 6780, Page 310, Volume 5668, Page 296,

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and Volume 6823, Page 608 of the Harris County Deed Records, and being more particularly described by metes and bounds as follows:

BEGINNING at a 1/2 inch iron rod set on the intersection of the north right-of-way line of First Street (60 feet wide) with the east line of a 25 foot easement recorded in Volume 811, Page 462 of the Harris County Deed Records;

THENCE N 2 degrees 51 minutes 51 seconds W a distance of 989.68 feet along the east line of the aforementioned 25 foot easement to a 1/2 inch iron rod for corner;

THENCE S 87 degrees 08 minutes 09 seconds W a distance of 25.00 feet along the north line of the aforementioned 25 foot drainage easement to a 1/2 inch iron rod set for corner, said point being on the east right-of-way line of Jackson Road 60 feet wide);

THENCE N 2 degrees 51 minutes 51 seconds W a distance of 483.91 feet along the east right-of-way line of Jackson Rood to a 1/2 inch iron rod set on the north right-at-way line of Jackson Road;

THENCE S 87 degrees 08 minutes 09 seconds W a distance of 60.00 feet along the north right-of-way line of Jackson Road to a 1/2 inch iron rod set for corner on the west right-of-way of Jackson Road;

THENCE S 2 degrees 51 minutes 51 seconds E a distance of 1473.64 feet along the west right-of-way line of Jackson Road to a 1/2 inch iron rod found for the intersection of the west right-at-way line of Jackson Road and the north right-of-way line of First Street, said point being N 43 degrees 11 minutes 19 seconds W a distance of 17.83 feet from a concrete monument found for reference;

THENCE S 87 degrees 01 minute 10 seconds W 3930.60 feet (called S 87 degrees 05 minutes 46 seconds W - 3932.79 feet) along the north right-of-way line of First Street to a concrete monument found for point;

THENCE S 33 degrees 06 minutes 16 seconds W at a distance of 327.28 pass the end of a 4 foot chain link fence for reference and in total a distance of 340.81 feet to a point in Cotton Patch Bayou;

THENCE N 49 degrees 31 minutes 37 seconds W a distance of 141.71 feet to a point, said point being S 45 degrees 43 minutes 36 seconds W - 39.24 feet from a 1/2 inch iron rod set for reference;

THENCE N 42 degrees 45 minutes 56 seconds W a distance of 220.63 feet to a point for the meanders of the Houston Ship Channel, said point being S 83 degrees 32 minutes 58 seconds W - 23.67 feet from a 1/2 inch iron rod set for reference;

THENCE along the meanders of the Houston Ship Channel as follows:

N 29 degrees 03 minutes 49 seconds E - 230.96 feet to a 1/2 inch iron set for point;

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N 34 degrees 17 minutes 35 seconds E - 311.27 feet to a point, said point being N 29 degrees 33 minutes 21 seconds W - 23.08 feet from a 1/2 inch iron rod set for reference;

N 40 degrees 10 minutes 07 seconds E - 77.51 feet to a point, said point being N 4 degrees 51 minutes 31 seconds E - 44.52 feet from a 1/2 inch iron rod set for reference;

N 59 degrees 39 minutes 36 seconds E - 104.64 feet to a point, said point being N 16 degrees 37 minutes 15 seconds W - 26.61 feet from a 1/2 inch iron rod set for reference;

N 60 degrees 30 minutes 05 seconds E - 98.70 feet to a 1/2 inch iron rod set for point;

N 79 degrees 35 minutes 09 seconds E - 63.72 feet to a 1/2 inch iron rod set for point;

N 29 degrees 34 minutes 28 seconds W - 76.22 feet to a 1/2 inch iron rod set for point;

N 21 degrees 16 minutes 37 seconds E - 104.65 feet to a point, said point being N 73 degrees 25 minutes 46 seconds W - 30.68 feet from a 1/2 inch iron rod set for reference;

N 46 degrees 41 minutes 01 seconds E - 206.67 feet to a 1/2 inch iron rod set for point;

N 45 degrees 03 minutes 06 seconds E - 201.10 feet to a point, said point being N 63 degrees 54 minutes 02 seconds W - 33.97 feet from a 1/2 inch iron rod set for reference;

N 48 degrees 07 minutes 33 seconds E - 200.26 feet to a nail set on a wooden bulkhead for point;

N 53 degrees 31 minutes 49 seconds E - 494.55 feet to a point, said point being S 74 degrees 36 minutes 32 seconds W - 46.02 feet, from a spike set for reference at the end of a wooden bulkhead;

N 55 degrees 38 minutes 32 seconds E - 109.90 feet to a 1/2 inch iron rod set at the beginning of sheet piling;

N 61 degrees 43 minutes 09 seconds E - 288.73 feet to a 1/2 inch iron rod set on the end of sheet piling;

N 68 degrees 34 minutes 02 seconds E - 532.03 feet to a point on the concrete rip-rap, said point being N 1 degree 09 minutes 42 seconds W - 12.33 feet from a chiseled square on the end of a concrete pier;

N 66 degrees 53 minutes 12 seconds E 208.05 feet to a point on a wall, said point being N 21 degrees 02 minutes 37 seconds W - 6.88 feet from a point on the intersection of another wall with the aforementioned wall for reference;

N 67 degrees 08 minutes 33 seconds E - 699.28 feet to a point on the rip-rap, said point being N 10 degrees 29 minutes 06 seconds W - 52.04 feet from a power pole for reference:

N 84 degrees 24 minutes 02 seconds E - 87.73 feet to a point, on the rip-rap, said point being 18 degrees 19 minutes 35 seconds W - 38.36 feet from a power pole for reference;

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N 42 degrees 03 minutes 51 seconds E - 230.15 feet to a point on the rip-rap, said point being N 69 degrees 00 minutes 43 seconds W - 16.61 feet from a chiseled "x" on a slab for reference;

N 58 degrees 46 minutes 14 seconds E - 368.86 feet to a spike set on a wood post for corner;

N 68 degrees 33 minutes 19 seconds W - 125.87 feet to a 1/2 inch iron rod set on the rip-rap;

N 79 degrees 34 minutes 53 seconds E - 314.31 feet to a 1/2 inch iron rod set for corner; .

N 57 degrees 39 minutes 12 seconds E - 229.80 feet to a 1/2 inch iron rod set for corner;

N 64 degrees 58 minutes 56 seconds E - 248.07 feet to a 1/2 inch iron rod set for corner;

N 64 degrees 58 minutes 53 seconds E - 33.68 feet to a 1/2 inch iron rod set for corner;

N 72 degrees 06 minutes 50 seconds E - 235.61 feet to a 1/2 inch iron rod set for corner;

N 73 degrees 05 minutes 13 seconds E - 187.60 feet to a 1/2 inch iron rod set for corner;

N 79 degrees 56 minutes 00 seconds E - 213.41 feet to a 1/2 inch iron rod set for corner;

N 78 degrees 02 minutes 15 seconds E - 75.37 feet to a 1/2 inch iron rod found for corner;

N 20 degrees 34 minutes 30 seconds E - 62.80 feet to a 1/2 inch iron rod found for corner for the northeast corner of the herein described tract;

THENCE S 02 degrees 51 minutes 51 seconds E a distance of 1859.83 feet to a 5/8 inch iron rod found marking the southeast corner of Outlot 118 of the aforementioned Deepwater Subdivision;

THENCE S 45 degrees 10 minutes 58 seconds E a distance of 1336.79 feet to a spike found marking the southeast corner of Outlot 101 of the Deepwater Subdivision, said point also being the intersection of the north right-of-way line of First Street and the west right-of-way of Jefferson Rood (100 feet wide);

THENCE S 87 degrees 05 minutes 46 seconds W a distance of 1775.00 feet along the north right-of-way line of First Street to the POINT OF BEGINNING of the herein described tract and containing 231.4840 acres (10,083,444 square feet) of land more or less.

PARCEL 4: (QUITCLAIM FOR JACKSON ROAD)

Being a tract of land containing 3.2669 acres (142,305 square feet) of land and also being a part of a 60 foot dedicated roadway (called Jackson Road) out of the James Seymour Survey, Abstract Number 698, Harris County, Texas, and being west and adjacent to a 30 foot drainage tract recorded in volume 2070, Page 249 of the Harris County Deed Records and being described more particularly by metes and bounds as follows:

BEGINNING at a 1/2 inch iron rod set in the intersection of the east right-of-way line of Jackson Road and the South line of the Port Terminal Railway Association right-of-way, said point being the northwest corner of the aforementioned 30 foot drainage tract;

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THENCE S 02 degrees 54 minutes 50 seconds E a distance of 2372.10 feet along the east right-of-way line of Jackson Road to a 1/2 inch iron rod set for the southeast corner of the herein described tract;

THENCE S 87 degrees 36 minutes 42 seconds W a distance of 60.00 feet to a 1/2 inch iron rod set on the west right-of-way line of Jackson Road and the southwest corner of the herein described tract;

THENCE N 02 degrees 54 minutes 50 seconds W a distance of 2371.40 feet along the west right-of-way line of Jackson Road to a threaded rod found for the northwest corner of the herein described tract;

THENCE N 86 degrees 56 minutes 36 seconds E a distance of 60.00 feet to the POINT OF BEGINNING of the herein described tract containing 3.2669 acres (142.305 square feet) of land more or less.

ANY PROVISION HEREIN WHICH RESTRICTS THE SALE, RENTAL, OR USE OF THE DESCRIBED REAL PROPERTY BECAUSE OF COLOR OR RACE IS INVALID AND UNENFORCEABLE UNDER FEDERAL LAW
THE STATE OF TEXAS
COUNTY OF HARRIS
I hereby certify that this instrument was FILED in File Number Sequence on the date and at the time stamped hereon by me; and was duly RECORDED, in the Official Public Records of Real Property of Harris County, Texas on

MAY 17 2005

COUNTY CLERK
HARRIS COUNTY, TEXAS

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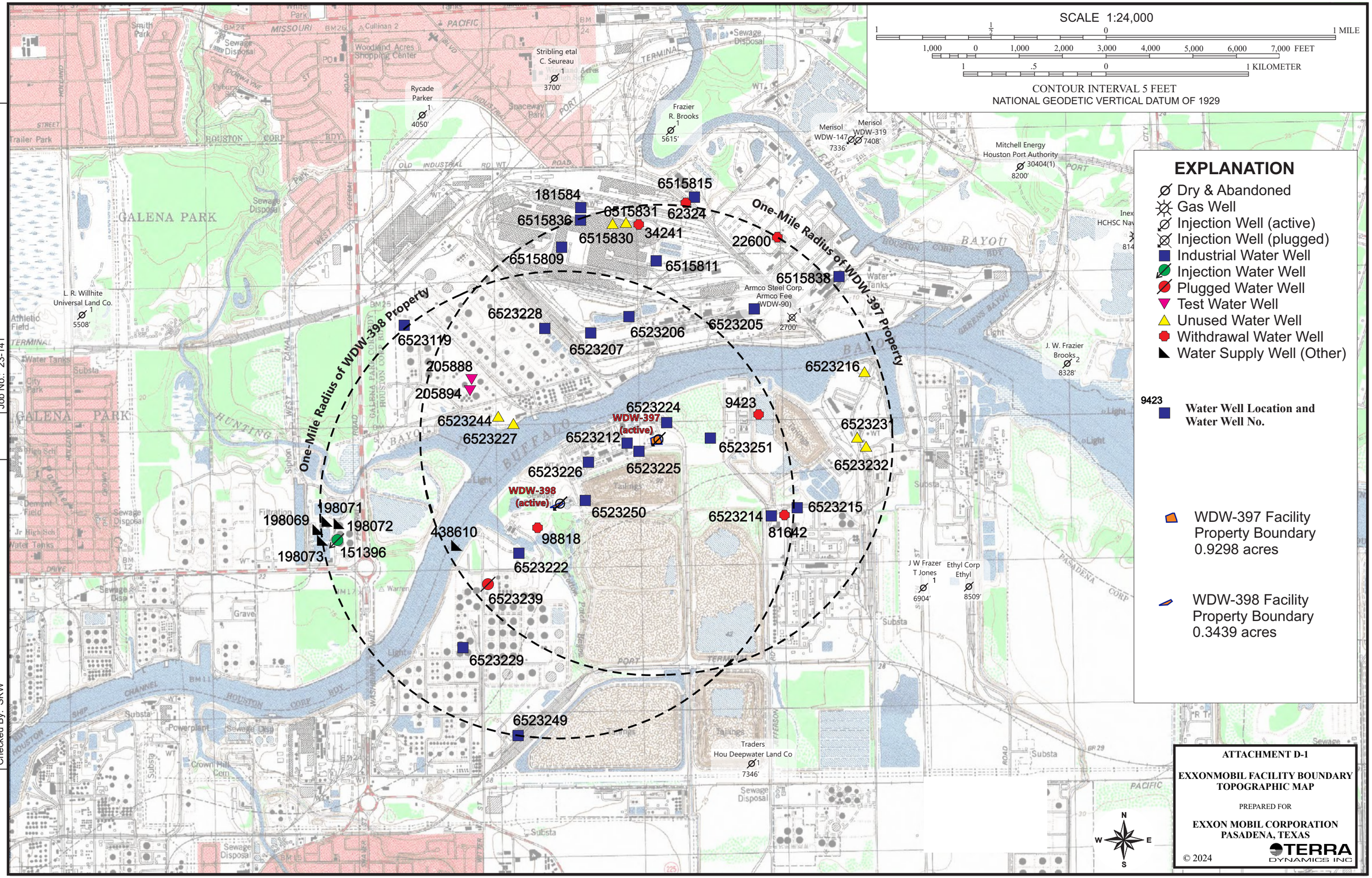
ATTACHMENT D

FACILITY BOUNDARY AND

TOPOGRAPHIC MAP

REVISED 8/1/2024



ATTACHMENT D-1

EXXONMOBIL FACILITY BOUNDARY TOPOGRAPHIC MAP

PREPARED FOR

EXXON MOBIL CORPORATION
PASADENA, TEXAS

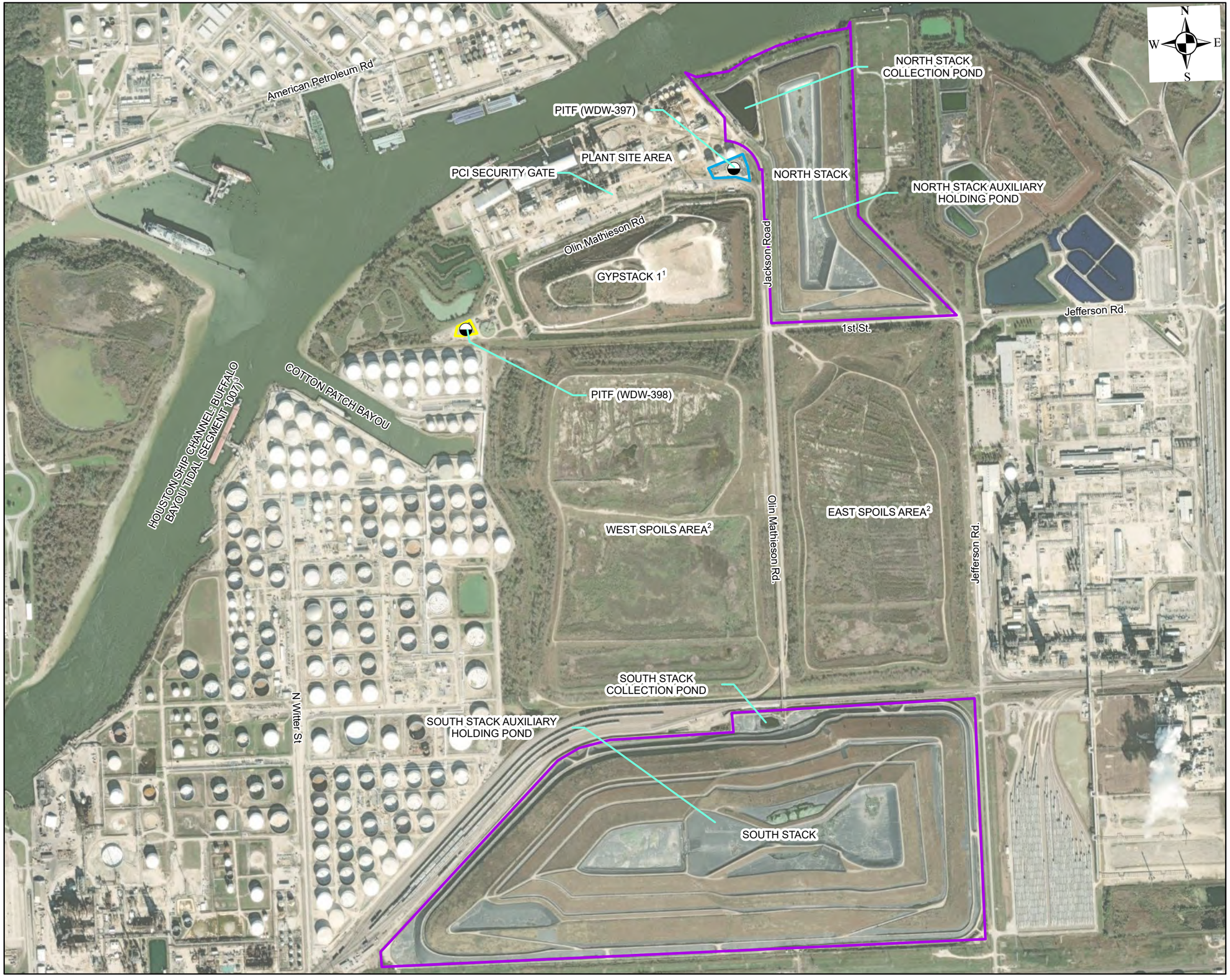
TERRA DYNAMICS INC

© 2024

Drawing No.: Attachment D-1
Date: Revised 05/03/2024
Job No.: 23-141

Drawn By: VASB
Designed By: VASB
Checked By: SKW

REVISED 8/1/2024



ATTACHMENT D-2 : HAZARDOUS WASTE GENERATION, STORAGE, AND TREATMENT LOCATION MAP

1933 Jackson Rd, Pasadena, TX

Legend

- Stack Closure Areas
- Hazardous Waste Generation, Treatment, and Disposal Location (ExxonMobil Managed Property)
- Hazardous Waste Disposal Location (ExxonMobil Managed Property)
- Deep Injection Wells

LEGEND:
PCI: Pasadena Commodities International
PITF: Pre Injection Treatment Facility

NOTES:
1. Future ExxonMobil Commercial Responsibility for Closure
2. The Harris County Appraisal District (HCAD) indicates that the east and west spoil areas of the site are owned by CPB Properties, LLC.
3. Listed by TCEQ as impaired with dioxin in edible tissue, polychlorinated biphenyls (PCBs) in edible tissue and toxicity in sediment. Neither dioxins nor PCBs are pollutants expected to be present in the regulated industrial activities at the Gypstack complex or PITF.
4. Some process water (pH <2) is also present in the South Stack Collection Pond and the North Stack Collection Pond. Depending upon the site conditions, there is a possibility that some process water (pH <2) may also be present in the South Stack Auxiliary Holding Pond and/or the North Stack Auxiliary Holding Pond. This water is not considered hazardous waste under the Bevill exemption, however, it carries the characteristics of being corrosive and toxic.

Feet
0 440 880 1,760

SOURCE: ESRI, DIGITAL GLOBE
GEOEYE AERIAL IMAGE 2017

ARCADIS

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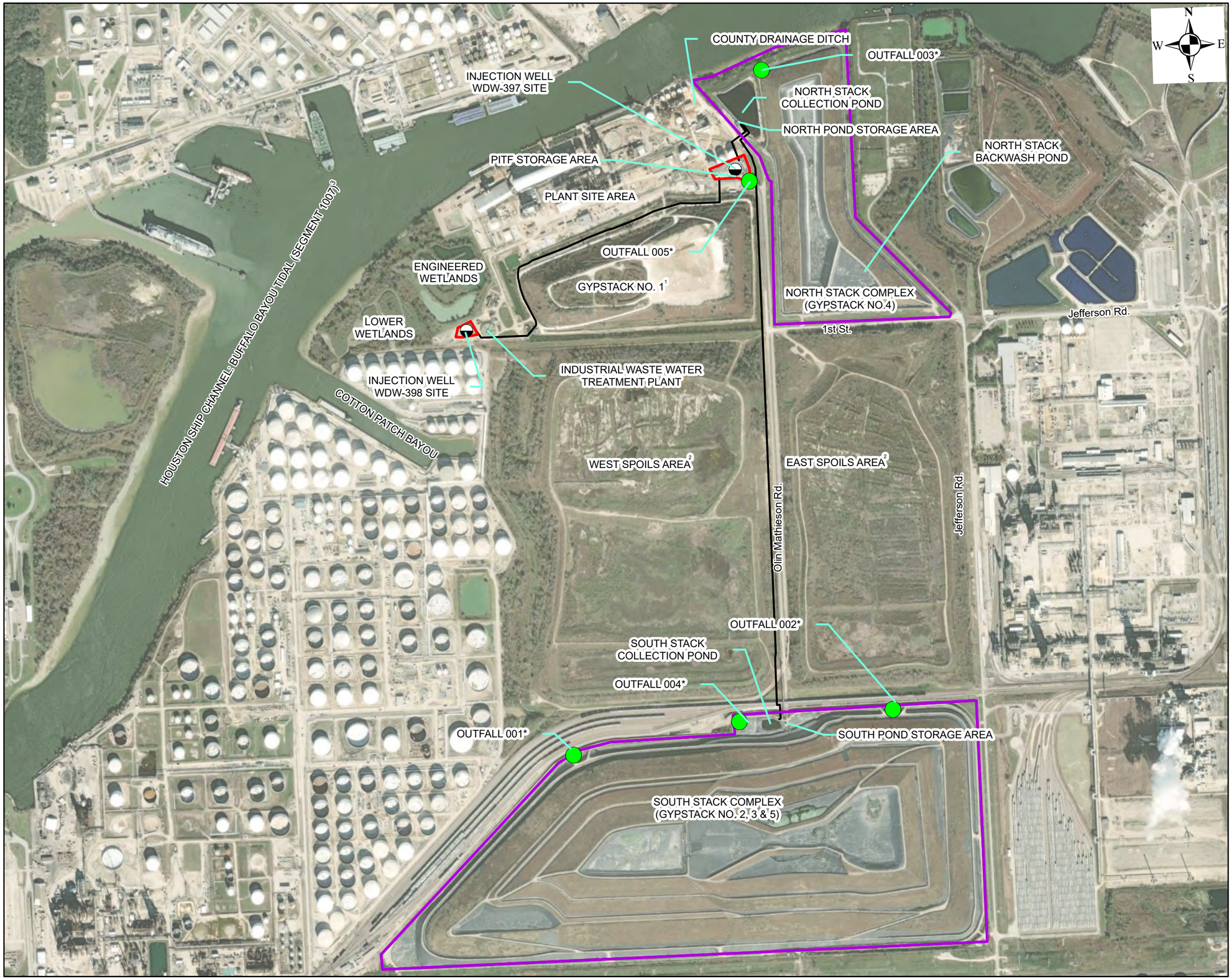
REVISED 8/1/2024

ATTACHMENT D-3 : SITE PLAN

1933 Jackson Rd, Pasadena, TX



Legend

- Outfalls
- Stack Closure Areas
- ExxonMobil Managed Property
- Piping
- Deep Injection Wells

PITF: Pre Injection Treatment Facility

NOTES:

1. Future ExxonMobil Commercial Responsibility for Closure
2. The Harris County Appraisal District (HCAD) indicates that the east and west spoil areas of the site are owned by CPB Properties, LLC.
3. Listed by TCEQ as impaired with dioxin in edible tissue, polychlorinated biphenyls (PCBs) in edibl tissue and toxicity in sediment. Neither dioxins nor PCBs are pollutants expected to be present in the regulated industrial activities at the Gypstack complex or PITF.

*Historical nomenclature lists Gypstack and PITF Outfalls under several names. Records indicate Outfalls have been referred to using the following identifiers:

001 : SGS-01, Outfall 001 and SS001
002 : SGS-02, Outfall 002 and SS002
003 : No. 4 Outfall, Outfall 003, and NS001
004 : Outfall 004 and SS003
005 : PITF 397, Outfall 001, 001, PITF Outfall, WDW-397

0 440 880 1,760 Feet

SOURCE: ESRI, DIGITAL GLOBE GEOEYE AERIAL IMAGE 2017

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ATTACHMENT E

PLAIN LANGUAGE SUMMARY

ATTACHMENT E
PLAIN LANGUAGE SUMMARY

Included on the following pages is a Plain Language Summary of the Permit Renewal Application for WDW-397 and WDW-398.

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Attachment E

Plain Language Summary

ExxonMobil Corporation WDW-397 and WDW-398
Permit Renewal Application to Dispose of Waste in a Class I Injection Well

The applicant is ExxonMobil Corporation (referred to as ExxonMobil). This application and supporting technical document is for a permit to dispose of waste in a Class I injection well. ExxonMobil is requesting renewal for two permits for two drilled wells, which are currently permitted as waste disposal well WDW-397 and waste disposal well WDW-398. The waste injected in the wells will be pond water associated with stack closures at the PCI Nitrogen Pasadena Fertilizer Plant at the ExxonMobil Facility, which is located on 1933 Jackson Road in Pasadena, Texas. The injection wells are located on property which is owned by Exxon Mobil Corporation within the boundaries of the original Pasadena Fertilizer Plant, which is currently owned and operated by PCI Nitrogen, LLC.

Pursuant to a contractual agreement between the parties, ExxonMobil has assumed responsibility for certain environmental matters at the site, including the Closure of existing gypsum stacks. The term "existing gypsum stacks" means the gypsum disposal sites in use or previously used by Mobil Oil Corporation at the time of Closing, including stacks 1, 2, 3 and 4, and the zone of consolidation between stacks 2 and 3, and otherwise limited to the existing footprint of the stacks at the time of Closing. Under a Consent and Final Order Agreement (CAFO) executed between the United States Environmental Protection Agency (USEPA) and ExxonMobil in September 2010, ExxonMobil is responsible for closure of the existing gypsum stacks, proper disposal of the process wastewater, and certain sampling, analysis, and corrective action related to the closure of the gypsum stacks at the Pasadena Fertilizer Plant.

The principal wastes that will be routinely injected are Gypsum stack pond water from Gypstacks #2,#3, #5 (South Stack Complex) and #4, , although on occasion wastes generated from other sources will be injected. The additional permitted wastes include other associated wastes such as groundwater and rainfall contaminated by the above authorized wastes, spills of the above authorized wastes, wash waters and solutions used in cleaning and servicing the waste disposal well system equipment which are compatible with the permitted waste streams, injection zone and well materials; and wastes generated during well construction or closure of the well and associated facilities that are compatible with permitted wastes, injection zone and the well.

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The wastewater generated for injection into the WDW-397 and WDW-398 injection wells will consist of a composite of a number of individual waste streams described in Table IX.A of the permit application. The waste stream is defined as hazardous for pH less than 2.0 and concentrations of 2,4 Dinitrotoluene (2,4-DNT) above the toxicity characteristic threshold of 130 µg/L, and the following RCRA waste codes are applicable to the ExxonMobil Pasadena facility: D002, D004, D005, D006, D007, D008, D009, D023, D024, D025, D030 and F039.

The USEPA has approved a petition from ExxonMobil for exemption from the land disposal restrictions based on a no-migration demonstration. ExxonMobil has with that application demonstrated to a reasonable degree of certainty, there will be no migration of hazardous waste from the Injection Zone. Information submitted in the No-Migration Petition demonstrates that subsurface injection of the waste stream is protective of human health and the environment.

Therefore, the company is confident that injection of waste at the Pasadena Facility is the best technology available for disposal of the waste stream.

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Adjunto E

Resumen en lenguaje sencillo

Corporación ExxonMobil WDW-397 y WDW-398
Aplicación De Renovación De Permiso Para Desecho de Residuos En Un Pozo De Inyección Clase I

El aplicante es la Corporación ExxonMobil (referida como ExxonMobil). Esta aplicación y documento técnico de soporte es para un permiso para desechar residuos en un pozo de inyección Clase I. ExxonMobil está pidiendo la renovación de dos permisos para dos pozos perforados, los cuales están actualmente permitidos como pozo de desecho de residuos WDW-397 y pozo de desecho de residuos WDW-398. El residuo inyectado en los pozos será agua de estanque asociada con el cierre de las pilas en la Planta de Fertilizante de PCI Nitrogen (Nitrógeno PCI) de Pasadena en la Instalación de ExxonMobil, la cual está ubicada en 1933 Jackson Road en Pasadena, Texas. Los pozos de inyección están localizados en propiedad de la que es dueña la Corporación ExxonMobil, dentro de los límites de la original Planta de Fertilizante de Pasadena la cual es actualmente propiedad de, y operada por; PCI Nitrogen, LLC.

Conforme a un acuerdo contractual entre las partes, ExxonMobil ha asumido responsabilidad por ciertos asuntos ambientales en el sitio, incluyendo el Cierre de las existentes pilas de yeso. El término ¨existentes pilas de yeso¨ significa los sitios de desecho de yeso en uso o previamente usados por la Corporación de Petróleo Mobil al tiempo de Cierre, incluyendo las pilas 1, 2, 3 y 4, y la zona de consolidación entre las pilas 2 y 3, y de otra manera limitado a la existente huella de las pilas al tiempo de Cierre. Bajo el Acuerdo de Consentimiento y Orden Final (CAFO, por sus siglas en inglés) ejecutado entre la Agencia de Protección Ambiental de Estados Unidos (USEPA, por sus siglas en inglés) y ExxonMobil en Septiembre de 2010, ExxonMobil es responsable del cierre de las pilas existentes de yeso, del apropiado desecho de aguas residuales de proceso, y de ciertos muestreos, análisis, y toma de acciones correctivas relacionadas con el cierre de las pilas de yeso en la Planta de Fertilizante de Pasadena.

Los desechos principales que serán rutinariamente inyectados es agua de estanque de las pilas de Yeso (llamadas Gypstacks en inglés) #2, #3, #5 (Complejo Sur de Pilas) y #4, aunque en ocasiones desechos generados de otras fuentes serán inyectados. Los adicionales desechos permitidos incluyen otros desechos asociados como aguas subterráneas y agua de lluvia contaminada por los desechos autorizados mencionados antes, derrames de los residuos autorizados mencionados

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anteriormente, aguas de lavado y soluciones usadas en la limpieza y el servicio de los equipos del sistema de pozo de inyección de desechos los cuales son compatibles con los flujos de residuos, la zona de inyección y los materiales del pozo; y los desechos generados durante la construcción o cierre del pozo y las instalaciones asociadas que son compatibles con los desechos permitidos, la zona de inyección y el pozo.

El agua de residuos generada para inyección en los pozos de inyección WDW-397 y WDW-398 consistirá en un compuesto de un número de flujos de desecho individuales descritos en la Tabla IX.A. de la aplicación de permiso. El flujo de desechos está definido como peligroso por el pH menor a 2.0 y la concentración de 2,4 Dinitrotolueno (2,4-DNT) sobre el límite de toxicidad característico de 130 µg/L, y los siguientes códigos de residuos RCRA son aplicables para la instalación de ExxonMobil en Pasadena: D002, D004, D005, D006, D007, D008, D009, D023, D024, D025, D030 y F039.

La USEPA ha aprobado una petición de ExxonMobil para exención de las restricciones de disposición en tierra basado en una demostración de no-migración. ExxonMobil ha demostrado con esa aplicación un grado razonable de certitud de que no habrá migración de los desechos peligrosos fuera de la Zona de Inyección. La información entregada en la Petición de No-Migración demuestra que la inyección subterránea de flujos de desecho protege la salud humana y el medio ambiente.

Por lo tanto, la compañía tiene confianza que la inyección de los residuos en la Instalación de Pasadena es la mejor tecnología disponible para el desecho de flujos de residuos.

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ATTACHMENT F

PUBLIC INVOLVEMENT PLAN

ATTACHMENT F PUBLIC INVOLVEMENT PLAN

The TCEQ's Public Participation Plan provides guidance for using preliminary screening and public involvement plans to ensure meaningful public outreach. Applicants who are applying for a new injection well permit are required to complete a Public Involvement Plant.

This permit application is for the renewal of permits WDW-397 and WDW-398 and does not request a new injection well permit. Therefore a Public Involvement Plan is not required and a Public Involvement Plan has not been included in this application.

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Texas Commission on Environmental Quality

Public Involvement Plan Form for Permit and Registration Applications

The Public Involvement Plan is intended to provide applicants and the agency with information about how public outreach will be accomplished for certain types of applications in certain geographical areas of the state. It is intended to apply to new activities; major changes at existing plants, facilities, and processes; and to activities which are likely to have significant interest from the public. This preliminary screening is designed to identify applications that will benefit from an initial assessment of the need for enhanced public outreach.

All applicable sections of this form should be completed and submitted with the permit or registration application. For instructions on how to complete this form, see TCEQ-20960-inst.

Section 1. Preliminary Screening

New Permit or Registration Application

New Activity – modification, registration, amendment, facility, etc. (see instructions)

If neither of the above boxes are checked, completion of the form is not required and does not need to be submitted.

Section 2. Secondary Screening

Requires public notice,

Considered to have significant public interest, **and**

Located within any of the following geographical locations:

- Austin
- Dallas
- Fort Worth
- Houston
- San Antonio
- West Texas
- Texas Panhandle
- Along the Texas/Mexico Border
- Other geographical locations should be decided on a case-by-case basis

If all the above boxes are not checked, a Public Involvement Plan is not necessary. Stop after Section 2 and submit the form.

Public Involvement Plan not applicable to this application. Provide **brief** explanation.

Section 3. Application Information

Type of Application (check all that apply):

Air Initial Federal Amendment Standard Permit Title V

Waste Municipal Solid Waste Industrial and Hazardous Waste Scrap Tire
Radioactive Material Licensing Underground Injection Control

Water Quality

Texas Pollutant Discharge Elimination System (TPDES)

Texas Land Application Permit (TLAP)

State Only Concentrated Animal Feeding Operation (CAFO)

Water Treatment Plant Residuals Disposal Permit

Class B Biosolids Land Application Permit

Domestic Septage Land Application Registration

Water Rights New Permit

New Appropriation of Water

New or existing reservoir

Amendment to an Existing Water Right

Add a New Appropriation of Water

Add a New or Existing Reservoir

Major Amendment that could affect other water rights or the environment

Section 4. Plain Language Summary

Provide a brief description of planned activities.

Section 5. Community and Demographic Information

Community information can be found using EPA's EJ Screen, U.S. Census Bureau information, or generally available demographic tools.

Information gathered in this section can assist with the determination of whether alternative language notice is necessary. Please provide the following information.

(City)

(County)

(Census Tract)

Please indicate which of these three is the level used for gathering the following information.

City County Census Tract

(a) Percent of people over 25 years of age who at least graduated from high school

(b) Per capita income for population near the specified location

(c) Percent of minority population and percent of population by race within the specified location

(d) Percent of Linguistically Isolated Households by language within the specified location

(e) Languages commonly spoken in area by percentage

(f) Community and/or Stakeholder Groups

(g) Historic public interest or involvement

Section 6. Planned Public Outreach Activities

(a) Is this application subject to the public participation requirements of Title 30 Texas Administrative Code (30 TAC) Chapter 39?

Yes No

(b) If yes, do you intend at this time to provide public outreach other than what is required by rule?

Yes No

If Yes, please describe.

If you answered "yes" that this application is subject to 30 TAC Chapter 39, answering the remaining questions in Section 6 is not required.

(c) Will you provide notice of this application in alternative languages?

Yes No

Please refer to Section 5. If more than 5% of the population potentially affected by your application is Limited English Proficient, then you are required to provide notice in the alternative language.

If yes, how will you provide notice in alternative languages?

Publish in alternative language newspaper

Posted on Commissioner's Integrated Database Website

Mailed by TCEQ's Office of the Chief Clerk

Other (specify)

(d) Is there an opportunity for some type of public meeting, including after notice?

Yes No

(e) If a public meeting is held, will a translator be provided if requested?

Yes No

(f) Hard copies of the application will be available at the following (check all that apply):

TCEQ Regional Office TCEQ Central Office

Public Place (specify)

Section 7. Voluntary Submittal

For applicants voluntarily providing this Public Involvement Plan, who are not subject to formal public participation requirements.

Will you provide notice of this application, including notice in alternative languages?

Yes No

What types of notice will be provided?

Publish in alternative language newspaper

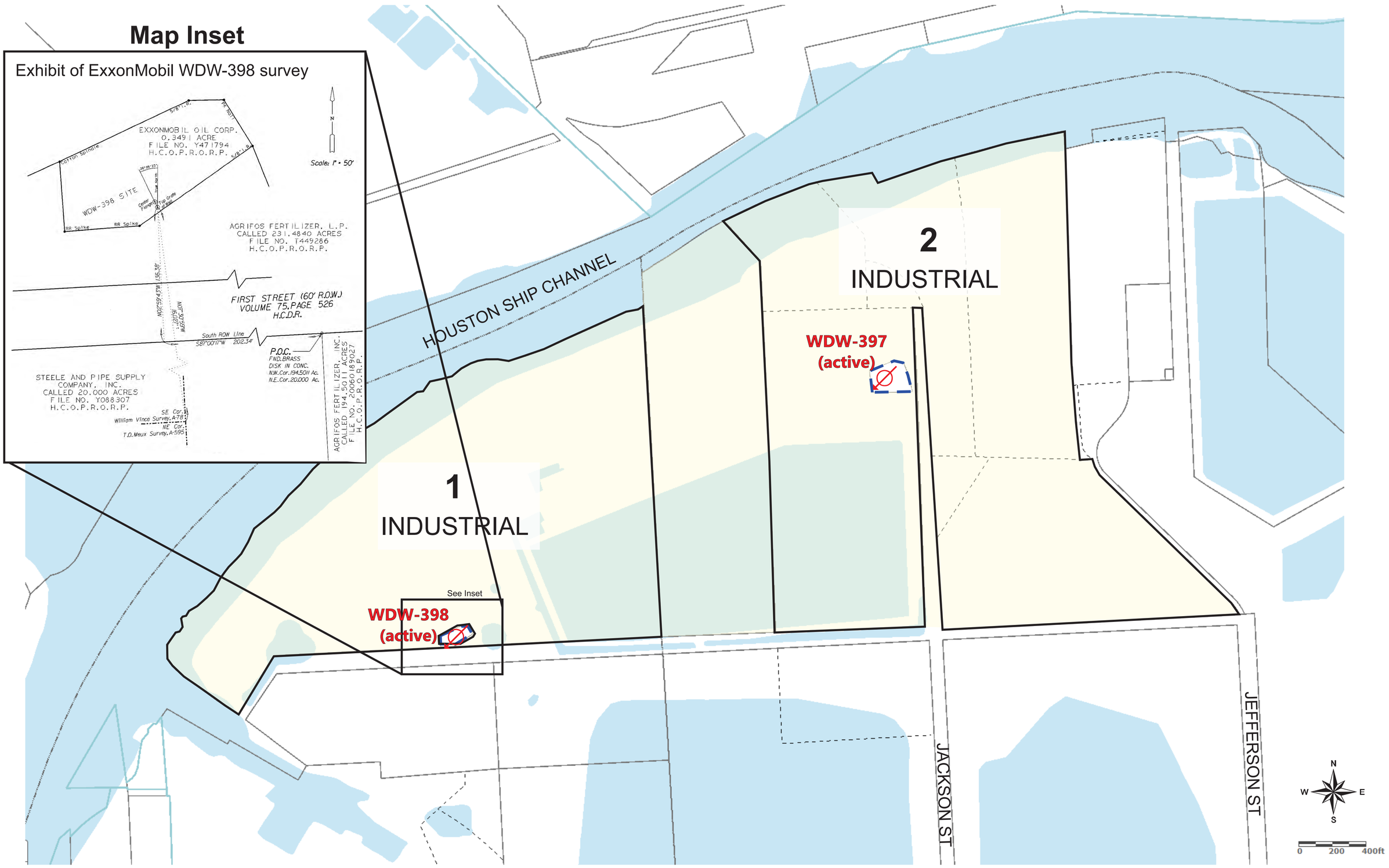
Posted on Commissioner's Integrated Database Website

Mailed by TCEQ's Office of the Chief Clerk

Other (specify)

ATTACHMENT G

AFFECTED LAND AND MINERAL OWNERS



EXPLANATION

Injection Well

ExxonMobil Property Line

Adjacent Surface Owner Property Line

Contiguous Property Owned by PCI Nitrogen

ATTACHMENT G

TERRA DYNAMICS INC

ADJACENT PROPERTY OWNERSHIP MAP

PREPARED FOR:
EXXON MOBIL CORPORATION
PASADENA, TEXAS

DRAWN BY: VASB	SCALES: As Indicated	DATE: REVISED 5/23/2024	
DESIGNED BY: VASB		JOB NO.: 23-141	© 2024
CHECKED BY: SKW			

LANDOWNERS

Tract 1: A-78, William Vince Survey, Harris County, TX		
Name	Address	City, State, Zip
PCI NITROGEN LLC FKA RENETCH NITROGEN PASADENA, LLC	PO BOX 3447	PASADENA TX 77501-3447

Tract 2: A-698, James Seymour Survey, Harris County, TX		
Name	Address	City, State, Zip
PCI NITROGEN LLC FKA RENETCH NITROGEN PASADENA, LLC	PO BOX 3447	PASADENA TX 77501-3447

MINERAL RIGHTS OWNERS

Tract 1: A-78, William Vince Survey, Harris County, TX		
Name	Address	City, State, Zip
PCI NITROGEN LLC FKA RENETCH NITROGEN PASADENA, LLC	PO BOX 3447	PASADENA TX 77501-3447

Tract 2: A-698, James Seymour Survey, Harris County, TX		
Name	Address	City, State, Zip
PCI NITROGEN LLC FKA RENETCH NITROGEN PASADENA, LLC	PO BOX 3447	PASADENA TX 77501-3447

PCI NITROGEN LLC FKA RENTECH
NITROGEN PASADENA LLC
PO BOX 3447
PASADENA TX 77501-3447

MAYOR JEFF WAGNER
1149 ELLSWORTH DRIVE
PASADENA TX 77506

PASADENA HEALTH DEPARTMENT
1149 ELLSWORTH DRIVE
PASADENA TX 77506

JUDGE LINA HIDALGO
1001 PRESTON SUITE 911
HOUSTON TX 77002

HARRIS COUNTY PUBLIC HEALTH
1111 FANNIN STREET
HOUSTON TX 77002

ATTACHMENT H

LETTER FROM THE RAILROAD COMMISSION OF TEXAS

ATTACHMENT H
LETTER FROM THE RAILROAD COMMISSION OF TEXAS

Included on the following pages are letters from the Railroad Commission of Texas (RRC) generated during the previous permit applications of the ExxonMobil WDW-397 and WDW-398 injection wells. The RRC letters dated February 5, 2003 and May 13, 2009 assert that the continued operation of the existing non-commercial disposal wells for the injection of hazardous wastewaters into the Frio Formation at a depth of 5,303 and 7,256 feet will not injure or endanger any known oil or gas reservoir.

ExxonMobil has submitted a copy of this permit renewal application to the RRC. A copy of the cover letter submitted to the RRC is included in this attachment.

Copyright © 2024 by Terra Dynamics Incorporated.

TERRA DYNAMICS INC

February 29, 2024 23-141

Mr. Sean Avitt
Technical Programs Manager
Injection-Storage Permits Unit
Technical Permitting
Railroad Commission of Texas
1701 N. Congress, 11th Floor, Room 140
PO Box 12967
Austin, Texas 78711-2967

Re: TCEQ Permit Renewal Application for WDW-397 and WDW-398 Exxon Mobil Corporation, Pasadena, Harris County, Texas

Dear Mr. Avitt:

Exxon Mobil Corporation is applying to the Texas Commission on Environmental Quality (TCEQ) for renewal of the permit for two Class I injection wells at its Pasadena Fertilizer Plant in Pasadena, Texas. The permit will allow them to continue to conduct Class I underground injection under provisions of Chapters 26 and 27 of the Texas Water Code. The permit will authorize operation of two existing Class I injection wells (WDW-397 and WDW-398) for disposal of hazardous wastewaters generated at the site. ExxonMobil is submitting the application and technical report to the Railroad Commission for review as required in the current regulations. ExxonMobil has demonstrated that operating the disposal wells and injecting industrial waste into the subsurface stratum specified in the technical report will not endanger any known oil or gas resources.

The Pasadena Fertilizer Plant is located along the south bank of the Houston Ship Channel in Pasadena, Texas. The WDW-397 location is approximately1,450 feet east of the west line and 25,700 feet north of the south line of the James Seymore Survey, Abstract-698, Harris County, Texas. WDW-398 is located approximately 1,200 feet west of the east line and 16,600 feet north of the south line of the William Vince Survey, Abstract-78, Harris County, Texas. The geographical coordinates of the WDW-397 injection well are:

Latitude 29 deg 44 min 27 sec North
Longitude 95 deg 11 min 23 sec West.

The geographical coordinates of the WDW-398 injection well are:

Latitude 29 deg 44 min 12 sec North
Longitude 95 deg 11 min 53 sec West.

ExxonMobil is currently authorized to dispose of hazardous wastewater into the Frio Formation. The Injection Zone is present from approximately 5,325 feet to 7,250 feet below ground level (BGL) at WDW-397 and from approximately 5,345 feet to 7,270 feet BGL at WDW-398. The Injection Interval is within the Frio Formation and is present from approximately 5,900 feet to 7,250 feet BGL at WDW-397 and from approximately 5,940 feet to 7,270 feet BGL at WDW-398.

In order to assist in your review process, I have enclosed the TCEQ UIC Class I Injection Well Permit Renewal Application and associated technical report for your review. The geology and hydrogeology section is included in Section V.0. Cross sections, structure and isopach maps, tables, and figures are included with the discussion of local and regional geology. Section VIII.0 discusses the Area of Review, research protocol, and provides information regarding the non-freshwater artificial penetrations in the Area of Review. Tables listing the non-freshwater artificial penetrations and the research protocol are included with the discussion of the Area of Review. Copies of the previous Railroad Commission letters are included in Attachment H.

We look forward to working with you toward issuance of a letter confirming that operating the WDW-397 and WDW-398 disposal wells and injecting industrial waste into the subsurface stratum specified in the technical report will not endanger any known oil or gas resources.

Please email at swilliams@terradyn.com or call at (512) 795-8183 if you should have any questions about this matter.

Stephanie K. Williams

Stephanie K. Williams, PG
Senior Geologist

Attachment

cc: Ms. Breanna Jackson, Project Manager
ExxonMobil Environmental Services Company
22777 Springwoods Village Parkway
Spring, TX 773889

Mr. Bryan Smith
Texas Commission on Environmental Quality
UIC Permits Section, Radioactive Materials Division
Mail Code 233
PO 13087
Austin, Texas 78711-3087

CHRISTI CRADDICK, CHAIRMAN
WAYNE CHRISTIAN, COMMISSIONER
JIM WRIGHT, COMMISSIONER

DANNY SORRELLS
ASSISTANT EXECUTIVE DIRECTOR
DIRECTOR, OIL AND GAS DIVISION
PAUL DUBOIS
ASSISTANT DIRECTOR, TECHNICAL PERMITTING

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

3/28/2024

Exxon Mobil Corporation
1933 Jackson Road
Pasadena, TX 77506-3447

RE: Class I Injection Well Renewal Permit Application
Exxon Mobil Corporation– WDW-398
Harris County, Texas

The Railroad Commission of Texas (RRC) staff has reviewed your renewal application submitted by Terra Dynamics INC for the referenced Class I injection well. We received the application on February 29, 2024. We reviewed the portion of the applications relating to possible injury or endangerment of any known oil and gas reservoir.

Specifically, our review entailed a study of the aspects of the application relating to the injection operation, geology of the area, and location and well records of the artificial penetrations within the area of review (2.5 mile) around the well's location: 29° 44' 12" North, 95° 11' 53" West. We also used the RRC's computerized mapping system to verify that all artificial penetrations within the area of review have been identified in the application.

Based upon our review, we have concluded that the continued operation of this existing disposal well for the disposal of nonhazardous and hazardous waste into Frio formation with the injection zone of 5,345 to 7,270 feet below ground level (BGL), respectively, and the injection interval of 5,940 to 7,270 feet BGL will not injure or endanger any known oil or gas reservoirs.

Sincerely,

Ivan Salas

Ivan Salas, Manager
Injection-Storage Permits Unit
Technical Permitting

IS/WL

CC:

BRYAN SMITH, P.G., MANAGER
UNDERGROUND INJECTION CONTROL SECTION
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
MC-233
P O BOX 13087
AUSTIN, TX 78711-3087

Stephanie K. Williams, PG
2300 Greenhill Dr. Ste 700
Round Rock, TX 78664

Ms. Breanna Jackson
ExxonMobil Environmental and Property Solutions
22777 Springwoods Village Pkwy
Spring, TX 77389

Mr. Michael Turco
Houston-Galveston Coastal Subsidence District
1660 West Bay Area Blvd.
Friendswood, TX 77546

CHRISTI CRADDICK, CHAIRMAN
WAYNE CHRISTIAN, COMMISSIONER
JIM WRIGHT, COMMISSIONER

DANNY SORRELLS
ASSISTANT EXECUTIVE DIRECTOR
DIRECTOR, OIL AND GAS DIVISION
PAUL DUBOIS
ASSISTANT DIRECTOR, TECHNICAL PERMITTING

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

03/28/2024

Exxon Mobil Corporation
1933 Jackson Road
Pasadena, TX 77506-3447

RE: Class I Injection Well Renewal Permit Application
Exxon Mobil Corporation– WDW-397
Harris County, Texas

The Railroad Commission of Texas (RRC) staff has reviewed your renewal application submitted by Terra Dynamics INC for the referenced Class I injection well. We received the application on February 29, 2024. We reviewed the portion of the applications relating to possible injury or endangerment of any known oil and gas reservoir.

Specifically, our review entailed a study of the aspects of the application relating to the injection operation, geology of the area, and location and well records of the artificial penetrations within the area of review (2.5 mile) around the well's location: 29° 44' 27" North, 95° 11' 23" West. We also used the RRC's computerized mapping system to verify that all artificial penetrations within the area of review have been identified in the application. Due to the presence of a formerly producing well 11,923 feet away that is within the injection zone, we have limited the search for wells only within the 10-year future waste plume extent with advection and dispersion for a distance of 2,837 feet from the Class I injection well.

Based upon our review, we have concluded that the continued operation of this existing disposal well for the disposal of nonhazardous and hazardous waste into Frio formation with the injection zone of 5,325 to 7,250 feet below ground level (BGL), respectively, and the injection interval of 5,900 to 7,250 feet BGL will not injure or endanger any known oil or gas reservoirs.

Sincerely,

Ivan Salas

Ivan Salas, Manager
Injection-Storage Permits Unit
Technical Permitting

IS/WL

CC:

BRYAN SMITH, P.G., MANAGER
UNDERGROUND INJECTION CONTROL SECTION
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
MC-233
P O BOX 13087
AUSTIN, TX 78711-3087

Stephanie K. Williams, PG
2300 Greenhill Dr. Ste 700
Round Rock, TX 78664

Ms. Breanna Jackson
ExxonMobil Environmental and Property Solutions
22777 Springwoods Village Pkwy
Spring, TX 77389

Mr. Michael Turco
Houston-Galveston Coastal Subsidence District
1660 West Bay Area Blvd.
Friendswood, TX 77546

MICHAEL L. WILLIAMS, CHAIRMAN
CHARLES R. MATTHEWS, COMMISSIONER

RICHARD A. VARELA
DIRECTOR, OIL AND GAS DIVISION
STEVEN J. SENI
ASSISTANT DIRECTOR, ENVIRONMENTAL SERVICES

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

February 5, 2003

TERRA DYNAMICS INC
4900 SPICEWOOD SPRINGS ROAD
AUSTIN, TX 78759-8422

RE: Class I Nonhazardous Waste Disposal Well Permit Application
ExxonMobil Facility, Pasadena
Exxon Mobil Corporation
Harris County

The Railroad Commission staff has completed a technical review for the referenced permit application received November 8, 2002, for two non-hazardous wastewater disposal wells in Harris County. We reviewed the portion of the application relating to possible injury or endangerment of any known oil and gas reservoir.

Specifically, our review entailed a study of the aspects of the application relating to the injection operation, geology of the area, and location and well records of the artificial penetrations within the area of review (2.5 miles). We also used the Railroad Commission's computerized mapping system to verify that all artificial penetrations within the area of review have been identified in the application.

Based upon our review, we have concluded that the operation of the proposed wells for the disposal of non-hazardous wastewater into the Frio Formation (subsurface interval 5900-7250 feet) will not injure or endanger any known oil or gas reservoir.

Sincerely yours,

Richard F. Ginn, Deputy Assistant Director for
Underground Injection Control, Environmental
Services

RG/NDLR
cc: Ben Knape, UIC Unit Head
Hazardous and Solid Waste Enforcement Section
Texas Commission on Environmental Quality

MICHAEL L. WILLIAMS, CHAIRMAN
ELIZABETH A. JONES, COMMISSIONER
VICTOR G. CARRILLO, COMMISSIONER

TOMMIE SEITZ
DIRECTOR, OIL AND GAS DIVISION

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

May 13, 2009

Mr. Buddy Hand Jr.
Exxon Mobil Corporation
16825 Northchase Drive
Houston, TX 77060

RE: Class I Injection Well Permit Renewal Application
Exxon Mobil Corporation - Pasadena Facility WDW-397 – WDW-398
Harris County, Texas.

The Railroad Commission staff has reviewed your renewal application submitted by Terra Dynamics Inc. for the referenced Class I injection wells. We received the application April 23, 2009. We reviewed the portion of the application relating to possible injury or endangerment of any known oil and gas reservoir.

Specifically, our review entailed a study of the aspects of the application relating to the injection operation, geology of the area, and location and well records of the artificial penetrations within the area of review (2.5 mile). We also used the Railroad Commission's computerized mapping system to verify that all artificial penetrations within the area of review have been identified in the application.

Based upon our review, we have concluded that the continued operation of these existing non-commercial disposal wells for the injection of hazardous wastewaters into the Frio formation at a depth between 5,303 and 7,256 feet will not injure or endanger any known oil or gas reservoir.

Sincerely yours,

Doug O. Johnson, P E
Manager for Injection-
Storage Permits and Support

cc: Mr. Ben Knape
Texas Commission on Environmental Quality
Permits Administration Review Section
1200 Park 35 Circle, Building F, MC 161
Austin, TX 78753

cc: Ms. Terry Moody
Terra Dynamics Incorporated
4616 West Howard Lane Ste. 9-980
Austin, TX 78728

BARRY T. SMITHERMAN, CHAIRMAN
DAVID PORTER, COMMISSIONER
CHRISTI CRADDICK, COMMISSIONER

GIL BUJANO, P.E.
DIRECTOR, OIL AND GAS DIVISION

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

October 1, 2013

Mr. Buddy Hand Jr.
Exxon Mobil Corporation
16825 Northchase Drive
Houston, TX 77060

RE: Class 1 Injection Well Permit Renewal Application
Exxon Mobil Corporation – Pasadena Facility WDW-397 & WDW-398
Harris County, Texas.

The Railroad Commission staff has reviewed your renewal application submitted by Terra Dynamics Inc. for the referenced Class 1 Injection wells. We received the application July 30, 2013. We reviewed the portion of the application relating to possible injury or endangerment of any known oil and gas reservoir.

Specifically, our review entailed a study of the aspects of the application relating to the injection operation, geology of the area, and location and well records of the artificial penetrations within the area of review (2.5 miles). We also used the Railroad Commission's computerized mapping system to verify that all artificial penetrations within the area of review have been identified in the application.

Based upon our review, we have concluded that the continued operation of these existing non-commercial disposal wells for the injection of hazardous wastewaters, into the Frio Formation at depths between 5,325 and 7,270 feet, will not injure or endanger any known oil or gas reservoir.

Sincerely yours,

David Hill

Dave Hill, P.E., P.G., Manager
Injection-Storage Permits and Support
Technical Permitting

cc: Ms. Kathryn Hoffman
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
Permits Administration Review Section
1200 Park 35 Circle, Building F, MC 161
Austin, Texas 78753

cc: Stephanie K. Williams, P.E.
Terra Dynamics Incorporated
4616 West Howard Lane Ste. 9-980
Austin, Texas 78728

ATTACHMENT I

FINANCIAL ASSURANCE

ExxonMobil Hungary Kft
Registered seat of the Company: Dózsa György út 61-63, 1134
Budapest, Hungary
+36 1 987 8856 Telephone

Julieth Cubillos
Environmental Operations Analyst

ExxonMobil

March 24, 2023

Texas Commission on Environmental Quality
Office of the Executive Director, MC-109
12100 Park 35 Circle
Austin, Texas 78753

Sent via Overnight Mail

Re: Financial Assurance Unit/
Financial Analyst, Mark Stoebner, MC-184

Dear Mr. Stoebner:

Enclosed is Exxon Mobil Corporation's documentation, demonstrating proof of financial assurance, in accordance with applicable federal and state regulations, through use of financial test to provide required coverage for closure, post closure, corrective action, liability and/or other financial requirements for the RCRA facilities listed on Exhibit A.

This submission covers the financial responsibility requirements for hazardous waste facilities in Texas that are owned or operated by the following: (1) Exxon Mobil Corporation (self-insurance) and (2) ExxonMobil Oil Corporation and Neches River Treatment Corporation (corporate guarantee from Exxon Mobil Corporation). The following documents are submitted in compliance with applicable laws:

1) A letter from the Chief Financial Officer of Exxon Mobil Corporation in support of the financial test for closure, post closure and liability coverage.
2) A corporate guarantee from Exxon Mobil Corporation covering closure and post closure care, corrective action and / or liability for the hazardous waste facilities owned or operated by the following: (1) ExxonMobil Oil Corporation, and (2) Neches River Treatment Corporation.
3) A Corporate Guarantee for Liability Coverage.
4) Line 5 (f) Breakdown Summary of Other Obligations.
5) Schedule B - List of Current Cost Estimates (excluding CAFO/Other).
6) Exhibit 2 - Listing of CERCLA and State Remediation Sites (Multiple Party) for which ExxonMobil maintains financial assurance through some form of financial test or corporate guarantee.
7) Intangible Assets Summary (used to calculate tangible net worth).

8) Exhibit A - List of facilities included in financial assurance for post closure care and an explanation of the annual aggregate liability coverage.

9) Copy of site/financial assurance coverage information with the EPA, including a corporate guarantee from Exxon Mobil Corporation to the benefit of EPA to cover the obligation of ExxonMobil Oil Corporation for the estimated costs associated with the Work undertaken pursuant to the RCRA Section 7003 Administrative Order on Consent (AOC) (filed March 28, 2008 with an effective date of April 15, 2008) for certain work to be performed at the PCI Nitrogen (formerly Rentech and formerly Agrifos) Site in Pasadena, Texas.

10) Copy of Louisiana Solid Waste financial assurance and facilities list (LA-SW).

11) Copy of Bureau of Ocean Energy Management forms for Exxon Mobil Corporation (EMC) and Mobil Oil Exploration & Producing Southeast Inc. (MOEPSI).

12) Copy of California, Department of Fish and Wildlife, Office of Spill Prevention and Response financial assurance (CA-OSPR).

13) Copy of New Jersey ACO/ISRA self-guarantee forms (NJ-ACO & NJ-ISRA).

14) Copy of New Jersey Discharge Cleanup and Removal letter, guarantee, and facilities list. (NJ-DCR).

15) Copy of Texas UST liability coverage letter, and schedules AE (TX-UST).

16) Written verification of a Moody's Rating for a Aa2 bond issued by Exxon Mobil Corporation.

17) A special report from Exxon Mobil Corporation's independent certified public accountant addressing all applicable asterisked line items.

18) A copy of Exxon Mobil Corporation's representation letter to Exxon Mobil Corporation's independent certified public accountant that no events have occurred subsequent to the most recent 10-K report that would have a material effect on their subject matter or assertion.

19) A copy of Exxon Mobil Corporation's most recent 10-K report (cover page + 4 financial pages).

If you have any questions, or if we can be of further assistance, please do not hesitate to contact me at +36 1 987 8856.

Sincerely,

Julieth Cubillos
Environmental Operations Analyst

c - Erika Herlugson (EMEPS, BTRF)
Cecilia M Coldham (EMEPS, Pasadena)
Jesse Eastep (NRTC, LNVA)
Jefferson Bunce (EMEPS)
Brian S. Cary (EMEPS)

Exxon Mobil Corporation
5959 Las Colinas Boulevard
Irving, Texas 75039-2298

Kathryn A. Mikells
Senior Vice President / Chief Financial Officer

ExxonMobil

March 22, 2023

Texas Commission on Environmental Quality
Office of the Executive Director, MC-109
12100 Park 35 Circle
12100 Park 35 Circle

Attn: Mr. Mark Stoebner
Financial Assurance Section (MC-184)
Hazardous Waste Permitted Facilities

Dear Mr. Stoebner:

I am the Chief Financial Officer of Exxon Mobil Corporation located at 5959 Las Colinas Boulevard, Irving, Texas 75039. This letter is in support of the use of the financial test to demonstrate financial responsibility for liability coverage and closure, post closure or corrective action, as specified in 30 Texas Administrative Code (TAC) Chapter 37 (relating to Financial Assurance).

The firm identified above is the owner or operator of the following facilities for which liability coverage for both sudden and nonsudden accidental occurrences is being demonstrated through the financial test specified in 30 TAC Section 37.541 (relating to Financial Test for Liability): (see Exhibit A).

The firm identified above guarantees, through the guarantee specified in 30 TAC Section 37.551 (relating to Corporate Guarantee for Liability), liability coverage for both sudden and nonsudden accidental occurrences at the following facilities owned or operated by ExxonMobil Oil Corporation (see Exhibit A). The firm identified above is the direct or higher-tier parent corporation of the owner or operator.

1) The firm identified above owns or operates the following facilities in Texas for which financial assurance for closure, post closure, or corrective action or liability coverage is demonstrated through a financial test specified in 30 TAC Chapter 37. The current cost estimates covered by the test are shown for each facility (see Exhibit A).

2) The firm identified above guarantees, through a corporate guarantee specified in 30 TAC Chapter 37, the cost for closure, post closure, corrective action, or liability coverage of the following facilities owned or operated by the guaranteed party (ExxonMobil Oil Corporation or Neches River Treatment Corporation). The current cost estimates so guaranteed are shown for each facility (see Exhibit A).

3) In States where TCEQ is not administering the financial requirements of 30 TAC Chapter 37, this firm, as owner, operator, or guarantor, is demonstrating financial assurance for the closure, post closure, or corrective action of the following facilities through the use of a test equivalent to a financial test specified in 30 TAC Chapter 37. The current cost estimates covered by such a test are shown for each facility (see Exhibit A).

4) The firm identified above owns or operates the following facilities for which financial assurance for closure, post closure, or corrective action, is not demonstrated either to TCEQ, a federal agency or a State through the financial test or any other financial assurance mechanisms specified in 30 TAC Chapter 37 or equivalent State mechanisms. The current cost estimates not covered by such financial assurance are shown for each facility: None.

5) This firm is the owner or operator or guarantor of the following facilities for which financial assurance is being demonstrated under other EPA regulations or state programs authorized by EPA through a financial test or guarantee. The following amounts have not been included in Paragraphs 1 through 4.

a) Municipal solid waste management facilities under 30 TAC Chapter 330, 40 CFR part 258 or equivalent		None
b) Underground injection control facilities under 30 TAC Chapter 331, 40 CFR part 144 or equivalent		see Exhibit A
c) Petroleum underground storage tank facilities under 30 TAC Chapter 334, 40 CFR part 280 or equivalent (See Attached Schedule B)	$	3,000,000
d) PCB storage facilities under 40 CFR part 761 or equivalent		None
e) Hazardous waste treatment, storage, and disposal facilities under 30 TAC Chapter 335, 40 CFR parts 264 and 265 or equivalent (see Exhibit A)	$	187,277,574
f) Additional environmental obligations not shown above, including PCI Nitrogen former AGRIFOS site (See attached Line 5(f) Breakdown Summary sheet)	$	569,385,282
Total (a through f):	$	813,762,856

This owner, operator and guarantor has not received an adverse opinion, a disclaimer of opinion, or a going concern qualification from an independent auditor on its financial statements for the latest completed fiscal year.

This firm is required to file a Form 10-K with the Securities and Exchange Commission (SEC) for the latest fiscal year. The fiscal year of this firm ends on December 31. The figures for the following items marked with an asterisk are derived from this firm's independently audited, year-end financial statements for the latest completed fiscal year, ended December 31, 2022.

Part B. Closure, Post-Closure, Corrective Action, and Liability Coverage
Alternative II

1.	Sum of current closure, post-closure, and corrective action cost estimates, including PCI Nitrogen former AGRIFOS site ($44,000,000 see Exhibit A) (total of all cost estimates listed above)	$	813,762,856
2.	Amount of annual aggregate liability coverage to be demonstrated	$	62,000,000
3.	Sum of lines 1 and 2	$	875,762,856
4.	Current bond rating of most recent issuance and name of rating service		Aa2 (Moody's)
5.	Date of issuance of bond	Latest issuance is:	June 26, 2020
6.	Date of maturity of bond	Latest maturity is:	October 12, 2054
*7.	Tangible net worth (if any portion of the current cost estimates is included in total liabilities you may add that portion to this line)	$	193,013,000,000
*8.	Total assets in the U.S. (required only if less than 90% of assets are located in the U.S.)	$	118,605,000,000

9.	Is line 7 at least $10 million?	Yes	X	No	
10.	Is line 7 at least 6 times line 3?	Yes	X	No	
*11.	Are at least 90% of assets located in the U.S.? If not, complete line 12.	Yes		No	X
12.	Is line 8 at least 6 times line 3?	Yes	X	No	

I hereby certify that the wording of this letter is identical to the wording specified in 30 TAC Section 37.651 as such regulations were constituted on the date shown immediately below.

Kathryn A. Mikells
Senior Vice President / Chief Financial Officer
Exxon Mobil Corporation
March 22, 2023

KO

Corporate Guarantee

March 22, 2023

Guarantee made this March 22, 2023, by Exxon Mobil Corporation, a business corporation organized under the laws of the State of New Jersey, herein referred to as guarantor. This guarantee is made to the Texas Commission on Environmental Quality (TCEQ) on behalf of ExxonMobil Oil Corporation of 5959 Las Colinas Boulevard, Irving, Texas 75039, which is our subsidiary.

Recitals

1) Guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors as specified in 30 Texas Administrative Code (TAC) Section 37.251 (relating to Financial Test) and Section 37.261 (relating to Corporate Guarantee).

2) ExxonMobil Oil Corporation owns or operates the following facility(ies) covered by this guarantee (see Exhibit A, Texas facilities are identified on page 5 of 8 as submitted with Chief Financial Officer letter dated March 22, 2023).

3) "Closure or post closure plans" as used below refer to the plans maintained as required for the closure or post closure of the facilities as identified above.

4) For value received from ExxonMobil Oil Corporation, for $1.00 and other good and valuable consideration, guarantor guarantees to TCEQ that in the event that ExxonMobil Oil Corporation fails to perform closure, post closure or corrective action of the above facility(ies) in accordance with the closure plans, post closure plans, or corrective action, permits, and other applicable requirements whenever required to do so, the guarantor shall do so or establish a trust fund as specified in 30 TAC Section 37.201 (relating to Trust Fund), in the name of ExxonMobil Oil Corporation in the amount of the current cost estimate.

5) Guarantor agrees that if, at the end of any fiscal year before termination of this guarantee, the guarantor fails to meet the financial test criteria, guarantor shall send within 90 days, by certified mail, notice to the TCEQ executive director and to ExxonMobil Oil Corporation that the guarantor intends to provide alternate financial assurance as specified in 30 TAC Chapter 37 (relating to Financial Assurance), as applicable, in the name of ExxonMobil Oil Corporation. Within 120 days after the end of such fiscal year, the guarantor shall establish such financial assurance unless ExxonMobil Oil Corporation has done so.

6) The guarantor agrees to notify the TCEQ executive director by certified mail, of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming guarantor as debtor, within 10 days after commencement of the proceeding.

7) Guarantor agrees that within 30 days after being notified by the TCEQ executive director of a determination that guarantor no longer meets the financial test criteria or is disallowed from continuing as a guarantor of closure, post closure, or corrective action, guarantor shall establish alternate financial assurance as specified in Subchapter C of 30 TAC Chapter 37 (relating to Financial Assurance Mechanisms for Closure, Post Closure, and Corrective Action), in the name of ExxonMobil Oil Corporation unless ExxonMobil Oil Corporation has done so.

8) Guarantor agrees to remain bound under this guarantee notwithstanding any or all of the following: amendment or modification of the closure or post closure plans, or corrective action requirements, amendment or modification of the permit, the extension or reduction of the time of performance, or any other modification or alteration of an obligation of the owner or operator.

9) Guarantor agrees to remain bound under this guarantee for so long as ExxonMobil Oil Corporation must comply with the applicable financial assurance requirements of 30 TAC Chapter 37 for the above-listed facilities, except as provided in paragraph 10 of this agreement.

10) Guarantor may terminate this guarantee by sending notice by certified mail to the TCEQ executive director and to ExxonMobil Oil Corporation, provided that this guarantee may not be terminated unless and until ExxonMobil Oil Corporation obtains, and the TCEQ executive director approves, alternate financial assurance.

11) Guarantor agrees that if ExxonMobil Oil Corporation fails to provide alternate financial assurance as specified in 30 TAC Chapter 37, as applicable, and obtain written approval of such assurance from the TCEQ executive director within 90 days after a notice of termination by the guarantor is received by the TCEQ executive director from guarantor, guarantor shall provide such alternate financial assurance in the name of ExxonMobil Oil Corporation.

12) Guarantor expressly waives notice of acceptance of this guarantee by the TCEQ or by ExxonMobil Oil Corporation. Guarantor also expressly waives notice of amendments or modifications of the closure plans, post closure plans, or corrective action requirements, and of amendments or modifications of the permit(s).

I hereby certify that the wording of this guarantee is identical to the wording specified in 30 Texas Administrative Code Section 37.361 as such regulations were constituted on the date first above written.

Effective Date: March 22, 2023

Exxon Mobil Corporation

Kathryn A. Mikells
Senior Vice President / Chief Financial Officer

Signature of Witness or
Notary (with Seal)

KIMBERLY M YOUNG
Notary ID #8820779
My Commission Expires
November 4, 2024

Corporate Guarantee

March 22, 2023

Guarantee made this March 22, 2023, by Exxon Mobil Corporation, a business corporation organized organized under the laws of the State of New Jersey, herein referred to as guarantor. This guarantee is made to the Texas Commission on Environmental Quality (TCEQ) on behalf of Neches River Treatment Corporation of P. O. Box 3311, Beaumont, Texas 77704, which is our subsidiary.

Recitals

1) Guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors as specified in 30 Texas Administrative Code (TAC) Section 37.251 (relating to Financial Test) and Section 37.261 (relating to Corporate Guarantee).

2) Neches River Treatment Corporation owns or operates the following facility(ies) covered by this guarantee (see Exhibit A, Texas facilities are identified on page 5 of 8 as submitted with Chief Financial Officer letter dated March 22, 2023).

3) "Closure or post closure plans" as used below refer to the plans maintained as required for the closure or post closure of the facilities as identified above.

4) For value received from Neches River Treatment Corporation, for $1.00 and other good and valuable consideration, guarantor guarantees to TCEQ that in the event that Neches River Treatment Corporation fails to perform closure, post closure, or corrective action of the above facility(ies) in accordance with the closure plans, post closure plans, or corrective action, permits, and other applicable requirements whenever required to do so, the guarantor shall do so or establish a trust fund as specified in 30 TAC Section 37.201 (relating to Trust Fund), in the name of Neches River Treatment Corporation in the amount of the current cost estimate.

5) Guarantor agrees that if, at the end of any fiscal year before termination of this guarantee, the guarantor fails to meet the financial test criteria, guarantor shall send within 90 days, by certified mail, notice to the TCEQ executive director and to Neches River Treatment Corporation that the guarantor intends to provide alternate financial assurance as specified in 30 TAC Chapter 37 (relating to Financial Assurance), as applicable, in the name of Neches River Treatment Corporation. Within 120 days after the end of such fiscal year, the guarantor shall establish such financial assurance unless Neches River Treatment Corporation has done so.

6) The guarantor agrees to notify the TCEQ executive director by certified mail, of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming guarantor as debtor, within 10 days after commencement of the proceeding.

7) Guarantor agrees that within 30 days after being notified by the TCEQ executive director of a determination that guarantor no longer meets the financial test criteria or is disallowed from continuing as a guarantor of closure, post closure, or corrective action, guarantor shall establish alternate financial assurance as specified in Subchapter C of 30 TAC Chapter 37 (relating to Financial Assurance Mechanisms for Closure, Post Closure, and Corrective Action), in the name of Neches River Treatment Corporation unless Neches River Treatment Corporation has done so.

8) Guarantor agrees to remain bound under this guarantee notwithstanding any or all of the following: amendment or modification of the closure or post closure plans, or corrective action requirements, amendment or modification of the permit, the extension or reduction of the time of performance, or any other modification or alteration of an obligation of the owner or operator.

9) Guarantor agrees to remain bound under this guarantee for so long as Neches River Treatment Corporation must comply with the applicable financial assurance requirements of 30 TAC Chapter 37 for the above-listed facilities, except as provided in paragraph 10 of this agreement.

10) Guarantor may terminate this guarantee by sending notice by certified mail to the TCEQ executive director and to Neches River Treatment Corporation, provided that this guarantee may not be terminated unless and until Neches River Treatment Corporation obtains, and the TCEQ executive director approves, alternate financial assurance.

11) Guarantor agrees that if Neches River Treatment Corporation fails to provide alternate financial assurance as specified in 30 TAC Chapter 37, as applicable, and obtain written approval of such assurance from the TCEQ executive director within 90 days after a notice of termination by the guarantor is received by the TCEQ executive director from guarantor, guarantor shall provide such alternate financial assurance in the name of Neches River Treatment Corporation.

12) Guarantor expressly waives notice of acceptance of this guarantee by the TCEQ or by Neches River Treatment Corporation. Guarantor also expressly waives notice of amendments or modifications of the closure plans, post closure plans, or corrective action requirements, and of amendments or modifications of the permit(s).

I hereby certify that the wording of this guarantee is identical to the wording specified in 30 Texas Administrative Code Section 37.361 as such regulations were constituted on the date first above written.

Effective Date: March 22, 2023

Exxon Mobil Corporation

Kathryn A. Mikells
Senior Vice President / Chief Financial Officer

Signature of Witness or
Notary (with Seal)

KIMBERLY M YOUNG
Notary ID #8820779
My Commission Expires
November 4, 2024

Corporate Guarantee for Liability

March 22, 2023

Guarantee made this March 22, 2023, by Exxon Mobil Corporation, a business corporation organized under the laws of the State of New Jersey, herein referred to as guarantor. This guarantee is made on behalf of ExxonMobil Oil Corporation of 5959 Las Colinas Boulevard, Irving, Texas 75039, which is our subsidiary, to any and all third parties who have sustained or may sustain bodily injury or property damage caused by sudden and/or nonsudden accidental occurrences arising from operation of the facility(ies) covered by this guarantee.

Recitals

1) Guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors as specified in 30 Texas Administrative Code (TAC) Section 37.541 (relating to Financial Test for Liability) and Section 37.551 (relating to Corporate Guarantee for Liability).

2) ExxonMobil Oil Corporation owns or operates the following facility(ies) covered by this guarantee (see Exhibit A, Texas facilities are identified on pages 5 and 6 of 8 as submitted with Chief Financial Officer letter dated March 22, 2023). This corporate guarantee satisfies third-party liability requirements for sudden and/or nonsudden accidental occurrences in above-named owner or operator facilities for coverage in the amount of $4,000,000 for each occurrence and $8,000,000 annual aggregate.

3) For value received from ExxonMobil Oil Corporation, guarantor guarantees to any and all third parties who have sustained or may sustain bodily injury or property damage caused by sudden and/or nonsudden accidental occurrences arising from operations of the facility(ies) covered by this guarantee that in the event that ExxonMobil Oil Corporation fails to satisfy a judgment or award based on a determination of liability for bodily injury or property damage to third parties caused by sudden and/or nonsudden accidental occurrences, arising from the operation of the above-named facilities, or fails to pay an amount agreed to in settlement of a claim arising from or alleged to arise from such injury or damage, the guarantor will satisfy such judgment(s), award(s) or settlement agreement(s) up to the limits of coverage identified above.

4) Such obligation does not apply to any of the following:

   a) Bodily injury or property damage for which ExxonMobil Oil Corporation is obligated to pay damages by reason of the assumption of liability in a contract or agreement. This exclusion does not apply to liability for damages that ExxonMobil Oil Corporation would be obligated to pay in the absence of the contract or agreement.

   b) Any obligation of ExxonMobil Oil Corporation under a workers' compensation, disability benefits, or unemployment compensation law or any similar law.

   c) Bodily injury to:

      (1) An employee of ExxonMobil Oil Corporation arising from, and in the course of, employment by ExxonMobil Oil Corporation, or

      (2) The spouse, child, parent, brother, or sister of that employee as a consequence of, or arising from, and in the course of employment by ExxonMobil Oil Corporation.

      This exclusion applies:

(A) Whether ExxonMobil Oil Corporation may be liable as an employer or in any other capacity; and

(B) To any obligation to share damages with or repay another person who must pay damages because of the injury to persons identified in paragraphs (1) and (2).

d) Bodily injury or property damage arising out of the ownership, maintenance, use, or entrustment to others of any aircraft, motor vehicle or watercraft.

e) Property damage to:

(1) Any property owned, rented, or occupied by ExxonMobil Oil Corporation;

(2) Premises that are sold, given away or abandoned by ExxonMobil Oil Corporation if the property damage arises out of any part of those premises;

(3) Property loaned to ExxonMobil Oil Corporation;

(4) Personal property in the care, custody or control of ExxonMobil Oil Corporation;

(5) That particular part of real property on which ExxonMobil Oil Corporation or any contractors or subcontractors working directly or indirectly on behalf of ExxonMobil Oil Corporation are performing operations, if the property damage arises out of these operations.

5) Guarantor agrees that if, at the end of any fiscal year before termination of this guarantee, the guarantor fails to meet the financial test criteria, guarantor shall send within 90 days, by certified mail, notice to the TCEQ executive director and to ExxonMobil Oil Corporation that guarantor intends to provide alternate liability coverage as specified in Subchapter F of 30 TAC Chapter 37 (relating to Financial Assurance Mechanisms for Liability), in the name of ExxonMobil Oil Corporation. Within 120 days after the end of such fiscal year, the guarantor shall establish such liability coverage unless ExxonMobil Oil Corporation has done so.

6) The guarantor agrees to notify the TCEQ executive director by certified mail of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming guarantor as debtor, within 10 days after commencement of the proceeding.

7) Guarantor agrees that within 30 days after being notified by the TCEQ executive director of a determination that guarantor no longer meets the financial test criteria or is disallowed from continuing as a guarantor, guarantor shall establish alternate liability coverage as specified in Subchapter F of 30 TAC Chapter 37 in the name of ExxonMobil Oil Corporation, unless ExxonMobil Oil Corporation has done so.

8) Guarantor reserves the right to modify this agreement to take into account amendment or modification of the liability requirements set by Subchapter E of 30 TAC Chapter 37 (relating to Financial Assurance Requirements for Liability Coverage), provided that such modification shall become effective only if the TCEQ executive director does not disapprove the modification within 30 days of receipt of notification of the modification.

9) Guarantor agrees to remain bound under this guarantee for so long as ExxonMobil Oil Corporation must comply with the applicable requirements of Subchapter E of 30 TAC Chapter 37 for the above-listed facility(ies), except as provided in Paragraph 10 of this agreement.

10) Guarantor may terminate this guarantee by sending notice by certified mail to the TCEQ executive director and to ExxonMobil Oil Corporation provided that this guarantee may not be terminated unless and until ExxonMobil Oil Corporation obtains, and the TCEQ executive director approves, alternate financial assurance for liability coverage complying with Subchapter F of 30 TAC Chapter 37.

11) Guarantor hereby expressly waives notice of acceptance of this guarantee by any party.

12) Guarantor agrees that this guarantee is in addition to and does not affect any other responsibility or liability of the guarantor with respect to the covered facilities.

13) The Guarantor shall satisfy a third-party liability claim only on receipt of one of the following documents:

a) Certification from the Principal and the third-party claimant(s) that the liability claim should be paid. The certification must be worded as follows, except that instructions in parentheses are to be replaced with the relevant information and the parentheses deleted:

Certification of Valid Claim

The undersigned, as parties the Principal (name of principal) and (name and address of third-party claimant(s)), hereby certify that the claim of bodily injury and/or property damage caused by a (sudden and/or nonsudden) accidental occurrence arising from operating (Principal's) facility should be paid in the amount of $(amount).

[Signatures]

Principal _____

[Notary] _____ [Date] _____

[Signatures]

Claimant(s) _____

[Notary] _____ [Date] _____

or b) A valid final court order establishing a judgment against the Principal for bodily injury or property damage caused by sudden and/or nonsudden accidental occurrences arising from the operation of the Principal's facility or group of facilities.

14) In the event of combination of this guarantee with another mechanism to meet liability requirements, this guarantee will be considered primary coverage.

I hereby certify that the wording of the guarantee is identical to the wording specified in 30 TAC Section 37.661 as such regulations were constituted on the date shown immediately below.

Effective Date: March 22, 2023

Exxon Mobil Corporation

Kathryn A. Mikells
Senior Vice President / Chief Financial Officer

Signature of Witness or
Notary (with Seal)

KIMBERLY M YOUNG
Notary ID #8820779
My Commission Expires
November 4, 2024

List of Current Obligations (line 5f Summary)

List of Environmental Obligations included on Line 5f of CFO RCRA Certification to TCEQ (Does not include RCRA or PCI Nitrogen (f/k/a Rentech and f/k/a Agrifos) CAFO Closure, Post-Closure, Corrective Action or Liability or Texas UST)

Current Cost Estimates appearing on this page equals: $ 569,385,282

1)	CERCLA and State Remediation Sites (See Exhibit 2)			$	52,348,005
2)	Louisiana Solid Waste Financial Assurance			$	15,813,754
3)	Offshore Facilities (Oil Pollution Act), includes companies (below):			$	300,000,000
	Exxon Mobil Corporation		$ 150,000,000		
	Mobil Oil Exploration & Producing Southeast Inc		$ 150,000,000		
4)	California Department of Fish and Wildlife (Office of Spill Prevention and Response)			$	100,000,000
5)	New Jersey (Self Guarantee Applications), includes ACO/ISRA (below):			$	97,223,524
	ACO Sites (includes sites below):		$ 50,267,000		
	Bayonne Terminal	$ 22,500,000			
	Bayway Refinery	$ 25,000,000			
	Lail Property	$ 267,000			
	Linden Technology Center	$ 2,500,000			
	ISRA Sites (includes sites below):		$ 46,956,524		
	Bayonne Terminal	$ 43,141,286			
	Flemington Terminal	$ 1,774,460			
	Paulsboro Terminal	$ 418,478			
	Seaboard Oil Terminal	$ 272,205			
	Trenton Terminal	$ 1,350,095			
6)	New Jersey Discharge Cleanup and Removal (DCR) - ($10M included in Line 3)			$	4,000,000

Schedule B - List of Current Cost Estimates

Current Cost Estimates appearing on this page equals: $ 813,662,856

(excludes Phosphogypsum Stack System Closure and Long Term Care Costs $ 54,100,000 and associated liability coverage ($ 8,000,000))

1)	CERCLA and State Remediation Sites (Exhibit 2)		$	52,348,005
2)	RCRA Closure, Post-Closure and Corrective Action Costs (See Exhibit A)		$	187,277,574
3)	RCRA Liability Coverage for RCRA sites included on Exhibit A		$	54,000,000
4)	Louisiana Solid Waste Financial Assurance		$	15,813,754
5)	Offshore Facilities (Oil Pollution Act), includes companies (below):		$	300,000,000
	Exxon Mobil Corporation	$ 150,000,000		
	Mobil Oil Exploration & Producing Southeast Inc	$ 150,000,000		
6)	California Department of Fish & Wildlife (Office of Spill Prevention and Response)		$	100,000,000
7)	New Jersey - ACO, includes sites (below):		$	50,267,000
	Bayonne Terminal	$ 22,500,000		
	Bayway Refinery	$ 25,000,000		
	Lail Property	$ 267,000		
	Linden Technology Center	$ 2,500,000		
8)	New Jersey - ISRA, includes sites (below):		$	46,956,524
	Bayonne Terminal	$ 43,141,286		
	Flemington Terminal	$ 1,774,460		
	Paulsboro Terminal	$ 418,478		
	Seaboard Oil Terminal	$ 272,205		
	Trenton Terminal	$ 1,350,095		
9)	New Jersey Discharge Cleanup and Removal (DCR)		$	4,000,000
10)	Texas UST Liability Coverage		$	3,000,000

Exhibit 2 [1]

CERCLA and State Remediation Sites
Financial Assurance in ACOs Referencing Use of Financial Test or Corporate Guarantee

Program	Site Name and Address	ACO FA Requirement/ Cost Estimate ($)[2]
CERCLA CD (Multiple Party)	Auburn Road Superfund Site Londonderry, New Hampshire	3,333,333
CERCLA CD (Multiple Party)	Beede Waste Oil Superfund Site Plaistow, New Hampshire	48,000,000 [3]
Illinois ASAOC	DePue, NJ Zinc Site Depot Street and Marquette Street DePue, Illinois	300,000
New Jersey DEP CD (Multiple Party)	Helen Kramer Landfill 102 Jessup Mill Road Mantua, New Jersey	619,703
New Jersey DEP ACO (Multiple Party)	High Point Landfill Broadway Boulevard Warren County, New Jersey	94,969
	Total	**$ 52,348,005**

[1] Included at the request of USEPA Region 6

[2] ExxonMobil provides financial responsibility at each of these sites through some form of financial test or corporate guarantee. These sites have multiple potentially responsible parties (PRPs), and ExxonMobil's financial responsibility filing in some cases is on behalf of itself and the other PRPs. Financial responsibility for these CERCLA/State sites may take any one of a number of forms. For example, certain ACOs require only that one of the PRPs submit an Annual Report to the Agency to confirm that one of the PRPs meets a certain minimum net worth threshold. In other cases, more detailed financial reporting is required by one of the PRPs to satisfy the terms of the ACO. Because the financial responsibility at some of these sites is based on total remediation costs, and not costs allocated to any individual PRP, the extent of ExxonMobil's reasonably anticipated financial responsibility/liability at some of these multiparty sites may be unknown or not reasonably calculable at this time. These figures shown above are derived either from: (1) the applicable Consent Order as the total amount of financial responsibility required to be demonstrated for the site (or the amount of corporate net worth required to be demonstrated), (2) an estimate of total remediation costs associated with the site based on most recent information and work plans, or (3) an estimate of ExxonMobil's remediation costs associated with the site, based on most recent information and work plans. These estimates are subject to review and modification at any time. As certain estimates cover total financial responsibility at sites for which there are multiple parties, the "estimate" is being used here solely for purposes of the financial responsibility demonstration, but does not necessarily reflect ExxonMobil's actual individual financial responsibility/liability at the site.

[3] The Consent Order (Paragraph 46) requires financial assurance for $48M.

Exxon Mobil Corporation - Intangible Assets Summary
(as Reported from the Most Recent 10-K for the Past Year-Ended December 31)

Description		Amount
Goodwill (CF 100/LN 71)	$	60,000,000
Allowances (CF 100/LN 72)	$	-
Other Intangibles (CF 100/LN 73)	$	5,252,000,000
Allowance (CF 100/LN 74)	$	(3,276,000,000)
Net Intangible Assets	$	2,036,000,000

Exhibit A

RCRA Facilities Financial Requirements for Closure/Post-Closure Care and Liability Requirements for Sudden and Non-Sudden Accidental Occurrences

Louisiana - Owned/Operated Facility(s)

EPA ID#: LAD062662887

Exxon Mobil Corporation

Baton Rouge Refinery

P.O. Box 551

Baton Rouge, LA 70821

Liability Coverage	
Sudden	Non-Sudden
Yes	Yes

Costs			
Closure ($)	Post-Closure ($)	Corrective Action ($)*	Other ($)**
-	1,166,427	1,194,838	

Louisiana - Guaranteed Facility(s)

EPA ID#: None

Louisiana (Total)	-	1,166,427	1,194,838	-
All States (Total)	69,911,585	31,152,692	86,213,297	54,100,000

Sum of current closure & post-closure cost estimates	$ 101,064,277
Sum of closure, post-closure & corrective action cost estimates	$ 187,277,574
Total closure, post-closure, corrective action & other cost estimates	$ 241,377,574

* This column for "corrective action" is included in this Exhibit at the request of several States. The column includes costs associated with RCRA (or analogous State) corrective action requirements in States where ExxonMobil is providing financial responsibility for such corrective action using a financial test or corporate guarantee. At the request of those agencies, the RCRA corrective action cost commitment is added to the costs for closure and post-closure in performing the financial test calculation.

** This column is included at the request of EPA Region 6 for the work being performed pursuant to a CAFO, Docket No. RCRA 06-2010-1101 (Phosphogypsum Stack System Closure and Long Term Care). (See Page 6 of 8)

Exhibit A

RCRA Facilities Financial Requirements for Closure/Post-Closure Care and Liability Requirements for Sudden and Non-Sudden Accidental Occurrences

Mississippi - Owned/Operated Facility(s)

EPA ID#: MSD083543009

ExxonMobil Fuels & Lubricants Company
(a Division of Exxon Mobil Corporation)
Centreville Landfarm
11152 Highway 24 East
Centreville, MS 39631

Liability Coverage	
Sudden	Non-Sudden
N/A	N/A

Costs			
Closure ($)	Post-Closure ($)	Corrective Action ($)*	Other ($)**
-	6,106,516	-	

Mississippi - Guaranteed Facility(s)

EPA ID#: None

Mississippi (Total)	-	6,106,516	-	-
All States (Total)	69,911,585	31,152,692	86,213,297	54,100,000

Sum of current closure & post-closure cost estimates	$	101,064,277
Sum of closure, post-closure & corrective action cost estimates	$	187,277,574
Total closure, post-closure, corrective action & other cost estimates	$	241,377,574

* This column for "corrective action" is included in this Exhibit at the request of several States. The column includes costs associated with RCRA (or analogous State) corrective action requirements in States where ExxonMobil is providing financial responsibility for such corrective action using a financial test or corporate guarantee. At the request of those agencies, the RCRA corrective action cost commitment is added to the costs for closure and post-closure in performing the financial test calculation.

** This column is included at the request of EPA Region 6 for the work being performed pursuant to a CAFO, Docket No. RCRA 06-2010-1101 (Phosphogypsum Stack System Closure and Long Term Care). (See Page 6 of 8)

Exhibit A

RCRA Facilities Financial Requirements for Closure/Post-Closure Care and Liability Requirements for Sudden and Non-Sudden Accidental Occurrences

Montana - Owned/Operated Facility(s)

EPA ID#: MTDO10380574

ExxonMobil Fuels & Lubricants Company

(a Division of Exxon Mobil Corporation)

Billings Refinery

P.O. Box 1163

Billings, MT 59103-1163

Liability Coverage	
Sudden	Non-Sudden
Yes	Yes

Costs			
Closure ($)	Post-Closure ($)	Corrective Action ($)*	Other ($)**
1,645,344	3,393,646	17,314,791	

Montana - Guaranteed Facility(s)

EPA ID#: None

Montana (Total)	1,645,344	3,393,646	17,314,791	-
All States (Total)	69,911,585	31,152,692	86,213,297	54,100,000

Sum of current closure & post-closure cost estimates	$	101,064,277
Sum of closure, post-closure & corrective action cost estimates	$	187,277,574
Total closure, post-closure, corrective action & other cost estimates	$	241,377,574

* This column for "corrective action" is included in this Exhibit at the request of several States. The column includes costs associated with RCRA (or analogous State) corrective action requirements in States where ExxonMobil is providing financial responsibility for such corrective action using a financial test or corporate guarantee. At the request of those agencies, the RCRA corrective action cost commitment is added to the costs for closure and post-closure in performing the financial test calculation.

** This column is included at the request of EPA Region 6 for the work being performed pursuant to a CAFO, Docket No. RCRA 06-2010-1101 (Phosphogypsum Stack System Closure and Long Term Care). (See Page 6 of 8)

Exhibit A

RCRA Facilities Financial Requirements for Closure/Post-Closure Care and Liability Requirements for Sudden and Non-Sudden Accidental Occurrences

New Jersey - Owned/Operated Facility(s)

EPA ID#: NJD062037031
ExxonMobil Fuels & Lubricants Company
(a Division of Exxon Mobil Corporation)
Site Remediation@ Linden Refinery (now owned by Phillips)
P.O. Box 728
Linden, NJ 07036

Liability Coverage	
Sudden	Non-Sudden
Yes	Yes

Costs			
Closure ($)	Post-Closure ($)	Corrective Action ($)*	Other ($)**
3,533,989	2,805,649	-	

New Jersey - Guaranteed Facility(s)

EPA ID#: NJD000692111
ExxonMobil Technology and Engineering Company
1545 Route 22 East
Linden, NJ 07036
Clinton Township
Annandale, NJ 08801-3059

Liability Coverage	
Sudden	Non-Sudden
Yes	N/A

Costs			
Closure ($)	Post-Closure ($)	Corrective Action ($)*	Other ($)**
465,874	-	-	

New Jersey (Total)	3,999,862	2,805,649	-	-
All States (Total)	69,911,585	31,152,692	86,213,297	54,100,000

Sum of current closure & post-closure cost estimates	$	101,064,277
Sum of closure, post-closure & corrective action cost estimates	$	187,277,574
Total closure, post-closure, corrective action & other cost estimates	$	241,377,574

* This column for "corrective action" is included in this Exhibit at the request of several States. The column includes costs associated with RCRA (or analogous State) corrective action requirements in States where ExxonMobil is providing financial responsibility for such corrective action using a financial test or corporate guarantee. At the request of those agencies, the RCRA corrective action cost commitment is added to the costs for closure and post-closure in performing the financial test calculation.

** This column is included at the request of EPA Region 6 for the work being performed pursuant to a CAFO, Docket No. RCRA 06-2010-1101 (Phosphogypsum Stack System Closure and Long Term Care). (See Page 6 of 8)

Exhibit A

RCRA Facilities Financial Requirements for Closure/Post-Closure Care and Liability Requirements for Sudden and Non-Sudden Accidental Occurrences

Texas - Owned/Operated Facility(s)

EPA ID#: TXD00782698 (30040[1])

Exxon Mobil Corporation
Baytown Refinery
P.O. Box 4004
Baytown, TX 77522-4004

Liability Coverage	
Sudden	Non-Sudden
Yes	Yes

Costs			
Closure ($)	Post-Closure ($)	Corrective Action ($)*	Other ($)**
51,108,828	9,969,637	28,868,978	

EPA ID#: TXR000076828

Exxon Mobil Corporation
Pasadena Injection Wells
1933 Jackson Road
Pasadena , TX 77501

Liability Coverage	
Sudden	Non-Sudden
Yes	Yes

	Costs			
	Closure ($)	Post-Closure ($)	Corrective Action ($)*	Other ($)**
WDW-397 (UIC)	495,617	-	-	
WDW-398 (UIC)	418,477	-	-	

Texas - Guaranteed Facility(s)

EPA ID#: TXD990797714 (30587[1])

ExxonMobil Oil Corporation
Beaumont Refinery
P.O. Box 3311
Beaumont , TX 77704

Liability Coverage	
Sudden	Non-Sudden
Yes	Yes

Costs			
Closure ($)	Post-Closure ($)	Corrective Action ($)*	Other ($)**
12,243,457	7,250,839	38,681,795	

1 TCEQ Solid Waste Registration (SWR) Number

* This column for "corrective action" is included in this Exhibit at the request of several States. The column includes costs associated with RCRA (or analogous State) corrective action requirements in States where ExxonMobil is providing financial responsibility for such corrective action using a financial test or corporate guarantee. At the request of those agencies, the RCRA corrective action cost commitment is added to the costs for closure and post-closure in performing the financial test calculation.

** This column is included at the request of EPA Region 6 for the work being performed pursuant to a CAFO, Docket No. RCRA 06-2010-1101 (Phosphogypsum Stack System Closure and Long Term Care). (See Page 6 of 8)

Exhibit A

RCRA Facilities Financial Requirements for Closure/Post-Closure Care and Liability Requirements for Sudden and Non-Sudden Accidental Occurrences

Texas - Guaranteed Facility(s) - Continued

EPA ID#: TXD074204991 (35045[1])

Neches River Treatment Corporation
P.O. Box 3311
Beaumont , TX 77704

Liability Coverage	
Sudden	Non-Sudden
N/A	N/A

Costs			
Closure ($)	Post-Closure ($)	Corrective Action ($)*	Other ($)**
-	459,977	-	

CAFO Docket # RCRA-06-2010-1101

ExxonMobil Oil Corporation
PCI Nitrogen (f/k/a Rentech and f/k/a Agrifos) Site
2001 Jackson Road
Pasadena, TX 77501

Liability Coverage	
Sudden	Non-Sudden
Yes	Yes

Costs			
Closure ($)	Post-Closure ($)	Corrective Action ($)*	Other ($)**
			54,100,000

Texas (Total)	64,266,379	17,680,453	67,550,772	54,100,000
All States (Total)	69,911,585	31,152,692	86,213,297	54,100,000

Sum of current closure & post-closure cost estimates	$	101,064,277
Sum of closure, post-closure & corrective action cost estimates	$	187,277,574
Total closure, post-closure, corrective action & other cost estimates	$	241,377,574

1 TCEQ Solid Waste Registration (SWR) Number

* This column for "corrective action" is included in this Exhibit at the request of several States. The column includes costs associated with RCRA (or analogous State) corrective action requirements in States where ExxonMobil is providing financial responsibility for such corrective action using a financial test or corporate guarantee. At the request of those agencies, the RCRA corrective action cost commitment is added to the costs for closure and post-closure in performing the financial test calculation.

** This column is included at the request of EPA Region 6 for the work being performed pursuant to a CAFO, Docket No. RCRA 06-2010-1101 (Phosphogypsum Stack System Closure and Long Term Care).

Exhibit A

RCRA Facilities Financial Requirements for Closure/Post-Closure Care and Liability Requirements for Sudden and Non-Sudden Accidental Occurrences

Virginia - Owned/Operated Facility(s)

EPA ID#: None

Virginia - Guaranteed Facility(s)

EPA ID#: VAD048565279
ExxonMobil Oil Corporation[1]
Manassas Terminal
10315 Balls Ford Road
Manassas, VA 22110

Liability Coverage	
Sudden	Non-Sudden
N/A	N/A

	Costs			
	Closure ($)	Post-Closure ($)	Corrective Action ($)*	Other ($)**
	-	0	152,896	
Virginia (Total)	-	0	152,896	-
All States (Total)	69,911,585	31,152,692	86,213,297	54,100,000

Sum of current closure & post-closure cost estimates	$ 101,064,277
Sum of closure, post-closure & corrective action cost estimates	$ 187,277,574
Total closure, post-closure, corrective action & other cost estimates	$ 241,377,574

1 The Manassas Terminal is currently owned by Sunoco Logistics Partners, L.P. ExxonMobil Oil Corporation is responsible at this time for corrective action at the facility located on the property.

* This column for "corrective action" is included in this Exhibit at the request of several States. The column includes costs associated with RCRA (or analogous State) corrective action requirements in States where ExxonMobil is providing financial responsibility for such corrective action using a financial test or corporate guarantee. At the request of those agencies, the RCRA corrective action cost commitment is added to the costs for closure and post-closure in performing the financial test calculation.

** This column is included at the request of EPA Region 6 for the work being performed pursuant to a CAFO, Docket No. RCRA 06-2010-1101 (Phosphogypsum Stack System Closure and Long Term Care). (See Page 6 of 8)

Explanation of Line 2 Liability Coverage - $ 62,000,000
"Amount of annual aggregate liability coverage to be demonstrated"
For Facilities Listed in Exhibit A

Exxon Mobil Corporation ("EMC") uses the Financial Test for its facilities and uses a Corporate Guarantee (for its wholly-owned subsidiaries ExxonMobil Oil Corporation ("EMOC") and ExxonMobil Technology and Engineering Company ("EMTEC")) to satisfy RCRA and certain other third-party liability requirements for both sudden and non-sudden accidental occurrences, as applicable, in annual aggregate amounts as follows:

1. Exxon Mobil Corporation (EMC) - $ 44,000,000

Louisiana: [1]	$	10,000,000
Montana:	$	18,000,000
New Jersey:	$	8,000,000
Texas: [2]	$	8,000,000

[1] In Louisiana, an owner or operator combining coverage for both sudden and nonsudden accidental occurrences for surface impoundments must demonstrate liability coverage of $10M (LAC 33.V.3715.B), as opposed to $8M as required under federal rules.

[2] A separate liability number is provided in Texas for EMC and EMOC facilities. The reason is that ExxonMobil counts the liability figures for the facilities owned or operated by EMC in a State (i.e. Baytown Refinery and Pasadena Injection Well) separate from those owned or operated by EMOC (i.e. Beaumont Refinery), its wholly-owned subsidiary.

2. ExxonMobil Oil Corporation (EMOC) - $ 16,000,000

Texas:	$	8,000,000	
Texas:	$	8,000,000	third-party liability requirements for PCI Nitrogen (f/k/a Rentech f/k/a Agrifos) Site CAFO

3. ExxonMobil Technology and Engineering Company (EMTEC) facility - [3] $ 2,000,000

[3] This site maintains a RCRA container storage area in New Jersey and carries liability coverage for sudden accidental occurrences in the amount of at least $1M per occurrence with an annual aggregate of at least $2M. (40 CFR 265.147(a))

Exxon Mobil Corporation
5959 Las Colinas Boulevard
Irving, Texas 75039-2298

Kathryn A Mikells
Senior Vice President / Chief Financial Officer

ExxonMobil

March 22, 2023

Earthea Nance, PhD, PE
U.S. Environmental Protection Agency, Region 6
1201 Elm Street, Suite 500 (Mail Code: ORA)
Dallas, Texas 75270-210

Dear Madam/Sir:

I am the Chief Financial Officer ("CFO") of Exxon Mobil Corporation, 5959 Las Colinas Boulevard, Irving, Texas 75039 (hereinafter, "the firm"). This letter is in support of this firm's use of the corporate financial test to demonstrate Financial Assurance for costs associated with Phosphogypsum Stack System Closure and/or Long Term Care and/or liability coverage to compensate third-parties for bodily injury or property damage that might result from sudden accidental or non-sudden accidental occurrences associated with the Phosphogypsum Stack System Closure or Long Term Care.

1) This firm is the Respondent in an action brought by the United States Environmental Protection Agency relating to the PCI Nitrogen (formerly Agrifos) Site, for which Financial Assurance for Phosphogypsum Stack System Closure and/or Long Term Care is demonstrated through the corporate financial test specified in Section III of Appendix 2 of the Consent Agreement and Final Order ("CAFO"), In the Matter of ExxonMobil Oil Corporation, Docket No. RCRA 06-2010-1101. The current Phosphogypsum Stack System Closure and/or Long Term Care Cost Estimates covered by the corporate financial test are provided for the facility in Schedule A, attached to this letter. **(See response for paragraph #2 (below))**.

2) This firm guarantees, through the guarantee specified in Section III of Appendix 2 of the Consent Agreement and Final Order ("CAFO"), In the Matter of ExxonMobil Oil Corporation, Docket No. RCRA 06-2010-1101, the Phosphogypsum Stack System Closure and/or Long Term Care at the facility, listed below, on behalf of Respondent, which is the guaranteed party. The current Cost Estimates for the Phosphogypsum Stack System Closure and/or Long Term Care so guaranteed are provided for the facility listed below in Schedule A, attached to this letter.

$ 54,100,000

3) The firm identified above is: The direct or higher-tier parent corporation of the Respondent.

4) The firm, Respondent or guarantor, is using a corporate financial test to secure the obligations of the facilities listed in Schedule B for which financial assurance is required under programs that EPA directly operates and obligations where EPA has delegated authority to the State or approved a State's program. These obligations include, but are not limited to: third-party liability coverage for sudden and non-sudden accidental occurrences, closure, post-closure and corrective action cost estimates for hazardous waste treatment, storage and disposal facilities under 40 C.F.R. §§ 264.101, 264.142, 264.144, 264.147, 265.142, 265.144 and 265.147; cost estimates for municipal solid waste management facilities under 40 C.F.R. §§ 258.71, 258.72 and 258.73; current plugging and abandonment cost estimates for underground injection control facilities under 40 C.F.R. § 144.62; cost estimates for underground storage tanks under 40 C.F.R. § 280.93; cost estimates for facilities handling polychlorinated biphenyls under 40 C.F.R. § 761.65; any financial assurance required under, or as part of an action under, the Comprehensive Environmental Response, Compensation, and Liability Act; and any other environmental obligation assured through a financial test, excluding those costs represented in paragraphs 1 and 2 listed above. The cost estimates by obligation are provided for each facility in Schedule B, attached to this letter.

A) The firm represents the total of all such environmental obligations in current dollars for the listed facilities in Schedule B of **$ 813,662,856** , as of December 31, 2022

5) Are there guarantees disclosed in accordance with ASC 460 for which the firm is liable, but which are not explicitly accounted for on the balance sheet of the firm's latest completed independently audited financial statements? **(Yes).**

A) The firm has identified the following contingent liabilities, primarily relating to guarantees for notes, loans and performance under contracts, as of the firm's latest completed fiscal year ended December 31, 2022 : **$ 7,460,000,000**

6) Are there asset retirement obligations, under ASC 410, which are not explicitly accounted for on the balance sheet of the firm's latest completed independently audited financial statements? **(No).**

A) The firm disclosed the following information with respect to its asset retirement obligations as of the firm's latest completed fiscal year ended: December 31, 2022

7) Are there significant estimates and material concentrations known to management that are required to be disclosed in accordance with ASC 275, related to the firm's world-wide environmental obligations? **(No).**

A) The firm discloses the following significant estimates and material concentrations, as of the firm's latest completed fiscal year ended December 31, 2022 : **N/A**

8) Does the company provide post-retirement benefits other than pensions? **(Yes).**

A) Has the company explicitly accounted for its accrued pension and post-retirement benefits on the balance sheet of the firm's latest completed independently audited financial statements? **(Yes).**

B) If not, the firm discloses the following estimate, as of the firm's latest completed fiscal year ended December 31, 2022 : **N/A**

9) Does the firm file a Form 10-K with the Securities and Exchange Commission ("SEC") for the latest fiscal year? **(Yes).**

10) Does the firm comply with Sarbanes-Oxley Section 404? **(Yes).**

A) Did the firm's independent auditors' report on of the firm's internal controls identify any material weaknesses? **(No).** The independent auditor's report is included in the independently audited financial statements on Page No. **79**

11) The fiscal year of the firm ends on December 31.

A) The firm's financial statements are independently audited by an independent certified public accountant? **(Yes).**

B) Is the firm relying on audited consolidated financial statements? **(Yes).** The list of companies which are covered by the audited consolidated financial statements is included in Exhibit 2 of the independently audited financial statement.

C) The firm has received a qualified or adverse accountant's opinion for the latest completed fiscal year ended December 31, 2022 : **(No).**

12) The firm represents that the figures marked with an asterisk below are:

A) Exactly as represented in the firm's independently audited, year-end financial statements (as attached). **(Yes).**

B) In accordance with U.S. Generally Accepted Accounting Principles (GAAP). **(Yes).**

C) As of the latest completed fiscal year ended December 31, 2022 : **(Yes).**

13) The firm represents that as of the latest completed fiscal year-end December 31, 2022 , the Assets located in the United States in the amount of **$ 118,605,000,000** is at least 90% of the firm's total assets. **(No).**

14) The firm represents that no more than sixty percent (60%) of the firm's tangible assets are in the form of one or more note receivables from one or more Related Parties. **(Yes).**

15) This firm is the Respondent in an action brought by the United States Environmental Protection Agency relating to the PCI Nitrogen (formerly Agrifos) Site, for which liability coverage for both sudden and non-sudden accidental occurrences in connection with Phosphogypsum Stack System Closure and/or Long Term Care is being demonstrated through the corporate financial test specified in Section IV of Appendix 2 of the CAFO.
(See response for paragraph #16 (below)).

16) This firm guarantees, through the guarantee specified in Section IV of Appendix 2 of the CAFO, liability coverage for both sudden and nonsudden accidental occurrences in connection with Phosphogypsum Stack System Closure and/or Long Term Care at the PCI Nitrogen (formerly Agrifos) Site.

(Liability coverage of: **$ 8,000,000** annual aggregate. See Schedule A.)

Alternative II

1.	Sum of current Cost Estimates (total of all cost estimates shown in paragraphs 1 or 2, 4, and 15 or 16 above)	$	875,762,856
2.	The firm represents: A Long-Term Corporate Family Rating with Moody's Investor Services of: Aa2 (Moody's) as of June 26, 2020 (See Moody's Investor Service attachment)		
*3.	Total Liabilities	$	166,594,000,000
*4.	Total Assets	$	369,067,000,000
5.	Net Worth [line 4 minus line 3]	$	202,473,000,000
*6.	Intangible Assets	$	2,036,000,000
7.	Tangible Net Worth [line 5 minus line 6]	$	200,437,000,000
*8.	Total tangible assets in U.S. (required only if less than 90% of firm's tangible assets are located in the U.S.)	$	116,569,000,000

9.	Is line 7 at least $10 million?	Yes	X	No	
10.	Is line 7 at least 6 times line 1?	Yes	X	No	
11.	Are at least 90% of firm's tangible assets located in the U.S.? If not, complete line 12.	Yes		No	X
12.	Is line 8 at least 6 times line 1?	Yes	X	No	

([1]) EPA agreed in the CAFO that for purposes of Respondent furnishing financial assurance pursuant to Alternative I or Alternative II, EPA will accept in Respondent's financial assurance submissions, in lieu of a response and figure for Total Tangible Assets in the U.S., a response and figure representing "Total U.S. assets - Total World-Wide Intangible Assets," which Respondent indicates is derivable from audited financials. Respondent shall designate that change in a footnote in its CFO Letter submission, if applicable.

I hereby certify in my capacity as the Chief Financial Officer of the firm, based on my knowledge after reasonable due diligence, that the information included in this letter, including all attachments and exhibits, is true and accurate. I further certify in my capacity as the Chief Financial Officer of the firm, that the language of this letter is identical to the wording specified in Appendix 2, Attachment A-1, of the Consent Agreement and Final Order, In the Matter of ExxonMobil Oil Corporation, Docket No. RCRA 06-2010-1101.

Attached is a special report of procedures and findings from the firm's independent certified public accountant resulting from an agreed-upon procedures performed in accordance with the AICPA Statement on Standards for Attestation Engagements and Related Attestation Interpretations, AT Section 201 – Agreed Upon Procedures Engagements, that describes the procedures performed and related findings. The CPA's report discloses whether or not differences and/or discrepancies were found in the comparison of financial information disclosed in this letter (including all attachments and exhibits) with the independently audited financial statements (including attachments), as of the firm's latest completed fiscal year end December 31, 2021. Where differences or discrepancies exist between the financial information disclosed in this letter (including all attachments and exhibits) with the firm's independently audited financial statements (including attachments), the CPA's report of procedures and findings identifies and reconciles any difference or discrepancy between the values or information represented in this letter and the firm's independently audited year-end financial statements.

Kathryn A. Mikells

Senior Vice President / Chief Financial Officer

Exxon Mobil Corporation

March 22, 2023

Corporate Guarantee

Corporate Guarantee for Phosphogypsum Stack System Closure and Long Term Care and/or Corrective Action

Guarantee made this March 22, 2023, by Exxon Mobil Corporation, a business corporation organized under the laws of the State of New Jersey, herein referred to as guarantor. This guarantee is made on behalf of ExxonMobil Oil Corporation of 5959 Las Colinas Boulevard, Irving, Texas 75039, which is our subsidiary to the United States Environmental Protection Agency ("EPA").

Recitals

1) Guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors as specified in Appendix 2 of the Consent Agreement and Final Order, Docket No. RCRA 06-2010-1101 ("CAFO" or "Order"), as applicable.

2) ExxonMobil Oil Corporation is the Respondent in the CAFO that includes a requirement for financial responsibility that is covered by this guarantee: (See Schedule A)

3) "Stack Closure Plan" and "Permanent Stack Closure Plan", as applicable, as used below refer to the plans maintained as required by the CAFO for the Phosphogypsum Stack System Closure and Long Term Care of the facility identified above.

4) For value received from ExxonMobil Oil Corporation, guarantor guarantees to EPA that in the event that ExxonMobil Oil Corporation fails to perform both "Phosphogypsum Stack System Closure and Long Term Care" in accordance with the Stack Closure Plan or Permanent Stack Closure Plan, as applicable, the guarantor shall do so or establish a trust fund as specified in Appendix 2 of the Consent Agreement and Final Order, as applicable, in the name of ExxonMobil Oil Corporation in the amount of the current Phosphogypsum Stack System Closure and Long Term Care Cost Estimates as specified in the Consent Agreement and Final Order, Appendix 2.

5) Guarantor agrees that if, at the end of any fiscal year before termination of this guarantee, the guarantor fails to meet the financial test criteria, guarantor shall send within 90 days, by certified mail, notice to the EPA Regional Administrator, and to ExxonMobil Oil Corporation, that the guarantor intends to provide alternate Financial Assurance as specified in Appendix 2 of the Consent Agreement and Final Order, as applicable, in the name of ExxonMobil Oil Corporation. Within 120 days after the end of such fiscal year, the guarantor shall establish such Financial Assurance unless ExxonMobil Oil Corporation has done so. Guarantor also agrees that if it determines that it no longer meets the financial test criteria, it shall notify the EPA Regional Administrator, and ExxonMobil Oil Corporation, that it intends to provide alternate Financial Assurance as specified in Appendix 2 of the CAFO, as applicable, in the name of ExxonMobil Oil Corporation. Within 30 days after the guarantor provides notice, the guarantor shall establish such Financial Assurance unless ExxonMobil Oil Corporation has done so.

6) The guarantor agrees to notify the EPA Regional Administrator by certified mail, of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming guarantor as debtor, within 10 days after commencement of the proceeding.

7) Guarantor agrees that within 30 days after being notified by the EPA Regional Administrator of a determination that guarantor no longer meets the financial test criteria or that it is disallowed from continuing as a guarantor of Phosphogypsum Stack System Closure and/or Long Term Care, it shall establish alternate Financial Assurance as specified in Appendix 2 of the Consent Agreement and Final Order, as applicable, in the name of ExxonMobil Oil Corporation unless ExxonMobil Oil Corporation has done so.

8) Guarantor agrees to remain bound under this guarantee notwithstanding any or all of the following: amendment or modification of the Stack Closure Plan or Permanent Stack Closure Plan, as applicable, amendment or modification of the CAFO, the extension or reduction of the time of performance of Phosphogypsum Stack System Closure or Long Term Care, or any other modification or alteration of an obligation of the owner or operator pursuant to the CAFO.

9) Guarantor agrees to remain bound under this guarantee for as long as ExxonMobil Oil Corporation must comply with the applicable Financial Assurance requirements of the CAFO, including Appendix 2 of the CAFO, for the above-listed facility, except as provided in paragraph 10 of this agreement.

10) Guarantor may terminate this guarantee by sending notice to EPA Regional Administrator, and to ExxonMobil Oil Corporation, by certified mail, provided that this guarantee may not be terminated unless and until ExxonMobil Oil Corporation obtains, and the EPA approves, alternate Financial Assurance for Phosphogypsum Stack System Closure and/or Long Term Care in compliance with the CAFO, including Appendix 2.

11) Guarantor agrees that if ExxonMobil Oil Corporation fails to provide alternate Financial Assurance as specified in the CAFO, Appendix 2, as applicable, and obtain written approval of such Financial Assurance from the EPA within 90 days after a notice of cancellation by the guarantor is received by the notificants in paragraph 10, above, from guarantor, guarantor shall provide such alternate Financial Assurance in the name of ExxonMobil Oil Corporation.

12) Guarantor expressly waives notice of acceptance of this guarantee by the EPA or by ExxonMobil Oil Corporation. Guarantor also expressly waives notice of amendments or modifications of the Stack Closure Plan or Permanent Stack Closure Plan, as applicable and of amendments or modifications of the CAFO.

I hereby certify that the wording of this guarantee is identical to the wording required under the CAFO.

Effective Date: March 22, 2023

Exxon Mobil Corporation

Kathryn A. Mikells

Senior Vice President / Chief Financial Officer

Signature of Witness or Notary (with Seal)

KIMBERLY M YOUNG
Notary ID #8820779
My Commission Expires
November 4, 2024

Guarantee for Liability Coverage

March 22, 2023

Guarantee made this March 22, 2023, by Exxon Mobil Corporation, a business corporation organized under the laws of the State of New Jersey, herein referred to as guarantor. This guarantee is made on behalf of ExxonMobil Oil Corporation of 5959 Las Colinas Boulevard, Irving, Texas 75039, which is our subsidiary to the United States Environmental Protection Agency ("EPA").

Recitals

1) Guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors as specified in Appendix 2 of the Consent Agreement and Final Order, Docket No. RCRA 06-2010-1101 ("CAFO" or "Order"), as applicable.

2) ExxonMobil Oil Corporation is the Respondent in the CAFO that includes a requirement for financial responsibility covered by this guarantee: (See Schedule A). This corporate guarantee satisfies the CAFO's third-party liability requirements for both sudden and nonsudden accidental occurrences arising from Phosphogypsum Stack Closure System and/or Long Term Care for coverage in the amount of $4 million for each occurrence and $8 million annual aggregate.

3) For value received from ExxonMobil Oil Corporation, guarantor guarantees to any and all third parties who have sustained or may sustain bodily injury or property damage caused by sudden and/or nonsudden accidental occurrences arising from Phosphogypsum Stack Closure System and/or Long Term Care covered by this guarantee that in the event that ExxonMobil Oil Corporation fails to satisfy a judgment or award based on a determination of liability for bodily injury or property damage to third parties caused by sudden and/or nonsudden accidental occurrences, arising from the above-named facility(ies), or fails to pay an amount agreed to in settlement of a claim arising from or alleged to arise from such injury or damage, the guarantor will satisfy such judgment(s), award(s) or settlement agreement(s) up to the limits of coverage identified above.

4) Such obligation does not apply to any of the following:

   a) Bodily injury or property damage for which ExxonMobil Oil Corporation is obligated to pay damages by reason of the assumption of liability in a contract or agreement. This exclusion does not apply to liability for damages that ExxonMobil Oil Corporation would be obligated to pay in the absence of the contract or agreement.

   b) Any obligation of ExxonMobil Oil Corporation under a workers' compensation, disability benefits, or unemployment compensation law or any similar law.

   c) Bodily injury to:

      (1) An employee of ExxonMobil Oil Corporation arising from, and in the course of, employment by ExxonMobil Oil Corporation, or

      (2) The spouse, child, parent, brother, or sister of that employee as a consequence of, or arising from, and in the course of employment by ExxonMobil Oil Corporation.

This exclusion applies:

(A) Whether ExxonMobil Oil Corporation may be liable as an employer or in any other capacity; and

(B) To any obligation to share damages with or repay another person who must pay damages because of the injury to persons identified in paragraphs (1) and (2).

d) Bodily injury or property damage arising out of the ownership, maintenance, use, or entrustment to others of any aircraft, motor vehicle or watercraft.

e) Property damage to:

(1) Any property owned, rented, or occupied by ExxonMobil Oil Corporation;

(2) Premises that are sold, given away or abandoned by ExxonMobil Oil Corporation if the property damage arises out of any part of those premises;

(3) Property loaned to ExxonMobil Oil Corporation;

(4) Personal property in the care, custody or control of ExxonMobil Oil Corporation;

(5) That particular part of real property on which ExxonMobil Oil Corporation or any contractors or subcontractors working directly or indirectly on behalf of ExxonMobil Oil Corporation are performing operations, if the property damage arises out of these operations.

5) Guarantor agrees that if, at the end of any fiscal year before termination of this guarantee, the guarantor fails to meet the financial test criteria, guarantor shall send within 90 days, by certified mail, notice to the EPA and to ExxonMobil Oil Corporation that he intends to provide alternate liability coverage as specified in the CAFO, as applicable, in the name of ExxonMobil Oil Corporation. Within 120 days after the end of such fiscal year, the guarantor shall establish such liability coverage unless ExxonMobil Oil Corporation has done so.

6) The guarantor agrees to notify the EPA by certified mail of a voluntary or involuntary proceeding under title 11 (Bankruptcy), U.S. Code, naming guarantor as debtor, within 10 days after commencement of the proceeding.

7) Guarantor agrees that within 30 days after being notified by the EPA of a determination that guarantor no longer meets the financial test criteria or that he is disallowed from continuing as a guarantor, he shall establish alternate liability coverage as specified in the CAFO in the name of ExxonMobil Oil Corporation, unless ExxonMobil Oil Corporation has done so.

8) Guarantor reserves the right to modify this agreement to take into account amendment or modification of the liability requirements set by 40 CFR 264.147 and 265.147 or the CAFO, provided that such modification shall become effective only if EPA does not disapprove the modification within 30 days of receipt of notification of the modification.

9) Guarantor agrees to remain bound under this guarantee for so long as ExxonMobil Oil Corporation must comply with the applicable requirements of the CAFO, except as provided in paragraph 10 of this agreement.

10) Guarantor may terminate this guarantee by sending notice by certified mail to the EPA and to ExxonMobil Oil Corporation, provided that this guarantee may not be terminated unless and until ExxonMobil Oil Corporation obtains, and the EPA approves, alternate liability coverage satisfying the terms of the CAFO.

11) Guarantor hereby expressly waives notice of acceptance of this guarantee by any party.

12) Guarantor agrees that this guarantee is in addition to and does not affect any other responsibility or liability of the guarantor with respect to the CAFO.

13) The Guarantor shall satisfy a third-party liability claim only on receipt of one of the following documents:

a) Certification from the Principal and the third-party claimant(s) that the liability claim should be paid. The certification must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Certification of Valid Claim

The undersigned, as parties [insert Principal] and [insert name and address of third-party claimant(s)], hereby certify that the claim of bodily injury and/or property damage caused by a [sudden or nonsudden] accidental occurrence arising from operating [Principal's] hazardous waste treatment, storage, or disposal facility should be paid in the amount of $[ ]

[Signatures]

Principal _____

[Notary] _____ [Date] _____

[Signatures]

Claimant(s) _____

[Notary] _____ [Date] _____

b) A valid final court order establishing a judgment against the Principal for bodily injury or property damage caused by sudden or nonsudden accidental occurrences arising from the operation of the Principal's facility or group of facilities.

14) In the event of combination of this guarantee with another mechanism to meet liability requirements, this guarantee will be considered primary coverage.

I hereby certify that the wording of the guarantee is identical to the wording specified in the CAFO.

Effective Date: March 22, 2023

Exxon Mobil Corporation

Kathryn A. Mikells
Senior Vice President / Chief Financial Officer

Signature of Witness or
Notary (with Seal)

KIMBERLY M YOUNG
Notary ID #8820779
My Commission Expires
November 4, 2024

Exxon Mobil Corporation
5959 Las Colinas Boulevard
Irving, Texas 75039-2298

Kathryn A. Mikells
Senior Vice President / Chief Financial Officer

ExxonMobil

March 22, 2023

Chuck Carr Brown, Ph.D., Secretary
Louisiana Department of Environmental Quality
Post Office Box 4313
Baton Rouge, Louisiana 70821-4313
Attention: Office of Environmental Services, Waste Permits Division

Re: Solid Waste Financial Assurance, ExxonMobil Facilities Identified on Exhibit 1

Dear Dr. Brown:

I am the Chief Financial Officer of Exxon Mobil Corporation located at 5959 Las Colinas Boulevard, Irving, Texas 75039. This letter is in support of this firm's use of the financial test and a corporate guarantee to demonstrate financial responsibility for closure and/or post-closure as specified in LAC 33:VII.1303.

1) The firm identified above is the permit holder or parent corporation of the permit holder or applicant for a standard permit of the following facilities, whether in Louisiana or not, for which financial assurance for closure and post-closure is guaranteed and demonstrated through a financial test similar to that specified in LAC 33:VII.1303 or other forms of self-insurance. The current closure and post-closure cost estimates covered by the test are shown for each facility (see Exhibit 1).

2) This firm guarantees through a corporate guarantee similar to that specified in LAC 33:VII. 1303, for closure and post-closure care of the following facilities, whether in Louisiana or not, of which ExxonMobil Oil Corporation is a subsidiary of this firm. The amount of annual aggregate liability coverage covered by the guarantee for each facility and/or the current cost estimates for the closure and/or post-closure care so guaranteed is shown for each facility: None.

3) This firm guarantees through a corporate guarantee similar to that specified in LAC 33:VII.1303, for closure and post-closure care of the following facilities, whether in Louisiana or not, of which ExxonMobil Oil Corporation has a substantial business relationship with the permit holder or applicant. The amount of annual aggregate liability coverage covered by the guarantee for each facility and/or the current cost estimates for the closure and/or post-closure care so guaranteed is shown for each facility: Louisiana Station Electrical Generating Plant #1.

4) This firm is the permit holder or applicant of the following facilities, whether in Louisiana or not, for which financial assurance for closure and/or post-closure care is not demonstrated either to the U.S. Environmental Protection Agency or to a state through a financial test or any other financial assurance mechanism similar to those specified in LAC 33:VII.1303. The current closure and or post-closure cost estimates not covered by such financial assurance are shown for each facility: None.

This firm is required to file a Form 10-K with the Securities and Exchange Commission (SEC) for the latest fiscal year. The fiscal year of this firm ends on December 31. The figures for the following items marked with an asterisk are derived from this firm's independently audited, year-end financial statements for the latest completed year, ended December 31, 2022.

Closure and/or Post-Closure
Alternative I

1.	Sum of current closure and/or post-closure estimate (total all cost estimates shown above)	$	15,813,754
*2.	Tangible net worth	$	193,013,000,000
*3.	Total assets in U.S. (required only if less than 90 percent of firm's assets are located in the U.S.)	$	118,605,000,000

4.	Is line 2 at least $10 million?	Yes	X	No	
5.	Is line 2 at least 6 times line 1?	Yes	X	No	
*6.	Are at least 90 percent of the firm's assets located in the U.S.? If not, complete line 7.	Yes		No	X
7.	Is line 3 at least 6 times line 1?	Yes	X	No	

I hereby certify that the wording of this letter is identical to the wording specified in LAC 33: VII.1399. Appendix I.

Kathryn A. Mikells

Senior Vice President / Chief Financial Officer

Exxon Mobil Corporation

March 22, 2023

Solid Waste Facility Corporate Guarantee for Closure and/or Post-Closure Care

Louisiana Station Electrical Generating Plant #1

Agency Interest #1186

Solid Waste Permit #P-0023R1

Guarantee made this March 22, 2023, by Exxon Mobil Corporation, a business corporation organized under the laws of the State of New Jersey, herein referred to as guarantor, to the Louisiana Department of Environmental Quality, obligee, on behalf of a firm with a substantial business relationship with the permit holder or applicant EthosEnergy Power Operations (West), LLC of 2800 North Loop West, Suite 1100, Houston, Texas 77092.

Recitals

1) The guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors as specified in LAC 33:VII.1303.H.9.

2) EthosEnergy Power Operations (West), LLC is the permit holder, hereinafter referred to as permit holder, for the following facility covered by this guarantee: Louisiana Station Electrical Generating Plant #1, Agency Interest No. 1186, Site ID No. GD-033-0263, Solid Waste Permit No. P-0023R1. This corporate guarantee is for closure, and the amount of annual aggregate closure costs covered by the guarantee is listed on Exhibit 1.

3) Closure plans, as used below, refers to the plans maintained as required by LAC 33:Part.VII, for the closure and/or post-closure care of the facility identified in Paragraph 2 above.

4) For value received from permit holder, guarantor guarantees to the Louisiana Department of Environmental Quality that in the event that permit holder fails to perform closure of the above facility in accordance with the closure plan and other permit requirements whenever required to do so, the guarantor shall do so or shall establish a trust fund as specified in LAC 33:VII.1303.C, as applicable, in the name of permit holder in the amount of the current closure and/or post-closure estimates, as specified in LAC 33:VII.1303.

5) The guarantor agrees that if, at the end of any fiscal year before termination of this guarantee, the guarantor fails to meet the financial test criteria, guarantor shall send within 90 days, by certified mail, notice to the administrative authority and to permit holder that it intends to provide alternative financial assurance as specified in LAC 33:VII.1303, as applicable, in the name of the permit holder, within 120 days after the end of such fiscal year, the guarantor shall establish such financial assurance unless permit holder has done so.

6) The guarantor agrees to notify the administrative authority, by certified mail, of a voluntary or involuntary proceeding under Title 11 (bankruptcy), U.S. Code, naming guarantor as debtor, within 10 days after commencement of the proceeding.

7) The guarantor agrees that within 30 days after being notified by the administrative authority of a determination that guarantor no longer meets the financial test criteria or that it is disallowed from continuing as a guarantor of closure and/or post-closure care it shall establish alternate financial assurance as specified in LAC 33:VII.1303, in the name of permit holder, unless permit holder has done so.

8) The guarantor agrees to remain bound under this guarantee notwithstanding any or all of the following: amendment or modification of the closure and/or post-closure care, the extension or reduction of the time of performance of closure and/or post-closure, or any other modification or alteration of an obligation of the permit holder pursuant to LAC 33:Part.VII.

9) The guarantor agrees to remain bound under this guarantee for as long as the permit holder must comply with the applicable financial assurance requirements of LAC 33:VII.1303 for the above-listed facility, except that guarantor may cancel this guarantee by sending notice by certified mail, to the administrative authority and to the permit holder, such cancellation to become effective no earlier than 90 days after receipt of such notice by both the administrative authority and the permit holder, as evidenced by the return receipts.

10) The guarantor agrees that if the permit holder fails to provide alternative financial assurance as specified in LAC 33:VII.1303, as applicable, and obtain written approval of such assurance from the administrative authority within 60 days after a notice of cancellation by the guarantor is received by the administrative authority from guarantor, guarantor shall provide such alternate financial assurance in the name of the permit holder.

11) The guarantor expressly waives notice of acceptance of this guarantee by the administrative authority or by the permit holder. Guarantor expressly waives notice of amendments or modifications of the closure and/or post-closure plan and of amendments or modifications of the facility permit(s).

I hereby certify that the wording of this guarantee is identical to the wording specified in LAC 33:VII.1399, Appendix J, effective on the date first above written.

Effective Date: March 22, 2023

Exxon Mobil Corporation

Kathryn A Mikells
Senior Vice President / Chief Financial Officer

Kimberly M Young
Signature of Witness or
Notary (with Seal)

KIMBERLY M YOUNG
Notary ID #8820779
My Commission Expires
November 4, 2024

KD

Exhibit 1

Louisiana Solid Waste Facilities Financial Requirements for Closure/ Post-Closure Care

Owned/Operated Facilities	Name & Address	Closure	Post-Closure
Agency Interest #2638 Site ID #GD-033-0596 Permit #'s: P-0402R1-M1, P-0273R2-M2 and P-0274R2-M2	Exxon Mobil Corporation Baton Rouge Refinery P.O. Box 551 Baton Rouge, LA 70821-0551	$ 8,893,113	0
Agency Interest #19584 Site ID #GD-033-1402 Permit #P-0024R2	Exxon Mobil Corporation Baton Rouge Coke Terminal P.O. Box 551 Baton Rouge, LA 70821-0551	$ 641,438	0
Agency Interest #285 Site ID #GD-033-1788 Permit #P-0150R1	Exxon Mobil Corporation Baton Rouge Plastics Plant 11675 Scotland Avenue Baton Rouge, LA 70807	$ 1,521,480	0
Agency Interest #1395 Site ID #GTPD-033-0054 Permit #P-0239R2	Exxon Mobil Corporation ExxonMobil Baton Rouge Chemicals North 5955 Scenic Highway Baton Rouge, LA 70805	$ 646,192	0
Agency Interest #3230 Site ID #GD-033-1859 Permit #P-0401	Exxon Mobil Corporation Baton Rouge Resin Finishing Plant 12480 Scenic Highway Baton Rouge, LA 70807	$ 322,829	0
Guaranteed Facilities	**Name & Address**		
Agency Interest #1186 Site ID #GD-033-0263 Permit #P-0023R1	EthosEnergy Power Operations (West), LLC 300 Gulf States Utility Road Baton Rouge, LA 70805	$ 3,788,701	0
Total		$15,813,754	0

Exxon Mobil Corporation
ExxonMobil Houston Campus (W4.2A.535)
22777 Springwoods Village Parkway
Spring, TX 77389

ExxonMobil

April 27, 2022

Oil Spill Financial Responsibility
BOEM Operator Code: 00276

U.S. Department of the Interior
Bureau of Ocean Energy Management
Gulf of Mexico Region
Oil Spill Financial Responsibility Program
1201 Elmwood Park Boulevard, Mail Stop 5421
New Orleans, Louisiana 70123

Attn: Ms. Tatiana Williams

Dear Ms. Williams:

Please find enclosed Exxon Mobil Corporation's Oil Spill Financial Responsibility demonstration package.

If you should have any questions regarding this submittal or require additional information, please contact me by email at jun.h.kim@exxonmobil.com.

Sincerely,

DocuSigned by:
JUN KIM
FC16917261BA42E

Jun H. Kim
Attorney-in-Fact
Exxon Mobil Corporation

/JHK
Enclosures

Exxon Mobil Corporation
ExxonMobil Houston Campus (N3.4B.571)
22777 Springwoods Village Parkway
Spring, TX 77389

ExxonMobil

April 21, 2022

Outer Continental Shelf Lands Act
Oil Spill Financial Responsibility for
Offshore Facilities Filing

U.S. Department of the Interior
Bureau of Ocean Energy Management
Gulf of Mexico Region
Oil Spill Financial Responsibility Program
1201 Elmwood Park Boulevard
New Orleans, Louisiana 70123

Attention: Ms. Tatiana Williams

Dear Ms. Williams:

This letter is in support of Exxon Mobil Corporation's (a New Jersey Corporation) 2022 filing under the Outer Continental Shelf Lands Act, as a qualifying self-insurer under 30 CFR 553. The following information is provided as of December 31, 2021 as required by 30 CFR Part 553.23:

	(U.S. dollar amounts in millions)
Shareholder Equity	$168,577
Net Property, Plant and Equipment (PPE)	$216,552
Net Identifiable U.S. Assets	$113,799
Net Identifiable Total Assets	$336,373

Should you have any questions or need additional information, please contact Jun Kim via email at jun.h.kim@exxonmobil.com.

Sincerely,

Alfred Y. Harper
Treasurer
ExxonMobil Upstream Company,
a division of Exxon Mobil Corporation

U.S. Department of the Interior
Bureau of Ocean Energy Management

OMB Control No.: 1010-0106
Expiration Date: 01/31/2023

DESIGNATED APPLICANT INFORMATION CERTIFICATION

CERTIFICATION OF OIL SPILL FINANCIAL RESPONSIBILITY IN ACCORDANCE WITH THE REQUIREMENTS OF THE OIL POLLUTION ACT OF 1990

(TYPE OR PRINT ALL INFORMATION EXCEPT SIGNATURES)

1. Designated Applicant: Exxon Mobil Corporation (COMPANY LEGAL NAME) — 00276 (BOEM COMPANY NUMBER)

22777 Springwoods Village Parkway (ADDRESS) — GOM (BOEM COMPANY REGION)

Spring (CITY) — Texas (STATE) — 77389 (ZIP CODE)

CONTACT PERSON — ( ) AREA CODE and TELEPHONE NUMBER

Attorney-in-Fact (CONTACT PERSON'S TITLE) — ( ) AREA CODE and FAX NUMBER

E-MAIL ADDRESS

2. Summary of Evidence of Oil Spill Financial Responsibility:

Type of Evidence	Amount (in U.S. Dollars)	Effective Date of Evidence	Expiration Date of Evidence
■ Self-Insurance (BOEM-1018)	$ 150,000,000.00	05/01/2022	05/01/2023
■ Financial Guarantee (BOEM-1023)	$		
■ Surety Bonds (BOEM-1020)	$		
■ Insurance (BOEM-1019)	$		
■ Other	$		
TOTAL AMOUNT	$ 150,000,000.00		

3. The Designated Applicant, for all of the Responsible Parties whose Designated Applicant authorizations (form BOEM-1017) are on file or attached, agrees to establish and maintain oil spill financial responsibility (OSFR), under the Oil Pollution Act of 1990, as amended, 33 U.S.C. § 2701 *et seq.*, for all said Responsible Parties. This OSFR will be maintained continuously for those leases, permits, rights of use and easement, and pipeline segments identified in form(s) BOEM-1017 on file or attached. I will immediately notify the Responsible Parties of any claims that I receive. I will immediately notify the BOEM OSFR program if information on this form changes. I certify the information contained herein, including all the information on the attached forms, is complete, true, and correct to the best of my information and knowledge.

Jun H. Kim (NAME OF AUTHORIZED REPRESENTATIVE) — DocuSigned by: JUN KIM FC16917261BA4DE (SIGNATURE)

Attorney-in-Fact (TITLE OF AUTHORIZED REPRESENTATIVE) — April 26, 2022 (DATE)

4. The Designated Applicant's U.S. Agent for Service of Process is: Corporation Services Company (NAME)

320 Somerulos St. (ADDRESS) — BOEM COMPANY NUMBER

Baton Rouge (CITY) — Louisiana (STATE) — 70802-6129 (ZIP CODE)

225 387-8326 (AREA CODE and TELEPHONE NUMBER) — 225 387-8338 (AREA CODE and FAX NUMBER) — E-MAIL ADDRESS

PAPERWORK REDUCTION ACT STATEMENT

BUREAU OF OCEAN ENERGY MANAGEMENT
OIL POLLUTION ACT OF 1990
OIL SPILL FINANCIAL RESPONSIBILITY FOR OFFSHORE FACILITIES

The Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.) requires us to inform you that the Bureau of Ocean Energy Management (BOEM) collects this information to:

1. Provide a standard method for establishing eligibility for oil spill financial responsibility (OSFR) for offshore facilities;

2. Identify and maintain a record of those offshore facilities that have a potential oil spill liability;

3. Establish and maintain a continuous record, over the liability term specified in Title I of the Oil Pollution Act of 1990, of financial evidence and instruments established to pay claims for oil spill cleanup and damages resulting from operations conducted on offshore facilities and the transportation of oil from offshore platforms and wells;

4. Establish and maintain a continuous record of Responsible Parties, as defined in Title I of the Oil Pollution Act of 1990, and their agents or Authorized Representatives for oil spill financial responsibility for offshore facilities; and

5. Establish and maintain a continuous record, over the liability term specified in Title I of the Oil Pollution Act of 1990, of persons to contact and U.S. Agents for Service of Process for claims associated with oil spills from offshore facilities.

The BOEM will routinely use the information to:

1. Ensure compliance of offshore lessees and owners and operators of offshore facilities with Title I of the Oil Pollution Act of 1990;

2 Establish eligibility of applicants for OSFR; and

3. Establish a reference source of names, addresses, and telephone numbers of Responsible Parties for offshore facilities and their Authorized Representatives and Guarantors for claims associated with oil pollution from designated offshore facilities.

Responses are mandatory (33 U.S.C. 2716). No confidential or proprietary information is required to be submitted. The BOEM considers oil spill financial responsibility demonstrations, including supporting audited financial statements, to be public information open for review under the Freedom of Information Act (5 U.S.C. 552).

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid Office of Management and Budget (OMB) Control Number. The public reporting burden for an application for certification of oil spill financial responsibility is listed below. The burden includes the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the application. The average burden for this form and required information that could comprise a submission is 1 hour.

Comments regarding the burden estimate or any other aspect of this form should be directed to the Information Collection Clearance Officer, Bureau of Ocean Energy Management, 45600 Woodland Road, Sterling, VA 20166.

SELF-INSURANCE INFORMATION

RESPONSIBLE PARTY SELF-INSURANCE CERTIFICATION OF OIL SPILL FINANCIAL RESPONSIBILITY IN ACCORDANCE WITH THE REQUIREMENTS OF THE OIL POLLUTION ACT OF 1990

(TYPE OR PRINT ALL INFORMATION EXCEPT SIGNATURES)

1. I, the undersigned, as the Authorized Representative of the Responsible Party (described in section 6), certifies that the Responsible Party is acting in the capacity of a Self-Insurer, in accordance with the requirements of 30 CFR 553.41.

2. The amount of coverage for which evidence of oil spill financial responsibility is being established by the Responsible Party using self-insurance is:

FROM	$	0 LOWER LIMIT	TO	$ 150,000,000.00 UPPER LIMIT (MUST BE COMPLETED)

3. This coverage is effective: 05/01/2022 (DATE) and expires on the first calendar day of the fifth month after the close of the Self-Insurer's fiscal year, which ends: 12/31/2022 (DATE).

4. The Responsible Party providing evidence of oil spill financial responsibility in the form of Self-Insurance is:

Exxon Mobil Corporation COMPANY LEGAL NAME	00276 BOEM COMPANY NUMBER

5959 Las Colinas Boulevard
ADDRESS

Irving CITY	Texas STATE	75039 ZIP CODE
Jun H. Kim CONTACT PERSON FOR CLAIMS		Attorney-in-Fact CONTACT PERSON'S TITLE
818-606-9660 AREA CODE AND TELEPHONE NUMBER	N/A AREA CODE AND FAX NUMBER	jun.h.kim@exxonmobil.com E-MAIL ADDRESS

5. The undersigned certifies on behalf of the Responsible Party that the requirements set forth in 30 CFR Part 553 and specifically §§ 553.21 through 553.28 have been met.

   The undersigned further agrees that the Responsible Party, pursuant to the requirements of 30 CFR 553.15, will notify the BOEM oil spill financial responsibility program in the event the Responsible Party is no longer able to maintain evidence of oil spill financial responsibility as a Self-Insurer in the amounts stated in section 2 above.

6. The Responsible Party, as Self-Insurer, acting through the Designated Applicant must, no later than the first calendar day of the fifth month after the close of your fiscal year, submit either a renewal of this Self-Insurance or other acceptable evidence of financial responsibility.

Jun H. Kim
NAME OF AUTHORIZED REPRESENTATIVE OF RESPONSIBLE PARTY

DocuSigned by:
JUN KIM
FC16917261BA42E...
SIGNATURE

Attorney-in-Fact
TITLE OF AUTHORIZED REPRESENTATIVE OF RESPONSIBLE PARTY

April 26, 2022
DATE

7. The Self-Insurer's U.S. Agent for Service of Process is:

Corporation Services Company
NAME

BOEM COMPANY NUMBER

320 Somerulos St
ADDRESS

Baton Rouge
CITY

Louisiana
STATE

70802-6129
ZIP CODE

225-387-8326
AREA CODE AND TELEPHONE NUMBER

225-387-8338
AREA CODE AND FAX NUMBER

E-MAIL ADDRESS

8. Designated Applicant for Responsible Party (if different than Responsible Party identified in No. 6 above):

SIGNATURE OF AUTHORIZED REPRESENTATIVE OF DESIGNATED APPLICANT

NAME OF AUTHORIZED REPRESENTATIVE OF DESIGNATED APPLICANT

TITLE OF AUTHORIZED REPRESENTATIVE OF DESIGNATED APPLICANT

In witness whereof, the Designated Applicant and the Self-Insurer have executed this instrument on the 26 day of April, 2022.
MONTH YEAR

PAPERWORK REDUCTION ACT STATEMENT

BUREAU OF OCEAN ENERGY MANAGEMENT
OIL POLLUTION ACT OF 1990
OIL SPILL FINANCIAL RESPONSIBILITY FOR OFFSHORE FACILITIES

The Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.) requires us to inform you that the Bureau of Ocean Energy Management (BOEM) collects this information to:

1. Provide a standard method for establishing eligibility for oil spill financial responsibility (OSFR) for offshore facilities;

2. Identify and maintain a record of those offshore facilities that have a potential oil spill liability;

3. Establish and maintain a continuous record, over the liability term specified in Title I of the Oil Pollution Act of 1990, of financial evidence and instruments established to pay claims for oil spill cleanup and damages resulting from operations conducted on offshore facilities and the transportation of oil from offshore platforms and wells;

4. Establish and maintain a continuous record of Responsible Parties, as defined in Title I of the Oil Pollution Act of 1990, and their agents or Authorized Representatives for oil spill financial responsibility for offshore facilities; and

5. Establish and maintain a continuous record, over the liability term specified in Title I of the Oil Pollution Act of 1990, of persons to contact and U.S. Agents for Service of Process for claims associated with oil spills from offshore facilities.

The BOEM will routinely use the information to:

1. Ensure compliance of offshore lessees and owners and operators of offshore facilities with Title I of the Oil Pollution Act of 1990;

2 Establish eligibility of applicants for OSFR; and

3. Establish a reference source of names, addresses, and telephone numbers of Responsible Parties for offshore facilities and their Authorized Representatives and Guarantors for claims associated with oil pollution from designated offshore facilities.

Responses are mandatory (33 U.S.C. 2716). No confidential or proprietary information is required to be submitted. The BOEM considers oil spill financial responsibility demonstrations, including supporting audited financial statements, to be public information open for review under the Freedom of Information Act (5 U.S.C. 552).

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid Office of Management and Budget (OMB) Control Number. The public reporting burden for an application for certification of oil spill financial responsibility is listed below. The burden includes the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the application. The average burden for this form and required information that could comprise a submission is 1 hour.

Comments regarding the burden estimate or any other aspect of this form should be directed to the Information Collection Clearance Officer, Bureau of Ocean Energy Management, 45600 Woodland Road, Sterling, VA 20166.

U.S. Department of the Interior
Bureau of Ocean Energy Management

OMB Control No.: 1010-0106
Expiration Date: 01/31/2023

COVERED OFFSHORE FACILITIES

CERTIFICATION OF OIL SPILL FINANCIAL RESPONSIBILITY IN ACCORDANCE WITH THE REQUIREMENTS OF THE OIL POLLUTION ACT OF 1990

(TYPE OR PRINT ALL INFORMATION EXCEPT SIGNATURES)

1. Designated Applicant: Exxon Mobil Corporation (COMPANY LEGAL NAME) 00276 (BOEM COMPANY NUMBER)

2. The following list comprises all of the 83 (NUMBER) locations of covered offshore facilities to be covered by my certification of oil spill financial responsibility.

Jun H. Kim
NAME OF AUTHORIZED REPRESENTATIVE

DocuSigned by: JUN KIM
FC16917261BA42E...
SIGNATURE OF AUTHORIZED REPRESENTATIVE

Attorney-in-Fact
TITLE

April 26, 2022
DATE

3. Locations of covered offshore facilities:

STATE OR OCS REGION	LEASE NUMBER	ALIQUOT PORTION (If Applicable)	AREA NAME	BLOCK NUMBER	PERMIT NUMBER	RUE or ROW NUMBER	PIPELINE SEGMENT NUMBER	POTENTIAL WORST CASE OIL-SPILL DISCHARGE (In Barrels)
			see attached					

3. Locations of covered offshore facilities (continued):

STATE OR OCS REGION	LEASE NUMBER	ALIQUOT PORTION (If Applicable)	AREA NAME	BLOCK NUMBER	PERMIT NUMBER	RUE or ROW NUMBER	PIPELINE SEGMENT NUMBER	POTENTIAL WORST CASE OIL-SPILL DISCHARGE (In Barrels)

If additional space is required, additional copies of this page may be attached as continuation pages.

PAPERWORK REDUCTION ACT STATEMENT

BUREAU OF OCEAN ENERGY MANAGEMENT
OIL POLLUTION ACT OF 1990
OIL SPILL FINANCIAL RESPONSIBILITY FOR OFFSHORE FACILITIES

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2. Identify and maintain a record of those offshore facilities that have a potential oil spill liability;
3. Establish and maintain a continuous record, over the liability term specified in Title I of the Oil Pollution Act of 1990, of financial evidence and instruments established to pay claims for oil spill cleanup and damages resulting from operations conducted on offshore facilities and the transportation of oil from offshore platforms and wells;
4. Establish and maintain a continuous record of Responsible Parties, as defined in Title I of the Oil Pollution Act of 1990, and their agents or Authorized Representatives for oil spill financial responsibility for offshore facilities; and
5. Establish and maintain a continuous record, over the liability term specified in Title I of the Oil Pollution Act of 1990, of persons to contact and U.S. Agents for Service of Process for claims associated with oil spills from offshore facilities.

The BOEM will routinely use the information to:

1. Ensure compliance of offshore lessees and owners and operators of offshore facilities with Title I of the Oil Pollution Act of 1990;
2 Establish eligibility of applicants for OSFR; and
3. Establish a reference source of names, addresses, and telephone numbers of Responsible Parties for offshore facilities and their Authorized Representatives and Guarantors for claims associated with oil pollution from designated offshore facilities.

Responses are mandatory (33 U.S.C. 2716). No confidential or proprietary information is required to be submitted. The BOEM considers oil spill financial responsibility demonstrations, including supporting audited financial statements, to be public information open for review under the Freedom of Information Act (5 U.S.C. 552).

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid Office of Management and Budget (OMB) Control Number. The public reporting burden for an application for certification of oil spill financial responsibility is listed below. The burden includes the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the application. The average burden for this form and required information that could comprise a submission is 6 hours.

Comments regarding the burden estimate or any other aspect of this form should be directed to the Information Collection Clearance Officer, Bureau of Ocean Energy Management, 45600 Woodland Road, Sterling, VA 20166.

BUREAU OF OCEAN ENERGY MANAGEMENT
GULF OF MEXICO REGION

List COFs for a Designated Applicant

MMS#: 00276
Exxon Mobil Corporation

5959 Las Colinas Boulevard
Irving TX 75039 United States

Total Number of COFs: 86
Total Number of Active COFs: 83
Total Number of Deleted COFs: 3

Financial Coverage

Insurance	$ 0
Self-Insurance	$150,000,000
Indemnity	$ 0
Surety Bonds	$ 0
Other	$ 0
Total	$150,000,000

State	Lease Number	ROW/RUE Segment Number	Area/Block		Worst Case Volume	Effective Date	Expiration Date	Segments	Aliquots/ Remarks
'X	33042		TR	54	0	05/01/2021	05/01/2022		Trt - Tract 54
'X	36005			TRT 61	0	05/01/2021	05/01/2022		Trt - Tract
'X	56823			TRT165	0	05/01/2021	05/01/2022		Trt - Tract (TRT150 & TRT165)
'X	56833			TRT166	0	05/01/2021	05/01/2022		Trt - Tract
'X	56834			TRT167	0	05/01/2021	05/01/2022		TRT - Tract
,A	C B T CO.		BS		0	05/01/2021	05/01/2022		C B T CO. - Canal Bank Trust Co. BS - Bayou Sale
,A	D LUKE		BS		0	05/01/2021	05/01/2022		BS - Bayou Sale
,A	E F MARIN		BS		0	05/01/2021	05/01/2022		BS - Bayou Sale
	G08803		MC	211	0	05/01/2021	05/01/2022		
	G10322		EB	948	0	05/01/2021	05/01/2022		
	G10323		EB	949	0	05/01/2021	05/01/2022		
	G10379		AC	24	0	05/01/2021	05/01/2022		
	G10380		AC	25	0	05/01/2021	05/01/2022		
	G10381		AC	26	0	05/01/2021	05/01/2022		
	G20351		WR	584	0	05/01/2021	05/01/2022		

MMS#: 00276
Exxon Mobil Corporation

State	Lease Number	ROW/RUE Segment Number	Area/Block		Worst Case Volume	Effective Date	Expiration Date	Segments	Aliquots/ Remarks
	G20361		WR	627	0	05/01/2021	05/01/2022		
	G20362		WR	628	0	05/01/2021	05/01/2022		
	G21451		KC	964	0	05/01/2021	05/01/2022		
	G25251		WR	540	0	05/01/2021	05/01/2022		
	G25258		WR	583	0	05/01/2021	05/01/2022		
	G32656		KC	962	0	05/01/2021	05/01/2022		
	G33714		MC	167	0	05/01/2021	05/01/2022		
	G34889		MC	210	0	05/01/2021	05/01/2022		
	G34978		GC	327	0	05/01/2021	05/01/2022		
	G34981		GC	371	0	05/01/2021	05/01/2022		
	G35660		GC	364	0	05/01/2021	05/01/2022		
	G36136		MC	779	0	05/01/2021	05/01/2022		
A	H PALFREY		BS		0	05/01/2021	05/01/2022		H Palfrey - Helen W. Palfrey, et al BS - Bayou Sale
A	J MCINTYRE		BS		0	05/01/2021	05/01/2022		BS - Bayou Sale
A	J WEBSTER		BS		0	05/01/2021	05/01/2022		J Webster - Jean Bennett Webster, et al BS - Bayou Sale
A	L MCANELLY		BS		0	05/01/2021	05/01/2022		BS - Bayou Sale
A	L WHITE		BS		0	05/01/2021	05/01/2022		L White - Lazarus White, et al BS - Bayou Sale
A	M BAUER		BS		0	05/01/2021	05/01/2022		BS - Bayou Sale
A	M J FIRMIN		BS		0	05/01/2021	05/01/2022		BS - Bayou Sale

MMS#: 00276
Exxon Mobil Corporation

State	Lease Number	ROW/RUE Segment Number	Area/Block		Worst Case Volume	Effective Date	Expiration Date	Segments	Aliquots/ Remarks
LA	M J FOSTER		BS		0	05/01/2021	05/01/2022		BS - Bayou Sale
LA	M WOOSTER		BS		0	05/01/2021	05/01/2022		BS - Bayou Sale
LA	MIAMI CORP		BS		0	05/01/2021	05/01/2022		BS - Bayou Sale
LA	O R FOSTER		BS		0	05/01/2021	05/01/2022		O R Foster - Olivia Roberts Foster, et al BS - Bayou Sale
	P00180		6A	5274	0	05/01/2021	05/01/2022		
	P00181		6A	5275	0	05/01/2021	05/01/2022		
	P00182		6A	5277	0	05/01/2021	05/01/2022		
	P00183		6A	5278	0	05/01/2021	05/01/2022		
	P00187		6A	5273	0	05/01/2021	05/01/2022		
	P00188		6A	5374	0	05/01/2021	05/01/2022		Lease includes part of Block 6A 5474
	P00189		6A	5375	0	05/01/2021	05/01/2022		Lease includes part of Block 6A 5475
	P00190		6A	5375	0	05/01/2021	05/01/2022		
	P00191		6A	5376	0	05/01/2021	05/01/2022		
	P00192		6A	5377	0	05/01/2021	05/01/2022		Lease includes part of Block 6A 5477
	P00193		6A	5378	0	05/01/2021	05/01/2022		Lease includes part of Block 6A 5478
	P00194		6A	5378	0	05/01/2021	05/01/2022		
	P00195		6A	5379	0	05/01/2021	05/01/2022		Lease includes part of Block 6A 5479
	P00329		6A	5276	0	05/01/2021	05/01/2022		

List COFs for a Designated Applicant

MMS#: 00276
Exxon Mobil Corporation

State	Lease Number	ROW/RUE Segment Number	Area/Block		Worst Case Volume	Effective Date	Expiration Date	Segments	Aliquots/ Remarks
	P00461		6A	5273	0	05/01/2021	05/01/2022		
'A	PRC 7163.1				0	05/01/2021	05/01/2022		
ıA	R D GATES		BS		0	05/01/2021	05/01/2022		R D Gates - Rowena D. Gates, et al; BS - Bayou Sale
:A	S D LUKE		BS		0	05/01/2021	05/01/2022		BS - Bayou Sale
ıA	SL 13287		MP	76	0	05/01/2021	05/01/2022		
ıA	SL 1706		LS		0	05/01/2021	05/01/2022		LS - Lake Sand
ıA	SL 2276		LS		0	05/01/2021	05/01/2022		LS - Lake Sand
ıA	SL 3209		LS		0	05/01/2021	05/01/2022		LS - Lake Sand
ıA	SL 3498		LS		0	05/01/2021	05/01/2022		LS - Lake Sand
ıA	SL 368		BS		0	05/01/2021	05/01/2022		LA 368 - State of LA 368 BS - Bayou Sale
ıA	ST M P L C		BS		0	05/01/2021	05/01/2022		BS - Bayou Sale; ST M P L C - St. Mary Ph Land Co.
ıA	W P FOSTER		BS		0	05/01/2021	05/01/2022		BS - Bayou Sale
ıA	W PELITERE		BS		0	05/01/2021	05/01/2022		BS - Bayou Sale
ıA	W PELTIER		BS		0	05/01/2021	05/01/2022		BS - Bayou Sale
ıA	W SMARDON		BS		0	05/01/2021	05/01/2022		BS - Bayou Sale
ıA	W T SHINN		BS		0	05/01/2021	05/01/2022		BS - Bayou Sale
ıL		*00-40-002*			*0*	*05/01/2021*	*03/22/2022*		
ıL		*09-08-02*			*0*	*05/01/2021*	*03/22/2022*		
ıA		4/28/55			0	05/01/2021	05/01/2022		
ıA		726			0	05/01/2021	05/01/2022		

List COFs for a Designated Applicant

MMS#: 00276
Exxon Mobil Corporation

State	Lease Number	ROW/RUE Segment Number	Area/Block		Worst Case Volume	Effective Date	Expiration Date	Segments	Aliquots/ Remarks
LA		800			0	05/01/2021	05/01/2022		
		G21495	MC	211	0	05/01/2021	05/01/2022	12520	
		G21496	MC	211	0	05/01/2021	05/01/2022	12523	
		G21885	EB	949	0	05/01/2021	05/01/2022	12584 12585	
		G21886	EB	946	0	05/01/2021	05/01/2022	18573	
		G21886	AC	24	0	05/01/2021	05/01/2022	12586 12587	
		G21887	AC	25	0	05/01/2021	05/01/2022	12588	
		G21888	AC	24	0	05/01/2021	05/01/2022	12589	
		G29192	KC	964	0	05/01/2021	05/01/2022	18839	
		G29193	KC	875	0	05/01/2021	05/01/2022	18887 18840	
		G29285	WR	718	0	05/01/2021	05/01/2022	18918 19265	
		G29286	*WR*	*584*	*0*	*05/01/2021*	*03/23/2022*	*18919* *19266*	
		G29580	**WR**	**584**	**0**	**03/23/2022**	**05/01/2022**	20812 20811	
AL		MS 5232			0	05/01/2021	05/01/2022		

Exxon Mobil Corporation
ExxonMobil Houston Campus (W4.2A.535)
22777 Springwoods Village Parkway
Spring, TX 77389

ExxonMobil

April 27, 2022

Oil Spill Financial Responsibility
BOEM Operator Code: 00540

U.S. Department of the Interior
Bureau of Ocean Energy Management
Gulf of Mexico Region
Oil Spill Financial Responsibility Program
1201 Elmwood Park Boulevard, Mail Stop 5421
New Orleans, Louisiana 70123

Attn: Ms. Tatiana Williams

Dear Ms. Williams:

Exxon Mobil Corporation herein submits, on behalf of MOBIL OIL EXPLORATION & PRODUCING SOUTHEAST INC. (MOEPSI), the enclosed Oil Spill Financial Responsibility demonstration package.

If you should have any questions regarding this submittal or require additional information, please contact me by email at jun.h.kim@exxonmobil.com.

Sincerely,

DocuSigned by:
JUN KIM
FC16917261BA42E...

Jun H. Kim
Attorney-in-Fact
Exxon Mobil Corporation

/JHK
Enclosures

U.S. Department of the Interior
Bureau of Ocean Energy Management

OMB Control No.: 1010-0106
Expiration Date: 01/31/2023

DESIGNATED APPLICANT INFORMATION CERTIFICATION

CERTIFICATION OF OIL SPILL FINANCIAL RESPONSIBILITY IN ACCORDANCE WITH THE REQUIREMENTS OF THE OIL POLLUTION ACT OF 1990

(TYPE OR PRINT ALL INFORMATION EXCEPT SIGNATURES)

1. Designated Applicant: MOBIL OIL EXPLORATION & PRODUCING SOUTHEAST INC. (COMPANY LEGAL NAME) — BOEM COMPANY NUMBER: 00540

ADDRESS: 22777 Springwoods Village Parkway — BOEM COMPANY REGION: GOM

CITY: Spring — STATE: Texas — ZIP CODE: 77389

CONTACT PERSON: Jun H. Kim — AREA CODE and TELEPHONE NUMBER: (818) 606-9660

CONTACT PERSON'S TITLE: Attorney-in-Fact — AREA CODE and FAX NUMBER: ( )

E-MAIL ADDRESS: jun.h.kim@exxonmobil.com

2. Summary of Evidence of Oil Spill Financial Responsibility:

Type of Evidence	Amount (in U.S. Dollars)	Effective Date of Evidence	Expiration Date of Evidence
■ Self-Insurance (BOEM-1018)	$		
■ Financial Guarantee (BOEM-1023)	$ 150,000,000.00	05/01/2022	05/01/2023
■ Surety Bonds (BOEM-1020)	$		
■ Insurance (BOEM-1019)	$		
■ Other	$		
TOTAL AMOUNT	$ 150,000,000.00		

3. The Designated Applicant, for all of the Responsible Parties whose Designated Applicant authorizations (form BOEM-1017) are on file or attached, agrees to establish and maintain oil spill financial responsibility (OSFR), under the Oil Pollution Act of 1990, as amended, 33 U.S.C. § 2701 *et seq.*, for all said Responsible Parties. This OSFR will be maintained continuously for those leases, permits, rights of use and easement, and pipeline segments identified in form(s) BOEM-1017 on file or attached. I will immediately notify the Responsible Parties of any claims that I receive. I will immediately notify the BOEM OSFR program if information on this form changes. I certify the information contained herein, including all the information on the attached forms, is complete, true, and correct to the best of my information and knowledge.

NAME OF AUTHORIZED REPRESENTATIVE: Jun H. Kim — SIGNATURE: DocuSigned by: JUN KIM FC16917261BA42E

TITLE OF AUTHORIZED REPRESENTATIVE: Attorney-in-Fact — DATE: April 26, 2022

4. The Designated Applicant's U.S. Agent for Service of Process is: Corporation Services Company (NAME)

ADDRESS: 320 Somerulos St. — BOEM COMPANY NUMBER:

CITY: Baton Rouge — STATE: Louisiana — ZIP CODE: 70802-6129

AREA CODE and TELEPHONE NUMBER: (225) 387-8326 — AREA CODE and FAX NUMBER: (225) 387-8338 — E-MAIL ADDRESS:

PAPERWORK REDUCTION ACT STATEMENT

BUREAU OF OCEAN ENERGY MANAGEMENT
OIL POLLUTION ACT OF 1990
OIL SPILL FINANCIAL RESPONSIBILITY FOR OFFSHORE FACILITIES

The Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.) requires us to inform you that the Bureau of Ocean Energy Management (BOEM) collects this information to:

1. Provide a standard method for establishing eligibility for oil spill financial responsibility (OSFR) for offshore facilities;

2. Identify and maintain a record of those offshore facilities that have a potential oil spill liability;

3. Establish and maintain a continuous record, over the liability term specified in Title I of the Oil Pollution Act of 1990, of financial evidence and instruments established to pay claims for oil spill cleanup and damages resulting from operations conducted on offshore facilities and the transportation of oil from offshore platforms and wells;

4. Establish and maintain a continuous record of Responsible Parties, as defined in Title I of the Oil Pollution Act of 1990, and their agents or Authorized Representatives for oil spill financial responsibility for offshore facilities; and

5. Establish and maintain a continuous record, over the liability term specified in Title I of the Oil Pollution Act of 1990, of persons to contact and U.S. Agents for Service of Process for claims associated with oil spills from offshore facilities.

The BOEM will routinely use the information to:

1. Ensure compliance of offshore lessees and owners and operators of offshore facilities with Title I of the Oil Pollution Act of 1990;

2 Establish eligibility of applicants for OSFR; and

3. Establish a reference source of names, addresses, and telephone numbers of Responsible Parties for offshore facilities and their Authorized Representatives and Guarantors for claims associated with oil pollution from designated offshore facilities.

Responses are mandatory (33 U.S.C. 2716). No confidential or proprietary information is required to be submitted. The BOEM considers oil spill financial responsibility demonstrations, including supporting audited financial statements, to be public information open for review under the Freedom of Information Act (5 U.S.C. 552).

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid Office of Management and Budget (OMB) Control Number. The public reporting burden for an application for certification of oil spill financial responsibility is listed below. The burden includes the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the application. The average burden for this form and required information that could comprise a submission is 1 hour.

Comments regarding the burden estimate or any other aspect of this form should be directed to the Information Collection Clearance Officer, Bureau of Ocean Energy Management, 45600 Woodland Road, Sterling, VA 20166.

FINANCIAL GUARANTEE

CERTIFICATION OF OIL SPILL FINANCIAL RESPONSIBILITY IN ACCORDANCE WITH THE REQUIREMENTS OF THE OIL POLLUTION ACT OF 1990

(TYPE OR PRINT ALL INFORMATION EXCEPT SIGNATURES)

1. Designated Applicant: MOBIL OIL EXPLORATION & PRODUCTION SOUTHEAST INC. (COMPANY LEGAL NAME) 00540 (BOEM COMPANY NUMBER)

2. The Responsible Parties, identified in form(s) BOEM-1017 on file or attached, and Exxon Mobil Corporation (NAME OF ENTITY), a Corporation (TYPE OF ENTITY) created under the laws of New Jersey (STATE),

   and authorized to do business in the United States, as Guarantor, (hereinafter called Guarantor), agree to be jointly and severally liable to the United States of America and other claimants for damages and removal costs under the Oil Pollution Act of 1990, as amended, 33 U.S.C. § 2701 *et seq.* (hereinafter called OPA), in the sum indicated in section 4, for which payment our heirs, executors, administrators, successors, and assigns will also be liable, under the terms and conditions of Title 30 part 553 of the Code of Federal Regulations (CFR).

   This Guarantee is hereby provided on behalf of the Responsible Parties to comply with the requirements of 33 U.S.C. 2716(c) and is offered to satisfy any claim made under OPA.

3. For the purpose of this application, the undersigned is acting in the capacity of a Financial Guarantor in accordance with the requirements of 30 CFR 553.32.

4. The amount of coverage for which evidence of oil spill financial responsibility (OSFR) is being established is:

   $ 150,000,000.00

5. This coverage is effective: 05/01/2022 (DATE) and expires on the first calendar day of the fifth month after the close of the Financial Guarantor's fiscal year, which ends: 12/31/2022.

6. The Financial Guarantor may at any time give notice of intent to cancel this Guarantee by written notice sent by certified mail to the Designated Applicant with copies (plainly indicating the original notice was sent by certified mail) to all Responsible Parties and to the BOEM oil spill financial responsibility program by certified mail. This instrument will remain in force and the undersigned will remain liable until the expiration date above or until the earlier of: (1) thirty calendar days after Bureau of Ocean Energy Management (BOEM) and the Designated Applicant receive from the instrument issuer a notification of intent to cancel; (2) BOEM receives other acceptable OSFR evidence from your Designated Applicant; or (3) all the COFs to which the instrument applies are permanently abandoned in compliance with 30 CFR Part 250 or equivalent state requirements. The undersigned agrees that termination of this instrument will not affect the liability of the Financial Guarantor for claims arising from an incident (i.e., oil discharge or substantial threat of the discharge of oil) that occurs on or before the effective date of termination of this Guarantee.

The undersigned agrees that any suit or claim for which any Responsible Parties identified in form(s) BOEM-1017, on file or attached, represented by the aforementioned Designated Applicant may be liable under Title I of the Act may be brought directly against the Financial Guarantor for claims up to the amount of the penalty asserted by the U.S. government or other claimants when a Responsible Party denies or fails to pay a claim on the basis of insolvency or a Responsible Party has petitioned for bankruptcy under Title 11 of the U.S. Code.

The undersigned further agrees not to use any defenses except those that would be available to a Responsible Party for whom the Guarantee was provided or that the incident (i.e., oil discharge or a substantial threat of the discharge of oil) leading to the claim for removal costs or damages was caused by willful misconduct of a Responsible Party for whom the Designated Applicant demonstrated OSFR.

7. Financial Guarantor providing evidence of oil spill financial responsibility in the form of a Guarantee.

Exxon Mobil Corporation	00276
COMPANY LEGAL NAME	BOEM COMPANY NUMBER

5959 Las Colinas Boulevard
ADDRESS

Irving	Texas	75039
C ITY	STATE	ZIP CODE

Jun H. Kim	Attorney-in-Fact
CONTACT PERSON FOR CLAIMS	CONTACT PERSON'S TITLE

818-606-9660	N/A	jun.h.kim@exxonmobil.com
AREA CODE AND TELEPHONE NUMBER	AREA CODE AND FAX NUMBER	E-MAIL ADDRESS

8. The undersigned, as an Authorized Representative of the above-named Financial Guarantor, certifies on behalf of the Financial Guarantor that the requirements set forth in 30 CFR Part 553, and specifically §§ 553.20, 553.23-28, 553.30 and 553.40 have been met, and further agrees that, the Financial Guarantor, pursuant to the requirements of 30 CFR 553.15, will notify the BOEM oil spill financial responsibility program in the event that the Financial Guarantor is no longer able to maintain evidence of oil spill financial responsibility to the extent stated in section 4 above.

Jun H. Kim	DocuSigned by: JUN KIM FC1691726 1BA42E
NAME	SIGNATURE
Attorney-in-Fact	April 26, 2022
TITLE	DATE

9. The Financial Guarantor's U.S. Agent for Service of Process is:

Corporation Service Company	
NAME	BOEM COMPANY NUMBER

320 Somerulos St.
ADDRESS

Baton Rouge	Louisiana	70802-6129
CITY	STATE	ZIP CODE

225-387-8326	225-387-8338	
AREA CODE AND TELEPHONE NUMBER	AREA CODE AND FAX NUMBER	E-MAIL ADDRESS

10. The liability of the Financial Guarantor will not be discharged by any payment or succession of payments made, unless and until such payment or payments will amount in the aggregate to the amount of the Guarantee. In no event will the Financial Guarantor's obligation exceed the amount of the Guarantee, provided the Financial Guarantor furnishes timely written notice to the BOEM oil spill financial responsibility program of all claims filed, judgments rendered, and payments made by the Financial Guarantor under this Guarantee.

11. The Designated Applicant must, no later than the first calendar day of the fifth month after the close of your Financial Guarantor's fiscal year or expiration if earlier, submit either a renewal of this Financial Guarantee or other acceptable evidence of financial responsibility.

12. In witness whereof, the Designated Applicant for the Responsible Parties and the Financial Guarantor have executed this instrument on the April 26 (MONTH) day of 2022 (YEAR).

Designated Applicant for the Responsible Parties named herein:

DocuSigned by:
Dean Kaspar
4FAC9C4CD9C9442...
SIGNATURE OF AUTHORIZED REPRESENTATIVE

Dean D Kaspar
NAME OF AUTHORIZED REPRESENTATIVE

Safety, Security, Health & Environment Support Supervisor
TITLE OF AUTHORIZED REPRESENTATIVE

Financial Guarantor:

DocuSigned by:
JUN KIM
FC16917261BA42E...
SIGNATURE

Jun H. Kim
NAME

Attorney-in-Fact
TITLE

BOEM ID NUMBER	RESPONSIBLE PARTIES COVERED BY THIS AGREEMENT
	Submitted and on file with BOEM

PAPERWORK REDUCTION ACT STATEMENT

BUREAU OF OCEAN ENERGY MANAGEMENT

OIL POLLUTION ACT OF 1990

OIL SPILL FINANCIAL RESPONSIBILITY FOR OFFSHORE FACILITIES

The Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.) requires us to inform you that the Bureau of Ocean Energy Management (BOEM) collects this information to:

1. Provide a standard method for establishing eligibility for oil spill financial responsibility (OSFR) for offshore facilities;
2. Identify and maintain a record of those offshore facilities that have a potential oil spill liability;
3. Establish and maintain a continuous record, over the liability term specified in Title I of the Oil Pollution Act of 1990, of financial evidence and instruments established to pay claims for oil spill cleanup and damages resulting from operations conducted on offshore facilities and the transportation of oil from offshore platforms and wells;
4. Establish and maintain a continuous record of Responsible Parties, as defined in Title I of the Oil Pollution Act of 1990, and their agents or Authorized Representatives for oil spill financial responsibility for offshore facilities; and
5. Establish and maintain a continuous record, over the liability term specified in Title I of the Oil Pollution Act of 1990, of persons to contact and U.S. Agents for Service of Process for claims associated with oil spills from offshore facilities.

The BOEM will routinely use the information to:

1. Ensure compliance of offshore lessees and owners and operators of offshore facilities with Title I of the Oil Pollution Act of 1990;
2 Establish eligibility of applicants for OSFR; and
3. Establish a reference source of names, addresses, and telephone numbers of Responsible Parties for offshore facilities and their Authorized Representatives and Guarantors for claims associated with oil pollution from designated offshore facilities.

Responses are mandatory (33 U.S.C. 2716). No confidential or proprietary information is required to be submitted. The BOEM considers oil spill financial responsibility demonstrations, including supporting audited financial statements, to be public information open for review under the Freedom of Information Act (5 U.S.C. 552).

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid Office of Management and Budget (OMB) Control Number. The public reporting burden for an application for certification of oil spill financial responsibility is listed below. The burden includes the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the application. The average burden for this form and required information that could comprise a submission is 1.5 hours.

Comments regarding the burden estimate or any other aspect of this form should be directed to the Information Collection Clearance Officer, Bureau of Ocean Energy Management, 45600 Woodland Road, Sterling, VA 20166.

U.S. Department of the Interior
Bureau of Ocean Energy Management

OMB Control No.: 1010-0106
Expiration Date: 01/31/2023

COVERED OFFSHORE FACILITIES

CERTIFICATION OF OIL SPILL FINANCIAL RESPONSIBILITY IN ACCORDANCE WITH THE REQUIREMENTS OF THE OIL POLLUTION ACT OF 1990

(TYPE OR PRINT ALL INFORMATION EXCEPT SIGNATURES)

1. Designated Applicant: MOBIL OIL EXPLORATION & PRODUCING SOUTHEAST INC. (COMPANY LEGAL NAME) 00540 (BOEM COMPANY NUMBER)

2. The following list comprises all of the 3 (NUMBER) locations of covered offshore facilities to be covered by my certification of oil spill financial responsibility.

Jun H. Kim
NAME OF AUTHORIZED REPRESENTATIVE

DocuSigned by: JUN KIM
FC16017261BA42E...
SIGNATURE OF AUTHORIZED REPRESENTATIVE

Attorney-in-Fact
TITLE

April 26, 2022
DATE

3. Locations of covered offshore facilities:

STATE OR OCS REGION	LEASE NUMBER	ALIQUOT PORTION (If Applicable)	AREA NAME	BLOCK NUMBER	PERMIT NUMBER	RUE or ROW NUMBER	PIPELINE SEGMENT NUMBER	POTENTIAL WORST CASE OIL-SPILL DISCHARGE (In Barrels)
			see attached					

3. Locations of covered offshore facilities (continued):

STATE OR OCS REGION	LEASE NUMBER	ALIQUOT PORTION (If Applicable)	AREA NAME	BLOCK NUMBER	PERMIT NUMBER	RUE or ROW NUMBER	PIPELINE SEGMENT NUMBER	POTENTIAL WORST CASE OIL-SPILL DISCHARGE (In Barrels)

If additional space is required, additional copies of this page may be attached as continuation pages.

PAPERWORK REDUCTION ACT STATEMENT

BUREAU OF OCEAN ENERGY MANAGEMENT
OIL POLLUTION ACT OF 1990
OIL SPILL FINANCIAL RESPONSIBILITY FOR OFFSHORE FACILITIES

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4. Establish and maintain a continuous record of Responsible Parties, as defined in Title I of the Oil Pollution Act of 1990, and their agents or Authorized Representatives for oil spill financial responsibility for offshore facilities; and
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2. Establish eligibility of applicants for OSFR; and
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An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid Office of Management and Budget (OMB) Control Number. The public reporting burden for an application for certification of oil spill financial responsibility is listed below. The burden includes the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the application. The average burden for this form and required information that could comprise a submission is 6 hours.

Comments regarding the burden estimate or any other aspect of this form should be directed to the Information Collection Clearance Officer, Bureau of Ocean Energy Management, 45600 Woodland Road, Sterling, VA 20166.

List COFs for a Designated Applicant

MMS#: 00540
MOBIL OIL EXPLORATION & PRODUCING SOUTHEAST INC.

Total Number of COFs: 6
Total Number of Active COFs: 3
Total Number of Deleted COFs: 3

Financial Coverage

Insurance	$ 0
Self-Insurance	$ 0
Indemnity	$150,000,000
Surety Bonds	$ 0
Other	$ 0
Total	$150,000,000

22777 Springwoods Village Parkway
Spring TX 77389 United States

State	Lease Number	ROW/RUE Segment Number	Area/Block		Worst Case Volume	Effective Date	Expiration Date	Segments	Aliquots/ Remarks
	G01629		*MP*	*122*	*0*	*05/01/2021*	*09/01/2021*		
	G01649		*MP*	*237*	*0*	*05/01/2021*	*09/01/2021*		
	G01997		*WC*	*171*	*0*	*05/01/2021*	*09/01/2021*		
	G10493		LL	382	0	05/01/2021	05/01/2022		
	G10494		LL	383	0	05/01/2021	05/01/2022		
	G10495		LL	427	0	05/01/2021	05/01/2022		

Exxon Mobil Corporation
5959 Las Colinas Boulevard
Irving, Texas 75039-2298

Kathryn A. Mikells
Senior Vice President / Chief Financial Officer

March 22, 2023

Mr. Julie Yamamoto, Administrator
Department of Fish and Wildlife
Office of Spill Prevention and Response
Attn: Financial Responsibility Unit - Caitlin Hichborn
1010 Riverside Parkway
West Sacramento, California 95605

Re: Financial Assurance

Dear Ms. Hichborn:

I am the Senior Vice President and Chief Financial Officer of Exxon Mobil Corporation, a New Jersey corporation whose address is 5959 Las Colinas Boulevard, Irving, Texas, 75039.

The purpose of this letter is to support the corporation's use of self-insurance as a means for demonstrating financial responsibility in the amount and manner stated by the enclosed schedule pursuant to Title 14, California Code of Regulations, Section 795(b). Moreover, the corporation is the owner or operator of the marine facility or facilities described in the applicable application(s) for Certificate(s) of financial responsibility submitted to the Department of Fish and Wildlife's Office of Spill Prevention and Response by or on behalf of the corporation or its subsidiary or subsidiaries.

The corporation agrees to notify the Administrator for Spill Response by certified mail within seven business days if, at any time, the corporation fails to meet the self-insurance test criteria.

Kathryn A. Mikells
Senior Vice President / Chief Financial Officer
Exxon Mobil Corporation
March 22, 2023

Attachments

1. ExxonMobil Oil Corporation
(Name of owner or operator of vessel or facility)

whose address is 5959 Las Colinas Boulevard, Irving, Texas 75039
(Address of owner or operator of vessel or facility)

is the owner or operator of the ☐ vessel √ facility specified in the attached schedule, and desires to establish financial responsibility in accordance with the Lempert–Keene–Seastrand Oil Spill Prevention and Response Act (the "Act"); Article 5.5 (commencing with section 8670.37.51) of Chapter 7.4 of Division 1 of Title 2 of the Government Code, and Title 14, California Code of Regulations, section 791, et seq. (the "Regulations").

2. For valuable consideration, Exxon Mobil Corporation
(Name of Guarantor)

a(n) Corporation [if applicable - organized under
(Individual or type of business entity)

the laws of the State of New Jersey, whose address is

5959 Las Colinas Boulevard, Irving, Texas 75039
(Address of Guarantor)

agrees, subject to the provisions of this guaranty, to discharge the owner or operator's legal liability with respect to any claim arising under the Act, for cleanup and damages as specified in Government Code section 8670.56.5, resulting from oil spilled in or on waters of the State of California , or spills that could impact waters of the State of California, where the herein named owner or operator is determined to be a responsible party, for which payment the Guarantor jointly and severally binds itself, the owner or operator, and any successors and assigns of each firmly by these presents.

3. The Guarantor's liability under this guaranty does not exceed $ 100,000,000 for any incident(s).

4. Guarantor's liability attaches upon receiving notice from the Administrator of the Office of Spill Prevention and Response (the "Administrator") that the owner or operator is a responsible party with respect to a spill of oil, as specified in paragraph 2, and has failed to pay or perform pursuant to the Act.

5. The Guarantor complies with the self-insurance provisions set forth in section 795(b) of the Regulations, has provided the Administrator evidence of the Guarantor's financial responsibility sufficient to fulfill this and all other guaranties of financial responsibility issued under the Regulations, and hereby agrees to notify the Administrator by certified mail within five (5) business days if, at any time, the Guarantor fails to meet the self-insurance test criteria.

6. The Guarantor agrees to notify the Administrator by certified mail, of any proceeding in bankruptcy, voluntary or involuntary, naming Guarantor as a debtor, within five (5) business days after commencement of the proceedings.

7. Any claim for which liability may be lawfully established pursuant to the Act against the owner or operator as a responsible party may be asserted directly by the Administrator against the Guarantor. Except in circumstances where the Guarantor itself is a responsible party, the Guarantor's liability shall not exceed the amount of this guaranty.

8. During the effective period of this continuing guaranty, if the owner or operator named herein requests that a vessel or facility owned or operated by the herein named owner or operator, and not specified in the attached schedule, become the subject of this guaranty, and if the inclusion of that vessel or facility does not increase the required amount of this guaranty, then that vessel or facility is considered to be subject to this guaranty.

9. Guarantor agrees to remain bound under this continuing guaranty for so long as the owner or operator named herein must comply with the financial responsibility requirements of the Regulations for the vessel or facility listed in the attached schedule, except that the Guarantor may terminate this guaranty at any time prior to the expiration date set forth below by notifying the Administrator in writing. The termination date shall be thirty (30) days after written notice that the Guarantor has elected to terminate the guaranty and has so notified the herein named owner or operator, is received by the Administrator, as evidenced by a United States Postal return receipt. With respect to any vessel covered by the guaranty which are carrying oil in bulk as cargo and which were loaded prior to the termination date, termination shall not take effect earlier than thirty (30) days from the receipt by the Administrator of the notice prescribed above and furthermore not until either a) completion of the discharge of such cargo; b) until sixty (60) days after the receipt of the prescribed notice by the Administrator, whichever is earlier; or c) Guarantor provides other evidence of financial responsibility acceptable to the Administrator.

10. Guarantor agrees any and all payments shall be deposited into the standby trust fund established in accordance with Title 14, California Code of Regulations, section 795(e)(6), unless otherwise directed by the Administrator.

    If the Guarantor is the parent corporation of the owner or operator, then the requirement for a standby trust fund is waived and payments made under the terms of this guaranty shall be made as directed by the Administrator.

(Check one)

11. ☐ This guaranty expires on _____ (Date) or ☑ This guaranty shall be continuing.

12. This guaranty shall be subject to and governed by the laws of the State of California.

13. This guaranty is executed by the Guarantor to comply with the provisions of the Act; Article 5.5, commencing with section 8670.37.51, of Chapter 7.4 of Division 1 of Title 2 of the Government Code, and Title 14, California Code of Regulations, commencing with section 791, et seq., and said guaranty shall be subject to all of the terms and provisions thereof.

14. The Guarantor designates Corporation Services Company
    (Name of the agent for services of process)
    with offices at Suite 100, 2730 Gateway Oaks Drive, Sacramento, California 95833, California,
    (Address of agent for service of process)

    as the Guarantor's agent in the State of California for service of process for purposes of the Act.

    Effective Date: January 1, 2020
    (Month/Day/Year)

    Place of Execution: Irving, Texas
    (City State)

Typed name and address of Guarantor: Exxon Mobil Corporation, 5959 Las Colinas Blvd, Irving, TX 75039

I declare under penalty of perjury, under the laws of the State of California, that the foregoing is true and correct and that (check one):

- ☐ I have executed the foregoing guaranty under an unrevoked power of attorney.
- √ I am an officer or director of Guarantor with authority to bind Guarantor to this agreement and I have executed the foregoing guaranty under such authority under the laws of the State of California.

Executed at Irving, Texas (City and State), on March 19, 2020 (Date)

Signature of Attorney-in-Fact for Guarantor (or officer or director of Guarantor)

Andrew P. Swiger – Senior Vice President TF

Printed or typed name of Attorney-in-Fact for Guarantor
(or name and title of officer or director of Guarantor)

AFFIX CORPORATE SEAL (if applicable) (If person signing on behalf of Guarantor is not Guarantor's attorney-in-fact, include title and resolution of the Board of Directors giving signer authority to bind corporate Guarantor.)

ACKNOWLEDGMENT

State of Texas)
County of Dallas)
On 3/19/2020 (Date), before me Kimberly M. Young, Notary Public (Name, title of officer - e.g., Jane Doe, Notary Public)
personally appeared Andrew P. Swiger (Name of signer)

X personally known to me, or

_____ proved to me on the basis of satisfactory evidence,

to be the person whose name is subscribed to this instrument and acknowledged to me that he/she executed it in his/her authorized capacity, and that by his/her signature, on this instrument the person, or entity upon behalf of which the person acted, executed the instrument.

[Notary Seal]

KIMBERLY M. YOUNG
Notary Public, State of Texas
Comm. Expires 10-29-2020
Notary ID 8820779

Witness my hand and official seal.

Kimberly M Young (Signature of notary)

Notary Public for the State of Texas

My commission expires: 10-29-2020

SCHEDULE OF VESSELS OR FACILITIES

(if more space is needed, attach a separate sheet)

Type of Vessel or Facility	Name of Vessel or Facility	Home Port or Location of Facility
Facility	San Ardo Crude Storage	San Ardo, CA

New Jersey Department of Environmental Protection
Site Remediation Program

REMEDIATION FUNDING SOURCE SELF GUARANTEE APPLICATION

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: ExxonMobil Distribution Terminal #3018

Street Address: 198 Route 202/31 North

Municipality: Flemington (Township, Borough or City)

County: Hunterdon Zip Code: 08822

Program Interest (PI) Number(s): 001044

Case Tracking Number: E92352, 90-02-07-1629, 90-08-16-1522, 90-09-10-1027, 92-01-24-1631-10, 92-05-14-1045-12, 92-09-08-1332-37, 16-01-29-1434-59

SECTION B. OVERSIGHT DOCUMENT/AUTHORITY

1. Indicate the type(s) of Oversight Document/Authority in effect and provide the date the Oversight Document/Authority became effective and the name of the entity that entered into the oversight document *(check all that apply)*

- ☐ ACO.....Date: _____ Name of entity: _____
- ☐ Remediation Agreement (RA) ...Date: _____ Name of entity: _____
- ☐ Remediation Certification.....Date: _____ Name of entity: _____
- ☒ ISRA RAWP .....Date: 07/31/2018 Name of entity: Exxon Mobil Corporation
- ☐ Directive .....Date: _____ Name of entity: _____
- ☐ Order .....Date: _____ Name of entity: _____
- ☐ Court Order .....Date: _____ Name of entity: _____
- ☐ ACO Amendment .....Date: _____ Name of entity: _____
- ☐ RA Amendment .....Date: _____ Name of entity: _____

SECTION C. SELF-GUARANTEE APPLICANT / PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION

Name of Organization: Exxon Mobil Corporation

First Name of Contact: Ben Last Name of Contact: Wood

Title: Project Manager, ExxonMobil Environmental and Property Solutions Company

Phone Number: (346) 502-7324 Ext.: _____ Fax: _____

Mailing Address: 1900 East Linden Avenue, Building 28a

Municipality: Linden State: New Jersey Zip Code: 07036

Email Address: ben.wood@exxonmobil.com

1. Are you claiming to be a special purpose entity created specifically for the purpose of acquiring and redeveloping a contaminated site for which a statement of income and expenses are not available?..... ☐ Yes ☒ No
2. Does the person responsible for conducting the remediation produce its own audited financial statements? ..... ☒ Yes ☐ No

   If "No," does a Parent Company produce the audited financial statements? ..... ☐ Yes ☐ No

   If a Parent Company does produce the audited financial statements complete the Parent Company section below.

PARENT COMPANY INFORMATION *(If Applicable)*

Name of Organization: _____

First Name of Contact: _____ Last Name of Contact: _____

Title: _____

Phone Number: _____ Ext.: _____ Fax: _____

Mailing Address: _____

Municipality: _____ State: _____ Zip Code: _____

Email Address: _____

SECTION D. ESTIMATED COST OF REMEDIATION

1. Current estimated cost of remediation: $ 1,774,460.00
2. Estimated cost of remediation for the next 12-month period: $ 570,000.00

SECTION E. REMEDIATION FUNDING SOURCE (RFS) AMOUNT

Total amount of RFS to be established: ..... $ 1,774,460.00

SECTION F. FINANCIAL DOCUMENTATION

1. Does the required remediation funding source amount exceed one-third of the applicant's tangible net worth? ..... ☐ Yes ☒ No

   Self Guarantor's Net Worth (pg(s). 79) ..... $ 195,049,000,000.00

   Self Guarantor's Intangible Assets (pg(s). 79) ..... $ 2,036,000,000.00

   Self Guarantor's Tangible Net Worth (Net Worth minus Intangible Assets) ..... $ 193,013,000,000.00

   One-third of Tangible Net Worth Listed Above ..... $ 64,337,666,667.00

2. Is cash flow sufficient to assure the availability of sufficient monies for the remediation? ..... ☒ Yes ☐ No

   Self Guarantor's NET Cash provided by (used in) operating activities (pg(s). 80)..... $ 76,797,000,000.00

3. Do the gross receipts (revenues) exceed gross payments (expenses) in an amount at least equal to or greater than the estimated cost of remediation to be performed in the next 12-month period? .... ☒ Yes ☐ No

   Gross Receipts (revenues) (pg(s). 77) ..... $ 413,680,000,000.00

   Gross Payments (pg(s). 77) ..... $ 311,887,000,000.00

   Gross Receipts less Gross Payments ..... $ 101,793,000,000.00

Chief Financial Officer or Similar Officer Certification

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 3/22/23 By: _____

Signature

Kathryn A. Mikells

Print Full Name Signed Above

Senior Vice President / Chief Financial Officer

Title

KO

SECTION G. PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION CERTIFICATION

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 3/1/2023 By: Ben Wood

Signature

Ben Wood

Print Full Name Signed Above

Agent and Attorney-in-Fact for EMC

Title

Completed forms should be sent to:

Bureau of Case Assignment and Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

New Jersey Department of Environmental Protection
Site Remediation Program

REMEDIATION FUNDING SOURCE SELF GUARANTEE APPLICATION

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Mobil Oil Bulk Storage Facility

Street Address: 2141 Absecon Boulevard (Route 30)

Municipality: Atlantic City (Township, Borough or City)

County: Atlantic Zip Code: 08404

Program Interest (PI) Number(s): G000025805

Case Tracking Number: E93064

SECTION B. OVERSIGHT DOCUMENT/AUTHORITY

1. Indicate the type(s) of Oversight Document/Authority in effect and provide the date the Oversight Document/Authority became effective and the name of the entity that entered into the oversight document *(check all that apply)*

- ☐ ACO.....Date: _____ Name of entity: _____
- ☒ Remediation Agreement (RA) ...Date: 09/27/2002 Name of entity: ExxonMobil Oil Corporation
- ☐ Remediation Certification.....Date: _____ Name of entity: _____
- ☐ ISRA RAWP .....Date: _____ Name of entity: _____
- ☐ Directive .....Date: _____ Name of entity: _____
- ☐ Order .....Date: _____ Name of entity: _____
- ☐ Court Order .....Date: _____ Name of entity: _____
- ☐ ACO Amendment .....Date: _____ Name of entity: _____
- ☐ RA Amendment .....Date: _____ Name of entity: _____

SECTION C. SELF-GUARANTEE APPLICANT / PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION

Name of Organization: ExxonMobil Oil Corporation

First Name of Contact: Jason Last Name of Contact: Donalson

Title: Project Manager, ExxonMobil Environmental and Property Solutions Company

Phone Number: (346) 354-1224 Ext.: _____ Fax: _____

Mailing Address: 1900 East Linden Avenue, Building , Building 28A

Municipality: Linden State: New Jersey Zip Code: 07036

Email Address: jason.e.donalson@exxonmobil.com

1. Are you claiming to be a special purpose entity created specifically for the purpose of acquiring and redeveloping a contaminated site for which a statement of income and expenses are not available?..... ☐ Yes ☒ No
2. Does the person responsible for conducting the remediation produce its own audited financial statements? ..... ☐ Yes ☒ No

   If "No," does a Parent Company produce the audited financial statements? ..... ☒ Yes ☐ No

   If a Parent Company does produce the audited financial statements complete the Parent Company section below.

PARENT COMPANY INFORMATION *(If Applicable)*

Name of Organization: Exxon Mobil Corporation

First Name of Contact: Jason Last Name of Contact: Donalson

Title: Project Manager

Phone Number: (346) 354-1224 Ext.: Fax:

Mailing Address: 1900 East Linden Avenue, Building 28A

Municipality: Linden State: New Jersey Zip Code: 07036

Email Address: jason.e.donalson@exxonmobil.com

SECTION D. ESTIMATED COST OF REMEDIATION

1. Current estimated cost of remediation: $ 272,205.00
2. Estimated cost of remediation for the next 12-month period: $ 98,805.00

SECTION E. REMEDIATION FUNDING SOURCE (RFS) AMOUNT

Total amount of RFS to be established: ..... $ 272,205.00

SECTION F. FINANCIAL DOCUMENTATION

1. Does the required remediation funding source amount exceed one-third of the applicant's tangible net worth? ..... ☐ Yes ☒ No

   Self Guarantor's Net Worth (pg(s). 79) ..... $ 195,049,000,000.00

   Self Guarantor's Intangible Assets (pg(s). 79) ..... $ 2,036,000,000.00

   Self Guarantor's Tangible Net Worth (Net Worth minus Intangible Assets) ..... $ 193,013,000,000.00

   One-third of Tangible Net Worth Listed Above ..... $ 64,337,666,667.00

2. Is cash flow sufficient to assure the availability of sufficient monies for the remediation? ..... ☒ Yes ☐ No

   Self Guarantor's NET Cash provided by (used in) operating activities (pg(s). 80)..... $ 76,797,000,000.00

3. Do the gross receipts (revenues) exceed gross payments (expenses) in an amount at least equal to or greater than the estimated cost of remediation to be performed in the next 12-month period? .... ☒ Yes ☐ No

   Gross Receipts (revenues) (pg(s). 77) ..... $ 413,680,000,000.00

   Gross Payments (pg(s). 77) ..... $ 311,887,000,000.00

   Gross Receipts less Gross Payments ..... $ 101,793,000,000.00

Chief Financial Officer or Similar Officer Certification

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 3/22/23 By: _____

Signature

Kathryn A. Mikells

Print Full Name Signed Above

Senior Vice President / Chief Financial Officer

Title

KO

SECTION G. PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION CERTIFICATION

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 3/13/23

By: _____
Signature

Jason Donalson
Print Full Name Signed Above

Agent and Attorney-in-Fact for EMOC
Title

Completed forms should be sent to:

Bureau of Case Assignment and Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

New Jersey Department of Environmental Protection
Site Remediation Program

REMEDIATION FUNDING SOURCE SELF GUARANTEE APPLICATION

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Former Mobil Trenton Terminal

Street Address: 2875 Lamberton Road

Municipality: Hamilton (Township, Borough or City)

County: Mercer Zip Code: 08611

Program Interest (PI) Number(s): 001060

Case Tracking Number: (ISRA# 1276) 90-05-07-1406, 92-03-04-1121-31, 01-07-17-1609-21

SECTION B. OVERSIGHT DOCUMENT/AUTHORITY

1. Indicate the type(s) of Oversight Document/Authority in effect and provide the date the Oversight Document/Authority became effective and the name of the entity that entered into the oversight document *(check all that apply)*

☐	ACO	Date:	Name of entity:	
☐	Remediation Agreement (RA)	Date:	Name of entity:	
☐	Remediation Certification	Date:	Name of entity:	
☒	ISRA RAWP	Date: 11/05/2003	Name of entity:	ExxonMobil Oil Corporation
☐	Directive	Date:	Name of entity:	
☐	Order	Date:	Name of entity:	
☐	Court Order	Date:	Name of entity:	
☐	ACO Amendment	Date:	Name of entity:	
☐	RA Amendment	Date:	Name of entity:	

SECTION C. SELF-GUARANTEE APPLICANT / PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION

Name of Organization: Mobil Oil Corporation (ExxonMobil Oil Corporation)

First Name of Contact: Ben Last Name of Contact: Wood

Title: Project Manager, ExxonMobil Environmental and Property Solutions Company

Phone Number: (346) 502-7324 Ext.: Fax:

Mailing Address: 1900 East Linden Avenue, Building 28a

Municipality: Linden State: New Jersey Zip Code: 07036

Email Address: ben.wood@exxonmobil.com

1. Are you claiming to be a special purpose entity created specifically for the purpose of acquiring and redeveloping a contaminated site for which a statement of income and expenses are not available? ..... ☐ Yes ☒ No
2. Does the person responsible for conducting the remediation produce its own audited financial statements? ..... ☐ Yes ☒ No

   If "No," does a Parent Company produce the audited financial statements? ..... ☒ Yes ☐ No

   If a Parent Company does produce the audited financial statements complete the Parent Company section below.

PARENT COMPANY INFORMATION *(If Applicable)*

Name of Organization: Exxon Mobil Corporation

First Name of Contact: Ben Last Name of Contact: Wood

Title: Project Manager, ExxonMobil Environmental and Property Solutions Company

Phone Number: (346) 502-7324 Ext.: Fax:

Mailing Address: 1900 East Linden Avenue, Building 28A

Municipality: Linden State: New Jersey Zip Code: 07036

Email Address: ben.wood@exxonmobil.com

SECTION D. ESTIMATED COST OF REMEDIATION

1. Current estimated cost of remediation: $ 1,350,095.00
2. Estimated cost of remediation for the next 12-month period: $ 160,527.00

SECTION E. REMEDIATION FUNDING SOURCE (RFS) AMOUNT

Total amount of RFS to be established: ..... $ 1,350,095.00

SECTION F. FINANCIAL DOCUMENTATION

1. Does the required remediation funding source amount exceed one-third of the applicant's tangible net worth? ..... ☐ Yes ☒ No

   Self Guarantor's Net Worth (pg(s). 79) ..... $ 195,049,000,000.00

   Self Guarantor's Intangible Assets (pg(s). 79) ..... $ 2,036,000,000.00

   Self Guarantor's Tangible Net Worth (Net Worth minus Intangible Assets) ..... $ 193,013,000,000.00

   One-third of Tangible Net Worth Listed Above ..... $ 64,337,666,667.00

2. Is cash flow sufficient to assure the availability of sufficient monies for the remediation? ..... ☒ Yes ☐ No

   Self Guarantor's NET Cash provided by (used in) operating activities (pg(s). 80)..... $ 76,797,000,000.00

3. Do the gross receipts (revenues) exceed gross payments (expenses) in an amount at least equal to or greater than the estimated cost of remediation to be performed in the next 12-month period? .... ☒ Yes ☐ No

   Gross Receipts (revenues) (pg(s). 77) ..... $ 413,680,000,000.00

   Gross Payments (pg(s). 77) ..... $ 311,887,000,000.00

   Gross Receipts less Gross Payments ..... $ 101,793,000,000.00

Chief Financial Officer or Similar Officer Certification

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 3/22/23 By: Signature

Kathryn A. Mikells

Print Full Name Signed Above

Senior Vice President / Chief Financial Officer

Title

SECTION G. PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION CERTIFICATION

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 2/27/2023 By: Ben Wood

Signature

Ben Wood

Print Full Name Signed Above

Agent and Attorney-in-Fact for EMOC

Title

Completed forms should be sent to:

Bureau of Case Assignment and Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

New Jersey Department of Environmental Protection
Site Remediation Program

REMEDIATION FUNDING SOURCE SELF GUARANTEE APPLICATION

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Former Exxon Paulsboro Terminal

Street Address: 3rd Street & Billingsport Road

Municipality: Borough of Paulsboro (Township, Borough or City)

County: Gloucester Zip Code: 08066

Program Interest (PI) Number(s): G000002406

Case Tracking Number: E89947

SECTION B. OVERSIGHT DOCUMENT/AUTHORITY

1. Indicate the type(s) of Oversight Document/Authority in effect and provide the date the Oversight Document/Authority became effective and the name of the entity that entered into the oversight document *(check all that apply)*

- ☐ ACO.....Date: _____ Name of entity: _____
- ☐ Remediation Agreement (RA) ...Date: _____ Name of entity: _____
- ☐ Remediation Certification.....Date: _____ Name of entity: _____
- ☒ ISRA RAWP .....Date: 04/30/1990 Name of entity: Exxon Mobil Corporation
- ☐ Directive .....Date: _____ Name of entity: _____
- ☐ Order .....Date: _____ Name of entity: _____
- ☐ Court Order .....Date: _____ Name of entity: _____
- ☐ ACO Amendment .....Date: _____ Name of entity: _____
- ☐ RA Amendment .....Date: _____ Name of entity: _____

SECTION C. SELF-GUARANTEE APPLICANT / PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION

Name of Organization: Exxon Mobil Corporation

First Name of Contact: Jason Last Name of Contact: Donalson

Title: Project Manager, ExxonMobil Environmental and Property Solutions Company

Phone Number: (346) 354-1224 Ext.: _____ Fax: _____

Mailing Address: 1900 East Linden Avenue, Building 28A

Municipality: Linden State: New Jersey Zip Code: 07036

Email Address: jason.e.donalson@exxonmobil.com

1. Are you claiming to be a special purpose entity created specifically for the purpose of acquiring and redeveloping a contaminated site for which a statement of income and expenses are not available?..... ☐ Yes ☒ No
2. Does the person responsible for conducting the remediation produce its own audited financial statements? ..... ☒ Yes ☐ No

   If "No," does a Parent Company produce the audited financial statements? ..... ☐ Yes ☐ No

   If a Parent Company does produce the audited financial statements complete the Parent Company section below.

PARENT COMPANY INFORMATION *(If Applicable)*

Name of Organization: _____

First Name of Contact: _____ Last Name of Contact: _____

Title: _____

Phone Number: _____ Ext.: _____ Fax: _____

Mailing Address: _____

Municipality: _____ State: _____ Zip Code: _____

Email Address: _____

SECTION D. ESTIMATED COST OF REMEDIATION

1. Current estimated cost of remediation: $ 418,478.00
2. Estimated cost of remediation for the next 12-month period: $ 171,625.00

SECTION E. REMEDIATION FUNDING SOURCE (RFS) AMOUNT

Total amount of RFS to be established: ..... $ 418,478.00

SECTION F. FINANCIAL DOCUMENTATION

1. Does the required remediation funding source amount exceed one-third of the applicant's tangible net worth? ..... ☐ Yes ☒ No

   Self Guarantor's Net Worth (pg(s). 79) ..... $ 195,049,000,000.00

   Self Guarantor's Intangible Assets (pg(s). 79) ..... $ 2,036,000,000.00

   Self Guarantor's Tangible Net Worth (Net Worth minus Intangible Assets) ..... $ 193,013,000,000.00

   One-third of Tangible Net Worth Listed Above ..... $ 64,337,666,667.00

2. Is cash flow sufficient to assure the availability of sufficient monies for the remediation? ..... ☒ Yes ☐ No

   Self Guarantor's NET Cash provided by (used in) operating activities (pg(s). 80)..... $ 76,797,000,000.00

3. Do the gross receipts (revenues) exceed gross payments (expenses) in an amount at least equal to or greater than the estimated cost of remediation to be performed in the next 12-month period? .... ☒ Yes ☐ No

   Gross Receipts (revenues) (pg(s). 77) ..... $ 413,680,000,000.00

   Gross Payments (pg(s). 77) ..... $ 311,887,000,000.00

   Gross Receipts less Gross Payments ..... $ 101,793,000,000.00

Chief Financial Officer or Similar Officer Certification

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 3/22/23 By: _____

Signature

Kathryn A. Mikells

Print Full Name Signed Above

Senior Vice President / Chief Financial Officer

Title

SECTION G. PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION CERTIFICATION

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 3/13/23

By: _____
Signature

Jason Donalson
Print Full Name Signed Above

Agent and Attorney-in-Fact for EMC
Title

Completed forms should be sent to:

Bureau of Case Assignment and Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

New Jersey Department of Environmental Protection
Site Remediation Program

REMEDIATION FUNDING SOURCE SELF GUARANTEE APPLICATION

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Former Exxon Bayonne Terminal

Street Address: 250 East 22nd Street

Municipality: City of Bayonne (Township, Borough or City)

County: Hudson Zip Code: 07002

Program Interest (PI) Number(s): PI# 005822

Case Tracking Number: LSR 130001, E92727, E93089, E20080279

SECTION B. OVERSIGHT DOCUMENT/AUTHORITY

1. Indicate the type(s) of Oversight Document/Authority in effect and provide the date the Oversight Document/Authority became effective and the name of the entity that entered into the oversight document *(check all that apply)*

- ☐ ACO.....Date: _____ Name of entity: _____
- ☐ Remediation Agreement (RA) ...Date: _____ Name of entity: _____
- ☐ Remediation Certification.....Date: _____ Name of entity: _____
- ☒ ISRA RAWP .....Date: 11/17/2021 Name of entity: Exxon Mobil Corporation
- ☐ Directive .....Date: _____ Name of entity: _____
- ☐ Order .....Date: _____ Name of entity: _____
- ☐ Court Order .....Date: _____ Name of entity: _____
- ☐ ACO Amendment .....Date: _____ Name of entity: _____
- ☐ RA Amendment .....Date: _____ Name of entity: _____

SECTION C. SELF-GUARANTEE APPLICANT / PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION

Name of Organization: Exxon Mobil Corporation

First Name of Contact: Ben Last Name of Contact: Wood

Title: Project Manager, ExxonMobil Environmental and Property Solutions Company

Phone Number: (346) 502-7324 Ext.: _____ Fax: _____

Mailing Address: 1900 East Linden Avenue, Building 28a

Municipality: Linden State: New Jersey Zip Code: 07036

Email Address: ben.wood@exxonmobil.com

1. Are you claiming to be a special purpose entity created specifically for the purpose of acquiring and redeveloping a contaminated site for which a statement of income and expenses are not available?..... ☐ Yes ☒ No
2. Does the person responsible for conducting the remediation produce its own audited financial statements? ..... ☒ Yes ☐ No

   If "No," does a Parent Company produce the audited financial statements? ..... ☐ Yes ☐ No

   If a Parent Company does produce the audited financial statements complete the Parent Company section below.

PARENT COMPANY INFORMATION *(If Applicable)*

Name of Organization: _____

First Name of Contact: _____ Last Name of Contact: _____

Title: _____

Phone Number: _____ Ext.: _____ Fax: _____

Mailing Address: _____

Municipality: _____ State: _____ Zip Code: _____

Email Address: _____

SECTION D. ESTIMATED COST OF REMEDIATION

1. Current estimated cost of remediation: $ 43,141,286.00
2. Estimated cost of remediation for the next 12-month period: $ 1,250,000.00

SECTION E. REMEDIATION FUNDING SOURCE (RFS) AMOUNT

Total amount of RFS to be established: ..... $ 43,141,286.00

SECTION F. FINANCIAL DOCUMENTATION

1. Does the required remediation funding source amount exceed one-third of the applicant's tangible net worth? ..... ☐ Yes ☒ No

   Self Guarantor's Net Worth (pg(s). 79) ..... $ 195,049,000,000.00

   Self Guarantor's Intangible Assets (pg(s). 79) ..... $ 2,036,000,000.00

   Self Guarantor's Tangible Net Worth (Net Worth minus Intangible Assets) ..... $ 193,013,000,000.00

   One-third of Tangible Net Worth Listed Above ..... $ 64,337,666,667.00

2. Is cash flow sufficient to assure the availability of sufficient monies for the remediation? ..... ☒ Yes ☐ No

   Self Guarantor's NET Cash provided by (used in) operating activities (pg(s). 80)..... $ 76,797,000,000.00

3. Do the gross receipts (revenues) exceed gross payments (expenses) in an amount at least equal to or greater than the estimated cost of remediation to be performed in the next 12-month period? .... ☒ Yes ☐ No

   Gross Receipts (revenues) (pg(s). 77) ..... $ 413,680,000,000.00

   Gross Payments (pg(s). 77) ..... $ 311,887,000,000.00

   Gross Receipts less Gross Payments ..... $ 101,793,000,000.00

Chief Financial Officer or Similar Officer Certification

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 3/22/23

By: _____
Signature

Kathryn A. Mikells
Print Full Name Signed Above

Senior Vice President / Chief Financial Officer
Title

KO

SECTION G. PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION CERTIFICATION

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 2/27/2023

By: Ben Wood
Signature

Ben Wood
Print Full Name Signed Above

Agent and Attorney-in-Fact for EMC
Title

Completed forms should be sent to:

Bureau of Case Assignment and Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

New Jersey Department of Environmental Protection
Site Remediation Program

REMEDIATION FUNDING SOURCE SELF GUARANTEE APPLICATION

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Former Exxon Bayonne Terminal

Street Address: 250 East 22nd Street

Municipality: City of Bayonne (Township, Borough or City)

County: Hudson Zip Code: 07002

Program Interest (PI) Number(s): PI# 005822

Case Tracking Number: CN NJD 045435807

SECTION B. OVERSIGHT DOCUMENT/AUTHORITY

1. Indicate the type(s) of Oversight Document/Authority in effect and provide the date the Oversight Document/Authority became effective and the name of the entity that entered into the oversight document *(check all that apply)*

☒	ACO	Date: 11/27/1991	Name of entity:	Exxon Mobil Corporation
☐	Remediation Agreement (RA)	Date:	Name of entity:	
☐	Remediation Certification	Date:	Name of entity:	
☐	ISRA RAWP	Date:	Name of entity:	
☐	Directive	Date:	Name of entity:	
☐	Order	Date:	Name of entity:	
☐	Court Order	Date:	Name of entity:	
☒	ACO Amendment	Date: 12/18/1998	Name of entity:	Exxon Mobil Corporation
☐	RA Amendment	Date:	Name of entity:	

SECTION C. SELF-GUARANTEE APPLICANT / PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION

Name of Organization: Exxon Mobil Corporation

First Name of Contact: Ben Last Name of Contact: Wood

Title: Project Manager, ExxonMobil Environmental and Property Solutions Company

Phone Number: (346) 502-7324 Ext.: Fax:

Mailing Address: 1900 E Linden Avenue, Building 28a

Municipality: Linden State: New Jersey Zip Code: 07036

Email Address: ben.wood@exxonmobil.com

1. Are you claiming to be a special purpose entity created specifically for the purpose of acquiring and redeveloping a contaminated site for which a statement of income and expenses are not available? ☐ Yes ☒ No
2. Does the person responsible for conducting the remediation produce its own audited financial statements? ☒ Yes ☐ No

   If "No," does a Parent Company produce the audited financial statements? ☐ Yes ☐ No

   If a Parent Company does produce the audited financial statements complete the Parent Company section below.

PARENT COMPANY INFORMATION *(If Applicable)*

Name of Organization: _____

First Name of Contact: _____ Last Name of Contact: _____

Title: _____

Phone Number: _____ Ext.: _____ Fax: _____

Mailing Address: _____

Municipality: _____ State: _____ Zip Code: _____

Email Address: _____

SECTION D. ESTIMATED COST OF REMEDIATION

1. Current estimated cost of remediation: $ 20,328,000.00
2. Estimated cost of remediation for the next 12-month period: $ 805,938.00

SECTION E. REMEDIATION FUNDING SOURCE (RFS) AMOUNT

Total amount of RFS to be established: ..... $ 22,500,000.00

SECTION F. FINANCIAL DOCUMENTATION

1. Does the required remediation funding source amount exceed one-third of the applicant's tangible net worth? ..... ☐ Yes ☒ No

   Self Guarantor's Net Worth (pg(s). 79) ..... $ 195,049,000,000.00

   Self Guarantor's Intangible Assets (pg(s). 79) ..... $ 2,036,000,000.00

   Self Guarantor's Tangible Net Worth (Net Worth minus Intangible Assets) ..... $ 193,013,000,000.00

   One-third of Tangible Net Worth Listed Above ..... $ 64,337,666,667.00

2. Is cash flow sufficient to assure the availability of sufficient monies for the remediation? ..... ☒ Yes ☐ No

   Self Guarantor's NET Cash provided by (used in) operating activities (pg(s). 80)..... $ 76,797,000,000.00

3. Do the gross receipts (revenues) exceed gross payments (expenses) in an amount at least equal to or greater than the estimated cost of remediation to be performed in the next 12-month period? .... ☒ Yes ☐ No

   Gross Receipts (revenues) (pg(s). 77) ..... $ 413,680,000,000.00

   Gross Payments (pg(s). 77) ..... $ 311,887,000,000.00

   Gross Receipts less Gross Payments ..... $ 101,793,000,000.00

Chief Financial Officer or Similar Officer Certification

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 3/22/23

By: _____
Signature

Kathryn A. Mikells
Print Full Name Signed Above

Senior Vice President / Chief Financial Officer
Title

KO

SECTION G. PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION CERTIFICATION

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 2/27/2023 By: Ben Wood

Signature

Ben Wood

Print Full Name Signed Above

Agent and Attorney-in-Fact for EMC

Title

Completed forms should be sent to:

Bureau of Case Assignment and Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

New Jersey Department of Environmental Protection
Site Remediation Program

REMEDIATION FUNDING SOURCE SELF GUARANTEE APPLICATION

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Bayway Refinery Complex

Street Address: 1400 Park Avenue

Municipality: City of Linden (Township, Borough or City)

County: Union Zip Code: 07036

Program Interest (PI) Number(s): 008282

Case Tracking Number: CN NJD 062037031

SECTION B. OVERSIGHT DOCUMENT/AUTHORITY

1. Indicate the type(s) of Oversight Document/Authority in effect and provide the date the Oversight Document/Authority became effective and the name of the entity that entered into the oversight document *(check all that apply)*

- ☒ ACO.....Date: 11/27/1991 Name of entity: Exxon Mobil Corporation
- ☐ Remediation Agreement (RA) ...Date: _____ Name of entity: _____
- ☐ Remediation Certification.....Date: _____ Name of entity: _____
- ☐ ISRA RAWP .....Date: _____ Name of entity: _____
- ☐ Directive .....Date: _____ Name of entity: _____
- ☐ Order .....Date: _____ Name of entity: _____
- ☐ Court Order .....Date: _____ Name of entity: _____
- ☒ ACO Amendment .....Date: _____ Name of entity: Exxon Mobil Corporation (4/93 & 12/94)
- ☐ RA Amendment .....Date: _____ Name of entity: _____

SECTION C. SELF-GUARANTEE APPLICANT / PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION

Name of Organization: Exxon Mobil Corporation

First Name of Contact: Maureen Last Name of Contact: Forlenza

Title: Project Manager ExxonMobil Environmental and Property Solutions Company

Phone Number: (703) 963-7132 Ext.: _____ Fax: _____

Mailing Address: 1900 East Linden Avenue, Building 28a

Municipality: Linden State: NJ Zip Code: 07036

Email Address: maureen.p.forlenza@exxonmobil.com

1. Are you claiming to be a special purpose entity created specifically for the purpose of acquiring and redeveloping a contaminated site for which a statement of income and expenses are not available?..... ☐ Yes ☒ No
2. Does the person responsible for conducting the remediation produce its own audited financial statements? ..... ☒ Yes ☐ No

   If "No," does a Parent Company produce the audited financial statements? ..... ☐ Yes ☐ No

   If a Parent Company does produce the audited financial statements complete the Parent Company section below.

PARENT COMPANY INFORMATION *(If Applicable)*

Name of Organization: _____

First Name of Contact: _____ Last Name of Contact: _____

Title: _____

Phone Number: _____ Ext.: _____ Fax: _____

Mailing Address: _____

Municipality: _____ State: _____ Zip Code: _____

Email Address: _____

SECTION D. ESTIMATED COST OF REMEDIATION

1. Current estimated cost of remediation: $ 188,060,000.00
2. Estimated cost of remediation for the next 12-month period: $ 25,700,000.00

SECTION E. REMEDIATION FUNDING SOURCE (RFS) AMOUNT

Total amount of RFS to be established: ..... $ 25,000,000.00

SECTION F. FINANCIAL DOCUMENTATION

1. Does the required remediation funding source amount exceed one-third of the applicant's tangible net worth? ..... ☐ Yes ☒ No

   Self Guarantor's Net Worth (pg(s). 79) ..... $ 195,049,000,000.00

   Self Guarantor's Intangible Assets (pg(s). 79) ..... $ 2,036,000,000.00

   Self Guarantor's Tangible Net Worth (Net Worth minus Intangible Assets) ..... $ 193,013,000,000.00

   One-third of Tangible Net Worth Listed Above ..... $ 64,337,666,667.00

2. Is cash flow sufficient to assure the availability of sufficient monies for the remediation? ..... ☒ Yes ☐ No

   Self Guarantor's NET Cash provided by (used in) operating activities (pg(s). 80)..... $ 76,797,000,000.00

3. Do the gross receipts (revenues) exceed gross payments (expenses) in an amount at least equal to or greater than the estimated cost of remediation to be performed in the next 12-month period? .... ☒ Yes ☐ No

   Gross Receipts (revenues) (pg(s). 77) ..... $ 413,680,000,000.00

   Gross Payments (pg(s). 77) ..... $ 311,887,000,000.00

   Gross Receipts less Gross Payments ..... $ 101,793,000,000.00

Chief Financial Officer or Similar Officer Certification

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 3/22/23 By: _____

Signature

Kathryn A. Mikells

Print Full Name Signed Above

Senior Vice President / Chief Financial Officer

Title

SECTION G. PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION CERTIFICATION

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 3/3/23

By: Maureen Forlenza
Signature

Maureen Forlenza
Print Full Name Signed Above

Agent and Attorney-in-fact for EMC
Title

Completed forms should be sent to:

Bureau of Case Assignment and Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

New Jersey Department of Environmental Protection
Site Remediation Program

REMEDIATION FUNDING SOURCE SELF GUARANTEE APPLICATION

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Former Lail Property

Street Address: Cohawkin Road and Berkley Road

Municipality: East Greenwich Township (Township, Borough or City)

County: Gloucester Zip Code: 08020

Program Interest (PI) Number(s): G000006032

Case Tracking Number: NJD982178790

SECTION B. OVERSIGHT DOCUMENT/AUTHORITY

1. Indicate the type(s) of Oversight Document/Authority in effect and provide the date the Oversight Document/Authority became effective and the name of the entity that entered into the oversight document *(check all that apply)*

- ☒ ACO ..... Date: 10/04/2005 Name of entity: Exxon Mobil Corporation
- ☐ Remediation Agreement (RA) ... Date: Name of entity:
- ☐ Remediation Certification ..... Date: Name of entity:
- ☐ ISRA RAWP ..... Date: Name of entity:
- ☐ Directive ..... Date: Name of entity:
- ☐ Order ..... Date: Name of entity:
- ☐ Court Order ..... Date: Name of entity:
- ☐ ACO Amendment ..... Date: Name of entity:
- ☐ RA Amendment ..... Date: Name of entity:

SECTION C. SELF-GUARANTEE APPLICANT / PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION

Name of Organization: Exxon Mobil Corporation

First Name of Contact: Juliann Last Name of Contact: Naughton

Title: Portfolio Manager, ExxonMobil Environmental & Property Solutions

Phone Number: (346) 224-4654 Ext.: Fax:

Mailing Address: 22777 Springwoods Village Parkway, Wellness 3.2A.581

Municipality: Spring State: TX Zip Code: 77389

Email Address: juliann.c.naughton@exxonmobil.com

1. Are you claiming to be a special purpose entity created specifically for the purpose of acquiring and redeveloping a contaminated site for which a statement of income and expenses are not available? ..... ☐ Yes ☒ No
2. Does the person responsible for conducting the remediation produce its own audited financial statements? ..... ☒ Yes ☐ No

   If "No," does a Parent Company produce the audited financial statements? ..... ☐ Yes ☐ No

   If a Parent Company does produce the audited financial statements complete the Parent Company section below.

PARENT COMPANY INFORMATION *(If Applicable)*

Name of Organization: _____

First Name of Contact: _____ Last Name of Contact: _____

Title: _____

Phone Number: _____ Ext.: _____ Fax: _____

Mailing Address: _____

Municipality: _____ State: _____ Zip Code: _____

Email Address: _____

SECTION D. ESTIMATED COST OF REMEDIATION

1. Current estimated cost of remediation: $ 267,000.00
2. Estimated cost of remediation for the next 12-month period: $ 6,500.00

SECTION E. REMEDIATION FUNDING SOURCE (RFS) AMOUNT

Total amount of RFS to be established: ..... $ 267,000.00

SECTION F. FINANCIAL DOCUMENTATION

1. Does the required remediation funding source amount exceed one-third of the applicant's tangible net worth? ..... ☐ Yes ☒ No

   Self Guarantor's Net Worth (pg(s). 79) ..... $ 195,049,000,000.00

   Self Guarantor's Intangible Assets (pg(s). 79) ..... $ 2,036,000,000.00

   Self Guarantor's Tangible Net Worth (Net Worth minus Intangible Assets) ..... $ 193,013,000,000.00

   One-third of Tangible Net Worth Listed Above ..... $ 64,337,666,667.00

2. Is cash flow sufficient to assure the availability of sufficient monies for the remediation? ..... ☒ Yes ☐ No

   Self Guarantor's NET Cash provided by (used in) operating activities (pg(s). 80)..... $ 76,797,000,000.00

3. Do the gross receipts (revenues) exceed gross payments (expenses) in an amount at least equal to or greater than the estimated cost of remediation to be performed in the next 12-month period? .... ☒ Yes ☐ No

   Gross Receipts (revenues) (pg(s). 77) ..... $ 413,680,000,000.00

   Gross Payments (pg(s). 77) ..... $ 311,887,000,000.00

   Gross Receipts less Gross Payments ..... $ 101,793,000,000.00

Chief Financial Officer or Similar Officer Certification

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 3/22/23 By: _____

Signature

Kathryn A. Mikells

Print Full Name Signed Above

Senior Vice President / Chief Financial Officer

Title

SECTION G. PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION CERTIFICATION

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 3/16/2023

By: _____
Signature

Juliann Naughton
Print Full Name Signed Above

Agent and Attorney-in-Fact for EMC
Title

Completed forms should be sent to:

Bureau of Case Assignment and Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

New Jersey Department of Environmental Protection
Site Remediation Program

REMEDIATION FUNDING SOURCE SELF GUARANTEE APPLICATION

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Exxon Linden Technology Center

Street Address: 1900 East Linden Avenue

Municipality: Linden (Township, Borough or City)

County: Union Zip Code: 07036

Program Interest (PI) Number(s): 007768

Case Tracking Number: CN NJD 002570893

SECTION B. OVERSIGHT DOCUMENT/AUTHORITY

1. Indicate the type(s) of Oversight Document/Authority in effect and provide the date the Oversight Document/Authority became effective and the name of the entity that entered into the oversight document *(check all that apply)*

- ☒ ACO.....Date: 11/27/1991 Name of entity: Exxon Mobil Corporation
- ☐ Remediation Agreement (RA) ...Date: _____ Name of entity: _____
- ☐ Remediation Certification.....Date: _____ Name of entity: _____
- ☐ ISRA RAWP .....Date: _____ Name of entity: _____
- ☐ Directive .....Date: _____ Name of entity: _____
- ☐ Order .....Date: _____ Name of entity: _____
- ☐ Court Order .....Date: _____ Name of entity: _____
- ☐ ACO Amendment .....Date: _____ Name of entity: _____
- ☐ RA Amendment .....Date: _____ Name of entity: _____

SECTION C. SELF-GUARANTEE APPLICANT / PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION

Name of Organization: Exxon Mobil Corporation

First Name of Contact: Breanna Last Name of Contact: Jackson

Title: Project Manager, ExxonMobil Environmental and Property Solutions Company

Phone Number: (201) 407-0462 Ext.: _____ Fax: _____

Mailing Address: 1900 East Linden Avenue, Building 28A

Municipality: Linden State: NJ Zip Code: 07036

Email Address: breanna.j.jackson@exxonmobil.com

1. Are you claiming to be a special purpose entity created specifically for the purpose of acquiring and redeveloping a contaminated site for which a statement of income and expenses are not available?..... ☐ Yes ☒ No
2. Does the person responsible for conducting the remediation produce its own audited financial statements? ..... ☒ Yes ☐ No

   If "No," does a Parent Company produce the audited financial statements? ..... ☒ Yes ☐ No

   If a Parent Company does produce the audited financial statements complete the Parent Company section below.

PARENT COMPANY INFORMATION *(If Applicable)*

Name of Organization: _____

First Name of Contact: _____ Last Name of Contact: _____

Title: _____

Phone Number: _____ Ext.: _____ Fax: _____

Mailing Address: _____

Municipality: _____ State: _____ Zip Code: _____

Email Address: _____

SECTION D. ESTIMATED COST OF REMEDIATION

1. Current estimated cost of remediation: $ 1,137,600.00
2. Estimated cost of remediation for the next 12-month period: $ 272,801.00

SECTION E. REMEDIATION FUNDING SOURCE (RFS) AMOUNT

Total amount of RFS to be established: ..... $ 2,500,000.00

SECTION F. FINANCIAL DOCUMENTATION

1. Does the required remediation funding source amount exceed one-third of the applicant's tangible net worth? ..... ☐ Yes ☒ No

   Self Guarantor's Net Worth (pg(s). 79) ..... $ 195,049,000,000.00

   Self Guarantor's Intangible Assets (pg(s). 79) ..... $ 2,036,000,000.00

   Self Guarantor's Tangible Net Worth (Net Worth minus Intangible Assets) ..... $ 193,013,000,000.00

   One-third of Tangible Net Worth Listed Above ..... $ 64,337,666,667.00

2. Is cash flow sufficient to assure the availability of sufficient monies for the remediation? ..... ☒ Yes ☐ No

   Self Guarantor's NET Cash provided by (used in) operating activities (pg(s). 80)..... $ 76,797,000,000.00

3. Do the gross receipts (revenues) exceed gross payments (expenses) in an amount at least equal to or greater than the estimated cost of remediation to be performed in the next 12-month period? .... ☒ Yes ☐ No

   Gross Receipts (revenues) (pg(s). 77) ..... $ 413,680,000,000.00

   Gross Payments (pg(s). 77) ..... $ 311,887,000,000.00

   Gross Receipts less Gross Payments ..... $ 101,793,000,000.00

Chief Financial Officer or Similar Officer Certification

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 3/22/23

By: _____
Signature

Kathryn A. Mikells
Print Full Name Signed Above

Senior Vice President / Chief Financial Officer
Title

SECTION G. PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION CERTIFICATION

I certify under penalty of law that I am fully aware of the requirements of N.J.S.A. 58:10B-3 as they pertain to remediation funding sources. Specifically, I am aware of the responsibilities to establish and maintain the remediation funding source. Additionally, I acknowledge that the remediation funding source as required by N.J.A.C. 7:26C-5 shall be maintained in the appropriate amount and form until such time as an alternative remediation funding source is submitted to the Department and it has been approved by the Department in writing or the Department determines that it is no longer necessary to maintain a remediation funding source. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for all resulting penalties.

Date: 3/1/2023

By: Breanna Jackson
Signature

Breanna Jackson
Print Full Name Signed Above

Agent and Attorney-in-Fact for EMC
Title

Completed forms should be sent to:

Bureau of Case Assignment and Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

Exxon Mobil Corporation
5959 Las Colinas Boulevard
Irving, Texas 75039-2298

Kathryn A. Mikells
Senior Vice President / Chief Financial Officer

ExxonMobil

March 22, 2023

Paul Kominsky, Manager
New Jersey Department of Environmental Protection
Bureau of Release Prevention
401 East State Street, 7th Floor (Mail code: 22-03D)
Trenton, New Jersey 08625

Re: Discharge Cleanup and Removal (DCR)

Dear Mr. Komosinsky:

I am the Chief Financial Officer of Exxon Mobil Corporation located at 5959 Las Colinas Boulevard, Irving, Texas 75039. This letter is in support of the use of the financial test of self-insurance and guarantee to demonstrate financial responsibility for cleanup and removal activities arising from operating the facilities listed in Schedule A in the amount of at least $1,000,000 per occurrence per facility and $2,000,000 annual aggregate per facility.

A financial test and guarantee is also used by this owner or operator/guarantor to demonstrate evidence of financial responsibility in the following amounts under the following EPA or State rules or regulations (i.e., RCRA, ECRA, UST, etc.):

State	Regulation		Amount
California	14CCR 795	$	100,000,000
Louisiana	LAC 33.V11.727	$	15,813,754
New Jersey	NJ ACO's	$	50,267,000
	ISRA P.L.1993, c.139	$	46,956,524
Federal (or State equivalent)	40 CFR 280	$	3,000,000
	40 CFR 264.147-265.147	$	62,000,000
	40 CFR 264-265 (Corrective Action & Other)	$	241,377,574
	Remediation ACO's (see Exhibit 2)	$	52,348,005
	30 CFR 253.21-253.41	$	300,000,000
Total		$	871,762,856

This owner or operator/guarantor has not received an adverse opinion, a disclaimer of opinion, or a "going concern" qualification from an independent auditor on his or her financial statements for the latest completed fiscal year.

Alternative I

1.	Amount of annual DCR aggregate coverage being assured by a financial test and/or guarantee	$	4,000,000
2.	Amount of annual aggregate coverage for all other federal or State regulatory costs (i.e., RCRA, ECRA, UST, etc.) covered by a financial test, and/or guarantee	$	871,762,856
3.	Sum of lines 1 and 2	$	875,762,856
4.	Total tangible assets	$	367,031,000,000
5.	Total liabilities	$	166,594,000,000
6.	Tangible net worth	$	200,437,000,000

7.	Is line 6 at least $10 million?	Yes	X	No	
8.	Is line 6 at least ten times line 3?	Yes	X	No	
9.	Have financial statements for the latest fiscal year been filed with the Securities and Exchange Commission?	Yes	X	No	
10.	Have financial statements for the latest fiscal year been filed with the Energy Information Administration?	Yes		No	X
11.	Have financial statements for the latest fiscal year been filed with the Rural Utilities Services or the Board of Public Utilities?	Yes		No	X
12.	Has financial information been provided to Dun and Bradstreet, and has Dun and Bradstreet provided a financial strength rating of 4A or 5A?	Yes		No	X

I hereby certify that the wording of this letter is identical to the wording specified in Appendix B of N.J.A.C. 7:1E, as such rules were constituted on the date shown immediately below.

Kathryn A. Mikells

Senior Vice President / Chief Financial Officer

Exxon Mobil Corporation

March 22, 2023

Guarantee

March 22, 2023

Guarantee made this March 22, 2023, by Exxon Mobil Corporation, a business entity organized under the laws of the State of New Jersey, herein referred to as guarantor, to the Department and to any and all third parties, and obligees, on behalf of ExxonMobil Oil Corporation, 5959 Las Colinas Boulevard, Irving, Texas and ExxonMobil Technology and Engineering Company, Billingsport Road, Paulsboro, New Jersey.

1) Guarantor meets or exceeds the financial test criteria of N.J.A.C. 7:1E-4.4(g) and agrees to comply with the requirements for guarantors as specified in N.J.A.C. 7:1E-4.4(h).

2) ExxonMobil Oil Corporation or ExxonMobil Technology and Engineering Company owns or operates the following major facilities covered by this guarantee: [See Schedule A]. This guarantee satisfies the requirements of N.J.A.C. 7:1E-4.4 for assuring funding in the amount of $1,000,000 per occurrence per facility and $2,000,000 annual aggregate per facility for cleanup and removal activities arising from operating the above identified major facilities.

3) On behalf of our subsidiaries, ExxonMobil Oil Corporation and ExxonMobil Technology and Engineering Company, guarantor guarantees to the Department and to any and all third parties that:

   i) In the event that ExxonMobil Oil Corporation or ExxonMobil Technology and Engineering Company fails to provide alternate coverage within 60 days after receipt of a notice of cancellation of this guarantee and the Department has determined or suspects that a discharge has occurred at a facility covered by this guarantee, the guarantor, upon instructions from the Department, shall fund a standby trust fund in an amount sufficient to cover cleanup and removal costs, but not to exceed the coverage limits specified in N.J.A.C. 7:1E-4.4(b).

   ii) In the event that the Department determines that ExxonMobil Oil Corporation or ExxonMobil Technology and Engineering Company has failed to perform cleanup and removal activities arising out of the operation of an above-identified facility, the guarantor, upon written instructions from the Department, shall fund a standby trust in an amount sufficient to cover cleanup and removal costs, but not to exceed the coverage limits specified above.

4) Guarantor agrees that if, at the end of any fiscal year before cancellation of this guarantee, the guarantor fails to meet the financial test criteria of N.J.A.C. 7:1E-4.4(g), guarantor shall send within 120 days of such failure, by certified mail, notice to ExxonMobil Oil Corporation, ExxonMobil Technology and Engineering Company. The guarantee will terminate 120 days from the date of receipt of the notice by ExxonMobil Oil Corporation or ExxonMobil Technology and Engineering Company or 120 days from the date of receipt of the notice by the Department, whichever is later, as evidenced by the return receipt.

5) Guarantor agrees to notify ExxonMobil Oil Corporation and ExxonMobil Technology and Engineering Company by certified mail of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming guarantor as debtor, within 10 days after commencement of the proceeding.

6) Guarantor agrees to remain bound under this guarantee notwithstanding any modification or alteration of any obligation of ExxonMobil Oil Corporation or ExxonMobil Technology and Engineering Company pursuant to N.J.A.C. 7:1E.

7) Guarantor agrees to remain bound under this guarantee for so long as ExxonMobil Oil Corporation or ExxonMobil Technology and Engineering Company must comply with the applicable financial responsibility requirements of N.J.A.C. 7:1E-4.4 for the above-identified facilities, except that guarantor may cancel this guarantee by sending notice by certified mail to ExxonMobil Oil Corporation, ExxonMobil Technology and Engineering Company and the Department, such cancellation to become effective no earlier than 120 days after receipt of such notice by ExxonMobil Oil Corporation or ExxonMobil Technology and Engineering Company or 120 days from the date of receipt of the notice by the Department, whichever is later, as evidenced by the return receipt.

8) The guarantor's obligation does not apply to any of the following:

   a) Any obligation of ExxonMobil Oil Corporation or ExxonMobil Technology and Engineering Company under a workers' compensation, disability benefits, or unemployment compensation law or other similar law;

   b) Bodily injury to an employee of ExxonMobil Oil Corporation or ExxonMobil Technology and Engineering Company arising from, and in the course of, employment by ExxonMobil Oil Corporation or ExxonMobil Technology and Engineering Company;

   c) Bodily injury or property damage not related to a discharge arising from the ownership, maintenance, use, or entrustment to others of any aircraft, motor vehicle, or watercraft;

   d) Property damage to any property owned, rented, loaned to, in the care, custody, or control of, or occupied by ExxonMobil Oil Corporation or ExxonMobil Technology and Engineering Company that is not the direct result of a discharge from the facility;

   e) Bodily damage or property damage for which ExxonMobil Oil Corporation or ExxonMobil Technology and Engineering Company is obligated to pay damages by reason of the assumption of liability in a contract or agreement other than a contract or agreement entered into to meet the requirements of N.J.A.C. 7:1E-4.4.

9) Guarantor expressly waives notice of acceptance of this guarantee by the Department or by ExxonMobil Oil Corporation or ExxonMobil Technology and Engineering Company.

I hereby certify that the wording of this guarantee is identical to the wording specified in Appendix B of N.J.A.C. 7:1E as such rules were constituted on the effective date shown immediately below.

Effective Date: March 22, 2023

Exxon Mobil Corporation

Kathryn A. Mikells
Senior Vice President / Chief Financial Officer

Signature of Witness or
Notary (with Seal)

KIMBERLY M YOUNG
Notary ID #8820779
My Commission Expires
November 4, 2024

Schedule A

Facilities Operated:

None

Facilities Guaranteed:

ExxonMobil Oil Corporation — EPA ID: NJD986629178

Paulsboro Lube Plant
1001 Billingsport Road
Paulsboro, New Jersey 08066

ExxonMobil Technology and Engineering Company — EPA ID: NJD000692111

Clinton Technical Center
1545 US Route 22 E
Annandale, New Jersey 08801

Exxon Mobil Corporation
5959 Las Colinas Boulevard
Irving, Texas 75039-2298

Kathryn A. Mikells
Senior Vice President / Chief Financial Officer

ExxonMobil

March 22, 2023

To Whom It May Concern:

I am the Chief Financial Officer of Exxon Mobil Corporation, 5959 Las Colinas Boulevard, Irving, Texas 75039. This letter is in support of the use of the financial test of self-insurance and guarantee to demonstrate financial assurance for taking corrective action and compensating third parties for bodily injury and property damage caused by accidental releases in the amount of at least $3,000,000 annual aggregate arising from operating underground storage tanks.

Underground storage tanks at the following facilities are assured by this financial test by this owner or operator/guarantor. See Schedule AE for a list of facilities self-insured.

This firm is the owner, operator, or guarantor of the following facilities for which financial assurance is being demonstrated under other TCEQ, EPA regulations, or state program authorized by EPA through a financial test or guarantee:

a)	Municipal solid waste management facilities under 30 TAC Chapter 330, 40 Code of Federal Regulations (CFR) Part 258 or equivalent	None
b)	Underground injection control facilities under 30 TAC Chapter 331, 40 CFR Part 144 or equivalent	None
c)	PCB storage facilities under 40 CFR Part 761 or equivalent	None
d)	Hazardous waste treatment, storage, and disposal facilities under 30 TAC Chapter 335, 40 CFR Parts 264 and 265 or equivalent. (See Exhibit A)	$ 241,377,574
e)	Additional environmental obligations not shown above	$ 634,385,282
Total a) - e)		$ 875,762,856

This owner or operator/guarantor has not received an adverse opinion, a disclaimer of opinion, or a "going concern" qualification from an independent auditor on its financial statements for the latest completed fiscal year, which was December 31, 2022.

Alternative I

1.	Amount of annual UST aggregate coverage being assured by a financial test, and/or guarantee	$	3,000,000
2.	Sum of current cost estimates for closure, post-closure, corrective action and liability coverage (total of a)-e) directly above)	$	875,762,856
3.	Sum of lines 1 and 2	$	878,762,856
4.	Total tangible assets	$	367,031,000,000
5.	Total liabilities (if any of the amount reported on line 3 is included in total liabilities, you may deduct that amount from this line and add that amount to line 6)	$	166,594,000,000
6.	Tangible net worth (subtract line 5 from line 4)	$	200,437,000,000

7.	Is line 6 at least $10 million?	Yes	X	No	
8.	Is line 6 at least ten times line 3?	Yes	X	No	
9.	Have financial statements for the latest fiscal year been filed with the Securities and Exchange Commission?	Yes	X	No	
10.	Have financial statements for the latest fiscal year been filed with the Energy Information Administration?	Yes		No	X
11.	Have financial statements for the latest fiscal year been filed with the Rural Electrification Administration?	Yes		No	X
12.	Has financial information been provided to Dun and Bradstreet, and has Dun and Bradstreet provided a financial strength rating of 4A or 5A? [Answer "Yes" only if both criteria have been met.]	Yes		No	X

I hereby certify that the wording of this letter is identical to the wording specified in §37.825, as this regulation was constituted on the date shown immediately below.

Kathryn A. Mikells

Senior Vice President / Chief Financial Officer

Exxon Mobil Corporation

March 22, 2023

Schedule AE
Texas

Brand	*Location*	*Registration Number*	*Address*	*County*	*Number of UST's*
Exxon	Baytown Refinery	0008309	2800 Decker Drive Baytown, Texas 77520	Harris	2
Exxon	Irving Terminal	11395	1201 East Airport Irving, Texas 75062	Dallas	1
Exxon	North Houston Terminal	11397	8700 North Freeway Houston, Texas 77037	Harris	2
Exxon	San Antonio Terminal	11399	3214 N. Pan American Expressway San Antonio, Texas 78219	Bexar	3
Exxon	South Houston Terminal	11398	10617 East Almeda Houston, Texas 77051	Harris	1

List of Current Cost Estimates

Current Cost Estimates appearing on this page equals: $ 875,762,856

1)	CERCLA and State Remediation Sites		$	52,348,005
2)	RCRA Closure, Post-Closure and Corrective Action Costs (See Exhibit A)		$	187,277,574
3)	RCRA Liability Coverage for RCRA sites included on Exhibit A		$	62,000,000
4)	Louisiana Solid Waste Financial Assurance		$	15,813,754
5)	Offshore Facilities (Oil Pollution Act)		$	300,000,000
	Exxon Mobil Corporation	$ 150,000,000		
	Mobil Oil Exploration & Producing Southeast Inc	$ 150,000,000		
6)	California Department of Fish and Wildlife (Office of Spill Prevention and Response)		$	100,000,000
7)	New Jersey - ACO, includes sites (below):		$	50,267,000
	Bayonne Terminal	$ 22,500,000		
	Bayway Refinery	$ 25,000,000		
	Lail Property	$ 267,000		
	Linden Technology Center	$ 2,500,000		
8)	New Jersey - ISRA, includes sites (below):		$	46,956,524
	Bayonne Terminal	$ 43,141,286		
	Flemington Terminal	$ 1,774,460		
	Paulsboro Terminal	$ 418,478		
	Seaboard Oil Terminal	$ 272,205		
	Trenton Terminal	$ 1,350,095		
9)	New Jersey Discharge Cleanup and Removal ($10M included in Line 3)		$	4,000,000
10)	Texas UST Liability Coverage		$	3,000,000
11)	Texas PCI Nitrogen (CAFO) Closure & Long-Term Care Associated Liability Coverage ($8M included in Line 3 above)		$	54,100,000

MOODY'S
INVESTORS SERVICE

Moody's Investors Service, Inc.
7 World Trade Center at
250 Greenwich Street
New York, NY 10007
+1.212.553.0300 tel
+1.212.553.4820 fax
www.moodys.com

March 1, 2023

Kim Hardman
Exxon Mobil Corporation
5959 Las Colinas Boulevard
Irving, TX 75039

Dear Madam:

This is to inform you that as at the date of this letter, Exxon Mobil Corporation has an Issuer Rating of **Aa2.**

Please refer to Moody's *Rating Symbols & Definitions*, which is available at www.moodys.com, for the meaning of Moody's rating(s).

Moody's monitoring of the rating is dependent upon receipt of all relevant information, financial or otherwise, from the issuer or its agents. Failure to submit such information in a timely manner may result in the withdrawal of the rating.

In accordance with our usual policy, assigned ratings are subject to revision or withdrawal by Moody's at any time, without notice, in the sole discretion of Moody's. For the most current rating, please visit www.moodys.com.

Credit ratings issued by Moody's are Moody's current opinions of the relative future credit risk of entities, credit commitments, or debt or debt-like securities and are not statements of current or historical fact. Moody's credit ratings address credit risk only and do not address any other risk, including but not limited to: liquidity risk, market value risk, or price volatility.

Moody's credit ratings are not and do not provide investment advice or recommendations to purchase, sell, or hold particular securities. Moody's issues its credit ratings with the expectation and understanding that each investor will make its own evaluation of each security that is under consideration for purchase, holding, or sale.

Moody's adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources Moody's considers to be reliable including, when appropriate, independent third-party sources. However, Moody's is not an auditor and cannot in every instance independently verify or validate information received in the rating process. Under no circumstances shall Moody's have any liability to any person or entity for (a) any loss or damage in whole or in part caused by, resulting from, or relating to, any error (negligent or otherwise) or other circumstance or contingency within or outside the control of Moody's or any of its directors, officers, employees or agents in connection with the

procurement, collection, compilation, analysis, interpretation, communication, publication or delivery of any such information, or (b) any direct, indirect, special, consequential, compensatory or incidental damages whatsoever (including without limitation, lost profits), even if Moody's is advised in advance of the possibility of such damages, resulting from the use of or inability to use, any such information.

The assignment of a rating does not create a fiduciary relationship between Moody's and you or between Moody's and other recipients of the rating. Moody's has not consented to and will not consent to being named as an "expert" under the applicable securities laws, including, without limitation, Section 7 of the Securities Act of 1933.

This letter is strictly confidential and you may not disclose it to any other person except: (i) to your legal counsel acting in their capacity as such; (ii) to your other authorized agents, acting in their capacity as such, that have entered into non-disclosure agreements with Moody's in the form provided by Moody's; (iii) as required by the law or regulation; or (iv) with the prior written consent of Moody's, in which case Moody's reserves the right to impose conditions upon such consent such as requiring that you only disclose this letter in its entirety and/or requiring any third party to enter into a non-disclosure agreement with Moody's in the form provided by Moody's.

Yours faithfully,
Moody's Investors Service, Inc.
Moody's Investors Service, Inc.

cc: JK, Rating Desk Services

pwc

Report of Independent Accountants

To the Management of Exxon Mobil Corporation:

We have performed the procedures enumerated below, which were agreed to by Exxon Mobil Corporation ("the Corporation", as the engaging party), solely to assist you in evaluating the amounts of the Corporation's Consolidated Tangible Net Worth (ExxonMobil share of equity less intangible assets), the Identifiable Assets of the U.S. portions of the Upstream, Energy Products, Chemical Products and Specialty Products segments (determined in accordance with FASB Accounting Standards Codification 280 - Segment Reporting) and Gross Receipts (total revenues and other income) less Gross Payments (total costs and other deductions) at December 31, 2022, from the information used in the preparation of the consolidated financial statements by the Corporation ("subject matter") in connection with your filing with the regulatory agencies listed in Exhibit I. The Corporation is responsible for the subject matter.

In an agreed-upon procedures engagement, we perform specific procedures that the Corporation has agreed to and acknowledged to be appropriate for the intended purpose of the engagement and we report on findings based on the procedures performed. The procedures performed may not address all the items of interest to a user of this report and may not meet the needs of all users of this report and, as such, users are responsible for determining whether the procedures performed are appropriate for their purposes. Management of the Corporation has agreed to and acknowledged that the procedures performed are appropriate for their purposes. This report may not be suitable for any other purpose.

We have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated financial statements of the Corporation as of December 31, 2022, and for the year then ended ("audited consolidated financial statements"), and have issued our report thereon dated February 22, 2023.

The procedures performed and results thereof are as follows.

1. We agreed Total Consolidated Assets and Total Consolidated Liabilities at December 31, 2022, in Exhibit II of $369,067 million and $166,594 million, respectively, to the audited consolidated financial statements.
2. We agreed contingent liabilities, primarily relating to guarantees for notes, loans and performance under contracts at December 31, 2022, in Exhibit II of $7,460 million, to "Total guarantees" per the Litigation and Other Contingencies footnote to the audited consolidated financial statements.
3. We agreed Net Cash Provided by Operating Activities for the year ended December 31, 2022, in Exhibit II of $76,797 million, to the audited consolidated financial statements.
4. We agreed Gross Receipts (Revenues) for the year ended December 31, 2022, in Exhibit II of $413,680 million, to "Total revenues and other income" in the audited consolidated financial statements.
5. We agreed Gross Payments (Costs and Expenses excluding Depreciation, Depletion and Impairments) for the year ended December 31, 2022, in Exhibit II of $311,887 million, to "Total costs and other deductions" less "Depreciation and depletion (includes impairments)" in the audited consolidated financial statements.
6. We recalculated the difference between Gross Receipts in procedure 4 and Gross Payments in procedure 5, in Exhibit II of $101,793 million.
7. We agreed Total Consolidated Assets in the U.S. of the Upstream, Energy Products, Chemical Products and Specialty Products segments at December 31, 2022, in Exhibit II of $66,695 million, $31,729 million, $17,342 million and $2,839 million respectively, to the Disclosures about Segments and Related Information footnote to the audited consolidated financial statements.
8. We recalculated Total Consolidated Assets in the U.S. at December 31, 2022 in Exhibit II of $118,605 million, based on the sum of Total Consolidated Assets in the U.S. of the Upstream, Energy Products, Chemical Products and Specialty Products segments at December 31, 2022 in procedure 7.
9. We compared Total Consolidated Assets in the U.S. in procedure 8 to the Total Consolidated Assets in

PricewaterhouseCoopers LLP, 2121 N Pearl Street, Suite 2000, Dallas, TX 75201-2469
T: (214) 999 1400, F:(214) 754 7991, www.pwc.com/us

procedure 1 and observed that Total Consolidated Assets in the U.S. at December 31, 2022 were not greater than ninety percent of the amount of Total Consolidated Assets per procedure 1.

10. We agreed Goodwill, Allowance on Goodwill, Other Intangibles and Allowance on Other Intangibles (Total Consolidated Intangible Assets) included in "Other Assets, including intangibles, net" in the audited consolidated financial statements at December 31, 2022, in Exhibit II of $60 million, $0 million, $5,252 million and ($3,276) million, respectively, to the December 31, 2022 ExxonMobil Dataflex general ledger system which is used to support the audited consolidated financial statements.
11. We recalculated "Tangible Assets in the U.S." based on Total Consolidated Assets in the U.S. in procedure 8 less Total Consolidated Intangible Assets in procedure 10, in Exhibit II of $116,569 million.
12. We recalculated Total Consolidated Tangible Assets at December 31, 2022 based on Total Consolidated Assets in procedure 1 less Total Consolidated Intangible Assets in procedure 10, in Exhibit II of $367,031 million.
13. We agreed Net Property, Plant and Equipment at December 31, 2022, in Exhibit II of $204,692 million, to "Property, plant and equipment, at cost, less accumulated depreciation and depletion" in the audited consolidated financial statements.
14. We recalculated the difference between Total Consolidated Tangible Assets in procedure 12 and Total Consolidated Liabilities in procedure 1, in Exhibit II of $200,437 million.
15. We agreed Net Worth at December 31, 2022, in Exhibit II of $195,049 million, to "ExxonMobil share of equity" in the audited consolidated financial statements.
16. We recalculated ExxonMobil Share of Tangible Net Worth at December 31, 2022 based on Net Worth in procedure 15 less Total Consolidated Intangible Assets in procedure 10, in Exhibit II of $193,013 million.
17. We compared Total Consolidated Liabilities in procedure 1 to Net Worth in procedure 15 and observed that Total Consolidated Liabilities were not greater than one hundred fifty percent of Net Worth per procedure 15.

This agreed-upon procedures engagement was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants (AICPA). We were not engaged to and did not conduct an audit or an examination engagement, the objective of which would be the expression of an opinion, or a review engagement, the objective of which would be the expression of a conclusion, on the subject matter. Accordingly, we do not express such an opinion or conclusion. Had we performed additional procedures, other matters might have come to our attention that would have been reported to you.

In performing this engagement, we are required to be independent of the Corporation and to meet our ethical responsibilities, in accordance with the relevant ethical requirements related to our agreed-upon procedures engagement.

This report is intended solely for the information and use of the Management of the Corporation and the parties specified in Exhibit I and is not intended to be and should not be used by anyone other than these specified parties.

PricewaterhouseCoopers LLP

Dallas, Texas
March 22, 2023

EXHIBIT I

- California: Department of Fish and Wildlife, Office of Spill Prevention and Response, Financial Responsibility (ExxonMobil Ref# CA-OSPR)
- Illinois: United States Environmental Protection Agency, Region 5: 2 copies (ExxonMobil Ref# IL-EPA)
- Louisiana: Department of Environmental Quality: 2 copies (ExxonMobil Ref# LA-RCRA & LA-SW)
- Louisiana: Department of Environmental Quality, Office of Environmental Services, Waste Permits Division: 2 copies (ExxonMobil Ref# LA-RCRA & LA-SW)
- Mississippi: Department of Environmental Quality (ExxonMobil Ref# MS-RCRA)
- Montana: Department of Environmental Quality, Permitting and Compliance Division (ExxonMobil Ref# MT-RCRA)
- New Hampshire: United States Environmental Protection Agency, New England Region 1 for Auburn Road (ExxonMobil Ref# NH-EPA)
- New Jersey: New Jersey Department of Environmental Protection, Site Remediation & Waste Management Program, Remediation Funding Source Unit for Self Guarantee Applications: 12 copies [ExxonMobil Ref#: NJ-ACO(4), NJ-ISRA(6) & NJ-CERCLA(2)]
- New Jersey: New Jersey Department of Environmental Protection, Bureau of Release Prevention for Discharge, Cleanup and Removal (ExxonMobil Ref# NJ-DCR)
- New Jersey: Department of Environmental Protection, Bureau of Solid Waste Planning &Licensing: 2 copies (ExxonMobil Ref# NJ-LIRF & NJ-RCRA)
- Texas: United States Environmental Protection Agency, Region 6 (ExxonMobil Ref# TXCAFO)
- Texas: Texas Commission on Environmental Quality, Office of the Executive Director (ExxonMobil Ref# TX-RCRA)
- Texas: Texas Commission on Environmental Quality, UST Financial Assurance Section (ExxonMobil Ref# TX-UST)
- Texas: Texas Commission on Environmental Quality, Region 10 (ExxonMobil Ref# TXUST)
- Texas: Texas Commission on Environmental Quality, Region 12 (ExxonMobil Ref# TX-UST)
- Texas: Texas Commission on Environmental Quality, Remediation Division (ExxonMobil Ref# TX-UST)
- Virginia: Department of Environmental Quality, Office of Financial Responsibility and Data Management (ExxonMobil Ref# VA-DEQ)
- Virginia: United States Environmental Protection Agency, Region 3 (ExxonMobil Ref# VA-RCRA)

EXHIBIT II

		(in millions of dollars) 12/31/2022
Total Consolidated Assets		
	Total Consolidated Assets	$ 369,067
Total Consolidated Liabilities		
	Total Consolidated Liabilities	$ 166,594
Total Contingent Liabilities primarily relating to guarantees for notes, loans and performance under contracts		
	Total Contingent Liabilities	$ 7,460
Net Cash Provided by Operating Activities		
	Net Cash Provided by Operating Activities	$ 76,797
ExxonMobil Gross Receipts less Gross Payments		
	Gross Receipts (Revenues)	$ 413,680
	Gross Payments (Costs and Expenses excluding Depreciation, Depletion and Impairments)	$ 311,887
	ExxonMobil Gross Receipts less Gross Payments	$ 101,793
Total Consolidated Assets in the U.S.		
	U.S. Upstream	$ 66,695
	U.S. Energy Products	$ 31,729
	U.S. Chemical Products	$ 17,342
	U.S. Specialty Products	$ 2,839
	Total Consolidated Assets in the U.S.	$ 118,605
Total Consolidated Intangible Assets		
	Goodwill	$ 60
	Less: Allowance on Goodwill	$ -
	Other Intangibles	$ 5,252
	Less: Allowance on Other Intangibles	$ (3,276)
	Total Consolidated Intangible Assets	$ 2,036
Tangible Assets in the U.S.		
	Total Consolidated Assets in the U.S.	$ 118,605
	Less: Total Consolidated Intangible Assets	$ (2,036)
	Total Consolidated Assets in the U.S. less Total Consolidated Intangible Assets	$ 116,569
Total Consolidated Tangible Assets		
	Total Consolidated Assets	$ 369,067
	Less: Total Consolidated Intangible Assets	$ (2,036)
	Total Consolidated Tangible Assets	$ 367,031
Net Property, Plant and Equipment		
	Net Property, Plant and Equipment	$ 204,692
Total Consolidated Tangible Assets minus Total Consolidated Liabilities		
	Total Consolidated Tangible Assets	$ 367,031
	Total Consolidated Liabilities	$ 166,594
	Total Consolidated Tangible Assets minus Total Consolidated Liabilities	$ 200,437
ExxonMobil Share of Tangible Net Worth		
	Net Worth	$ 195,049
	Less: Total Consolidated Intangible Assets	$ (2,036)
	ExxonMobil Share of Tangible Net Worth	$ 193,013

ExxonMobil
Environmental & Property Solutions
22777 Springwoods Village Parkway
Spring, Texas 77389

ExxonMobil

March 22, 2023

PricewaterhouseCoopers LLP
2121 N. Pearl Street, Suite 2000
Dallas, Texas 75201

We are providing this letter in connection with your performance of the procedures related to the calculation of the amounts of Exxon Mobil Corporation's Consolidated Tangible Net Worth (ExxonMobil share of equity less intangible assets), the Identifiable Assets of the U.S. portions of the Upstream, Energy Products, Chemical Products, and Specialty Products segments (determined in accordance with FASB Accounting Standards Codification 280 - Segment Reporting) and Gross Receipts (total revenues and other income) less Gross Payments (total costs and other deductions) at December 31, 2022, from the information used in the preparation of the consolidated financial statements by the Corporation ("the subject matter").

We confirm, to the best of our knowledge and belief, as of March 22, 2023, the date of your report, the following representations made to you during your engagement:

1. We are responsible for the subject matter.
2. We agreed to the procedures and acknowledge that the procedures are appropriate for our purposes.
3. We have made available to you:
    a. all information necessary to perform the agreed-upon procedures.
    b. unrestricted access to personnel of Exxon Mobil Corporation from whom you have requested information.
4. We are responsible for the completeness and accuracy of the information supplied to you.
5. There are no known matters contradicting the subject matter.
6. There are no communications from regulatory agencies or others affecting the subject matter, including communications received between December 31, 2022 and the date of your report.
7. We are not aware of any material misstatements in the subject matter.
8. We have no knowledge of any actual, suspected or alleged fraud or noncompliance with laws or regulations affecting the subject matter.

To the best of our knowledge and belief, no events have occurred subsequent to December 31, 2022 and through the date of this letter that would have a material effect on the subject matter.

Byron Williams
Agent and Attorney in Fact
Exxon Mobil Corporation

2022

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

ExxonMobil

FORM 10-K

☑ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2022

or

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____

Commission File Number 1-2256

Exxon Mobil Corporation

(Exact name of registrant as specified in its charter)

New Jersey
(State or other jurisdiction of incorporation or organization)

13-5409005
(I.R.S. Employer Identification Number)

5959 Las Colinas Boulevard, Irving, Texas 75039-2298
(Address of principal executive offices) (Zip Code)

(972) 940-6000
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Trading Symbol	Name of Each Exchange on Which Registered
Common Stock, without par value	**XOM**	**New York Stock Exchange**
0.142% Notes due 2024	**XOM24B**	**New York Stock Exchange**
0.524% Notes due 2028	**XOM28**	**New York Stock Exchange**
0.835% Notes due 2032	**XOM32**	**New York Stock Exchange**
1.408% Notes due 2039	**XOM39A**	**New York Stock Exchange**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☑ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☑

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☑ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☑ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☑	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☑

Indicate by check mark whether the registrant is a shell company (as defined by Rule 12b-2 of the Act). Yes ☐ No ☑

The aggregate market value of the voting stock held by non-affiliates of the registrant on June 30, 2022, the last business day of the registrant's most recently completed second fiscal quarter, based on the closing price on that date of $85.64 on the New York Stock Exchange composite tape, was in excess of $356 billion.

Class	Outstanding as of January 31, 2023
Common stock, without par value	**4,070,984,988**

Documents Incorporated by Reference: Proxy Statement for the 2023 Annual Meeting of Shareholders (Part III)

CONSOLIDATED STATEMENT OF INCOME

(millions of dollars)	Note Reference Number	2022	2021	2020
Revenues and other income				
Sales and other operating revenue	18	398,675	276,692	178,574
Income from equity affiliates	7	11,463	6,657	1,732
Other income		3,542	2,291	1,196
Total revenues and other income		**413,680**	**285,640**	**181,502**
Costs and other deductions				
Crude oil and product purchases		228,959	155,164	94,007
Production and manufacturing expenses		42,609	36,035	30,431
Selling, general and administrative expenses		10,095	9,574	10,168
Depreciation and depletion (includes impairments)	2, 9	24,040	20,607	46,009
Exploration expenses, including dry holes		1,025	1,054	1,285
Non-service pension and postretirement benefit expense	17	482	786	1,205
Interest expense		798	947	1,158
Other taxes and duties	19	27,919	30,239	26,122
Total costs and other deductions		**335,927**	**254,406**	**210,385**
Income (loss) before income taxes		**77,753**	**31,234**	**(28,883)**
Income tax expense (benefit)	19	20,176	7,636	(5,632)
Net income (loss) including noncontrolling interests		**57,577**	**23,598**	**(23,251)**
Net income (loss) attributable to noncontrolling interests		1,837	558	(811)
Net income (loss) attributable to ExxonMobil		**55,740**	**23,040**	**(22,440)**
Earnings (loss) per common share *(dollars)*	12	**13.26**	**5.39**	**(5.25)**
Earnings (loss) per common share - assuming dilution *(dollars)*	12	**13.26**	**5.39**	**(5.25)**

The information in the Notes to Consolidated Financial Statements is an integral part of these statements.

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

(millions of dollars)	2022	2021	2020
Net income (loss) including noncontrolling interests	**57,577**	**23,598**	**(23,251)**
Other comprehensive income (loss) (net of income taxes)			
Foreign exchange translation adjustment	(3,482)	(872)	1,916
Adjustment for foreign exchange translation (gain)/loss included in net income	—	(2)	14
Postretirement benefits reserves adjustment (excluding amortization)	3,395	3,118	30
Amortization and settlement of postretirement benefits reserves adjustment included in net periodic benefit costs	403	925	896
Total other comprehensive income (loss)	**316**	**3,169**	**2,856**
Comprehensive income (loss) including noncontrolling interests	**57,893**	**26,767**	**(20,395)**
Comprehensive income (loss) attributable to noncontrolling interests	1,659	786	(743)
Comprehensive income (loss) attributable to ExxonMobil	**56,234**	**25,981**	**(19,652)**

The information in the Notes to Consolidated Financial Statements is an integral part of these statements.

CONSOLIDATED BALANCE SHEET

(millions of dollars)	Note Reference Number	December 31, 2022	December 31, 2021
ASSETS			
Current assets			
Cash and cash equivalents		29,640	6,802
Cash and cash equivalents – restricted		25	—
Notes and accounts receivable – net	6	41,749	32,383
Inventories			
Crude oil, products and merchandise	3	20,434	14,519
Materials and supplies		4,001	4,261
Other current assets		1,782	1,189
Total current assets		**97,631**	**59,154**
Investments, advances and long-term receivables	8	49,793	45,195
Property, plant and equipment, at cost, less accumulated depreciation and depletion	9	204,692	216,552
Other assets, including intangibles – net		16,951	18,022
Total Assets		**369,067**	**338,923**
LIABILITIES			
Current liabilities			
Notes and loans payable	6	634	4,276
Accounts payable and accrued liabilities	6	63,197	50,766
Income taxes payable		5,214	1,601
Total current liabilities		**69,045**	**56,643**
Long-term debt	14	40,559	43,428
Postretirement benefits reserves	17	10,045	18,430
Deferred income tax liabilities	19	22,874	20,165
Long-term obligations to equity companies		2,338	2,857
Other long-term obligations		21,733	21,717
Total Liabilities		**166,594**	**163,240**
Commitments and contingencies	16		
EQUITY			
Common stock without par value (9,000 million shares authorized, 8,019 million shares issued)		15,752	15,746
Earnings reinvested		432,860	392,059
Accumulated other comprehensive income		(13,270)	(13,764)
Common stock held in treasury (3,937 million shares in 2022 and 3,780 million shares in 2021)		(240,293)	(225,464)
ExxonMobil share of equity		**195,049**	**168,577**
Noncontrolling interests		7,424	7,106
Total Equity		**202,473**	**175,683**
Total Liabilities and Equity		**369,067**	**338,923**

The information in the Notes to Consolidated Financial Statements is an integral part of these statements.

CONSOLIDATED STATEMENT OF CASH FLOWS

(millions of dollars)	Note Reference Number	2022	2021	2020
CASH FLOWS FROM OPERATING ACTIVITIES				
Net income (loss) including noncontrolling interests		57,577	23,598	(23,251)
Adjustments for noncash transactions				
Depreciation and depletion (includes impairments)	2, 9	24,040	20,607	46,009
Deferred income tax charges/(credits)	19	3,758	303	(8,856)
Postretirement benefits expense in excess of/(less than) net payments		(2,981)	754	498
Other long-term obligation provisions in excess of/(less than) payments		(1,932)	50	(1,269)
Dividends received greater than/(less than) equity in current earnings of equity companies		(2,446)	(668)	979
Changes in operational working capital, excluding cash and debt				
Notes and accounts receivable *reduction/(increase)*		(11,019)	(12,098)	5,384
Inventories *reduction/(increase)*		(6,947)	(489)	(315)
Other current assets *reduction/(increase)*		(688)	(71)	420
Accounts and other payables *increase/(reduction)*		18,460	16,820	(7,142)
Net (gain)/loss on asset sales	5	(1,034)	(1,207)	4
All other items - net		9	530	2,207
Net cash provided by operating activities		**76,797**	**48,129**	**14,668**
CASH FLOWS FROM INVESTING ACTIVITIES				
Additions to property, plant and equipment		(18,407)	(12,076)	(17,282)
Proceeds from asset sales and returns of investments		5,247	3,176	999
Additional investments and advances		(3,090)	(2,817)	(4,857)
Other investing activities including collection of advances		1,508	1,482	2,681
Net cash used in investing activities		**(14,742)**	**(10,235)**	**(18,459)**
CASH FLOWS FROM FINANCING ACTIVITIES				
Additions to long-term debt		637	46	23,186
Reductions in long-term debt		(5)	(8)	(8)
Additions to short-term debt [1]		198	12,687	35,396
Reductions in short-term debt [1]		(8,075)	(29,396)	(28,742)
Additions/(reductions) in commercial paper, and debt with three months or less maturity		25	(2,983)	(9,691)
Contingent consideration payments		(58)	(30)	(21)
Cash dividends to ExxonMobil shareholders		(14,939)	(14,924)	(14,865)
Cash dividends to noncontrolling interests		(267)	(224)	(188)
Changes in noncontrolling interests		(1,475)	(436)	623
Common stock acquired		(15,155)	(155)	(405)
Net cash provided by (used in) financing activities		**(39,114)**	**(35,423)**	**5,285**
Effects of exchange rate changes on cash		(78)	(33)	(219)
Increase/(decrease) in cash and cash equivalents		**22,863**	**2,438**	**1,275**
Cash and cash equivalents at beginning of year		6,802	4,364	3,089
Cash and cash equivalents at end of year		**29,665**	**6,802**	**4,364**

[1] *Includes commercial paper with a maturity greater than three months.*

The information in the Notes to Consolidated Financial Statements is an integral part of these statements.

ATTACHMENT J

RADIOACTIVE WASTE STATEMENT

ATTACHMENT J RADIOACTIVE WASTE STATEMENT

The TCEQ previously determined that the phosphogypsum stack pond water generated at the PCI Nitrogen facility in Pasadena, Texas is exempt under the provisions of Section (§) 336.5(c) of Title 30 Texas Administrative Code (TAC), 25 TAC §289.251(e)(12)(A), 25 TAC Section §289.2525 and TAC §289.251(m)(1). The TCEQ detailed this exemption in a letter dated August 19, 2008.

The letter from the TCEQ detailing the exemption (dated August 19, 2008) is included in this attachment. Additionally, a letter from Terra Environmental Services requesting the exemption (dated August 8, 2008) is also included in this attachment.

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Buddy Garcia, *Chairman*
Larry R. Soward, *Commissioner*
Bryan W. Shaw, Ph.D., *Commissioner*
Mark R. Vickery, P.G., *Executive Director*

Texas Commission on Environmental Quality
Protecting Texas by Reducing and Preventing Pollution

August 19, 2008

EXXON MOBIL REFINING
AND SUPPLY CO.
ATTN F. E. BUDDY HAND, JR.
GLOBAL REMEDIATION
16945 NORTHCHASE DRIVE
HOUSTON, TX 77060

Re: Exemption Concurrence Request
Log No. 2008-08-0007

Dear Mr. Hand:

Please be advised that the Texas Commission on Environmental Quality has determined that the phosphogypsum stack pond water generated at the Agrifos Fertilizer, Inc. facility in Pasadena, Texas, described in your letter of August 8, 2008, is exempt under the provisions of Section (§) 336.5(c) of Title 30 Texas Administrative Code (TAC), 25 TAC §289.251(e)(12)(A), and 25 TAC Section 289.2525 TAC §289.251(m)(1). The exemption concurrence is granted on the condition that the sampling schedule of the stack pond water described in your August 8, 2008 letter (to verify that the radium concentrations are below the regulatory levels) is fulfilled.

Please let me know if I may answer any questions regarding this determination. I can be reached by telephone at 512-239-6465 or be e-mail at hweger@tceq.state.tx.us.

Sincerely,

Hans Weger

Hans Weger, Ph.D.
Waste License Reviewer
Radioactive Material Division

cc: Katherine Nelson, TCEQ
Steven Walker, Terra Environmental Services, Inc.

Received
AUG 25 2008
Terra
Environmental
Services, Inc.

TERRA
Environmental Services, Inc.

August 8, 2008

Ms. Susan Jablonski
Director
Radioactive Material Licensing Section
Texas Commission on Environmental Quality
12100 Park 35 Circle, Bldg. F, 5th Floor
Austin, TX 78753

RE: Disposal of Phosphogypsum Stack Pond Water
Exxon Mobil Corporation Injection Well
Pasadena, Texas

Dear Ms. Jablonski :

This letter is being submitted on behalf of Exxon Mobil Corporation (ExxonMobil) in response to the items discussed in the June 25, 2008 teleconference between ExxonMobil and the Texas Commission on Environmental Quality (TCEQ) regarding the permit application for amendment for Underground Injection Control (UIC) wells WDW-397 (constructed) and WDW-398 (planned) at the Agrifos Fertilizer, Inc. facility in Pasadena, Texas. Specifically, this submittal addresses the TCEQ's request for additional information regarding the proposed injection of phosphogypsum stack pond water containing low levels of radium.

Under the terms and conditions of an Administrative Order on Consent (AOC) executed by ExxonMobil, Agrifos and the U.S. Environmental Protection Agency (EPA), and the Underground Injection Control (UIC) permit for injection wells WDW-397 and WDW-398 issued by the TCEQ, the pond water will be pre-treated for removal of suspended solids and disposed as a hazardous waste by deep well injection. The TCEQ has issued a Class I, non-hazardous UIC permit for operation of the pre-treatment system and injection wells, and the EPA is reviewing the No Migration Petition (NMP) submitted by ExxonMobil, with approval anticipated in the near future.

On December 4, 2007, ExxonMobil submitted a permit application for amendment of the UIC permit to allow injection of hazardous waste, and requested that the unconditional prohibition for the injection of any NORM waste as defined by Texas Health and Safety Code §401.003(26) be changed to a "prohibition unless authorized by the TCEQ."

In the June 25, 2008 teleconference, TCEQ explained that based on information submitted in the permit application for amendment, the pond water may be exempt from classification as a radioactive material, and requested additional information needed to support the exemption.

The information presented below is provided in response to the agency's request, and is intended to support a determination that pond water characteristics and proposed treatment and disposal methods meet the criteria for exemption from the licensing requirements applicable to Naturally-Occurring Radioactive Materials (NORM). The pond water radium activity is expected to remain well below the effluent limit of 60 picoCuries per liter (pCi/L) for disposal of radium in water to the general environment (30 TAC 336.359, Appendix B, Table II, Column B), and result in no significant risk to public health and

5215 W. Laurel Street, Suite 200 ▼ Tampa, FL 33607 ▼ 813.287.1444 ▼ Fax 813.287.9499

safety or the environment in a manner at least as protective of the environment and the public health as the method or standard prescribed by the commission rule that would otherwise apply (30 TAC 336.5).

Pond Water Sampling Locations

Pond water samples were collected from the phosphogypsum stacks for analysis of radium^{226} and radium^{228} on July 24, 2002 and September 20, 2007. The samples collected in 2002 were obtained to support design and permitting efforts for stack closure. The samples collected in 2007 were intended to evaluate the activity of the pond water after treatment in the pre-injection treatment facility (PITF) as part of ongoing discussions with the TCEQ regarding disposal of the radium-containing pond water via deep well injection.

The stack collection ponds were selected for sample collection because the water in the collection ponds will be the source and, therefore, representative of the pond water to be pumped to the ExxonMobil PITF for treatment and disposal. The North Stack and South Stack collection ponds are shown on Attachment A.

The stack collection ponds are part of the closed-loop, process water and storm water management systems in place around the North and South Stacks. Process water containing phosphogypsum slurry from the fertilizer plant is discharged into the cooling/settling ponds on top of the stack where the suspended phosphogypsum settles out. The clarified process water infiltrates into the stack matrix through the bottom of the cooling/settling ponds and eventually drains to toe ditches installed around the perimeter of the base of the stack.

Storm water falling into the cooling/settling ponds blends with the process water and migrates to the toe ditches through the stack matrix along with the process water. Storm water that falls onto the side slopes of the stack runs off directly to the toe ditches. The seepage and storm water collected in the toe ditches flows to the collection ponds where it is pumped back to the fertilizer plant for reuse (as needed), or pumped up to the cooling/settling ponds on top of the stack to retain the water within the stack system. The blending and recycling of the process water (both to and from the plant, and within the stack water management system) results in thorough mixing of the water contained in the collection ponds.

The pond water to be disposed by injection will be drawn from the collection ponds using dedicated pumping systems. Water influent to the PITF will be drawn from the North Stack collection pond. Pond water from the South Stack (Stack Nos. 2/3/5) system will be pumped from the South Stack collection pond to the North Stack collection pond in a closed (force main) piping system, and later (as the North Stack physical closure proceeds) may be pumped directly to the PITF. The pond water will be pre-treated in the PITF to remove solids greater than 1 micron in diameter, followed by disposal in the permitted injection well(s).

Pond Water Sampling and Analysis

Pond water Sample 3860863 was collected on July 24, 2002 from the North Stack collection pond (Attachment A). The sample was collected as a total sample (unfiltered), and submitted to General Engineering Laboratories in Charleston, South Carolina for analysis of radium^{226} and radium^{228} by EPA Methods 904.0 and 903.1 (Modified), respectively.

Samples "N. Stack Filtered" and "S. Stack Filtered" were collected by Terra Environmental Services, Inc. personnel on September 20, 2007 from the North Stack and South Stack collection ponds, respectively (Attachment A). The objective of the sampling event was to characterize the radium activity in water samples collected in a manner that simulated the radium content of treated pond water after filtration in the ExxonMobil Pre-Injection Treatment Facility (PITF). The PITF is a staged-filtration treatment plant designed to remove suspended solids greater than 1 micron in diameter.

The 2007 samples were collected using a peristaltic sampling pump equipped with new collection tubing and a new, disposable, 1 micron in-line sampling filter. The tubing and filter were replaced after each use to prevent cross-contamination of the samples.

Sample "N. Stack Filtered" was collected from the North Stack collection pond pump station platform. The intake tubing was placed into the pond water column adjacent to the platform, and the sample was collected by pumping the water directly from the pond through the in-line filter and into the sampling container to simulate the pumping and treatment processes designed for operation of the full scale system. The same procedure was used at the South Stack collection pond pumping platform to collect Sample "S. Stack Filtered."

The samples were submitted to TestAmerica Laboratories, Inc. in Nashville, Tennessee using standard chain-of-custody procedures. The samples were reshipped by TestAmerica to their laboratory in Earth City, Missouri for analysis of radium^{226} and radium^{228} by EPA Methods 903.0 (Modified) and 904.0 (Modified), respectively.

The laboratory reports are included in Attachment B. The radium sampling and analysis results are summarized below.

Sample ID	Collection Date	Location	Ra^{226} (pCi/L)	Ra^{228} (pCi/L)
64153001	7/24/02	Stack 4 Collection Pond	12.8	4.16
N Stack Filtered	9/20/07	Stack 4 Collection Pond	10.5	0.73
S Stack Filtered	9/20/07	South Stack Collection Pond	0.29	0.51

pCi/L = picoCuries per liter

Disposal by Deep Well Injection

The PITF and injection wells well will be operated in accordance with the terms and conditions of the TCEQ UIC permit, and the AOC executed by ExxonMobil, Agrifos, and the EPA, effective April 2008. The injection zone in the constructed well (WDW-397) is the Frio Formation from 5,303 to 7,256 feet below ground level. Planned injection well WDW-398 is permitted to inject into the same zone.

Activity and Chemical Stability of Radium in Phosphogypsum Stack Pond Water

The reported pond water radium^{226} activity (0.29 to 12.8 pCi/L) and radium^{228} (0.51 to 4.16 pCi/L) are well below the effluent limit of 60 pCi/L provided in 30 TAC 336.359, Appendix B, Table II, Column 2 for release of radioactive elements of airborne and liquid effluents released to the general environment. These reported values are typical and relatively stable for radium in phosphogypsum stack pond water for the reasons explained below.

The chemistry of the water contained within the stack systems is stable in response to short-term influences (e.g., a large precipitation event) due to the large volume of water contained within each stack system. Short term fluctuations in the quality of water in a collection pond may occur due to a rapid influx of storm water run off from stack side slopes resulting from a large precipitation event, which would have the effect of reducing radium concentrations. Over the longer term, dilution from storm water and/or losses to evaporation have little effect on the pond water chemistry because the concentration of dissolved constituents is maintained in a near steady-state in equilibrium with the chemistry of the phosphogypsum that forms the matrix of the stack.

Radium is present in the stacks due to its release from the phosphate rock used in the fertilizer manufacturing process. Radium is chemically-similar to calcium in solution, and substitutes into the mineral lattice of the calcium sulfate (gypsum) precipitated in the stacks in proportion to the relative concentrations of calcium and radium present in the solution produced by the rock digestion process. Most of the radium entrained in the process water associates with the solid phosphogypsum deposited in the stack, consistent with the fate of most of the calcium released from the rock by the digestion process. A small fraction of the radium associates with the dissolved calcium sulfate in the pond water. The concentration of dissolved calcium sulfate and associated trace amounts of dissolved radium are controlled by the saturation solubility of calcium and sulfate (dissolved gypsum) in the pond water under the chemical conditions typically found in operating phosphogypsum stacks.

Consequently, the activities of radium^{226} and radium^{228} detected in the pond water at the Agrifos facility are typical of operating stacks, directly related to and in equilibrium with the composition of the stack matrix, and can be expected to remain relatively stable over time.

Proposed Monitoring Program

A monitoring program for radium in the pond water will be implemented to confirm and monitor the activities of radium^{226} and radium^{228} in pond water pumped to the PITF for pre-treatment and disposal. Confirmation samples (totals and filtered) will be collected from the North Stack and South Stack collection ponds in August 2008, followed by semi-annual monitoring in 2009 (January and July), and annual monitoring thereafter. Results of the radium monitoring will be submitted to the TCEQ.

Closing Comment

ExxonMobil believes that the information provided in this letter supports a determination that the pond water meets the regulatory criteria for exemption from licensing as a radioactive material. The pond water radium activity is expected to remain well below the effluent limit of 60 pCi/L for disposal of radium in water to the general environment (30 TAC 336.359, Appendix B, Table II, Column B), and result in no significant risk to public health and safety or the environment in a manner at least as

protective of the environment and the public health as the method or standard prescribed by the commission rule that would otherwise apply (30 TAC 336.5).

Please contact F.E. Buddy Hand of ExxonMobil at (281) 654-8457 or me at (813) 340-3193 if you have questions or comments regarding the contents of this letter.

Sincerely,

Terra Environmental Services, Inc.

Steven T. Walker
Principal

attachments
cc: Katherine Nelson, TCEQ
Hans Weger, TCEQ
Buddy Hand, TCEQ
Craig Oural, Terra
Terry Moody, Terra Dynamics

ATTACHMENT A

Locations of the Injection Well, Phosphogypsum Stack Collection Ponds And Pond Water Transfer Piping

Prepared By:

TERRA
Engineering & Consulting Services, Inc.

Attachment A:

Locations of the Injection Well, Phosphogypsum Stack Collection Ponds and Pond Water Transfer Piping
ExxonMobil Pasadena Facilty - Pasadena, Texas

Prepared For:

ExxonMobil

U:\EXPAS\- Dated Projects\2008-07-23 Special Labeled Site Aerials for Steve Walker\Pasadena Site Attachment A.dwg, 1 to 600 for Radium Letter, 8/7/2008 2:27:06 PM,
dkeyser, Adobe PDF, Tabloid, 1:1

ATTACHMENT B

Laboratory Reports

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Certificate of Analysis

Company : Lancaster Laboratories, Inc.
Address : 2425 New Holland Pike
Lancaster, Pennsylvania 17601--5994

Report Date: August 14, 2002

Contact: Earl Custer
Project: Routine Analytical

Client Sample ID:	3860863	Project:	LANC00196
Sample ID:	64153001	Client ID:	LANC001
Matrix:	Water		
Collect Date:	24-JUL-02 12:00		
Receive Date:	25-JUL-02		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow												
GFPC, Ra228, Liquid												
Radium-228		4.16	+/-0.588	0.889	1.50	pCi/L		AF1	08/08/02	1558	189714	1
Rad Radium-226												
Lucas Cell, Ra226, liquid												
Radium-226		12.8	+/-1.47	0.597	1.00	pCi/L		BF1	08/09/02	1710	189865	2

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 904.0	
2	EPA 903.1 Modified	

Notes:
The Qualifiers in this report are defined as follows :

< Actual result is less than amount reported
> Actual result is greater than amount reported
B Analyte found in the sample as well as the associated blank.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package

The above sample is reported on an "as received" basis.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Cheryl Jones.

Reviewed by

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

Printed on Recycled Paper.

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

QC Summary

Report Date: August 14, 2002

Client : **Lancaster Laboratories, Inc.**
2425 New Holland Pike
Lancaster, Pennsylvania
Contact: **Earl Custer**

Workorder: **64153**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gas Flow											
Batch 189714											
QC1200273123 64011014 DUP											
Radium-228		U	0.327 +/-0.340	U	0.662 +/-0.368	pCi/L	0 ^		(+/-1.00)	AF1	08/12/02 14:48
QC1200273124 LCS											
Radium-228	17.8				21.1 +/-1.94	pCi/L		119	(75%-125%)		08/08/02 16:02
QC1200273122 MB											
Radium-228				U	0.642 +/-0.432	pCi/L					08/12/02 14:48
QC1200273140 64011014 MS											
Radium-228	17.9	U	0.327 +/-0.340		20.2 +/-1.86	pCi/L		111	(75%-125%)		08/08/02 16:02
Rad Ra-226											
Batch 189865											
QC1200273537 64031001 DUP											
Radium-226		J	0.824 +/-0.379		1.60 +/-0.598	pCi/L	64 ^		(+/-1.00)	BF1	08/09/02 17:40
QC1200273539 LCS											
Radium-226	21.9				24.5 +/-2.06	pCi/L		112	(75%-125%)		
QC1200273536 MB											
Radium-226				U	0.277 +/-0.338	pCi/L					08/09/02 17:10
QC1200273538 64031001 MS											
Radium-226	21.9	J	0.824 +/-0.379		25.0 +/-2.04	pCi/L		111	(75%-125%)		08/09/02 17:40

Notes:
The Qualifiers in this report are defined as follows:

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package

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GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

QC Summary

Workorder: 64153

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptence criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407

(843) 556-8171 • Fax (843) 766-1178

Printed on Recycled Paper.

Acct. 11032 3860863
grp - 816113

Sample Custody Record

RECEIVED
AUG 29 2002
TERRA ENVIRONMENTAL SERVICES

To: Teresa Lis
Lancaster Laboratories
2425 New Lancaster, PA 17601

From: David Sutton
Core Laboratories
713.328.2437

Information

Company: Terra Environmental
Contact: Steven Bond - sbond@terraenv.com
Location:

Sample Inventory

"Pond Water" - 1/2 gallon

Released by: [signature] **Date:** 7/16/02

Received by: Kathy Binkley **Date:** 7-17-02 0915

Lancaster Laboratories
Where quality is a science.

ANALYTICAL RESULTS

Prepared for:

ExxonMobil
3225 Gallows Rd.
Room 8B408
Fairfax VA 22037
703-846-3272

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 816113. Samples arrived at the laboratory on Wednesday, July 17, 2002.

Client Description	Lancaster Labs Number
Pond Water Sample	3860863

1 COPY TO Terra Environmental Svcs. Attn: Steve Bond

Questions? Contact your Client Services Representative
Teresa M Lis at (717) 656-2300.

Respectfully Submitted,

Erik J. Frederiksen
Group Leader

Analysis Report

Lancaster Laboratories
Where quality is a science.

Lancaster Laboratories Sample No. WW 3860863

Collected: n.a.

Submitted: 07/17/2002 09:15
Reported: 08/22/2002 at 16:01
Discard: 08/30/2002
Pond Water Sample

Account Number: 11032

ExxonMobil
3225 Gallows Rd.
Room 8B408
Fairfax VA 22037

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
09424	Radium 226	n.a.	See Attached			1
09425	Radium 228	n.a.	See Attached			1

The analyses for Radium 226(EPA 903.1) and Radium 228(EPA 904.0) were subcontracted to another laboratory.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

PROJECT NO. EXXONMOBIL

Pasadena

Lot #: F7I210317

Leah Klingensmith

TestAmerica - Nashville
2960 Foster Creighton Drive
Nashville, TN 37204

TESTAMERICA LABORATORIES, INC.

Kay Clay
Project Manager

October 15, 2007

Case Narrative
LOT NUMBER: **F7I210317**

This report contains the analytical results for the two samples received under chain of custody by STL St. Louis on September 21, 2007. These samples are associated with your Groundwater project.

The analytical results included in this report meet all applicable quality control procedure requirements.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by STL St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of this report.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances
Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

There are no observations or nonconformances associated with the analysis in this lot.

METHODS SUMMARY

F7I210317

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Radium-226 by GFPC	EPA 903.0 MOD	
Radium-228 by GFPC	EPA 904 MOD	

References:

EPA "EASTERN ENVIRONMENTAL RADIATION FACILITY RADIOCHEMISTRY PROCEDURES MANUAL" US EPA EPA 520/5-84-006 AUGUST 1984

SAMPLE SUMMARY

F7I210317

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
J7ET4	001	N STOCK FILTERED	09/20/07	13:30
J7ET8	002	S STOCK FILTERED	09/20/07	14:50

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

TestAmerica Nashville

Client Sample ID: N STOCK FILTERED

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7I210317-001
Work Order: J7ET4
Matrix: WATER

Date Collected: 09/20/07 1330
Date Received: 09/21/07 0915

Parameter	Result	Qual	Count Uncert. (2 σ+/-)	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD					pCi/L		Batch # 7264506	Yld % 100
Radium (226)	10.5			1.3	1.0	0.1	09/21/07	10/08/07
Radium 228 by GFPC EPA 904 MOD					pCi/L		Batch # 7264507	Yld % 95
Radium 228	0.73	J		0.43	1.00	0.67	09/21/07	10/08/07

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC

J Result is greater than sample detection limit but less than stated reporting limit.

TestAmerica Nashville

Client Sample ID: S STOCK FILTERED

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F7I210317-002
Work Order: J7ET8
Matrix: WATER

Date Collected: 09/20/07 1450
Date Received: 09/21/07 0915

Parameter	Result	Qual	Count Uncert. (2 σ+/-)	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD					**pCi/L**	**Batch # 7264506**		**Yld % 47**
Radium (226)	0.29	U		0.22	1.00	0.30	09/21/07	10/08/07
Radium 228 by GFPC EPA 904 MOD					**pCi/L**	**Batch # 7264507**		**Yld % 52**
Radium 228	0.51	U		0.70	1.00	1.2	09/21/07	10/08/07

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC

U Result is less than the sample detection limit.

METHOD BLANK REPORT

Severn Trent Laboratories - Radiochemistry

Client Lot ID: F7I210317
Matrix: WATER

Parameter	Result	Qual	Count Uncert. (2 σ+/-)	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date	Lab Sample ID
Radium 226 by EPA 903.0 MOD				**pCi/L**	**Batch # 7264506**		**Yld % 100**		**F7I210000-506B**
Radium (226)	0.06	U		0.10	1.00	0.18	09/21/07	10/08/07	
Radium 228 by GFPC EPA 904 MOD				**pCi/L**	**Batch # 7264507**		**Yld % 93**		**F7I210000-507B**
Radium 228	0.14	U		0.38	1.00	0.65	09/21/07	10/08/07	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined using instrument performance only
Bold results are greater than the MDC

U Result is less than the sample detection limit.

Laboratory Control Sample Report

Severn Trent Laboratories - Radiochemistry

Client Lot ID: F7I210317
Matrix: WATER

Parameter	Spike Amount	Result	Count Uncert. (2 σ+/-)	Total Uncert.	MDC	% Yld	% Rec	Lab Sample ID / QC Control Limits
Radium 226 by EPA 903.0 MOD			**pCi/L**	**903.0 MOD**				**F7I210000-506C**
Radium (226)	11.2	10.2		1.2	0.2	106	91	(61 - 134)
	Batch #:	7264506			**Analysis Date:**	10/08/07		
Radium 228 by GFPC EPA 904 MOD			**pCi/L**	**904 MOD**				**F7I210000-507C**
Radium 228	8.55	7.17		0.96	0.65	94	84	(65 - 135)
	Batch #:	7264507			**Analysis Date:**	10/08/07		

NOTE(S)

MDC is determined by instrument performance only
Calculations are performed before rounding to avoid round-off error in calculated results

MATRIX SPIKE/MATRIX SPIKE DUPLICATE REPORT

Severn Trent Laboratories - Radiochemistry

Client Lot ID: F7I210317
Matrix: WATER

Date Sampled: 09/20/07 1330
Date Received: 09/21/07 0915

Parameter		Spike Amount	SPIKE Result	Total Uncert. (2 σ+/-)	Spike Yld	SAMPLE Result		Total Uncert. (2σ +/-)	QC Sample ID % Yld	%Rec	QC Control Limits
Radium 226 by EPA 903.0 MO				**pCi/L**		**903.0 MOD**			**F7I210317-001**		
Radium (226)		11.4	23.5	2.6	106	10.5		1.3	100	113	(50 - 130)
	Spk2	11.5	24.4	2.7	99	10.5		1.3	100	121	(50 - 130)
									Precision:	4	%RPD
		Batch #:	7264506		Analysis date:	10/08/07					
Radium 228 by GFPC EPA 904				**pCi/L**		**904 MOD**			**F7I210317-001**		
Radium 228		8.76	7.51	0.99	95	0.73	J	0.43	95	77	(64 - 150)
	Spk2	8.77	7.9	1.1	86	0.73	J	0.43	95	81	(64 - 150)
									Precision:	5	%RPD
		Batch #:	7264507		Analysis date:	10/08/07					

NOTE(S)

Data are incomplete without the case narrative.

Calculations are performed before rounding to avoid round-off error in calculated results

J Result is greater than sample detection limit but less than stated reporting limit.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Lot #(s): F7I210317

- 353 -

Condition Upon Receipt Form

Client: TA Nashville COC/RFA No: N/A Date: 09.21.07
Quote No: 75422 Initiated By: [illegible] Time: 0915

Shipping Information

Shipper Name: FedX
Shipping # (s):*
1. 8331 0875 6823 6.
2. 7.
3. 8.
4. 9.
5. 10.

Multiple Packages Y (N)
Sample Temperature (s):**
1 ambient 6.
2. 7.
3 8.
4 9.
5. 10.

*Numbered shipping lines correspond to Numbered Sample Temp lines

**Sample must be received at 4°C ± 2°C- If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid or Rad tests- Liquid or Solids

Condition (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

1.	(Y) N	Are there custody seals present on the cooler?	8.	Y (N)	Are there custody seals present on bottles?
2.	Y (N) N/A	Do custody seals on cooler appear to be tampered with?	9.	Y N (N/A)	Do custody seals on bottles appear to be tampered with?
3.	(Y) N	Were contents of cooler frisked after opening, but before unpacking?	10	(Y) N N/A	Was sample received with proper pH[1]? (If not, make note below)
4.	(Y) N	Sample received with Chain of Custody?	11.	(Y) N	If N/A- Was pH taken by original TestAmerica lab?
5.	(Y) N N/A	Does the Chain of Custody match sample ID's on the container(s)?	12.	(Y) N	Sample received in proper containers?
6.	Y (N)	Was sample received broken?	13.	Y N (N/A)	Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below)
7.	(Y) N	Is sample volume sufficient for analysis?	14.	Y N (N/A)	Was Internal COC/Workshare received?

[1] For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX and soils

Notes:

Corrective Action:
☐ Client Contact Name: Informed by:
☐ Sample(s) processed "as is"
☐ Sample(s) on hold until: If released, notify:
Project Management Review: [illegible] Date: 09-25-07

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

LOT# F7I210317

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Nashville Division
2960 Foster Creighton Drive * Nashville TN 37204
Phone: (800) 765-0980 / (615) 726-0177 Fax:(615) 726-3404

cell 353

ExxonMobil

Page ____ of ____

Consultant: Terra Environmental Services Inc. (10357)
Address: 5215 West Laurel Street, Suite 110
City, State, Zip: Tampa FL 33607
ExxonMobil Project Mgr: F.E. Buddy Hand (inv)
Consultant Project Mgr: Brandon Gallagher
Consultant Telephone #r: (281) 536-0122 Fax: (409) 765-7332
Sampler Name (Print) Steven Walker
SamplerSignature: [signature]

TA Account #: 1408020 PO #: 4508379279
Invoice to: ExxonMobil Corporation (80110)
Report to: Brandon Gallagher
Project Name: Pasadena
Facility ID: [none]
Site Address: 2001 Jackson Road
City,State,Zip: Pasadena Texas
Regulatory District (CA):

Sample ID	Date Sampled	Time Sampled	# Containers Shipped	Grab	Composite	Field Filtered	Preservative: Methanol	Sodium Bisulfate	(Blue Label) HCL	(Orange Label) NaOH	(Yellow Label) Plastic H2SO4	(Yellow Label) Glass H2SO4	(Red Label) HNO3	(Black Label) None	Matrix: Groundwater	Wastewater	Drinking Water	Sludge	Soil	(specify) Other	Analyze for: 8270 SIM Dinitrotoluenes	Subcontract - Radium 226/228														RUSH TAT (Pre Schedule)
N Stack Filtered	9-20-07	1330	6	6		6							6			6						6	x LP													
S Stack Filtered	9-20-07	1450	2	2		2							2			2						2	x LP													

COMMENTS: All turn around times are calculated from the time of receipt at TestAmerica.
* It will be the responsibility of ExxonMobil or its consultant to notify the TestAmerica Project Manager by phone or fax that a rush sample will be submitted. TA Project manager Date:
There may be a charge assessed for TestAmerica disposing of sample remainders.

NOTES/SPECIAL INSTRUCTIONS: BO # 6272
Analyze ASAP, Analyze MS/MSD for N Stack Filtered Sample

Relinquished by:	Date:	Time:	Received by:	Date:	Time:	Relinquished by:	Date:	Time:
[signature]	9-20-07	1700	[signature]	09.21.07	0915			

Shipped Via:
Shipped Via:

Received for TestAmerica by:	Date:	Time:	Temperature Upon Receipt:	Sample Containers Intact? Y N VOCs Free of Headspace? Y N	QC Deliverables (Please Circle One): Level 2 Level 3 Level 4 Site Specific (If site specific, please pre-schedule w/ TestAmerica Project Manager or attach specific instructions)	Date Due of Report:

1 of 11

TestAmerica St. Louis

APPENDIX A

WELL LOGS

APPENDIX A

Tabulation of Well Logs in Appendix A

Included in Original Set of the Permit Renewal Applications
for WDW-397 and WDW-398

Map ID	Operator and Well Name	Total Depth (ft)
WDW-397	Exxon Mobil Corporation WDW-397	7,260
WDW-398	Exxon Mobil Corporation WDW-398	7,225
Map ID 1	Wilhite Oil Co., HSC Navigation District #1	5,152
Map ID 5	Jack W. Frazier, Brooks #1	5,618
Map ID 8	Inexco Oil Co, HSC Navigation Disctrict #1	8,143
Map ID 15	Traders Oil Co, Houston Deepwater Land Co. #1	7,343
Map ID 16	Jack W. Frazier, Houston Deepwater Land Co. #2	7,743
Map ID 20	Amerada Hess Corp., Destec A #2	10,810
Map ID 24	Roberts-Whitson O&Gas Co, Mamie O. Furr #1	6,700
Map ID 30	Merisol WDW-147	7,336
Map ID 31	Merisol WDW-319	7,408

COMPANY	EXXON MOBIL
WELL	PASADENA WDW # 397
FIELD	AGRIFOS FERTILIZER PLANT
COUNTY	HARRIS
STATE	TEXAS

HALLIBURTON

HIGH RES ARRAY IND
DENSITY NEUTRON
LONGSPACE SONIC
4 RUN COMPOSITE

COMPANY	EXXON MOBIL
WELL	PASADENA WDW # 397
FIELD	AGRIFOS FERTILIZER PLANT
COUNTY	HARRIS
STATE	TEXAS
API No.	4220100000
Location	1,4750' FWL 25,700' FSL OF THE JAMES SEYMORE SURVEY A-698 LAT 29 44' 27" NORTH LONG 95 11' 23" WEST
Other Services	NONE
Sect	
Twp	
Rge	
Permanent Datum	GROUND LEVEL
Elev	10'
Log measured from	K.B. , 22' above perm. datum
Drilling measured from	K.B.
Elev.: K.B.	32'
D.F.	31'
G.L.	10'

Date	13 JAN 06	09 FEB 06	27 FEB 06	08 MAR 06
Run No.	ONE	TWO	THREE	FOUR
Depth – Driller	3390'	6654'	7260'	7146'
Depth – Logger	3380'	6638'	7246'	7137'
Bottom – Logged Interval	3370'	6627'	7236'	7132'
Top – Logged Interval	180'	3363'	6634'	6634'
Casing – Driller	20" @ 180'	13.38" @ 3366'	9.625" @ 6644	9.625" @ 6644'
Casing – Logger	180'	3363'	6634'	6634'
Bit Size	17.5"	12.25"	8.5"	16"
Type Fluid in Hole	WBM	WBM	WBM	WBM
Dens. | Visc.	9.4 | 41	12.0 | 53	9.6 | 44	9.5 | 48
Ph | Fluid Loss	8.80 | 20	8.5 | 9	9 | 3	8.8 | 3
Source of Sample	FLOWLINE	FLOWLINE	FLOWLINE	FLOWLINE
Rm @ Meas. Temp.	5.37 @ 73 F	0.24 @ 74 F	0.07 @ 75 F	N/A @ N/A
Rmf @ Meas. Temp.	4.81 @ 74 F	0.20 @ 63 F	0.05 @ 75 F	N/A @ N/A
Rmc @ Meas. Temp.	3.52 @ 76 F	0.46 @ 71 F	0.08 @ 75 F	N/A @ N/A
Source Rmf | Rmc	MEAS | MEAS	MEAS | MEAS	MEAS | MEAS	MEAS | MEAS
Rm @ BHT	3.668 @ 110 F	0.116 @ 160 F	0.034 @ 160 F	N/A @ N/A
Time Since Circ.	0100 1/13	10.3 HOURS	10 HOURS	5 HRS
Time on Bottom	1/13	02/09	02/27	03/08
Max. Rec. Temp.	110 F @ TD	160 F @ TD	160 F @ TD	144 F @ TD
Equip. | Location	53525 | VICT.	53525 | VICT.	2011 | VICT.	53525 | VICT.
Recorded By	F. COLLADO	J. STEVENS	J. JESSEPH	J. JESSEPH
Witnessed By	L. BURROW	D. MARABLE	D. MARABLE	C. HERNANDEZ

Fold Here

Service Ticket No.: 4158450 API Serial No.: 4220100000 PGM Version: XL v5.1

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLES			RESISTIVITY SCALE CHANGES				
Date | Sample No.	|	|	Type Log	Depth	Scale Up Hole	Scale Down Hole	
Depth – Driller							
Type Fluid in Hole							
Dens. | Visc.	|	|					
Ph | Fluid Loss	|	|					
Source of Sample			RESISTIVITY EQUIPMENT DATA				
Rm @ Meas. Temp.	SAMPLES @ SAMPL	@	Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
Rmf @ Meas. Temp.	SAMPLES @ SAMPL	@	DATA	DATA	DATA	DATA	DATA
Rmc @ Meas. Temp.	SAMPLES @ SAMPL	@	DATA	DATA	DATA	DATA	DATA
Source Rmf | Rmc	SAMPLES | SAMPLES	|	DATA	DATA	DATA	DATA	DATA
Rm @ BHT	SAMPLES @ SAMPL	@	DATA	DATA	DATA	DATA	DATA
Rmf @ BHT	SAMPLES @ SAMPL	@					
Rmc @ BHT	SAMPLES @ SAMPL	@					

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.		Run No.		Run No.	
Serial No.	108597	Serial No.		Serial No.		Serial No.	
Model No.	NGRT	Model No.		Model No.		Model No.	
Diameter	3.625"	No. of Cent.		Diameter		Diameter	
Detector Model No.	102T	Spacing		Log Type		Log Type	
Type	SCINT.			Source Type		Source Type	
Length	4"	LSA [Y / N]		Serial No.		Serial No.	
Distance to Source	N/A	FWDA [Y / N]		Strength		Strength	

LOGGING DATA

GENERAL				GAMMA		ACOUSTIC			DENSITY			NEUTRON		
Run	Depth		Speed	Scale		Scale			Scale			Scale		
No.	From	To	Ft / Min	L	R	L	R	Matrix	L	R	Matrix	L	R	Matrix
ONE	3385'	180'	REC	0	150	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TWO	6638'	3363'	REC	0	150	150	50	N/A	60 %	0 %	2.65	60 %	0 %	SAND
THREE	7246'	6644'	REC	0	150	N/A	N/A	N/A	60 %	0 %	2.65	60 %	0 %	SAND
						N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

DIRECTIONAL INFORMATION

Maximum Deviation deg. @ KOP

Remarks:

RUN-1 TOOL CONFIGURATION - D4TS/NGRT/SDDT/FIAC/HRAI.
TWO OVERBODY CENTRALIZER USED ON TOOL STRING ONE ON D4TS AND ONE ON HRAI.
FIAC CALIPERS WOULD NOT OPEN DUE TO MUD FOWLING
RUN-2 TOOL CONFIGURATION - D4TG/NGRT/DSNT/SDLT/SP_SUB/HRAIJ.
CALIPER PRESENTED IS FROM DENSITY TOOL. CHLORIDES - 27000.
DSNT RUN WITH STIFF-SPRING BOWSPRING DECENTRALIZER. HRAI RUN SLICK. 6 IN
RUN-3 TOOL CONFIGURATION - D4TG/NGRT/XRMI CHLORIDES - 70000.
THE GAMMA DATA FROM 6634' TO 6572' IS SUPPRESSED DUE TO THE PRESENCE OF CASING, LARGER BOREHOLE AND CEMENT.
RUN-4 TOOL CONFIG - D4TG/NGRT/FIAC. TOOLSTRING RUN CENTRALIZED WITH OVERBODY CENTRALIZERS.

HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.

HALLIBURTON

COMPOSITE LOG 1" = 100'

HALLIBURTON

Version No: | hc:3.0
Data File: composite.cls
Format File: composite_1inch.spc
Plot Time: 2008-04-17 08:01:14
Database Time: 12:02:30
Top Depth: 101.00
Bottom Depth: 7252.00

GAMMA RAY	1:1200	HO12	CO12
0 APICOUNTS 150	FT.	0 OHMM 20	4000 MMHOS 0
SPB		HO01	
-160 -]20[+ 40		0 OHMM 20	
		HO01	
		0 OHMM 4	

HALLIBURTON

ARRAY INDUCTION LOG
3 RUN COMPOSITE

COMPANY	EXXON MOBIL
WELL	PASADENA WDW # 398-B
FIELD	PASADENA FERTILIZER PLANT
COUNTY	HARRISON
STATE	TEXAS

COMPANY EXXON MOBIL
WELL PASADENA WDW # 398-B
FIELD PASADENA FERTILIZER PLANT
COUNTY HARRISON STATE TEXAS
API No. 4220100000
Location 1200' FEL & 1660' FSL OF THE WILLIAM VINCE SURVEY, A-78
LAT 29 44' 12" NORTH
LONG 95 11' 53" WEST

Other Services: IDT ICT

Permanent Datum GL Elev. 37.0 ft — Elev.: K.B. 62.0 ft, D.F. 62.0 ft, G.L. 37.0 ft
Log measured from KB 25.0 ft above perm. Datum
Drilling measured from KB

Date	18-Jun-09	01-Jul-09	18-Jul-09
Run No.	1	2	3
Depth - Driller	3387.00 ft	6826.00 ft	7225.00 ft
Depth - Logger	3388.0 ft	6830.0 ft	7234.0 ft
Bottom - Logged Interval	3384.0 ft	6827.0 ft	7230.0 ft
Top - Logged interval	90.0 ft	3370.0 ft	6757.0 ft
Casing - Driller	20.000 in @ 95.0 ft	13.375 in @ 3372.0 ft	9.625 in @ 6757.0 ft
Casing - Logger	90.0 ft	3371.0 ft	6757.0 ft
Bit Size	17.500 in	8.500 in 12.250 @ 6677.00 ft	8.500 in @
Type Fluid in Hole	WATER BASED MUD	WATER BASE MUD	WATER BASE MUD
Density / Viscosity	9.4 ppg / 42.00 s/qt	13.3 ppg / 51.00 s/qt	10.0 ppg / 49.00 s/qt
PH / Fluid Loss	9.00 pH / 7.0 cptm	9.50 pH / 9.4 cptm	9.20 pH / 8.2 cptm
Source of Sample	MUD TANK	MUD PIT	MUD PIT
Rm @ Meas. Temperature	2.23 ohmm @ 80.00 degF	0.27 ohmm @ 105.50 degF	0.24 ohmm @ 78.00 degF
Rmf @ Meas. Temperature	2.29 ohmm @ 82.00 degF	0.79 ohmm @ 100.00 degF	0.19 ohmm @ 74.00 degF
Rmc @ Meas. Temperature	1.48 ohmm @ 79.00 degF	1.16 ohmm @ 98.00 degF	0.25 ohmm @ 80.00 degF
Source Rmf / Rmc	MEASURED / MEASURED	MEASURED / MEASURED	MEASURED / MEASURED
Rm @ BHT	1.53 ohmm @ 120.0 degF	0.18 ohmm @ 166.0 degF	0.12 ohmm @ 169.0 degF
Time Since Circulation	4.0 hr	7.0 hr	8.5 hr
Time on Bottom	18-Jun-09 11:22	01-Jul-09 02:58	18-Jul-09 16:01
Max. Rec. Temperature	120.0 degF @ 3388.0 ft	166.0 degF @ 6830.0 ft	169.0 degF @ 7234.0 ft
Equipment / Location	10842690 / CALDWELL	375 / CALDWELL	10842690 / CALDWELL
Recorded By	R.MARQUEZ	R.MARQUEZ	R.MARQUEZ
Witnessed By	D.MARABLE (ON LOCATION)	D.MARABLE(ON LOCATION)	D.MARABLE(ON LOCATION)

Fold here

Service Ticket No.: 6717374 API Serial No.: 4220100000 PGM Version: WL INSITE R2.4 (Build 11)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

Date	Sample No.				
Depth-Driller					
Type Fluid in Hole					
Density	Viscosity				
Ph	Fluid Loss				
Source of Sample					
Rm @ Meas. Temp		@		@	
Rmf @ Meas. Temp.		@		@	
Rmc @ Meas. Temp.		@		@	
Source Rmf	Rmc	CALC	CALC		
Rm @ BHT		1.53 ohmm @ 120 degF		@	
Rmf @ BHT		1.56 ohmm @ 120 degF		@	
Rmc @ BHT		1.01 ohmm @ 120 degF		@	

RESISTIVITY SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

RESISTIVITY EQUIPMENT DATA

Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
ONE	ACRt-416s661	N/A	1.5" SO	N/A

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.		Run No.		Run No.	
Serial No.	11238316	Serial No.		Serial No.		Serial No.	
Model No.	GTET	Model No.		Model No.		Model No.	
Diameter	3.625"	No. of Cent.		Diameter		Diameter	
Detector Model No.	N/A	Spacing		Log Type		Log Type	
Type	SCINT			Source Type		Source Type	
Length	8"	LSA [Y/N]		Serial No.		Serial No.	
Distance to Source	N/A	FWDA [Y/N]		Strength		Strength	

LOGGING DATA

GENERAL				GAMMA		ACOUSTIC			DENSITY			NEUTRON		
Run	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix
No.	From	To	ft/min	L	R	L	R		L	R		L	R	
ONE	3388	90	REC	0	150									

DIRECTIONAL INFORMATION

Maximum Deviation @ KOP @

Remarks:
ANNULAR HOLE VOLUME CALCULATED FOR 13.375-IN CASING
RUN1:GTET/IDT/ICT(EXTENSIONS)/ACRT WERE RUN IN COMBINATION. SOME CALIPER ARMS HAD TROUBLE OPENING DUE TO HOLE CONDITIONS
GTET/ICT(NO EXTENSIONS) RAN AGAIN SEPERATE. SET DOWN 1750' DUE TO HOLE CONDITIONS. LOGGED UP AS PER CUTOMER REQUEST
BHT = 120 degF (T1: 118 degF, T2:123 degF, T3:121 degF)
NO REPEAT AS PER CUSTOMER REPEAT DUE TO HOLE CONDITIONS

HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.

HALLIBURTON

HALLIBURTON
Plot Time: 18-Jun-09 19:09:11
Plot Range: -28.75 ft to 3404.92 ft
Data: EXXON_WDW_398B\Well Based\DAQ-0001-003\
Plot File: \\ACRT\ACRT_1_INCH

MAIN PASS 1" = 100'

LANE Electric
SERVICE

COMPANY: ELLIOTT OIL CO.
WELL: HOUSE 2A, WILLINGTON DIST.
COUNTY: FAIRFIELD STATE: CONN.
FIELD: WILDCAT
COUNTRY: USA
DATE: 12/4/58
RUN NO. 1

WELL SUMMARY
Casing Size Depth: 10 3/4" 1,100'
Casing Depth: Mud Type: Gel
Mud Weight: Viscosity: 45 sec
Fluid Level: Bottom Hole Temp: 100°F
Max. Rec. Temp.: 100°F

Equipment of Record
Log Run: Gamma Ray
Log Run: Gamma Ray - Neutron
Log Run:

LOG SCALE
Gamma Ray: 0 - 100
Neutron: 0 - 40

Remarks
FROM THIS PAGE THRU 6 DIVERGENCE TO THE END
FROM THIS PAGE THRU 6 DIVERGENCE TO THE END

Recorded by: ELLIOTT
Witnessed by: ELLIOTT

GAMMA RAY NEUTRON

Gamma Ray Neutron Curve

200 MILLIVOLTS

20 COUNTS 80%

CASING 10"

CASING SHOE

TD 1,100'

Map Id # 5

SCHLUMBERGER

Location of Well

COMPANY: JACK W. FRAZIER

WELL: BROOKS #1

RUN NO.: ONE

FIELD: WC-GREENS BAYOU

SURVEY:

COUNTY: HARRIS

STATE: TEXAS

FILING No. 80-56

Elevation D.F.: ..... G.L.: .....

COUNTY: HARRIS
SURVEY:
WELL: BROOKS #1
COMPANY: JACK W. FRAZIER

First Reading	5618	ft.
Last Reading	333	ft.
Footage Measured	5285	ft.
Casing Shoe Depth: SCHLUMBERGER	333	ft.
Casing Shoe Depth: DRILLER	334	ft.
Max. depth reached	5618	ft.
Bottom Depth: DRILLER	5625	ft.
Depth Datum: Drive Bushing		

DIAMOND BAR

DIAMETER OF HOLE

from 333 to T.D. 5-7/8"
from ..... to .....
from ..... to .....

MUD DATA

Nature: Natural-Brown
Weight: 10.0#
Viscosity: 55
Resistivity: 2.0 @ 78 °F

SPACINGS

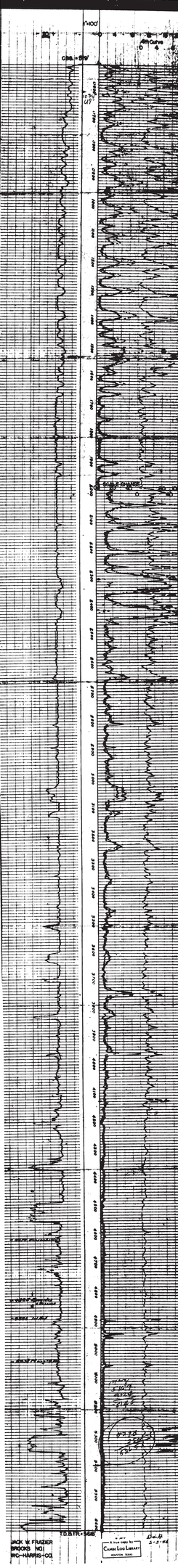
AM 16"
AW 32"
OA 64"

REMARKS

COMPANY ⇒ JACK W. FRAZIER
WELL ⇒ BROOKS # 1
RUN NO.⇒ ONE
FIELD ⇒ WILDCAT - GREENS BAYOU
SURVEY ⇒
COUNTY ⇒ HARRIS
STATE ⇒ TEXAS
FILING NO. S.G. 56

DATE FEBRUARY 5, 1946 OBSERVERS J. B. WEAVER

SELF-POTENTIAL | RESISTIVITY



T.D. STR. = 5625

JACK W FRAZIER
BROOKS NO1
WC-HARRIS-CO.

A true copy by
Chase Log Library
Houston, Texas

D.H.B.
3-5-84

Nixon-Ferguson Well Log Service HOUSTON, TEXAS 77002 ELSI REFERENCE

Map Id #8

INDUCTION ELECTRICAL LOG

COUNTY HARRIS
FIELD or LOCATION WILDCAT
WELL H.C. & H.S.C. NAV. DIST. #1
COMPANY INEXCO OIL CO.

COMPANY INEXCO OIL COMPANY
91695 B
WELL H.C. & H.S.C. NAVIGATION DIST. #1
FIELD WILDCAT
COUNTY HARRIS STATE TEXAS
LOCATION 6400'FNL & 10490'FEL OF RICHARD & ROBERT VINCE SUR. A-76
Sec. ___ Twp. ___ Rge. ___
Other Services: FDC-GR, HDT, CST

Permanent Datum: GROUND LEVEL, Elev. 27.0
Log Measured From K. B. 16.5 Ft. Above Perm. Datum
Drilling Measured From K. B.
Elev.: K.B. 43.5, D.F. 42.5, G.L. 27.0

Date	1-19-72	1-25-72		
Run No.	ONE	TWO		
Depth—Driller	7258	8143		
Depth—Logger	7260	8137		
Btm. Log Interval	7259	8136		
Top Log Interval	1045	7376		
Casing—Driller	9-5/8"@1045	7" @7385	@	@
Casing—Logger	1045	7376		
Bit Size	8-3/4"	6-1/8"		
Type Fluid in Hole	MAGCOBAR LOW PH	LOW PH		
Dens. / Visc.	9.3 / 35.0	10.8 / 44.0		
pH / Fluid Loss	9.0 / 10.5ml	9.5 / 8.0ml	ml	ml
Source of Sample	CIRC. PIT	CIRC. PIT		
R_m @ Meas. Temp.	0.94 @85 °F	0.85 @75 °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	1.28 @70 °F	0.58 @75 °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	0.75 @85 °F	1.1 @75 °F	@ °F	@ °F
Source: R_{mf} / R_{mc}	M / C	M / C		
R_m @ BHT	0.55 @147 °F	0.38 @168 °F	@ °F	@ °F
Time Since Circ.	5 HOURS	5 HOURS		
Max. Rec. Temp.	147 °F	168 °F	°F	°F
Equip. / Location	7038 DAYTON	7010 DAYTON		
Recorded By	BAKER	KENDRICK		
Witnessed By	MESSRS. CONRAD, PYLE, SHOCKLEY, KRAUS, KELLY &			

FOLD HERE The well name, location and borehole reference data were furnished by the customer.

REMARKS

Changes in Mud Type or Additional Samples		
Date / Sample No.		
Depth—Driller		
Type Fluid in Hole		
Dens. / Visc.		
ph / Fluid Loss	ml	
Source of Sample		
R_m @ Meas. Temp.	@ °F	@ °F
R_{mf} @ Meas. Temp.	@ °F	@ °F
R_{mc} @ Meas. Temp.	@ °F	@ °F
Source: R_{mf} / R_{mc}		
R_m @ BHT	@ °F	@ °F
R_{mf} @ BHT	@ °F	@ °F
R_{mc} @ BHT	@ °F	@ °F

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down Hole
SP	7376	20	10

Equipment Data

Run No.	Tool Type	Tool Position	Other

Run No.:	ONE	TWO
C.D.:	NO	NO
S.O.:	0	0
Equip. PANEL No.:	N-595	536
Used: CART. No.:	FB-436	436
SONDE No.:	M-645	535
IAP No.:	294	292
S.B.R.:	0.5	0.5

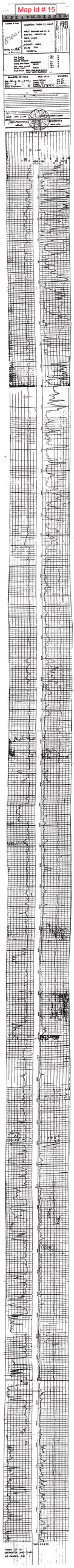
REMARKS: DEPTH BETWEEN 7259 & 7376 NOT LOGGED DUE TO CASING SET BETWEEN RUN #1 & #2

Check one, filling in blanks where applicable:
[X] Surface determined sonde errors used for 6FF40.
[ ] 6FF40 sonde error corrected for ___ inch borehole signal at Rm = ___
[ ] 6FF40 zero set in hole at depth of ___ feet.

SPONTANEOUS POTENTIAL millivolts	DEPTHS	RESISTIVITY ohms - m²/m	CONDUCTIVITY millimhos/m = 1000/ohms-m²/m

SPONTANEOUS POTENTIAL millivolts	DEPTHS	RESISTIVITY ohms - m²/m	CONDUCTIVITY millimhos/m = 1000/ohms-m²/m

Map Id # 15


WELL: DEPOSIT UNIT NO. 2
BLOCK NO.: DEPOSIT UNIT
FIELD: WILDCAT
SURVEY:
COUNTY: BURLEY
STATE: TEXAS
FILING NO.:
COMPANY: TEXAS CO. LTD.
Total Depth: 1,000
Date Log Started: 1-2-
Date Log Finished: 1-2-
Date Rig Released: 1-2-
Date Rig Moved: 1-2-
Type Well: DRY HOLE
Type Log: DIFL-SFL-GR-SP
Bottom Hole Temperature: 90°
Max. Rec. Temp.: 90°
Equip. No.: 1-2-
Max. Rec. Temp.: 90°
Equip. No.: 1-2-
Recorded By: R. Hoffman
Witnessed By: Mr. Hoffman
REMARKS
DATE: JAN. 1, 1900
SELF POTENTIAL
RESISTIVITY
MILLIVOLTS
OHMS
1000
SP
SFL
ILD
ILM
DIFL
Trace 1 Of 1
Deposit Unit 2
WO Hamilton #18

COMPANY NAME
WELL NAME
FIELD
COUNTY
STATE
DATE
RUN NO.
Depth Scale
Time Scale
Recorder
Max. Rec. Temp.
Equipment
Location
DIAMETER OF HOLE
MUD CHARACTERISTICS
Type
Level
Source
Density
Viscosity
Resistivity
Temperature
Fluid Loss
RIG
Contractor
Type
Elevation
Kelly Bushing
Ground Level
Permanent Datum
Log Measured From
Drilling Measured From
RECORDED BY
WITNESSED BY
BOREHOLE RECORD
Bit No.
From
To
CASING RECORD
Size
Wgt.
From
To
REMARKS
RUN NO.
TIME
TYPE LOG
DEPTH-DRILLER
DEPTH-LOGGER
BTM. LOG INTERVAL
TOP LOG INTERVAL
CASING-DRILLER
CASING-LOGGER
BTM. LOG INTERVAL
TOP LOG INTERVAL
TYPE FLUID IN HOLE
DENSITY
VISCOSITY
PH
FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS. TEMP.
RMF @ MEAS. TEMP.
RMC @ MEAS. TEMP.
SOURCE RMF
SOURCE RMC
RM @ BHT
TIME SINCE CIRC.
MAX. REC. TEMP.
EQUIPMENT LOCATION
RECORDED BY
WITNESSED BY

Map Id # 20

403-37406

Company: AMERICAN HESS CORPORATION
Well: DEETEL #2
Field: JACINTOPORT
County: HARRIS COUNTY
State: TEXAS

Date: 03-Dec-90
Run: 03
Depth Reference: KB
Elevation: 0 ft above MSL
Permanent Datum: MSL
Log Measured From: KB 0 ft above Permanent Datum
Drilling Measured From: KB

Logging Company: SCHLUMBERGER WELL SERVICES
Logging Unit: 5
Logging Engineer: J. HOLLIS
Witnessed By: MR. DAVID HESS

Bit Size: 7.875 in
Type Fluid: BRINE
Density: 10.0 lb/gal
Viscosity: 40 s
Fluid Loss: 8.0 cc
Source: RMF
Rm: 0.200 @ 75 °F
Rmf: 0.150 @ 75 °F
Rmc: 0.200 @ 75 °F
Rm @ BHT: 0.100 @ 250 °F
Max Rec Temp: 250 °F
Equipment: 5000 MILES
Location: 10 MILES N OF ALVIN
Recorded By: D. BOSTICK
Witnessed By: MR. DAVID HESS

Run No. 1 | Bit Size 7.875 in | Depth Driller 10800 ft | Depth Logger 10800 ft | Bottom Log Interval 10800 ft | Top Log Interval 9100 ft | Casing Driller 9100 ft @ 0 ft | Casing Logger 9100 ft | Bit Run 1 | Type Fluid BRINE | Density 10.0 lb/gal | Viscosity 40 s | Fluid Loss 8.0 cc | Source RMF | Rm 0.200 @ 75 °F | Rmf 0.150 @ 75 °F | Rmc 0.200 @ 75 °F | Rm @ BHT 0.100 @ 250 °F | Max Rec Temp 250 °F | Equipment 5000 MILES | Location 10 MILES N OF ALVIN | Recorded By D. BOSTICK | Witnessed By MR. DAVID HESS

Schlumberger

DUAL INDUCTION FOCUSED LOG
SCHLUMBERGER
FINAL COMPOSITE

Company: AMERICAN HESS CORPORATION
Well: DEETEL #2
Field: JACINTOPORT
County: HARRIS COUNTY
State: TEXAS

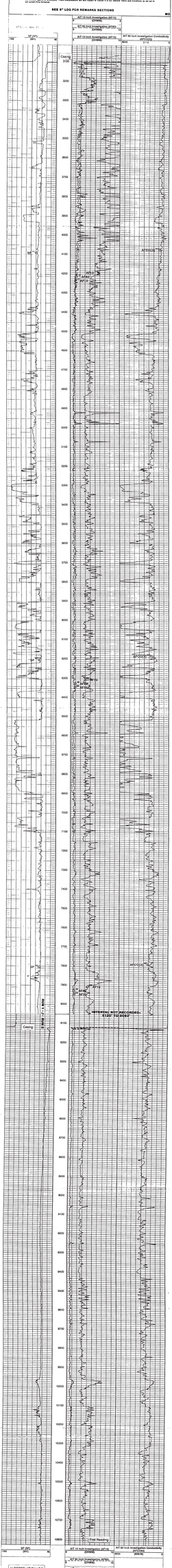
Date: 03-Dec-90
Run: 03
Depth Reference: KB
Elevation: 0 ft above MSL
Permanent Datum: MSL
Log Measured From: KB 0 ft above Permanent Datum
Drilling Measured From: KB

Logging Company: SCHLUMBERGER WELL SERVICES
Logging Unit: 5
Logging Engineer: J. HOLLIS
Witnessed By: MR. DAVID HESS

Bit Size: 7.875 in
Type Fluid: BRINE
Density: 10.0 lb/gal
Viscosity: 40 s
Fluid Loss: 8.0 cc
Source: RMF
Rm: 0.200 @ 75 °F
Rmf: 0.150 @ 75 °F
Rmc: 0.200 @ 75 °F
Rm @ BHT: 0.100 @ 250 °F
Max Rec Temp: 250 °F
Equipment: 5000 MILES
Location: 10 MILES N OF ALVIN
Recorded By: D. BOSTICK
Witnessed By: MR. DAVID HESS

Run No. 1 | Bit Size 7.875 in | Depth Driller 10800 ft | Depth Logger 10800 ft | Bottom Log Interval 10800 ft | Top Log Interval 9100 ft | Casing Driller 9100 ft @ 0 ft | Casing Logger 9100 ft | Bit Run 1 | Type Fluid BRINE | Density 10.0 lb/gal | Viscosity 40 s | Fluid Loss 8.0 cc | Source RMF | Rm 0.200 @ 75 °F | Rmf 0.150 @ 75 °F | Rmc 0.200 @ 75 °F | Rm @ BHT 0.100 @ 250 °F | Max Rec Temp 250 °F | Equipment 5000 MILES | Location 10 MILES N OF ALVIN | Recorded By D. BOSTICK | Witnessed By MR. DAVID HESS

Schlumberger



Map ID 24

SCHLUMBERGER INDUCTION ELECTRICAL LOG

SCHLUMBERGER WELL SURVEYING CORPORATION

COUNTY HARRIS
FIELD or LOCATION CLINTON
WELL MAMIE O. FURR #1
COMPANY ROBERTS-WHITSON

COMPANY ROBERTS-WHITSON OIL & GAS CORPORATION
G6698D
WELL MAMIE O. FURR #1
FIELD CLINTON
COUNTY HARRIS STATE TEXAS
LOCATION 10 MI E/HOUSTON 332.7-AC LSE, C. MARTINEZ SUR, A-545; SURF LOCATION: 2,732.5' FWL & **
Sec. ___ Twp. ___ Rge. ___
Other Services: SL/C

Permanent Datum: GROUND LEVEL, Elev. ___ Elev.: K.B. 47.4
Log Measured From K.B. 12.4 Ft. Above Perm. Datum D.F. 46.4
Drilling Measured From K.B. G.L. 35.0

Date	9-4-64	9-5-64		
Run No.	ONE	TWO		
Depth—Driller	6483	6700		
Depth—Logger	6493	6705		
Btm. Log Interval	6492	6704		
Top Log Interval	668	6492		
Casing—Driller	9-5/8 @ 667	9-5/8 @ 667	@	@
Casing—Logger	668	668		
Bit Size	8-3/4"	8-3/4"		
Type Fluid in Hole	NATIVE	NATIVE		
Dens. / Visc.	10.1 / 44	10.4 / 42		
pH / Fluid Loss	10.2 / 5.2 ml	10.2 / 4.3 ml	ml	ml
Source of Sample	PIT	PIT		
R_m @ Meas. Temp.	2.11 @ 80 °F	2.10 @ 80 °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	1.8 @ 80 °F	1.9 @ 80 °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	2.0 @ 80 °F	2.0 @ 80 °F	@ °F	@ °F
Source: R_{mf} / R_{mc}	C / C	C / C		
R_m @ BHT	1.1 @ 154 °F	1.0 @ 156 °F	@ °F	@ °F
Time Since Circ.	4 HOURS	4 HOURS		
Max. Rec. Temp.	154 °F	156 °F	°F	°F
Equip. / Location	4513 / HUNTSV.	4513 / HUNTSV.		
Recorded By	PURCELL	PURCELL		
Witnessed By	ROBERTS & WHITSON			

COMPLETION CARD ATTACHED

FOLD HERE

REMARKS NOTE: RUN ONE OVERLAPPED TO 5800 AT TIME OF RUN TWO.

Changes in Mud Type or Additional Samples					
Date / Sample No.					
Depth—Driller					
Type Fluid in Hole					
Dens. / Visc.					
ph / Fluid Loss		ml		ml	
Source of Sample					
R_m @ Meas. Temp.	@	°F	@	°F	
R_{mf} @ Meas. Temp.	@	°F	@	°F	
R_{mc} @ Meas. Temp.	@	°F	@	°F	
Source: R_{mf} / R_{mc}					
R_m @ BHT	@	°F	@	°F	
R_{mf} @ BHT	@	°F	@	°F	
R_{mc} @ BHT	@	°F	@	°F	

Scale Changes			
Type Log	Depth	Scale Up Hole	Scale Down Hole

Equipment Data			
Run No.	Tool Type	Tool Position	Other
ONE	6FF40		
TWO	6FF40		

Run No.:	ONE	TWO
C.D.:	NONE	NONE
S.O.:	0	0
Equip. Used: CART. No.:	219	219
PANEL No.:	173	173
SONDE No.:	200	200
S.B.R.:	1	1

NOTE: ** 1684' FNL SUR; BEING 1100' FWL & 1684' FNL LSE.

SPONTANEOUS POTENTIAL millivolts	DEPTHS	RESISTIVITY ohms - m²/m	CONDUCTIVITY millimhos/m = 1000 / ohms-m²/m
– 20 +		A-16"-M SHORT NORMAL 0 — 10; 0 — 100	6 FF40 INDUCTION 2000 — 0; 4000 — 2000
		INDUCTION 40" 0 — 10; 0 — 100	

		A-16"-M SHORT NORMAL 0 — 10; 0 — 100	6 FF40 INDUCTION 2000 — 0; 4000 — 2000
– 20 +		INDUCTION 40" 0 — 10; 0 — 100	
SPONTANEOUS-POTENTIAL millivolts	DEPTHS	RESISTIVITY ohms - m²/m	CONDUCTIVITY millimhos/m = 1000 / ohms-m²/m

COMPANY ROBERTS-WHITSON OIL & GAS CORPORATION
WELL MAMIE O. FURR #1
FIELD CLINTON
COUNTY HARRIS STATE TEXAS

SWSC FR 6704
SWSC TD 6705
DRLR TD 6700
Elev: KB 47.4
DF 46.4
GL 35.0

HARRIS TEXAS GULF COAST CLINTON (DIR. DRILL)
Well ROBERTS-WHITSON O&G CORP., #1 Mamie O. Furr
Result: DUAL OIL (BOTH ZONES NEW PAYS)

10 mi E Houston, 332.7-ac lse, C. Martinez Sur, A-545; Surf Loc: 2732'.5' FWL & 1684' FNL Sur; being 1100' FWL & 1684' FNL lse; proposed BHL: 360' S of Surf Loc, being 1000' FSL & 1100' FWL lse; 2nd BHL: 680' S & 150' E of Surf Loc & 680' FSL lse.

Spud: 8-21-64 Comp: 11-23-64 Elev: 35' Grd TD: 6700' Orig Hole; TD 6640' STH
C/Howard Parker Drlg Co.
Casing: 9 5/8" 667'; 5½" 6640'; 2 1/16" (LT) 6544'; 2 1/16" (UT) 6433'
Prod Zone: (Vicksburg 2) T/Pay 6548' Prod thru Perf 6550-54'/2 spf (LT)
IPF: 148.50 BOPD, no wtr, 10/64" ch, TP 680#, grav 36.5, GOR 461-1
Prod Zone: (Vicksburg 1) T/Pay 6493' Prod thru Perf 6509-24'/2 spf (UT)
IPF: 143.70 BOPD, no wtr, 11/64" ch, TP 610#, grav 35.2, GOR 228-1
Comp Info: drld to 6700'; ran IE/L; no SWCs; no tests; PB & set WS @ 2900' & STH; drld to 6640' STH; ran IE/L & S/L; stuck WLT tool in hole, rec fish, no tests taken; no SWCs; set 5½" 6640'; Perf (LT) 6550-54'; Perf (UT) 6509-24'; Comp as Dual Oil (Both Zones New Pays). PT Comp (LT) 12-8-64; (UT) 12-9-64.
Outlet: Service PL Co.

Date: 1-14-65 Card No.: 22 TOC 88

Merisol
Plant Well 1 (WDW-147)

Schlumberger

INDUCTION-SFL
COMPENSATED NEUTRON-
FORMATION DENSITY

COMPANY	MERICHEM COMPANY
WELL	MERICHEM COMPANY DISPOSAL WELL #1
FIELD	DISPOSAL WELL
COUNTY	HARRIS
STATE	TEXAS
LOCATION	4000' FNL & 1690' FEL OF RICHARD & ROBERT VINCE SUR. A-76
Other Services	ST, ISF/SLK, ISF/SFL
Permanent Datum	GROUND LEVEL
Elev.	N/A
Log Measured From	R.K.B. 16 Ft. Above Perm. Datum
Drilling Measured From	R.K.B.
Elev.: K.B. / D.F. / G.L.	N/A / N/A / N/A

Date	8/13/78
Run No.	ONE
Depth-Driller	2720
Depth-Logger (Schl.)	2765
Btm. Log Interval	2764
Top Log Interval	84
Casing-Driller	20 @ 83
Casing-Logger	84
Bit Size	25
Type Fluid in Hole	GEL/WATER
Dens. / Visc.	9 / 50
pH / Fluid Loss	8.5 / 1.C ml
Source of Sample	FLOWLINE
Rm @ Meas. Temp.	6.02 @ 75 °F
Rmf @ Meas. Temp.	4.52 @ 75 °F
Rmc @ Meas. Temp.	9.04 @ 75 °F
Source: Rmf / Rmc	M / C
Rm @ BHT	3.35 @ 135 °F
Circulation Stopped	0530
Logger on Bottom	0800
Max. Rec. Temp.	135 °F
Equip. / Location	7659 / DAYTON
Recorded By	HARRISON/KING
Witnessed By	TUCKER/ROTH

FOLD HERE — The well name, location and borehole reference data were furnished by the customer.

RUN NO.	ONE
Service Order No.	57706
Fluid Level	FULL
Salinity, PPM CL.	1500
Speed - F.P.M.	30
EQUIPMENT DATA	
IE Module	181
Ind. Cartridge	269
Ind. Sonde	278
NL Module	180
Dens. Cart.	100
Dens. Skid.	---
Dens. Sonde	65
Dens. Source	---
Dens. Calibrator	GCBC
Neut. Cart.	466
Neut. Source	535
Neut. Calibrator	467
GR Cart.	609
SSR	0.5
S.O.	NONE

SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

REMARKS

LOGGING DATA

DEPTH Top	DEPTH Bottom	CNP Porosity Scale	CNP Matrix	CNP Auto Corr. or Hole Size Setting	FDC Porosity Scale	FDC Grain Density	FDC Liquid Density	FDC Hole Fluid
84	2765	75-15	SAND	AUTO	75-15	2.65	1.0	LIQ.

☒ Surface determined sonde error used,
☐ Sonde errors corrected for ____ inch borehole signal at Rm = ____
☐ Zero set in hole at depth of ____ feet.

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 4 of our General Terms and Conditions as set out in our current Price Schedule.

Baker Atlas

OCT 13 2000

BAKER HUGHES

HIGH DEFINITION INDUCTION LOG / COMPENSATED Z-DENSILOG / COMPENSATED NEUTRON LOG / GAMMA RAY LOG

FILE NO:	
API NO:	
COMPANY	MERISOL
WELL	W.D.W. #319
FIELD	WASTE DISPOSAL WELL
COUNTY	HARRIS
STATE	TEXAS
LOCATION:	4140' FNL & 17145' FEL OF THE RICAHRD & ROBERT VINCE SURVEY, A-76
OTHER SERVICES	STAR
Ver. 5.74 FIELD PRINT	
PERMANENT DATUM	ELEVATION
LOG MEASURED FROM	KB 19.5 FT ABOVE P.D.
DRILL. MEAS. FROM	KB
ELEVATIONS	KB 19.5 FT / DF 18.5 FT / GL

DATE	31-Aug-2000	
RUN	1	TRIP 1
SERVICE ORDER	346387	
DEPTH DRILLER	7408 FT	
DEPTH LOGGER	7406 FT	
BOTTOM LOGGED INTERVAL	7399 FT	
TOP LOGGED INTERVAL	3300 FT	
CASING-DRILLER	13.325 IN	@3303 FT
CASING LOGGER	3300 FT	
BIT SIZE	12.25 IN	
TYPE OF FLUID IN HOLE	KCL / NEW DRILL	
DENSITY / VISCOSITY	9.8 LB/G	14 S
PH / FLUID LOSS	9.8	6.0 C3
SOURCE OF SAMPLE	FLOWLINE	
RM AT MEAS. TEMP.	0.27 OHMM	@89 DEGF
RMF AT MEAS. TEMP.	0.19 OHMM	@89 DEGF
RMC AT MEAS. TEMP.	0.32 OHMM	@89 DEGF
SOURCE OF RMF / RMC	MEASURED	MEASURED
RM AT BHT	0.18 OHMM	
TIME SINCE CIRCULATION	5.0 HOURS	
MAX. RECORDED TEMP.	156 DEGF	
EQUIP. NO. / LOCATION	HL6515	
RECORDED BY	D.SHORT	
WITNESSED BY	J.SANDT	

Appendix 4-7
Plant Well 2 (WDW-319) Open Hole Well Log

IN MAKING INTERPRETATIONS OF LOGS OUR EMPLOYEES WILL GIVE CUSTOMER THE BENEFIT OF THEIR BEST JUDGEMENT. BUT SINCE ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS, WE CANNOT, AND WE DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION. WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COST, DAMAGES, OR EXPENSES WHATSOEVER INCURRED OR SUSTAINED BY THE CUSTOMER RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR EMPLOYEES.

BOREHOLE RECORD		
BIT SIZE	FROM	TO
12.25 IN	3303 FT	7408 FT

CASING RECORD				
SIZE	WEIGHT	GRADE	FROM	TO
13.375 IN	61 LB/F	n/a	0 FT	3303 FT

REMARKS

RUN 1 TRIP 1 : BVOL = TOTAL BOREHOLE VOLUME
CVOL = TOTAL CEMENT VOLUME CALCULATED USING 9.625" CASING

MATRIX = SANDSTONE 2.65GMCC

CHLORIDES = 14900

CREW: D.SHORT,C.ROSS,J.QUINTANILLA,J.CATILLO,A.ADAMS

EQUIPMENT DATA					
RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
1	1	COM. REMOTE	3510XA	166166	FREE
1	1	GR	1329XA	121824	FREE
1	1	CN	2446XA	153095	DECENTRALIZED
1	1	ZDL ELECT.	2228EA	173975	DECENTRALIZED
1	1	ZDL MANDREL	2228MA	153006	DECENTRALIZED
1	1	HDIL ELECT.	1515EA	177893	1.5" STANDOFF
1	1	HDIL MANDRE	1515MA	177920	1.5" STANDOFF

MAIN LOG 5"/100FT SCALE

May 09, 2000 Updates: 1 — Fileview 2.66c Perplt /main/47 — Cplot 5.1 Pdf_Cpp /main/16 — Sat Aug 12 04:34:44 2000

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/pass/texasworld_354387/f775w01.prm
LOGGING MODE: DEPTH DIRECTION: UP
TOP DEPTH: 53.500 ft BOTTOM DEPTH: 3303.000 ft

CURVE MEASURE POINT OFFSET

CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
CAL	1.75	M1R3	8.00	M1RX	8.00		
GR	39.50	M1R6	8.00	SP	14.00		
M1R2	8.00	M1R9	8.00	TEN	0.00		

Presentation : vlc3:/dat1a/pass/texasworld_354387/MAIN5.pdf [5"/100' Scale]
Plot Interval : 1.75 – 3303 Feet

Data File 1 : F1 : vlc3:/dat1a/pass/texasworld_354387/f775w01.xtf
Created On : Aug 12 00:36:58 2000
Company : TEXAS WORLD OPERATING
Well : MERISOL W.D.W. #319
Field : WASTE DISPOSAL WELL
File Interval : 1.75 – 3303 Feet
Oct : f775w

APPENDIX B

CORE ANALYSIS DATA AND FORMATION BRINE ANALYSIS

CORE ANALYSIS REPORT

EXXONMOBIL WDW-397

ExxonMobil Refining
WDW 397
Agrifos Fertilizer Plant
Harris County, Texas

FILE NO. : HOU-060076
DATE : March 17, 2006
DRLG FLUID : Water Based Mud
ANALYSTS : MS
CORES : Halliburton

SIDEWALL CORE ANALYSIS

SHOT NO.	REC (in)	CQI	DEPTH (ft)	Kair (mD)*	POR (%)	Sco (%)	Stw (%)	PROB PROD	Ob (%)	Gb (%)	GAS DET	Sciw (%)	°API	LITHOLOGY	FLU
1-24	1.2	A4	4600.0	940	28.3	0.0	80.9	Wtr	0.0	5.4	3	34		Sd vf-fg sshy-shy sslty calc	no
1-23	1.2	A4	4770.0								0			Shale	no
1-22	1.2	A4	4840.0								0			Shale sfoss	no
1-21	1.2	A4	4955.0								1			Shale sfoss	no
1-20	0.1	F1	5012.0								5			Mud	
1-19	1.2	A4	5260.0	600	27.5	0.0	74.4	Gas	0.0	7.1	0	42		Sd vf-fg vshy lam(3) slty	no
1-18	0.6	D3	5350.0	5500	29.9	0.0	86.6	Wtr	0.0	4.0	0	32		Sd mg sslty	no
1-17	0.8	B3	5434.0								3			Shale	no
1-16	0.8	B3	5510.0	3000	29.2	0.0	87.1	Wtr	0.0	3.8	10	33		Sd fg sshy sslty scarb	no
1-15	0.6	C3	5614.0	5300	29.7	0.0	85.5	Wtr	0.0	4.3	5	32		Sd mg sslty (flushed)	no
1-14	0.8	B3	5710.0	1070	28.5	0.0	91.9	Wtr	0.0	2.3	6	34		Sd vf-fg sshy sslty	no
1-13	0.4	D2	5835.0	2030	28.8	0.0	91.0	Wtr	0.0	2.6	4	32		Sd fg sshy sslty (flushed)	no
1-12	0.8	C3	5900.0	40	22.5	0.0	81.5	Wtr	0.0	4.2	14	55		Sd vfg shy-vshy slty	no
1-11	0.8	C3	5966.0	2170	28.7	0.0	84.5	Wtr	0.0	4.4	5	32		Sd fg sshy sslty	no
1-10	1.0	B3	6026.0	400	26.8	0.0	79.3	Wtr	0.0	5.5	3	38		Sd vf-fg vshy lam(4) slty	no

ExxonMobil Refining
WDW 397
Agrifos Fertilizer Plant
Harris County, Texas

FILE NO. : HOU-060076
DATE : March 17, 2006
DRLG FLUID : Water Based Mud
ANALYSTS : MS
CORES : Halliburton

SIDEWALL CORE ANALYSIS

SHOT NO.	REC (in)	CQI	DEPTH (ft)	Kair (mD)*	POR (%)	Sco (%)	Stw (%)	PROB PROD	Ob (%)	Gb (%)	GAS DET	Sciw (%)	°API	LITHOLOGY	FLU
1-9	1.0	C3	6080.0	700	28.1	0.0	90.1	Wtr	0.0	2.8	8	35		Sd vf-fg sshy-shy sslty	no
1-8	0.2	D1	6120.0	2650	29.3	0.0	86.0	Wtr	0.0	4.1	1	33		Sd f-mg sshy sslty	no
1-7	0.5	C2	6165.0	160	24.9	0.0	89.1	Wtr	0.0	2.7	7	45		Sd vf-fg shy slty	no
1-6	0.3	D2	6220.0								8			Shale	no
1-5	0.5	C2	6245.0	4650	29.5	0.0	84.5	Wtr	0.0	4.6	0	33		Sd mg sslty	no
1-4	1.0	B3	6318.0	680	27.2	0.0	90.8	Wtr	0.0	2.5	6	35		Sd vf-fg shy slty calc	no
1-3	0.5	C2	6434.0	3150	29.3	0.0	86.5	Wtr	0.0	3.9	4	33		Sd f-mg sslty	no
1-2	0.8	C3	6483.0								4			Shale scalc	no
1-1	1.0	B3	6527.0	30	21.3	0.0	79.2	Wtr	0.0	4.4	0	57		Sd vfg vshy-shy slty	no
2-24	1.0	A3	6723.0	2340	28.8	0.0	78.9	Wtr	0.0	6.1	0	32		Sd f-mg sshy sslty	no
2-23	0.8	B3	6738.0	1450	28.2	0.0	93.7	Wtr	0.0	1.8	0	34		Sd fg sshy sslty (flushed)	no
2-22	1.0	A3	6755.0	2000	28.5	0.0	88.2	Wtr	0.0	3.4	0	32		Sd fg sshy sslty	no
2-21	0.5	C2	6775.0	2250	28.8	0.0	69.7	Gas	0.0	8.7	0	39		Sd fg sshy sslty	no
2-20	1.0	A3	6785.0	4750	29.5	0.0	89.8	Wtr	0.0	3.0	0	33		Sd f-mg sslty	no
2-19	1.0	A3	6836.0	1200	28.3	0.0	95.4	Wtr	0.0	1.3	0	34		Sd vf-fg sshy sslty	no

F&F SAND

ExxonMobil Refining
WDW 397
Agrifos Fertilizer Plant
Harris County, Texas

FILE NO. : HOU-060076
DATE : March 17, 2006
DRLG FLUID : Water Based Mud
ANALYSTS : MS
CORES : Halliburton

SIDEWALL CORE ANALYSIS

SHOT NO.	REC (in)	CQI	DEPTH (ft)	Kair (mD)*	POR (%)	Sco (%)	Stw (%)	PROB PROD	Ob (%)	Gb (%)	GAS DET	Sciw (%)	°API	LITHOLOGY	FLU
2-18	0.8	B3	6866.0	1020	28.0	0.0	74.3	Gas	0.0	7.2	0	40		Sd vf-fg sshy sslty	no
2-17	1.0	A3	6876.0	650	27.2	0.0	74.1	Gas	0.0	7.0	0	42		Sd vf-fg sshy-shy slty	no
2-16	1.0	A3	6887.0	1030	28.1	0.0	73.7	Gas	0.0	7.4	0	41		Sd vf-fg sshy slty	no
2-15	1.2	A4	6905.0	1300	28.4	0.0	73.4	Gas	0.0	7.5	0	41		Sd fg shy lam(2) slty scalc	no
2-14	1.2	A4	6920.0	2700	28.9	0.0	88.4	Wtr	0.0	3.3	0	32		Sd fg sslty	no
2-13	1.0	A3	6930.0	1410	28.3	0.0	88.1	Wtr	0.0	3.4	0	34		Sd fg sshy sslty	no
2-12	1.2	A4	6940.0								3			Shale	no
2-11	0.8	B3	6965.0	2240	28.8	0.0	87.2	Wtr	0.0	3.7	0	32		Sd fg sshy sslty	no
2-10		NR	6975.0											Empty bottle	
2-9		NR	6985.0											Empty bottle	
2-8	0.6	C3	7005.0	3120	29.2	0.0	83.3	Wtr	0.0	4.9	0	33		Sd f-mg sshy sslty	no
2-7	0.8	B3	7025.0	2500	28.7	0.0	86.1	Wtr	0.0	4.0	0	32		Sd fg sslty (flushed)	no
2-6	0.6	C3	7045.0	4050	29.6	0.0	90.5	Wtr	0.0	2.8	0	33		Sd f-mg sslty	no
2-5	1.0	A3	7065.0	3410	29.3	0.0	71.4	Gas	0.0	8.4	0	40		Sd f-mg sslty	no
2-4		NR	7095.0											Empty bottle	
2-3	0.8	B3	7104.0	1860	28.3	0.0	79.6	Wtr	0.0	5.8	0	34		Sd fg sshy sslty s-mcem	no
2-2		NR	7114.0											Empty bottle	
2-1	1.0	A3	7124.0	2900	28.8	0.0	80.4	Wtr	0.0	5.7	0	32		Sd fg sshy sslty s-mcem	no

E&F SAND

A/B SAND

ExxonMobil Refining
WDW 397
Agrifos Fertilizer Plant
Harris County, Texas

FILE NO. : HOU-060076
DATE : March 17, 2006
DRLG FLUID : Water Based Mud
ANALYSTS : MS
CORES : Halliburton

SIDEWALL CORE ANALYSIS

SHOT NO.	REC (in)	CQI	DEPTH (ft)	Kair (mD)*	POR (%)	Sco (%)	Stw (%)	PROB PROD	Ob (%)	Gb (%)	GAS DET	Sciw (%)	°API	LITHOLOGY	FLU

• (6) denotes low permeability.

• Excessive flushing by the mud filtrate can result in high measured water saturation in cores from gas productive sands. In water productive zones, the log calculated water saturation should be greater than the core analysis critical water saturation (Sciw).

ExxonMobil Refining
WDW 397
Agrifos Fertilizer Plant
Harris Co., TX

File No.: HOU-060076
Date: April 28, 2006
Analysts: RP, KJ, MM

PARTSIZ SM ANALYSIS

SMPL NO	DEPTH (ft)	SAND % GRVL	VCRS	CRS	MED	FINE	VFIN	SILT % CRS	MED	FINE	VFIN	CLAY (%)	Vsh (%)	Cs (m2/cc)	MEAN (μ)	LITHOLOGY*
7	5596.60	0.0	0.0	0.0	0.6	19.8	38.6	17.4	4.2	5.0	5.9	8.5	24	0.47	75	Sd vfg vsshy slty
8	5597.70	0.0	0.0	0.0	3.6	35.0	37.9	8.9	3.8	3.8	2.7	4.3	15	0.28	110	Sd vf-fg cln
10	5599.50	0.0	0.0	0.0	4.1	30.6	33.8	10.1	4.8	5.2	4.6	6.8	21	0.40	97	Sd vf-fg vsshy
13	5599.80	0.0	0.0	3.1	22.5	34.9	19.4	6.6	5.6	3.7	2.4	1.7	13	0.16	167	Sd fg cln
11	5600.50	0.0	0.0	0.0	3.5	34.3	36.2	8.5	4.3	4.5	3.5	5.1	17	0.32	106	Sd vf-fg vsshy
12	5601.50	0.0	0.0	0.0	11.6	37.8	24.2	4.6	5.1	6.2	5.7	4.8	22	0.32	123	Sd f-vfg vsshy
14	5602.50	0.0	0.0	0.0	7.4	35.7	28.7	12.0	6.1	3.7	2.8	3.6	16	0.26	114	Sd f-vfg vsshy
16	5604.40	0.0	0.0	0.0	18.2	44.4	20.4	4.4	4.7	2.9	2.4	2.5	13	0.19	159	Sd fg cln
20	5605.00	0.0	0.0	0.0	12.9	65.8	16.0	0.7	1.9	0.7	0.7	1.2	5	0.10	173	Sd fg cln
18	5606.50	0.0	0.0	0.0	2.5	43.3	32.0	5.5	7.1	4.5	2.7	2.5	17	0.22	118	Sd f-vfg vsshy
21	5608.50	0.0	0.0	0.0	0.7	32.8	36.2	10.1	5.1	4.6	4.0	6.5	20	0.38	96	Sd vf-fg vsshy
24	5610.00	0.0	0.0	0.0	16.6	44.8	23.4	4.1	4.2	2.6	1.9	2.4	11	0.18	155	Sd fg cln
23	5610.60	0.0	0.0	10.7	42.1	26.4	5.6	4.3	3.3	2.0	2.0	3.6	11	0.21	268	Sd m-fg cln
25	5611.40	0.0	0.0	2.5	34.2	42.0	10.2	3.1	3.2	1.4	1.3	2.0	8	0.14	216	Sd f-mg cln
26	5612.50	0.0	0.0	3.6	33.4	32.1	11.2	7.0	4.9	2.8	2.2	2.9	13	0.20	199	Sd f-mg cln
27	5613.40	0.0	0.0	12.8	42.9	23.6	7.8	5.5	3.0	1.7	1.2	1.5	7	0.12	279	Sd mg cln
28	5614.50	0.0	2.3	20.4	33.4	21.4	8.3	5.3	3.4	2.0	1.5	1.9	9	0.14	310	Sd mg cln
29	5615.60	0.0	0.0	19.7	49.2	18.6	4.0	3.9	1.8	1.0	0.7	1.0	5	0.09	342	Sd mg cln
30	5616.40	0.0	0.1	32.7	56.0	3.8	1.0	1.8	0.7	1.0	1.0	1.8	5	0.11	437	Sd m-cg cln
32	5617.50	0.0	0.4	30.0	47.9	12.1	1.7	2.5	1.3	1.3	1.1	1.7	5	0.11	406	Sd m-cg cln
33	5618.50	0.0	0.2	30.6	47.9	13.7	1.9	2.3	1.1	0.8	0.7	0.8	3	0.07	408	Sd m-cg cln
36	5620.00	0.0	0.0	16.7	56.7	17.8	2.1	3.3	1.2	0.8	0.7	0.6	3	0.06	348	Sd mg cln
35	5620.50	0.0	0.0	23.1	50.9	17.2	1.8	2.8	1.3	1.0	0.9	0.9	4	0.08	367	Sd mg cln
37	5621.40	0.0	0.0	19.5	46.5	15.7	5.5	4.2	2.8	2.2	1.8	1.7	9	0.13	329	Sd mg cln
50A	6795.70	0.0	0.0	1.5	37.9	51.0	4.9	1.0	1.6	0.5	0.8	0.9	4	0.08	231	Sd m-fg cln
51A	6796.40	0.0	0.1	12.5	40.5	34.3	5.9	1.7	2.1	1.0	1.0	0.9	5	0.08	281	Sd mg cln
52A	6797.40	0.0	2.0	23.8	37.8	21.3	7.6	3.7	1.9	1.0	0.7	0.4	4	0.06	347	Sd mg cln
53A	6798.80	0.2	17.1	36.8	23.1	12.3	5.1	1.8	1.5	0.9	0.6	0.5	4	0.05	567	Sd cg cln

ExxonMobil Refining
WDW 397
Agrifos Fertilizer Plant
Harris Co., TX

File No.: HOU-060076
Date: April 28, 2006
Analysts: RP, KJ, MM

PARTSIZ[SM] ANALYSIS

SMPL NO	DEPTH (ft)	SAND % GRVL	VCRS	CRS	MED	FINE	VFIN	SILT % CRS	MED	FINE	VFIN	CLAY (%)	Vsh (%)	Cs (m2/cc)	MEAN (μ)	LITHOLOGY*
54A	6799.15	0.0	0.0	2.0	42.1	47.2	3.5	1.0	1.4	0.5	0.9	1.3	4	0.09	243	Sd m-fg cln
55A	6800.10	0.0	0.0	0.8	36.0	52.3	5.0	1.1	1.9	0.5	0.8	1.5	5	0.11	225	Sd m-fg cln
40A	6801.00	0.0	0.0	0.0	15.3	68.9	6.6	2.0	3.4	1.0	1.3	1.5	7	0.12	188	Sd fg cln
56A	6801.80	0.0	0.0	1.4	38.7	46.9	5.9	1.9	2.3	0.8	1.0	1.1	5	0.09	231	Sd m-fg cln
57A	6802.45	0.0	0.0	1.5	41.4	46.7	3.4	1.8	2.3	0.9	1.1	1.0	5	0.09	239	Sd m-fg cln
58B	6803.30	0.0	0.0	1.1	38.1	50.3	4.1	1.6	2.2	0.7	0.9	0.9	5	0.08	231	Sd m-fg cln
41A	6804.00	0.0	0.0	0.4	32.4	54.6	5.9	1.5	2.4	0.8	1.0	1.0	5	0.09	216	Sd f-mg cln
59A	6804.80	0.0	0.0	3.1	36.2	41.9	9.5	3.2	3.0	1.1	0.9	1.1	6	0.10	226	Sd m-fg cln
60A	6805.50	0.0	0.0	1.7	34.8	49.0	8.2	1.6	2.5	0.8	0.7	0.8	5	0.08	222	Sd f-mg cln
61A	6806.25	0.0	0.0	2.7	38.5	46.5	6.5	1.4	2.1	0.7	0.7	0.8	4	0.08	235	Sd m-fg cln
42A	6807.00	0.0	0.0	2.2	37.9	46.7	6.6	1.6	2.4	0.8	0.8	1.0	5	0.09	231	Sd m-fg cln
62A	6807.70	0.0	0.0	0.0	28.5	48.9	13.2	2.4	3.5	1.2	1.1	1.2	7	0.11	198	Sd f-mg cln
63A	6808.20	0.0	0.0	0.0	19.9	66.5	10.2	0.7	2.1	0.5	0.0	0.0	3	0.05	193	Sd fg cln
64A	6809.10	0.0	0.0	0.0	19.9	62.3	14.4	0.7	2.2	0.5	0.0	0.0	3	0.05	187	Sd fg cln
43A	6810.30	0.0	0.0	0.0	5.6	58.5	26.3	1.5	4.1	1.5	1.2	1.4	8	0.13	149	Sd fg cln
65A	6810.75	0.0	0.0	0.0	7.2	56.8	26.8	2.2	3.8	1.4	0.8	1.1	7	0.11	151	Sd fg cln
66B	6811.53	0.0	0.0	0.0	6.7	53.4	31.6	1.2	3.1	1.6	1.0	1.5	7	0.13	145	Sd fg cln
67A	6812.00	0.0	0.0	0.0	10.2	55.7	24.8	1.2	3.3	1.8	1.4	1.6	8	0.14	156	Sd fg cln
44A	6813.00	0.0	0.0	0.0	9.0	61.5	22.5	0.8	2.9	1.3	0.8	1.2	6	0.11	158	Sd fg cln
68A	6813.75	0.0	0.0	0.0	5.5	58.5	26.8	1.7	4.2	1.3	0.8	1.2	7	0.11	149	Sd fg cln
69A	6814.20	0.0	0.0	0.0	8.1	58.8	23.3	2.4	4.0	1.4	1.0	1.1	7	0.11	156	Sd fg cln
70A	6815.10	0.0	0.0	0.6	25.3	43.0	17.2	4.8	4.1	2.1	1.5	1.5	9	0.13	181	Sd fg cln
45A	6816.00	0.0	0.0	0.4	24.0	48.1	17.8	2.4	3.3	1.6	1.2	1.1	7	0.11	183	Sd fg cln
71A	6816.60	0.0	0.0	0.5	21.2	47.4	21.0	2.9	3.4	1.6	1.0	1.0	7	0.11	175	Sd fg cln
72A	6817.25	0.0	0.0	0.2	24.0	50.1	18.3	1.8	2.8	1.0	0.7	1.0	6	0.10	185	Sd fg cln
73A	6818.00	0.0	0.0	2.6	25.4	44.3	17.4	2.7	3.0	1.5	1.3	1.8	8	0.14	191	Sd fg cln
46A	6819.00	0.0	0.0	0.0	12.8	58.0	18.9	1.2	3.6	1.9	1.6	2.1	9	0.16	163	Sd fg cln
75A	6820.00	0.0	0.0	0.0	13.4	57.3	18.8	1.2	3.4	2.0	1.7	2.1	9	0.16	164	Sd fg cln

ExxonMobil Refining
WDW 397
Agrifos Fertilizer Plant
Harris Co., TX

File No.: HOU-060076
Date: April 28, 2006
Analysts: RP, KJ, MM

PARTSIZ SM ANALYSIS

SMPL NO	DEPTH (ft)	SAND % GRVL	VCRS	CRS	MED	FINE	VFIN	SILT % CRS	MED	FINE	VFIN	CLAY (%)	Vsh (%)	Cs (m2/cc)	MEAN (μ)	LITHOLOGY*
47A	6821.00	0.0	0.0	0.2	22.8	49.3	17.1	1.4	3.4	1.9	1.6	2.2	9	0.16	181	Sd fg cln
76A	6821.50	0.0	0.0	0.2	22.9	46.8	18.3	2.8	3.5	1.8	1.4	2.3	9	0.16	178	Sd fg cln
77A	6822.10	0.0	0.0	3.9	28.7	41.4	15.6	3.9	3.2	1.3	0.9	1.1	7	0.11	203	Sd f-mg cln
48A	6823.00	0.0	0.0	4.6	34.1	41.5	11.1	2.3	2.8	1.4	1.1	1.1	6	0.10	225	Sd m-fg cln
78A	6826.10	0.0	0.0	0.5	24.4	49.3	17.0	1.9	3.2	1.5	1.1	1.1	7	0.11	186	Sd fg cln
108A	6826.85	0.0	0.0	4.8	32.7	40.4	12.8	3.2	2.9	1.3	1.0	0.9	6	0.10	220	Sd f-mg cln
79A	6827.10	0.0	0.0	4.2	31.8	40.6	13.2	3.3	3.1	1.6	1.2	1.1	7	0.10	214	Sd f-mg cln
109A	6827.30	0.0	0.0	2.0	22.8	42.3	18.7	4.2	4.1	2.3	1.7	2.0	10	0.16	176	Sd fg cln
80A	6828.00	0.0	0.0	1.0	23.8	43.2	20.2	4.3	3.8	1.6	1.0	1.1	8	0.11	178	Sd fg cln
81A	6829.35	0.0	0.0	0.1	18.1	41.1	24.8	6.8	4.3	2.1	1.2	1.3	9	0.14	155	Sd fg cln
82A	6830.25	0.0	0.0	1.1	26.0	44.6	18.3	3.9	3.3	1.3	0.7	0.7	6	0.09	188	Sd fg cln
83A	6831.00	0.0	0.0	1.2	22.6	40.9	21.5	6.3	3.8	1.7	1.0	1.0	8	0.11	172	Sd fg cln
84B	6832.20	0.0	0.0	0.0	9.5	56.2	24.6	0.9	3.1	2.1	1.6	2.0	9	0.16	154	Sd fg cln
110A	6832.50	0.0	0.0	0.0	7.1	55.8	27.9	0.8	2.8	2.2	1.5	1.9	8	0.15	148	Sd fg cln
85A	6833.10	0.0	0.1	8.2	30.9	35.4	15.1	5.2	2.9	1.1	0.7	0.5	5	0.08	224	Sd f-mg cln
86A	6834.00	0.0	0.0	6.6	28.7	38.6	16.5	4.5	3.0	1.1	0.6	0.5	5	0.08	212	Sd f-mg cln
87A	6835.00	0.0	0.0	2.2	26.9	44.1	17.1	3.7	3.2	1.3	0.8	0.7	6	0.09	194	Sd fg cln
111A	6835.40	0.0	0.0	5.3	30.0	40.3	16.1	4.0	2.7	0.8	0.4	0.3	4	0.07	212	Sd f-mg cln
112A	6836.50	0.0	0.0	0.0	9.2	62.2	19.8	0.9	2.8	2.0	1.5	1.6	8	0.13	160	Sd fg cln
88A	6836.83	0.0	0.0	4.1	27.1	39.9	17.8	5.3	3.4	1.2	0.6	0.4	6	0.08	197	Sd f-mg cln
89A	6837.00	0.0	0.4	5.8	27.1	41.2	16.7	4.0	3.0	1.0	0.5	0.3	5	0.07	207	Sd f-mg cln
90A	6838.00	0.0	0.0	0.0	7.1	45.8	32.4	3.0	3.7	3.3	2.1	2.6	12	0.19	134	Sd fg cln
113A	6839.00	0.0	0.0	2.5	20.0	39.8	23.7	6.1	3.8	1.9	1.0	1.1	8	0.12	167	Sd fg cln
91B	6839.70	0.0	1.0	10.0	26.7	33.9	18.0	5.8	2.8	1.0	0.4	0.3	5	0.07	222	Sd f-mg cln
92A	6840.25	0.0	0.0	6.1	25.5	36.6	20.1	6.2	3.2	1.3	0.6	0.4	5	0.08	197	Sd f-mg cln
93A	6841.00	0.0	0.0	0.0	12.2	42.1	26.1	8.9	5.0	2.7	1.6	1.5	11	0.15	139	Sd fg cln
114A	6842.30	0.0	0.0	0.0	12.4	46.5	26.8	7.3	3.9	1.7	0.8	0.6	7	0.10	148	Sd fg cln
94A	6842.70	0.0	0.0	0.0	19.1	45.0	22.9	6.8	3.8	1.4	0.6	0.4	6	0.09	164	Sd fg cln

ExxonMobil Refining
WDW 397
Agrifos Fertilizer Plant
Harris Co., TX

File No.: HOU-060076
Date: April 28, 2006
Analysts: RP, KJ, MM

PARTSIZ SM ANALYSIS

SMPL NO	DEPTH (ft)	SAND % GRVL	VCRS	CRS	MED	FINE	VFIN	SILT % CRS	MED	FINE	VFIN	CLAY (%)	Vsh (%)	Cs (m2/cc)	MEAN (μ)	LITHOLOGY*
95B	6843.55	0.0	0.9	9.3	24.4	34.6	19.5	5.9	3.1	1.3	0.6	0.4	5	0.08	210	Sd f-mg cln
96A	6844.25	0.0	0.0	3.4	22.2	41.0	21.7	5.2	3.5	1.5	0.7	0.7	6	0.10	179	Sd fg cln
115A	6845.30	0.0	0.0	4.8	23.8	38.8	21.6	5.5	3.1	1.3	0.6	0.4	5	0.08	189	Sd fg cln
97A	6845.75	0.0	1.6	7.4	20.5	33.8	22.2	7.8	3.9	1.6	0.7	0.5	7	0.09	187	Sd fg cln
98A	6846.41	0.0	0.6	5.8	22.3	37.7	21.8	6.3	3.3	1.2	0.5	0.4	5	0.08	188	Sd fg cln
99A	6847.05	0.0	0.0	0.0	3.5	48.8	36.4	1.8	2.9	2.8	1.7	2.1	9	0.17	131	Sd fg cln
116A	6848.30	0.0	0.0	0.0	4.1	51.2	35.5	1.5	2.6	2.3	1.2	1.6	8	0.14	136	Sd fg cln
100A	6848.75	0.0	0.0	0.0	4.3	49.3	35.2	1.7	3.0	2.9	1.7	2.0	10	0.17	133	Sd fg cln
101A	6849.15	0.0	0.0	0.2	18.4	41.6	25.5	6.5	4.4	1.9	0.8	0.7	8	0.11	157	Sd fg cln
102B	6850.20	0.0	0.0	0.0	18.4	49.0	21.8	5.6	3.4	1.0	0.4	0.3	5	0.08	168	Sd fg cln
117A	6851.00	0.0	0.0	1.7	23.8	41.4	21.9	5.0	3.5	1.5	0.7	0.6	6	0.09	179	Sd fg cln
103B	6851.95	0.0	0.0	0.7	19.6	39.1	24.7	7.8	4.4	2.0	0.9	0.7	8	0.11	159	Sd fg cln
104A	6852.45	0.0	0.0	2.4	23.8	41.2	22.0	5.5	3.3	1.1	0.4	0.4	5	0.08	181	Sd fg cln
105A	6853.00	0.0	0.0	4.0	23.7	39.7	21.4	5.8	3.4	1.2	0.5	0.4	5	0.08	185	Sd fg cln
118A	6854.00	0.0	0.0	0.0	2.7	50.6	32.4	6.1	5.1	1.7	0.7	0.7	8	0.11	131	Sd fg cln
106A	6854.55	0.0	0.0	0.0	10.9	49.8	29.6	2.4	3.4	2.1	0.8	1.0	7	0.11	150	Sd fg cln
107A	6855.05	0.0	0.0	0.0	0.3	43.8	43.0	4.6	3.8	2.4	0.8	1.3	8	0.14	120	Sd f-vfg cln

Footnotes:

* Lithology determined using laser particle size distribution.

CORE ANALYSIS DATA

for

ExxonMobil Refining

WDW 397

Agrifos Fertilizer Plant

Harris Co., TX

File No : HOU-060076

Date: May 16, 2006

SUMMARY OF LIQUID PERMEABILITY MEASUREMENTS

Core Lab
RESERVOIR OPTIMIZATION

PETROLEUM SERVICES

ExxonMobil Refining & Supply Co.
Well: Water Disposal Well 397
Formation: Frio

File: HOU-060076

Sample Number	Depth Interval, feet	Net Confining Stress, psi	Length, cm	Diameter, cm	Permeability to Frio Brine, millidarcys	Permeability to Pond 4 Waste Fluid, millidarcys
4A	5074.6-75.0	1580	1.38	3.77	5.06E-04	7.00E-05
5A	5076.7-76.9	1580	5.51	3.79	2.31E-03	4.08E-05
6A	5077.8-78.2	1580	4.22	3.76	6.18E-04	-

TRIAXIAL COMPRESSIVE TEST RESULTS

Company:	ExxonMobil Refining & Supply Co.	Date:	March 2006
Well Name:	Water disposal well 397	Job No:	HOU-060076
Field Name:		Saturation Fluid:	As Received
Location:		Rock Type:	Shale

Table 1 Triaxial Static Young's Modulus, Poisson's Ratio and Compressive Strength

Sample Number	Depth (ft)	Confining Pressure (psi)	Bulk Density (gm/cm^3)	Compressive Strength (psi)	Young's Modulus (10^6 psi)	Poisson's Ratio
1RM	5074.2-74.6	3500	2.24	4281	0.09	0.29
2RM	5076.0-76.4	3500	2.14	3748	0.06	0.38
6A	5077.8-78.2	3500	2.33	5335	0.22	0.31

Core Lab

ACOUSTIC VELOCITIES AND DYNAMIC ELASTIC PARAMETERS

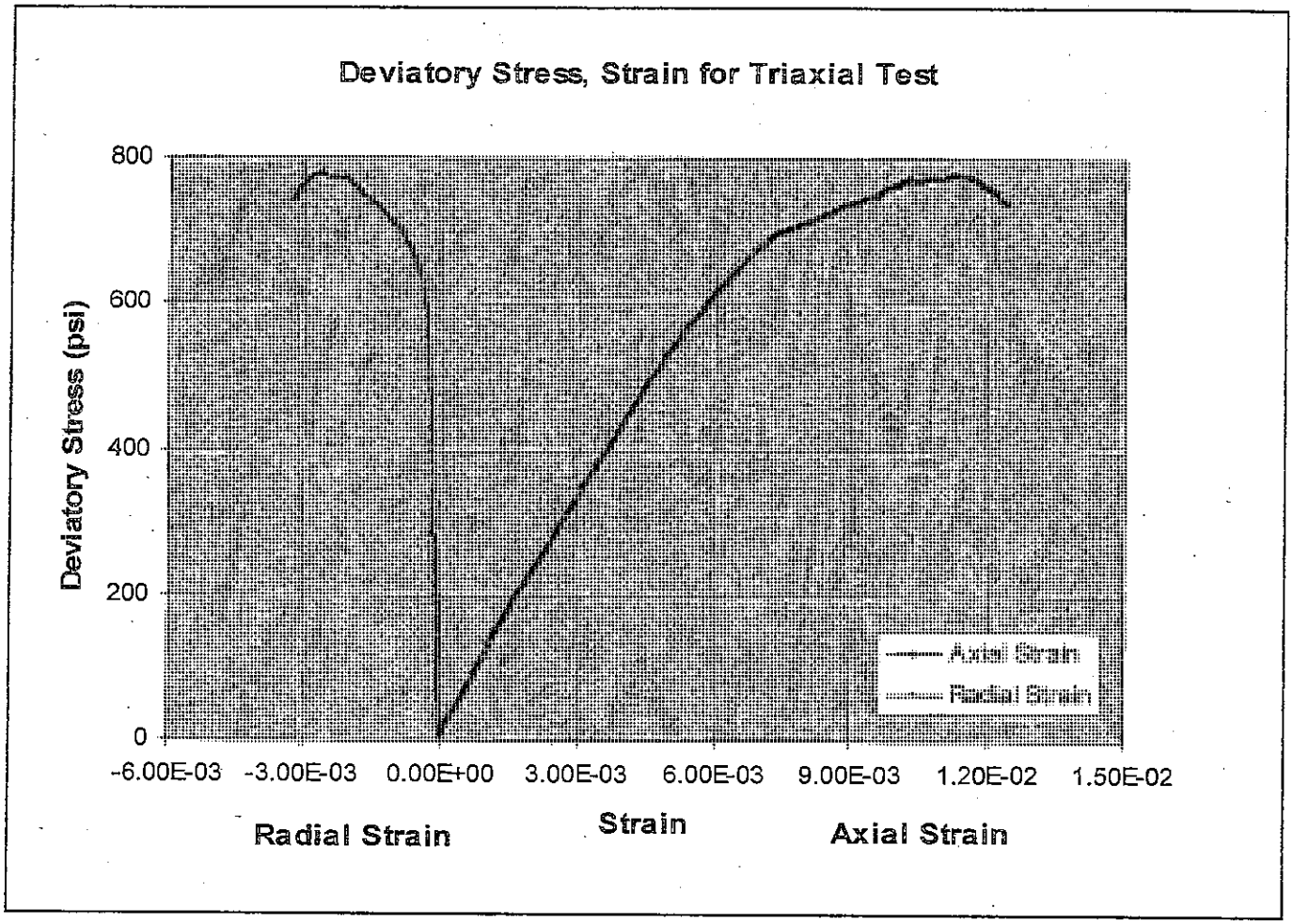
Company	ExxonMobil Refining & Supply Co.	Date	March 2006
Well Name	Water disposal well 397	Job No.	HOU-060076
Field Name		Saturation Fluid	As Received
Location		Rock Type	Shale

Table 2 Acoustic Velocities and Dynamic Moduli at Triaxial Stress Conditions

Sample No.	Depth (ft)	Confining Pressure (psi)	Axial Pressure (psi)	Bulk Density (g/cc)	Acoustic Velocity				Dynamic Elastic Parameters			
					Compressional		Shear		Bulk Modulus	Young's Modulus	Shear Modulus	Poisson's Ratio
					Vp (m/s)	(ft/s)	Vs (m/s)	(ft/s)	(10^6 psi)	(10^6 psi)	(10^6 psi)	

Results of Triaxial Test

Company	ExxonMobil Refining & Supply Co.	Date	March 2006
Well Name	Water disposal well 397	Job No.	HOU-060076
Field Name		Saturation Fluid	As Received
Location		Rock Type	Shale

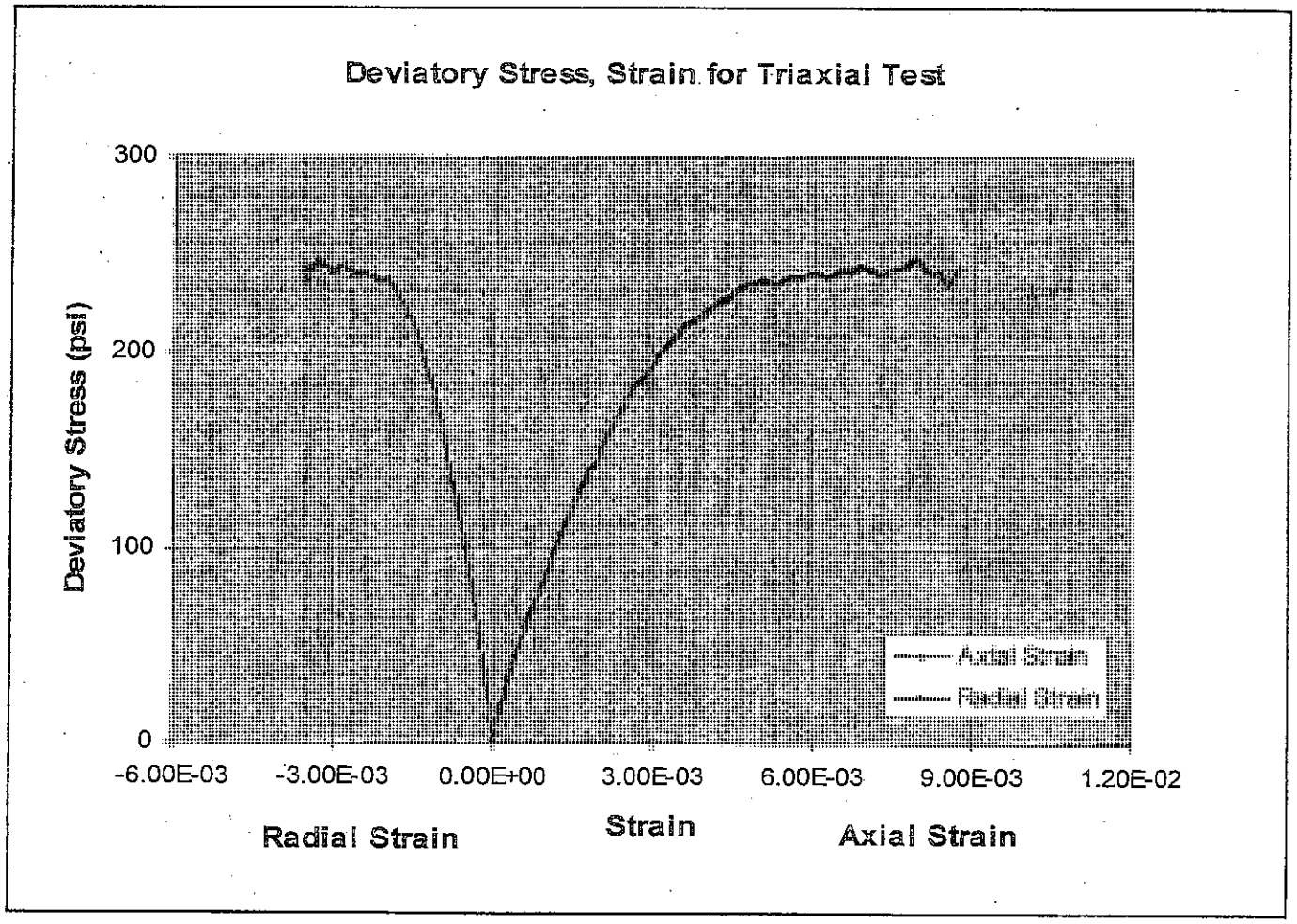


Sample	1RM
Depth (ft)	5074.2-74.6
Diameter (in)	1.476
Length (in)	1.2305
Mass (g)	77.36
Saturation Fluid	As Received
Bulk Density (g/cc)	2.24
Confining Pressure (psi)	3500
Pore Pressure (psi)	0
Static Young's Modulus ($X10^6$ psi)	0.09
Static Poisson's Ratio	0.29
Compressive Strength (psi)	4281

Core Laboratories

Results of Triaxial Test

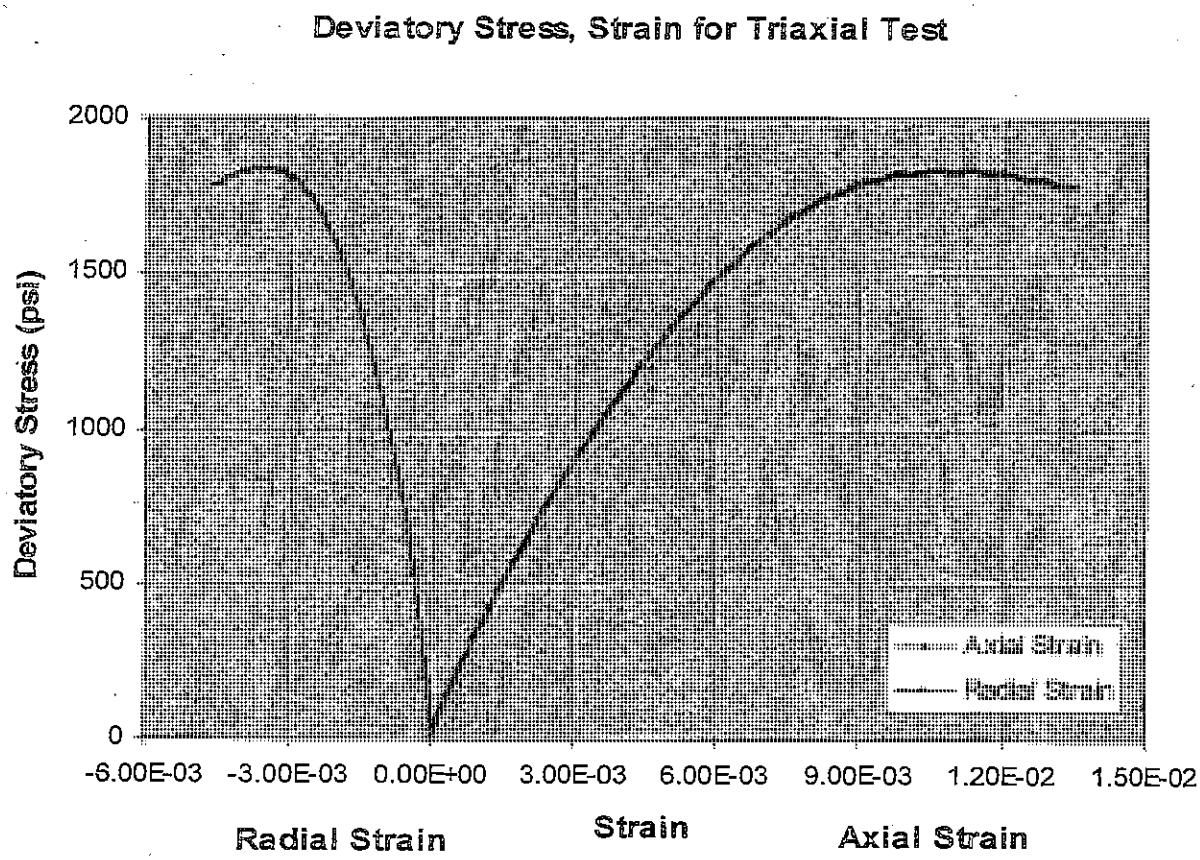
Company	ExxonMobil Refining & Supply Co.	Date	March 2006
Well Name	Water disposal well 397	Job No.	HOU-060076
Field Name		Saturation Fluid	As Received
Location		Rock Type	Shale



Sample	2RM
Depth (ft)	5076.0-76.4
Diameter (in)	1.465
Length (in)	1.6215
Mass (g)	95.78
Saturation Fluid	As received
Bulk Density (g/cc)	2.14
Confining Pressure (psi)	3500
Pore Pressure (psi)	0
Static Young's Modulus ($X10^6$ psi)	0.06
Static Poisson's Ratio	0.38
Compressive Strength (psi)	3748

Results of Triaxial Test

Company	ExxonMobil Refining & Supply Co.	Date	March 2006
Well Name	Water disposal well 397	Job No.	HOU-060076
Field Name		Saturation Fluid	As Received
Location		Rock Type	Shale



Sample	6A
Depth (ft)	5077.8-78.2
Diameter (in)	1.4726
Length (in)	1.6542
Mass (g)	107.69
Saturation Fluid	As Revceived
Bulk Density (g/cc)	2.33
Confining Pressure (psi)	3500
Pore Pressure (psi)	0
Static Young's Modulus ($X10^6$ psi)	0.22
Static Poisson's Ratio	0.31
Compressive Strength (psi)	5335

CORE ANALYSIS DATA

Smpl No	Vertical	DEPTH (ft)	NES Kair (mD)	NES POR (%)	Grain Density (g/cc)	K/Phi sq rt	Lithology (from Partsiz™)	Footnotes
Core 3 (5596.00 - 5623.00) - Mean Net Effective Stress [NES] = 1590 psig NCS								
7		5596.60	6.04	23.01	2.667	5.1	Sd vfg vsshy slty	
8		5597.70	335	32.68	2.648	32.0	Sd vf-fg cln	
10		5599.50	57.6	26.52	2.653	14.7	Sd vf-fg vsshy	
13	v	5599.80	32.3	25.42	2.656	11.3	Sd fg cln	
11		5600.50	40.9	25.66	2.656	12.6	Sd vf-fg vsshy	
12		5601.50	24.2	25.31	2.664	9.8	Sd f-vfg vsshy	
14		5602.50	14.7	25.11	2.662	7.7	Sd f-vfg vsshy	
16		5604.40	164	27.29	2.654	24.5	Sd fg cln	
20	v	5605.00	920	31.39	2.652	54.1	Sd fg cln	
18		5606.50	344	30.11	2.646	33.8	Sd f-vfg vsshy	
21		5608.50	266	29.55	2.656	30.0	Sd vf-fg vsshy	
24	v	5610.00	1790	31.89	2.635	74.9	Sd fg cln	
3		5610.60	437	30.27	2.627	38.0	Sd m-fg cln	(3)
25		5611.40	2820	32.63	2.638	93.0	Sd f-mg cln	
26		5612.50	4470	32.59	2.640	117.1	Sd f-mg cln	
27		5613.40	480	30.51	2.626	39.7	Sd mg cln	(3)
28		5614.50	3730	27.94	2.635	115.5	Sd mg cln	
29		5615.60	6060	31.21	2.655	139.3	Sd mg cln	
30		5616.40	7950	32.38	2.634	156.7	Sd m-cg cln	
32		5617.50	9070	31.32	2.642	170.2	Sd m-cg cln	
33		5618.50	14000	32.28	2.645	208.5	Sd m-cg cln	
36	v	5620.00	4520	32.71	2.637	117.6	Sd mg cln	
35		5620.50	11200	33.44	2.640	182.7	Sd mg cln	
37		5621.40	651	19.21	2.630	58.2	Sd mg cln	(1)
Core 5 (6795.00 - 6823.90) - Mean Net Effective Stress [NES] = 1930 psig NCS								
50A		6795.70	2690	32.37	2.637	91.2	Sd m-fg cln	
51A		6796.40	3370	30.97	2.636	104.3	Sd mg cln	
52A		6797.40	8170	31.04	2.643	162.2	Sd mg cln	
53A		6798.80	2920	29.01	2.641	100.3	Sd cg cln	
54A		6799.15	1290	29.54	2.640	66.1	Sd m-fg cln	
55A		6800.10	795	28.90	2.645	52.5	Sd m-fg cln	
10A	v	6801.00	729	29.20	2.638	50.0	Sd fg cln	
A		6801.80	717	29.83	2.628	49.0	Sd m-fg cln	
57A		6802.45	708	29.78	2.642	48.8	Sd m-fg cln	
58B		6803.30	627	30.10	2.647	45.6	Sd m-fg cln	

FRIO E&F SAND

CORE ANALYSIS DATA

Smpl No	Vertical	DEPTH (ft)	NES Kair (mD)	NES POR (%)	Grain Density (g/cc)	K/Phi sq rt	Lithology (from Partsiz™)	Footnotes
41A	v	6804.00	779	30.28	2.630	50.7	Sd f-mg cln	
59A		6804.80	279	27.01	2.647	32.1	Sd m-fg cln	
60A		6805.50	345	27.66	2.652	35.3	Sd f-mg cln	
61A		6806.25	1150	29.17	2.645	62.8	Sd m-fg cln	
42A	v	6807.00	1910	30.03	2.639	79.7	Sd m-fg cln	
62A		6807.70	1070	29.70	2.636	60.0	Sd f-mg cln	
63A		6808.20	500	28.48	2.642	41.9	Sd fg cln	
64A		6809.10	949	29.76	2.618	56.5	Sd fg cln	
43A	v	6810.30	412	29.55	2.628	37.3	Sd fg cln	
65A		6810.75	1550	31.82	2.674	69.8	Sd fg cln	
66B		6811.53	885	31.40	2.649	53.1	Sd fg cln	
67A		6812.00	627	31.00	2.644	45.0	Sd fg cln	FRIO E+F SAND
44A	v	6813.00	706	31.11	2.637	47.6	Sd fg cln	
[illegible]A		6813.75	1290	30.94	2.645	64.6	Sd fg cln	
69A		6814.20	856	31.56	2.650	52.1	Sd fg cln	
70A		6815.10	359	30.93	2.642	34.1	Sd fg cln	
45A	v	6816.00	439	31.02	2.637	37.6	Sd fg cln	
71A		6816.60	967	31.77	2.627	55.2	Sd fg cln	
72A		6817.25	561	28.99	2.650	44.0	Sd fg cln	
73A		6818.00	51.9	25.68	2.646	14.2	Sd fg cln	
46A	v	6819.00	766	30.88	2.656	49.8	Sd fg cln	
75A		6820.00	1000	31.25	2.648	56.6	Sd fg cln	
47A	v	6821.00	279	27.17	2.645	32.0	Sd fg cln	
76A		6821.50	235	27.13	2.646	29.4	Sd fg cln	
77A		6822.10	1040	29.81	2.646	59.1	Sd f-mg cln	
48A	v	6823.00	476	29.84	2.633	39.9	Sd m-fg cln	
Core 5 (6826.00 - 6856.70) - Mean Net Effective Stress [NES] = 1930 psig NCS								
78A		6826.10	1300	31.09	2.633	64.7	Sd fg cln	
108A	v	6826.85	996	31.31	2.629	56.4	Sd f-mg cln	
79A		6827.10	1180	31.36	2.642	61.3	Sd f-mg cln	
109A	v	6827.30	902	32.16	2.641	53.0	Sd fg cln	
80A		6828.00	1120	31.91	2.646	59.2	Sd fg cln	FRIO E+F
[illegible]1A		6829.35	1270	31.73	2.647	63.3	Sd fg cln	
[illegible]A		6830.25	1570	32.89	2.648	69.1	Sd fg cln	
83A		6831.00	989	32.06	2.640	55.5	Sd fg cln	
84B		6832.20	1720	31.92	2.630	73.4	Sd fg cln	

CORE ANALYSIS DATA

Smpl No	Vertical	DEPTH (ft)	NES Kair (mD)	NES POR (%)	Grain Density (g/cc)	K/Phi sq rt	Lithology (from Partsiz™)	Footnotes
110A	v	6832.50	1060	32.10	2.639	57.5	Sd fg cln	
85A		6833.10	1320	30.32	2.642	66.0	Sd f-mg cln	
86A		6834.00	1510	32.49	2.643	68.2	Sd f-mg cln	
87A		6835.00	1910	32.06	2.644	77.2	Sd fg cln	
111A	v	6835.40	871	31.62	2.637	52.5	Sd f-mg cln	
112A	v	6836.50	1570	31.99	2.633	70.1	Sd fg cln	
88A		6836.83	385	29.68	2.639	36.0	Sd f-mg cln	
89A		6837.00	2130	32.11	2.644	81.4	Sd f-mg cln	
90A		6838.00	1600	31.94	2.641	70.8	Sd fg cln	
113A	v	6839.00	78.4	29.56	2.644	16.3	Sd fg cln	
91B		6839.70	576	30.52	2.652	43.4	Sd f-mg cln	
92A		6840.25	931	31.38	2.647	54.5	Sd f-mg cln	
93A		6841.00	92.4	26.48	2.654	18.7	Sd fg cln	
4A	v	6842.30	326	31.26	2.640	32.3	Sd fg cln	
94A		6842.70	358	29.92	2.656	34.6	Sd fg cln	
95B		6843.55	1820	33.91	2.648	73.3	Sd f-mg cln	FRIO ELF SAND
96A		6844.25	1680	32.81	2.648	71.6	Sd fg cln	
115A	v	6845.30	126	29.41	2.666	20.7	Sd fg cln	
97A		6845.75	1430	32.89	2.650	65.9	Sd fg cln	
98A		6846.41	1760	33.04	2.650	73.0	Sd fg cln	
99A		6847.05	1660	32.79	2.653	71.2	Sd fg cln	
116A	v	6848.30	1320	32.34	2.645	63.9	Sd fg cln	
100A		6848.75	1490	32.35	2.654	67.9	Sd fg cln	
101A		6849.15	1550	32.49	2.652	69.1	Sd fg cln	
102B		6850.20	1660	32.84	2.651	71.1	Sd fg cln	
117A	v	6851.00	1380	32.12	2.657	65.5	Sd fg cln	
103B		6851.95	859	31.84	2.654	51.9	Sd fg cln	
104A		6852.45	1780	32.42	2.649	74.1	Sd fg cln	
105A		6853.00	1850	32.29	2.651	75.7	Sd fg cln	
118A	v	6854.00	1490	31.40	2.645	68.9	Sd fg cln	
106A		6854.55	1710	31.67	2.640	73.5	Sd fg cln	
107A		6855.05	1290	31.82	2.663	63.7	Sd f-vfg cln	

Notes :

(1) : Denotes fractured or chipped sample. Permeability and/or porosity may be optimistic.

(3) : Denotes very short sample, porosity may be optimistic due to lack of conformation of boot material to plug surface.

ANALYSIS PROTOCOL

Sample Preparation

1.5" diameter plugs were drilled using nitrogen cooled gas and trimmed into right cylinders with a diamond-bladed trim saw. The samples were encapsulated with Teflon tape, nickel foil, and stainless steel screens. All sample trims were archived.

Core Extraction

Plugs selected for routine core analysis were placed in batch soxhlet extraction cycling between a chloroform/methanol azeotrope and methanol.

Sample Drying

Samples were convection oven dried at 220° F to weight equilibrium (+/- 0.003 g).

Porosity

Porosity was determined using Boyle's Law technique by measuring grain volume at ambient conditions & pore volume at indicated net confining stress (NCS).

Grain Density

Grain density values were calculated by direct measurement of grain volume and weight on dried plug samples. Grain volume was measured by Boyle's Law technique.

Permeability

Permeability to air was measured on each sample using steady-state method at indicated NCS.

Fluid Saturations

Saturation measurements were not requested for these samples.

CORE ANALYSIS DATA

for

ExxonMobil Refining

WDW 397

Agrifos Fertilizer Plant

Harris Co., TX

File No : HOU-060076

Date: May 19, 2006

CORE ANALYSIS DATA

Smpl No	Vertical	DEPTH (ft)	NES Kair (mD)	NES POR (%)	Grain Density (g/cc)	K/Phi sq rt	Lithology (from Partsiz™)	Footnotes
Core 5 (6795.00 - 6823.90) - Mean Net Effective Stress [NES] = 1930 psig NCS								
51A		6796.40	3370	30.97	2.636	104.3	Sd mg cln	
51A		6796.40	3090				Sd mg cln (run @ 3000 psig NCS)	
52A		6797.40	8170	31.04	2.643	162.2	Sd mg cln	
52A		6797.40	7260				Sd mg cln (run @ 3000 psig NCS)	
63A		6808.20	500	28.48	2.642	41.9	Sd fg cln	
63A		6808.20	482				Sd fg cln (run @ 3000 psig NCS)	
64A		6809.10	949	29.76	2.618	56.5	Sd fg cln	
64A		6809.10	943				Sd fg cln (run @ 3000 psig NCS)	
69A		6814.20	856	31.56	2.650	52.1	Sd fg cln	
69A		6814.20	788				Sd fg cln (run @ 3000 psig NCS)	
Core 6 (6826.00 - 6856.70) - Mean Net Effective Stress [NES] = 1930 psig NCS								
80A		6828.00	1120	31.91	2.646	59.2	Sd fg cln	
80A		6828.00	1070				Sd fg cln (run @ 3000 psig NCS)	
112A	v	6836.50	1570	31.99	2.633	70.1	Sd fg cln	
112A	v	6836.50	1465				Sd fg cln (run @ 3000 psig NCS)	
91B		6839.70	576	30.52	2.652	43.4	Sd f-mg cln	
91B		6839.70	537				Sd f-mg cln (run @ 3000 psig NCS)	
95B		6843.55	1820	33.91	2.648	73.3	Sd f-mg cln	
95B		6843.55	1697				Sd f-mg cln (run @ 3000 psig NCS)	
104A		6852.45	1780	32.42	2.649	74.1	Sd fg cln	
104A		6852.45	1680				Sd fg cln (run @ 3000 psig NCS)	

Footnotes :

(1) : Denotes fractured or chipped sample. Permeability and/or porosity may be optimistic.

(3) : Denotes very short sample, porosity may be optimistic due to lack of conformation of boot material to plug surface.

ANALYSIS PROTOCOL

Sample Preparation

1.5" diameter plugs were drilled using nitrogen cooled gas and trimmed into right cylinders with a diamond-bladed trim saw. The samples were encapsulated with Teflon tape, nickel foil, and stainless steel screens. All sample trims were archived.

Core Extraction

Plugs selected for routine core analysis were placed in batch soxhlet extraction cycling between a chloroform/methanol azeotrope and methanol.

Sample Drying

Samples were convection oven dried at 220° F to weight equilibrium (+/- 0.003 g).

Porosity

Porosity was determined using Boyle's Law technique by measuring grain volume at ambient conditions & pore volume at indicated net confining stress (NCS).

Grain Density

Grain density values were calculated by direct measurement of grain volume and weight on dried plug samples. Grain volume was measured by Boyle's Law technique.

Permeability

Permeability to air was measured on each sample using steady-state method at indicated NCS.

Fluid Saturations

Saturation measurements were not requested for these samples.

Core Analysis Report

ExxonMobil WDW-398

ExxonMobil

Pasadena WDW #398
Pasadena Fertilizer Plant
Harris County, Texas

This report is based entirely upon the core samples, soils, solids, liquids, or gases, together with related observational data, provided solely by the client. The conclusions, inferences, deductions and opinions rendered herein reflect the examination, study, and testing of these items, and represent the best judgement of Core Laboratories. Any reliance on the information contained herein concerning the profitability or productivity of any well, sand, or drilling activity is at the sole risk of the client, and Core Laboratories, neither extends nor makes any warranty or representation whatsoever with respect to same. This report has been prepared for the exclusive and confidential use of the client and no other party.

ExxonMobil
Pasadena WDW #398-B
Pasadena Fertilizer Plant
Harris County, Texas

File No. : HOU-090621
Date: July 19, 2009
Drilling Fluid: Water Based Mud
Analyst(s): RP
Cores: Halliburton

SIDEWALL CORE ANALYSIS

SHOT NO.	REC (in)	CQI	DEPTH (ft)	Kair (mD)*	POR (%)	Sco (%)	Stw (%)	PROB PROD	Ob (%)	Gb (%)	GAS DET	Sciw (%)	°API	LITHOLOGY	FLU
24	0.5	C2	6795.0	1500.0	32.9	0.0	77.7	Water	0.0	7.4	1	36		Sd fg vsshy	no
23	0.2	D1	6805.0	1350.0	32.5	0.0	79.1	Water	0.0	6.8	1	36		Sd fg vsshy	no
22	0.7	C3	6825.0	1400.0	32.8	0.0	79.7	Water	0.0	6.7	2	36		Sd fg vsshy	no
21	0.0	NR	6835.0											Empty bottle	
20	1.0	A3	6845.0	900.0	29.2	0.0	79.4	Water	0.0	6.0	0	35		Sd f-vfg sshy sslty	no
19	1.0	A3	6855.0	850.0	29.2	0.0	82.2	Water	0.0	5.2	0	35		Sd f-vfg sshy sslty	no
18	1.0	A3	6865.0	50.0	23.6	0.0	78.4	Water	0.0	5.1	2	55		Sd vfg sshy-shy lam(2) slty scem	no
17	1.0	A3	6885.0	725.0	28.3	0.0	83.2	Water	0.0	4.8	2	35		Sd vf-fg sshy sslty	no
16	0.5	C2	6895.0	400.0	27.1	0.0	75.4	Water	0.0	6.7	1	39		Sd vf-fg sshy sslty scem	no
15	1.0	A3	6915.0	300.0	26.7	0.0	72.8	Water	0.0	7.3	1	41		Sd vfg sshy-shy slty	no
14	1.0	B3	6925.0	95.0	24.9	0.0	73.3	Water	0.0	6.7	0	50		Sd vf-fg shy slty mcem	no
13	1.0	B3	6935.0	110.0	25.3	0.0	85.4	Water	0.0	3.7	1	50		Sd vf-fg shy slty mcem	no
12	0.0	NR	6995.0											Misfire	
11	0.5	C2	7005.0	2750.0	33.2	0.0	83.9	Water	0.0	5.4	0	36		Sd f-mg vsshy	no
10	0.4	C2	7015.0	2900.0	32.8	0.0	79.7	Water	0.0	6.7	0	35		Sd f-mg vsshy	no
9	1.0	A3	7035.0	175.0	25.5	0.0	82.3	Water	0.0	4.5	0	46		Sd fg sshy-shy slty mcem	no
8	0.5	C2	7055.0	1380.0	31.7	0.0	76.2	Water	0.0	7.5	3	35		Sd fg sshy slty	no
7	0.8	B3	7075.0	4350.0	32.2	0.0	72.5	Water	0.0	8.9	2	35		Sd m-cg cln	no
6	1.0	A3	7095.0	2500.0	33.2	0.0	78.2	Water	0.0	7.2	3	36		Sd f-mg cln	no
5	0.8	B3	7105.0	1700.0	32.6	0.0	85.3	Water	0.0	4.8	3	36		Sd fg vsshy	no
4		NR	7115.0											Pull off	
3	0.0	NR	7145.0											Misfire	

ExxonMobil
Pasadena WDW #398-B
Pasadena Fertilizer Plant
Harris County, Texas

File No. : HOU-090621
Date: July 19, 2009
Drilling Fluid: Water Based Mud
Analyst(s): RP
Cores: Halliburton

SIDEWALL CORE ANALYSIS

SHOT NO.	REC (in)	CQI	DEPTH (ft)	Kair (mD)*	POR (%)	Sco (%)	Stw (%)	PROB PROD	Ob (%)	Gb (%)	GAS DET	Sciw (%)	°API	LITHOLOGY	FLU
2	0.8	B3	7150.0	2200.0	33.0	0.0	80.0	Water	0.0	6.6	3	36		Sd f-mg cln	no
1	1.0	B3	7155.0	200.0	26.2	0.0	73.5	Water	0.0	6.9	2	44		Sd vf-fg vsshy slty mcem	no

• (6) denotes low permeability.

• Excessive flushing by the mud filtrate can result in high measured water saturation in cores from gas productive sands. In water productive zones, the log calculated water saturation should be greater than the core analysis critical water saturation (Sciw).

ExxonMobil
Pasadena WDW #398
Pasadena Fertilizer Plant
Harris County, Texas

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Analyst(s): RP
Cores: Halliburton

PARTSIZ SM ANALYSIS

SHOT NO.	DEPTH (ft)	Kair (mD)*	POR (%)	SAND % GRVL	VCRS	CRS	MED	FIN	VFIN	SILT % CRS	MED	FINE	VFIN	CLAY (%)	Vsh (%)	Cs (m^2/cc)	MEAN (μ)	LITHOLOGY
24	6795.0	1500.0	32.9	0.0	0.0	0.0	18.5	47.2	20.8	4.4	4.4	2.1	1.2	1.5	9	0.14	165	Sd fg vsshy
23	6805.0	1350.0	32.5	0.0	0.0	0.4	20.2	39.6	19.9	7.7	5.5	2.9	1.8	1.9	12	0.17	157	Sd fg vsshy
22	6825.0	1400.0	32.8	0.0	0.0	1.0	24.0	40.2	17.6	5.8	4.7	2.6	1.8	2.3	11	0.18	172	Sd fg vsshy
21	6835.0																	Empty bottle
20	6845.0	900.0	29.2	0.0	0.0	0.0	8.8	46.9	30.7	2.9	3.4	2.7	1.9	2.8	11	0.20	140	Sd f-vfg sshy sslty
19	6855.0	850.0	29.2	0.0	0.0	0.0	16.0	43.6	21.6	4.4	4.7	3.6	2.9	3.2	14	0.23	150	Sd f-vfg sshy sslty
18	6865.0	50.0	23.6	0.0	0.0	0.0	2.5	15.7	21.6	16.2	15.0	11.8	8.1	9.2	44	0.59	57	Sd vfg sshy-shy lam(2) slty scem
17	6885.0	725.0	28.3	0.0	0.0	0.0	3.8	31.9	35.6	10.5	5.8	5.2	3.4	3.7	18	0.28	102	Sd vf-fg sshy sslty
16	6895.0	400.0	27.1	0.0	0.0	0.0	8.5	39.3	30.3	7.7	5.3	3.8	2.4	2.7	14	0.22	124	Sd vf-fg sshy sslty scem
15	6915.0	300.0	26.7	0.0	0.0	0.0	2.6	31.2	35.7	11.7	6.6	5.2	3.2	3.8	19	0.28	98	Sd vfg sshy-shy slty
14	6925.0	95.0	24.9	0.0	0.0	0.4	14.1	33.1	25.5	9.8	5.9	4.5	3.0	3.7	17	0.27	127	Sd vf-fg shy slty mcem
13	6935.0	110.0	25.3	0.0	0.0	0.5	12.7	32.5	28.4	10.1	5.3	4.2	2.8	3.5	16	0.26	124	Sd vf-fg shy slty mcem
12	6995.0																	Misfire
11	7005.0	2750.0	33.2	0.0	0.0	2.8	33.2	40.9	12.2	3.5	3.1	1.6	1.2	1.5	7	0.12	213	Sd f-mg vsshy
10	7015.0	2900.0	32.8	0.0	0.0	4.9	37.2	38.8	9.6	3.2	2.6	1.3	1.1	1.3	6	0.11	234	Sd f-mg vsshy
9	7035.0	175.0	25.5	0.0	0.0	7.3	26.7	33.2	17.7	5.3	3.1	2.4	1.8	2.4	10	0.17	202	Sd fg sshy-shy slty mcem
8	7055.0	1380.0	31.7	0.0	0.0	0.0	18.4	43.7	20.7	5.6	4.9	2.8	1.8	2.2	12	0.18	158	Sd fg sshy slty
7	7075.0	4350.0	32.2	0.0	7.8	37.4	34.7	10.4	4.1	1.9	1.2	1.0	0.7	0.8	4	0.07	489	Sd m-cg cln
6	7095.0	2500.0	33.2	0.0	0.0	1.5	26.5	42.5	14.4	3.8	4.2	2.7	2.1	2.3	11	0.17	187	Sd f-mg cln
5	7105.0	1700.0	32.6	0.0	0.0	0.3	29.1	55.2	8.2	1.3	2.6	1.1	1.1	1.1	6	0.10	207	Sd fg vsshy
4	7115.0																	Pull off
3	7145.0																	Misfire

ExxonMobil
Pasadena WDW #398
Pasadena Fertilizer Plant
Harris County, Texas

File No. : HOU-090621
Date: July 19, 2009
Drilling Fluid: Water Based Mud
Analyst(s): RP
Cores: Halliburton

PARTSIZ SM ANALYSIS

SHOT NO.	DEPTH (ft)	Kair (mD)*	POR (%)	SAND % GRVL	VCRS	CRS	MED	FIN	VFIN	SILT % CRS	MED	FINE	VFIN	CLAY (%)	Vsh (%)	Cs (m^2/cc)	MEAN (μ)	LITHOLOGY
2	7150.0	2200.0	33.0	0.0	0.0	0.0	21.8	48.4	18.7	2.8	3.5	1.8	1.4	1.7	8	0.14	176	Sd f-mg cln
1	7155.0	200.0	26.2	0.0	0.0	0.3	24.9	44.5	15.0	4.2	4.4	2.3	1.8	2.6	11	0.19	180	Sd vf-fg vsshy slty mcem

ExxonMobil
Pasadena WDW #398-B
Pasadena Fertilizer Plant
Harris County, Texas

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Analyst(s): RP
Cores: Halliburton

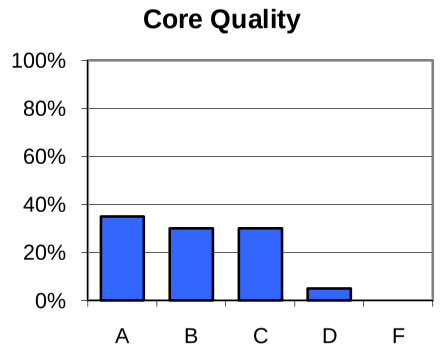
SIDEWALL CORE ANALYSIS - CORE QUALITY INDEX

RECOVERY EFFICIENCY

Total cores attempted =	24
Total cores recovered =	20
Recovery Efficiency =	83%

CORE QUALITY

A	Excellent	7	35%
B	Good	6	30%
C	Fair	6	30%
D	Poor	1	5%
F	Muddy/Insufficient	0	0%

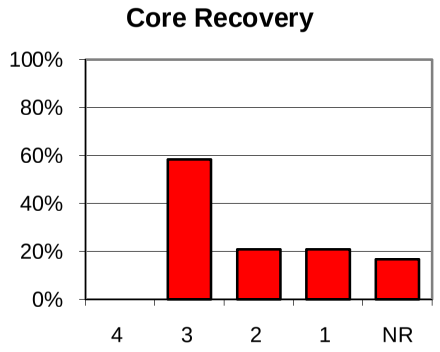


CORE BULLET INFO

Bullet diameter:
Bullet type:
Retaining wire length:
Retaining wire type:
Charge:

CORE RECOVERY SIZE

4	Full recovery (> 1")	0	0%
3	Good recovery (>0.5" - 1")	14	58%
2	Fair recovery (0.25" - .5")	5	21%
1	Poor recovery (<0.25")	5	21%
NR	No recovery	4	17%



Note: Core Quality Index (CQI) is a visual rescription of core grain recovery based upon two measures:
1) Core quality - Affected by mud invasion, shattering of grains, ability to use core for additional tests.
2) Core recovery size - Amount of core recovered.

ExxonMobil
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Cores: Halliburton

DESCRIPTION CODE KEY AND ABBREVIATIONS

LITHOLOGY

Anhy	Anhydrite
Cgl	Conglomerate
Dol	Dolomite
Glauc	Glauconite
H	Halite
Lig	Lignite
Ls	Limestone
Pyr	Pyrite
Sd	Sand
Sh	Shale
Slt	Silt
Sf	Shell Fragments

GRAIN SIZE

vfg	very fine grain
fg	fine grain
mg	medium grain
cg	coarse grain

FLUORESCENCE

ev	even
stk	streaks(ed)
spt	spots(ed)
mott	mottled

COLOR

b	blue
b-w	blue-white
bz	bronze
gld	gold
w	white
y	yellow

OTHER

calc	calcareous
cln	clean
carb	carbonaceous
cem	cementation
con	consolidated
dns	dense
flu	fluorescence
foss	fossiliferous
frc	fractured(s)
fl	flushed

INTENSITY

bt	bright
ft	faint
dl	dull
vft	very faint

MODIFIERS

u	unconsolidated
vs	very slightly
s	slightly
m	moderately
mw	moderately well
v	very
w	well
ha	high angle
hd	hard
lam	laminated(ion)
mic	micaceous
ms	mudshot
shy	shaley
slty	silty
tr	trace
vug	vuggy
vt	vertical

PRODUCTION CODES

Gas	gas
Oil	oil
Cond	condensate
Water	water
(1)	altered core
(2)	exposed core
(3)	insufficient sample
(4)	contaminated core
(5)	
(6)	low permeability

OTHER ABBREVIATIONS

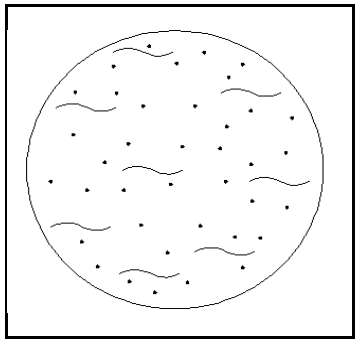
Por	porosity, %
Gb	gas saturation, % bulk volume
Ob	oil saturation, % bulk volume
Sco	core oil saturation, % pore volume
Stw	total water saturation, % pore volume
Sciw	critical water saturation, % pore volume
Vsh	volume of shale, % bulk volume
Cs	surface area (m^2/cc)
Mean	mean grain size, microns

FOOTNOTES

*	permeability values determined empirically
**	Sciw values after Granberry, R.J. and Keelan, D.K., 1977
***	samples interpreted without knowledge of depth or intervals

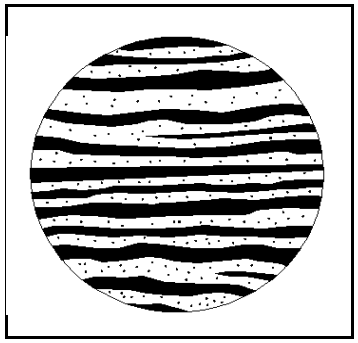
INTERLAM^{sm} THIN BED SAMPLE DESCRIPTION

TYPE 1



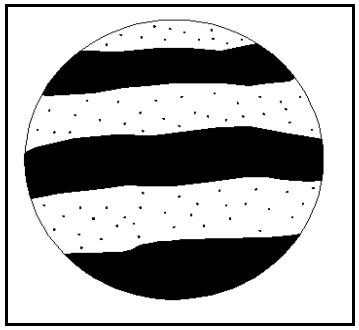
SHALE LAMINATIONS < 1 mm

TYPE 2



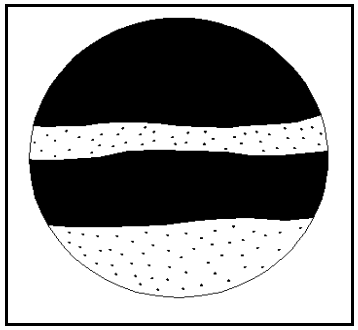
SHALE LAMINATIONS 1-5 mm

TYPE 3



SHALE LAMINATIONS 5-10 mm

TYPE 4



SHALE LAMINATIONS > 10 mm

ExxonMobil
Pasadena WDW #398-B
Pasadena Fertilizer Plant
Harris County, Texas

File No. : HOU-090621
Date: July 19, 2009
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Analyst(s): RP
Cores: Halliburton

SIDEWALL CORE ANALYSIS

CORE ANALYSIS PROTOCOL

Samples are inventoried upon arrival at the laboratory.

A qualitative combustible gas reading is performed on each sample.

Samples are carefully cleaned of mud and a general description is made noting lithology, grain size, visible minerals, and reactivity to 10% hydrochloric acid. The length, quality, and fluorescence of each sample is also recorded.

Porosity is calculated using the Summation of Fluids technique. A portion of the sample is placed into a calibrated mercury pump to measure the bulk volume of the sample via mercury displacement. The gas bulk is measured by injecting mercury into the sample at 750 psi. The sample is placed into a retort cup with a calibrated receiving tube. The samples are retorted to 400 deg F to remove pore water and determine the water bulk. The oven temperature is increased to 1200 deg F and the oil is retorted from the sample to determine the oil bulk. The sum of the gas bulk, water bulk, and oil bulk is equal to the porosity. All mercury is recovered.

Permeability is determined empirically based upon the lithological description of the sample.

Laser Particle Size Analysis can be used to generate better lithological descriptions and enhance permeability estimates. A small slice (less than 1g) of the sample is taken and cleaned of water and hydrocarbons. The sample is gently disaggregated using a mortar and teflon pestle. Prior to measurement, the sample is added to a 5% mixture of sodium hexa-metaphosphate to de-ionize particles. Following equipment operating procedures, the sample is added to the unit's water slurry and grain size is measured by laser diffration. The data generated by this technique can be applied to a proprietary algorithm to calculate a permeability.

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Cores: Halliburton

SIDEWALL CORE ANALYSIS

REC (in)	LITHOLOGY	FLU	°API	DEPTH (ft)	Kair (mD)*	POR (%)	Sco (%)	Stw (%)	Sciw (%)
0.5	Sd fg vsshy	no		6795.0	1500.0	32.9	0.0	77.7	36
0.2	Sd fg vsshy	no		6805.0	1350.0	32.5	0.0	79.1	36
0.7	Sd fg vsshy	no		6825.0	1400.0	32.8	0.0	79.7	36
	Empty bottle			6835.0					
1.0	Sd f-vfg sshy sslty	no		6845.0	900.0	29.2	0.0	79.4	35
1.0	Sd f-vfg sshy sslty	no		6855.0	850.0	29.2	0.0	82.2	35
1.0	Sd vfg sshy-shy lam(2) slty scem	no		6865.0	50.0	23.6	0.0	78.4	55
1.0	Sd vf-fg sshy sslty	no		6885.0	725.0	28.3	0.0	83.2	35
0.5	Sd vf-fg sshy sslty scem	no		6895.0	400.0	27.1	0.0	75.4	39
1.0	Sd vfg sshy-shy slty	no		6915.0	300.0	26.7	0.0	72.8	41
1.0	Sd vf-fg shy slty mcem	no		6925.0	95.0	24.9	0.0	73.3	50
1.0	Sd vf-fg shy slty mcem	no		6935.0	110.0	25.3	0.0	85.4	50
	Misfire			6995.0					
0.5	Sd f-mg vsshy	no		7005.0	2750.0	33.2	0.0	83.9	36
0.4	Sd f-mg vsshy	no		7015.0	2900.0	32.8	0.0	79.7	35
1.0	Sd fg sshy-shy slty mcem	no		7035.0	175.0	25.5	0.0	82.3	46
0.5	Sd fg sshy slty	no		7055.0	1380.0	31.7	0.0	76.2	35
0.8	Sd m-cg cln	no		7075.0	4350.0	32.2	0.0	72.5	35
1.0	Sd f-mg cln	no		7095.0	2500.0	33.2	0.0	78.2	36
0.8	Sd fg vsshy	no		7105.0	1700.0	32.6	0.0	85.3	36
	Pull off			7115.0					
	Misfire			7145.0					
0.8	Sd f-mg cln	no		7150.0	2200.0	33.0	0.0	80.0	36
1.0	Sd vf-fg vsshy slty mcem	no		7155.0	200.0	26.2	0.0	73.5	44

CORE ANALYSIS REPORT

MERISOL WDW-147

MERISOL
PLANT WELL 1 (WDW-147)
CORE ANALYSIS REPORT

6WQ-SG
FEB 1 2 2004

CORE ANALYSIS REPORT

FOR

MERICHEM COMPANY

DISPOSAL WELL NO. 1
WILDCAT
HARRIS COUNTY, TEXAS

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions [illegible] Inc. (all errors and omissions excepted); but Co[illegible]boratories, Inc. and its officers and employees assume no responsibility and make no warranty or

[illegible]ERICHEM COMPANY
[illegible]ISPOSAL WELL NO. 1
[illegible]ILDCAT
[illegible]ARRIS COUNTY, TEXAS

DATE: 8-14-78
FORMATION:
DRLG. FLUID:
LOCATION:

FILE NO: 2202-1[illegible]224-5
ANALYSTS: MEHALL
LABORATORY: HOUSTON
CORES: SCHLUMBERGER

SIDE WALL CORE ANALYSIS

[illegible]EC [illegible]N.	DEPTH FEET	PERM MD	POR %	OIL% PORE	WTR% PORE	PROB PROD	OIL% BULK	GAS% BULK	GAS DET	DESCRIPTION
2.4	294.0	1450	32.9	0.0	90.9	WTR	0.	3.0	0	SD F-VFG SSLTY INCLS N FLU
2.4	298.0	2100	32.0	0.0	90.3	WTR	0.0	3.1	0	SD FG SSLTY INCLS N FLU
0.8	301.0	3000	35.9	0.[illegible]	88.1	WTR	0.[illegible]	4.3	0	SD FG CLN N FLU
1.1	302.0	3600	35.5	0.0	89.7	WTR	0.0	3.7	0	SD F-MG CLN N FLU
1.0	304.0	4500	34.6	0.0	92.7	WTR	0.0	2.5	0	SD MG CLN N FLU
1.0	306.0	4250	34.4	0.0	87.3	WTR	0.[illegible]	4.4	0	SD MG CLN W/SSHY STK N FLU
0.7	307.0	3400	36.5	0.[illegible]	91.2	WTR	0.	3.2	0	SD F-MG SSLTY N FLU
0.9	308.0	5600	36.9	0.0	92.4	WTR	0.0	2.8	0	SD MG CLN N FLU
2.0	358.0	2.2	30.3	0.[illegible]	91.9	(6).	0.0	2.4	0	SILT VSHY W/SML LM INCLS N FLU
2.0	359.0	230	31.1	0.[illegible]	93.5	WTR	0.0	2.0	0	SD VFG SLTY N FLU
1.5	360.0	950	35.8	0.	94.2	WTR	0.0	2.1	0	SD F-VFG SLTY N FLU
1.5	461.0	1050	37.3	0.[illegible]	90.7	WTR	0.0	3.5	0	SD VFG SSLTY LMY N FLU
[illegible].4	462.0	1000	36.9	0.0	89.7	WTR	0.[illegible]	3.8	0	SD VFG SSLTY LMY N FLU
[illegible].3	464.0	430	35.0	0.0	94.8	WTR	0.0	1.8	0	SD VFG SLTY LMY N FLU
[illegible].3	466.0	750	36.0	0.[illegible]	93.5	WTR	0.[illegible]	2.3	0	SD VFG SLTY LMY N FLU
[illegible].7	467.0	225	32.6	0.0	94.3	WTR	0.	1.9	0	SD VFG SLTY LMY N FLU
[illegible].9	486.0	330	33.7	0.0	95.2	WTR	0.	1.6	0	SD VFG SLTY VLMY N FLU
[illegible].7	487.0	800	33.3	0.0	95.0	WTR	0.0	1.7	0	SD VFG S LTY LMY N FLU
[illegible].3	488.0	950	35.3	0.[illegible]	94.8	WTR	0.0	1.8	0	SD VFG SSLTY LMY N FLU
[illegible].9	808.0	275	31.1	0.0	91.9	WTR	0.0	2.5	0	SD F-VFG SLTY SHY N FLU
[illegible].4	809.0	660	32.9	0.[illegible]	91.4	WTR	0.	2.8	0	SD FG SSLTY SSHY N FLU
[illegible].0	6007.0	46	28.6	0.0	86.6	WTR	0.	3.8	0	SD F-VFG VSLTY N FLU
[illegible].3	6009.0	300	39.1	0.0	78.9	WTR	0.	6.4	0	SD FG SLTY N FLU

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:RICHEM COMPANY
'SPOSAL WELL NO. 1

DATE: 8-14-78
FORMATION:

FILE NO: 2 0 -102 4-5
ANALYSTS: MEHALL

:C	DEPTH FEET	PERM MD	POR %	OIL% PORE	WTR% PORE	PROB PROD	OIL% BULK	GAS% BULK	GAS DET	DESCRIPTION
.1	6010.0	350	33.3	0.0	79.6	WTR	0.0	6.8	0	SD F-VFG SLTY N FLU
.3	6013.0	34	29.7	0.1	81.4	WTR	0.0	5.5	0	SD VFG VSLTY N FLU
.0	6570.0	1500	31.2	0.0	86.1	WTR	0.0	4.3	0	SD FG CLN N FLU
1.8	6590.0	2500	33.7	0.0	82.8	WTR	0.1	5.8	0	SD FG CLN N FLU
.0	6610.0	1650	32.7	0.0	90.8	WTR	0.0	3.0	[illegible]	SD FG CLN N FLU
1.5	6627.0	[illegible]	34.0	0.0	76.9	WTR	0.	7.8	0	SD FG CLN N FLU
1.9	6645.0	[illegible]	31.4	0.	83.2	WTR	0.0	5.3	0	SD F-MG CLN N FLU
1.8	6664.0	610	27.6	0.0	90.5	WTR	0.1	2.6	0	SD F-VFG SSLTY-SLTY N FLU
.5	6689.0	720	28.4	0.0	76.5	WTR	0.1	6.7	0	SD F-MG CLN N FLU
.3	6710.0	1050	31.2	0.1	90.3	WTR	0.0	3.0	0	SD F-VFG SSLTY N FLU
.3	6740.0	900	30.2	0.0	82.0	WTR	0.0	5.4	0	SD F-VFG SSLTY N FLU
.2	6760.0	1350	30.4	0.0	85.2	WTR	0.	4.5	0	SD F-MG SSLTY N FLU
.0	6780.0	41	27.4	0.	81.3	WTR	0.0	5.1	0	SD F-VFG VSLTY N FLU
.4	7028.0	7.2	1.9	0.1	73.9	(6)	0.0	6.0	0	SD FG CARB SHY STKD VSLTY N FLU
.0	7029.0	14	27.9	0.0	73.4	WTR	0.	7.4	0	SD FG CARB SHY STKD VSLTY N FLU
.0	7030.0	21	27.0	1.0	75.4	WTR	0.0	6.6	0	SD FG CARB SHY STKD VSLTY N FLU
.5	7070.0	47	25.5	0.1	77.6	WTR	0.	5.7	0	SD VF-MG VSLTY SLMY N FLU
.3	7072.0	55	25.0	0.0	81.3	WTR	0.	4.8	0	SD VF-MG VSLTY SLMY N FLU
.3	7074.0	22	25.4	0.0	73.6	WTR	0.	6.7	0	SD VF-MG VSLTY SLMY N FLU

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DALLAS, T

MERICHEM COMPANY
DISPOSAL WELL NO. 1

DATE: 8-14-78
FORMATION:

FILE NO: 2 02-102 4-5
ANALYSTS: MEHALL

REC IN	DEPTH FEET	PERM MD	POR %	OIL% PORE	WTR% PORE	PROB PROD	OIL% BULK	GAS% BULK	GAS DET	DESCRIPTION
1.3	7076.0	49	29.5	0.0	77.3	WTR	0.1	6.7	0	SD F-VFG SSHY STKS VSLTY N FLU
1.5	7078.0	21	27.5	0.0	72.7	WTR	0.0	7.5	0	SD VFG VSLTY N FLU
1.3	7079.0	1250	34.3	0.1	79.3	WTR	0.1	7.1	0	SD F-VFG SSLTY N FLU

(6) LOW PERMEABILITY

[illegible] opinions or interpretations are based on observations and materials supplied by the client to [illegible] and for whose exclusive and confidential use this report is made. The interpretations or opinions

Well

Company: Merichem Company

Well: Merichem Co. Disposal Well #1

Field: Disposal Well

County: Harris

State: Texas

Sand Identification	Depths top	base	gross	Feet net	Ø	Sw %	Remarks
A	4334'	4363'	29	29	ave. 35.0	100	good clean sand.
B	4474'	4554'	80	48	33.0-35.0	100	good sand-slightly shaly, down to 4512' also several shale stringers
C	4677'	4709'	82	24	32.0-37.0	100	this sand is somewhat dirty (shaly) [illegible]
D	5160'	5188'	28	18	33.0-35.0	100	a very broken sand
E	5245'	5308'	65	62	30.0-33.0	100	very good clean sand
F	5400'	5434'	34	22	ave. 30.0	100	good sand with two stringers that are quite shaly.
G	5480'	5612'	132	117	32.0-35.0	100	very good clean sand, several minor shale stringers [illegible]
H	5880'	5920'	40	22	ave. 32.0	100	good clean sand, slightly shaly on top [illegible] shale stringers
I	6018'	6060'	42	22	27.0-30.0	100	a very broken sand.
J	6564'	6786'	222	222	27.0-30.0	100	very good clean sand
K	6800'	6816'	16	16	33.0	100	very good clean sand.
L	6836'	6976'	140	122	33.0-36.0	100	very good clean sand with several shale stringers
M	7098'	7154'	56	46	28.0-31.0	100	very good clean sand with one shale stringer
N	7208'	7284'	76	70	28.0-30.0	100	very good clean sand with several shale stringers

ENCLOSURE 1

ANALYSIS OF MERRICHEM CO. #1 DISPOSAL WELL RUBBER SLEEVE CORE

Sample Depth FT, Ref K.B.	Permeability to Air, Millidarcies	Porosity Percent	Oil Percent Fluid
6570	1990	33.6	0.0
6571	3510	34.1	0.2
6572	2280	34.3	0.2
6573	3400	33.8	0.2
6574	1720	34.0	0.5
6575	4410	33.4	0.0
6576	1680	31.2	0.2
6577	3360	33.4	0.4
6578	2660	34.3	0.4
6579	1520	32.5	0.0
6580	1350	33.5	0.4
6581	Not Sampled, Shaley		
6582	314	30.6	1.4
6583	804	28.4	3.2
6584	19	23.9	0.5
6585	5.8	18.9	1.0
6586	612	26.9	0.0
6587	113	23.6	0.3
6588	816	30.3	0.6
6589	1080	31.0	2.1
6590	67	26.4	0.5

CORE ANALYSIS REPORT

EQUISTAR WDW-36

SIDEWALL CORE DATA
EQUISTAR PLANT WELL 1 (WDW-36)

PETRO-CORE SERVICE CO.

Core Analysis Specialization

HOUSTON, TEXAS

WELL W D W #36 COUNTY Harris STATE Texas

COMPANY Sinclair Petro-Chemicals Inc. DATE June 2, 1968 FILE No. 3199

FIELD _____ TYPE CORES Schlum. Sidewall ANALYST Richard Garrott

ANALYSIS DATA AND INTERPRETATIONS

DEPTH	PERMEABILITY MILLIDARCIES	POROSITY %	GAS BY VOLUME	SATURATION WATER % PORE SPACE	SATURATION OIL % PORE SPACE	COMBUSTIBLE GAS	PROBABLE PRODUCTION	REMARKS
5840	2.1	16.4	1.8	89.2	0.0	0	Low Perm.	Sand & shale, firm, dark g 70% shale, no odor, no fl
4128	1200	31.3	2.4	92.3	0.0	0	Water	Sand, firm, grey, med. fn. gr sli. shaly, limy, no odor, no fluo.
4214	5.3	16.7	2.1	87.3	0.0	0	Low Perm.	Shale with sand strks., d grey, no odor, no fluo.
4283	383	27.1	3.4	87.4	0.0	0	Water	Sand, firm, grey, med. fn. gr shaly, v. limy, no odor, no fluo.
4372	959	31.2	4.7	85.2	0.0	0	Water	Sand as above, cleaner, sl limy, no odor, no fluo.
[illegible]0	2100	30.8	5.1	83.4	0.0	0	Water	Sand, soft, grey, fn. gr., sl shaly, limy, no odor, no f
4470	720	33.6	3.9	88.3	0.0	0	Water	Sand, as above, no odor, no fluo.
4540	800	33.0	4.2	90.3	0.0	0	Water	Sand as above, no odor, no fluo.
4920	22.0	24.3	2.9	88.7	0.0	0	Water	Shale with sand strks., v limy, no odor, no fluo.
5033	3200	34.5	2.9	91.6	0.0	0	Water	Shale as above, cleaner, no odor, no fluo.
5066	480	32.7	3.6	88.8	0.0	0	Water	Sand, firm, grey, fn. gr., sh no odor, no fluo.
5210	2860	34.5	4.2	87.9	0.0	0	Water	Sand as above, no odor, no fluo.
5313	2400	34.0	4.8	85.9	0.0	0	Water	Sand, soft, grey, med. gr., s limy, no odor, no fluo.
5519	1100	32.1	3.5	89.2	0.0	0	Water	Sand as above, shaly, lim no odor, no fluo.
5691	1440	28.8	3.8	87.2	0.0	0	Water	Sand, soft, grey, fn. gr., n odor, no fluo.
5776	450	31.0	2.9	90.7	0.0	0	Water	Sand as above, more shal no odor, no fluo.
5818	460	33.6	3.1	91.2	0.0	0	Water	Sand as above, cleaner, s limy, no odor, no fluo.
5047	220	31.3	3.6	88.4	0.0	0	Water	Sand as above, shaly, no odor, no fluo.
[illegible]95	3400	33.7	4.3	87.3	0.0	0	Water	Sand, soft, grey, coarse gr no odor, no fluo.
5275	1200	32.1	4.0	87.6	0.0	0	Water	Sand as above, sli. shaly no odor, no fluo.
6329	730	33.2	5.1	84.7	0.0	0	Water	Sand, soft, grey, med. fn. gr limy, no odor, no fluo.

PETRO-CORE SERVICE CO.

WELL Sinclair Petro-Chemicals, Inc. WDW #36

ANALYSIS DATA AND INTERPRETATIONS

DEPTH	PERMEABILITY MILLIDARCYS	POROSITY %	GAS BY VOLUME	SATURATION WATER % PORE SPACE	SATURATION OIL % PORE SPACE	COMBUSTIBLE GAS	PROBABLE PRODUCTION	REMARKS
347	2400	34.5	4.8	83.3	0.0	0	Water	Sand,soft,grey,med.fn.gr sli.shaly,limy,no odor, no fluo.
467	460	32.7	4.2	87.2	0.0	0	Water	Sand as above, no odor, no fluo.
489	930	3.4	3.4	89.8	0.0	0	Water	Sand as above, cleaner, no odor, no fluo.
567	940	31.5	5.2	83.4	0.0	0	Water	Sand, soft, grey, fn.gr., s limy, no odor, no fluo.
717	1920	29.8	4.7	84.3	0.0	0	Water	Sand as above, sli.limy, no odor, no fluo.
773	1800	34.3	3.5	89.8	0.0	0	Water	Sand, soft, grey, med.gr., no odor, no fluo.
788	860	30.5	3.8	87.6	0.0	0	Water	Sand as above, silty, no odor, no fluo.
819	1400	26.2	4.2	83.8	0.0	0	Water	Sand as above, shaly,lim no odor, no fluo.
877	2160	30.6	4.8	84.4	0.0	0	Water	Sand,soft,grey,med.gr., fn.gr.,sli.limy,no odor, no fluo.

CORE ANALYSIS REPORT

LYONDELL WDW-148

LYONDELL CHEMICAL COMPANY
PLANT WELL 1 (WDW-148)
CORE ANALYSIS REPORT

Petroleum Rese[illegible] Engineering
DALLA[illegible] TEXAS

CORE ANALYSIS REPORT

FOR

GOLDEN STRATA SERVICES

W.D.W. NO. 148
WILDCAT
HARRIS COUNTY, TEXAS

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whom exclusive and confidential use, this report is made. The interpretations or opinions

GOLDEN STRATA SERVICES, INC.
WASTE DISPOSAL
WILDCAT
HARRIS COUNTY, TEXAS

DATE: 5-25-78
FORMATION:
DRLG. FLUID: WATER BASE MUD
LOCATION:

FILE NO: 2202-10051-1
LABORATORY: HOUSTON, TEX
ANALYSTS: KUHLMAN
ELEVATION:

CONVENTIONAL CORE ANALYSIS

SMP NO	DEPTH	PERM MD HORZ(KA)	POR %	OIL% PORE	WTR% PORE	PROB PROD	GAS% BULK	CRIT WTR%	DESCRIPTION
	4890.0-96.0	CORE NO. 1 CUT 6 FT. REC. 6 FT. HET LIMESTONE							
1	4890.0-91.0	1.5	9.3						SD VFG VSLTY VLMY HD FOS W/DNS VFOS STKS N FLU
	4891.0-94.5								SHALE RINGTAIL SLTY LMY IN TOP FT. F
	4894.5-96.0								CUTTINGS
	CORE NO. 2 NO CORE								
	4896.0-4914.0	CORE NO. 3 CUT 18 FT. REC. 15 FT.							
2	4896.0-97.0	<0.1	5.5						LM VFNLY-CRYPXLN FOS W/HD SD STK N F
									(1/2' SH SDY VLMY W/LM STKS & INCLS)
3	4897.0-98.0	<0.1	12.3						LM CRYPXLN SDY SHY FOS N FLU
4	4898.0-99.0	<0.1	5.2						LM SCHLKY-VCHLKY SDY & SHY IN BOTTOM
									1/4' FOS N FLU
5	4899.0-00.0	<0.1	7.5						LM SCHLKY-VCHLKY (REWORKED) FOS N FL
6	4900.0-01.0	<0.1	8.3						LM SCHLKY-VCHLKY (REWORKED) FOS N FL
7	4901.0-02.0	<0.1	10.2						LM SCHLKY-VCHLKY (REWORKED) FOS N FL
8	4902.0-03.0	<0.1	8.1						LM SCHLKY-VCHLKY (REWORKED) FOS N FL
9	4903.0-04.0	<0.1	8.8						LM SCHLKY-VCHLKY (REWORKED) FOS N FL
10	4904.0-05.0	<0.1	8.4						LM SCHLKY-VCHLKY (REWORKED) FOS N FL
									W/DIRTY SHY STRIATIONS THROUGHOUT FO
11	4905.0-06.0	1.0	10.1						LM SCHLKY-VCHLKY (REWORKED) FOS N FL
									W/DIRTY SHY STRIATIONS THROUGHOUT FO
12	4906.0-07.0	0.1	6.7						LM SCHLKY-VCHLKY (REWORKED) FOS N FL

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GOLDEN STRATA SERVICES, INC.
WASTE DISPOSAL

DATE: 5-25-78
FORMATION:

FILE NO: 2202-10051-1
LABORATORY: HOUSTON, TEX

SMP NO	DEPTH	PERM MD HORZ(KA)	POR %	OIL% PORE	WTR% PORE	PROB PROD	GAS% BULK	CRIT WTR%	DESCRIPTION
									W/DIRTY SHY STRIATIONS THROUGHOUT FC
13	4907.0-08.0	<0.1	5.6						LM SCHLKY-VCHLKY (REWORKED) FOS N FL
									W/DIRTY SHY STRIATIONS THROUGHOUT FC
14	4908.0-09.0	1.5	9.9						LM SCHLKY-VCHLKY (REWORKED) FOS N FL
									W/DIRTY SHY STRIATIONS THROUGHOUT FC
15	4909.0-10.0	<0.1	5.0						LM SCHLKY-VCHLKY FOS N FLU
16	4910.0-11.0	<0.1	6.1						LM SCHLKY-VCHLKY FOS N FLU
	4911.0-14.0								LOST CORE
	4914.0-34.0	CORE NO. 4 CUT 20 FT. REC. 20 FT.							
	4914.0-27.0								LM CRYPTO-VFNLY XLN VSHY VFOS VKNOTI
									W/CRYPTO XLN LM
	4927.0-29.0								LM CRYPTO XLN VFOS W/THIN STKS VSHY
									VFOS (FOS HASH) SOME LM-CALC INCLS
17	4929.0-30.0	3.0	8.3						LM CRYPTO XLN VFOS W/THIN STKS VSHY
									VFOS (FOS HASH) SOME LM CALC INCLS
	4930.0-34.0								LM CRYPTO XLN VFOS W/THIN STKS VSHY
									VFOS (FOS HASH) SOME LM-CALC INCLS
	4934.0-52.0	CORE NO. 5 CUT 20 FT. REC. 18 FT.							
	4934.0-35.0								LM CRYPTO XLN VFOS W/THIN STKS VSHY
									VFOS (FOS HASH) SOME LM-CALC INCLS
18	4935.0-36.0	<0.1	5.5						LM CRYPXLN VFOS W/THIN STKS VSHY
									VFOS (FOS HASH) SOME LM-CALC INCLS
	4936.0-37.0								LM CRYPXLN VFOS W/THIN STKS VSHY
									VFOS (FOS HASH) SOME LM-CALC INCLS
19	4937.0-38.0	0.1	6.1						LM CRYPXLN VUG FOS W/SML-VLRG CALC
									INCLS N FLU
	4938.0-39.0								COQUINA SHY N FLU
20	4939.0-40.0	<0.1	5.2						COQUINA SHY N FLU

GOLDEN STRATA SERVICES, INC.
WASTE DISPOSAL

DATE: 5-25-78
FORMATION:

FILE NO: 2202-10051-1
LABORATORY: HOUSTON, TEX.

SMP NO	DEPTH	PERM MD HORZ(KA)	POR %	OIL% PORE	WTR% PORE	PROB PROD	GAS% BULK	CRIT WTR%	DESCRIPTION
	4940.0-41.0								COQUINA SHY W/SH STKS N FLU
21	4941.0-42.0	<0.1	6.8						COQUINA SHY N FLU
	4942.0-50.0								SHALE VLMY
	4950.0-52.0								LOST CORE
	6220.0-6338.0	CORE NO. 6 CUT 18 FT. REC. 14.5 FT.							
	6220.0-26.5								SHALE SLTY SDY-VSDY N FLU
	6226.5-27.5								LOST CORE
	6227.5-28.5								SD VFG VSLTY SHY N FLU
	6228.5-29.5								SHALE SLTY SDY N FLU
	6229.5-31.5								SD VFG VSLTY & SHY N FLU
	6231.5-34.5								SHALE VSLTY SDY N FLU
	6234.5-35.5								SILT VSHY N FLU
	6235.5-38.0								LOST CORE
	6385.0-6405.0	CORE NO. 7 CUT 20 FT. REC. 20 FT.							
22	6385.0-86.0	2662	33.9						SD F-MG SLTY SSHY N FLU
23	6386.0-87.0	380	28.9						SD F-MG SLTY SHY STKD N FLU
24	6387.0-88.0	197	29.5						SD F-MG SLTY VSHY STKD W/CLN LAM N FI
25	6388.0-89.0	2100	32.0						SD F-MG SLTY SSHY STKD W/LG VSLTY STI N FLU
26	6389.0-90.0	560	31.6						SD F-MG SLTY SHY STKD N FLU
27	6390.0-91.0	238	29.1						SD F-MG SLTY SHY STKD N FLU
28	6391.0-92.0	490	29.4						SD F-MG SLTY SHY STKD N FU
29	6392.0-93.0	285	28.1						SD FG SLTY SHY STKD N FLU
30	6393.0-94.0	97	27.3						SD FG VSLTY LG SH STKS N FLU
31	6394.0-95.0	84	26.7						SD FG VSLTY LG SH STKS N FLU
32	6395.0-96.0	63	25.5						SD FG VSLTY LG SH STKS N FLU
	6396.0-05.0								SHALE VLMY
	6543.0-63.0	CORE NO. 8 CUT 20 FT. REC. 20 FT.							

GOLDEN STRATA SERVICES, INC.
WASTE DISPOSAL

DATE: 5-25-78
FORMATION:

FILE NO: 2202-10051-1
LABORATORY: HOUSTON, TEX.

SMP NO	DEPTH	PERM MD HORZ(KA)	POR %	OIL% PORE	WTR% PORE	PROB PROD	GAS% BULK	CRIT WTR%	DESCRIPTION
33	6543.0-44.0	1441	32.6						SD FG SSHY STKD N FLU
34	6544.0-45.0	978	30.0						SD FG SSLTY W/SHY STKS N FLU
35	6545.0-46.0	1882	34.8						SD FG SSLTY W/SHY INCLS N FLU
36	6546.0-47.0	306	28.0						SD FG SSLTY SHY-VSHY STKD N FLU
37	6547.0-48.0	948	29.8						SD FG SSLTY SHY-VSHY STKD N FLU
38	6548.0-49.0	222	26.7						SD FG SSLTY VSHY STKD N FLU
39	6549.0-50.0	148	28.0						SD FG SLTY VSHY STKD N FLU
40	6550.0-51.0	1234	31.6						SD FG SSLTY SHY STKS N FLU
41	6551.0-52.0	623	30.0						SD FG SSLTY SHY-VSHY STKS N FLU
42	6552.0-53.0	671	32.4						SD FG SSLTY SHY STKS N FLU
43	6553.0-54.0	407	33.4						SD FG SSLTY SHY STKS N FLU
44	6554.0-55.0	175	28.9						SD F-VFG SLTY VSHY STKS N FLU
45	6555.0-56.0	595	31.4						SD F-MG SSLTY SHY STKS N FLU
46	6556.0-57.0	686	31.9						SD F-MG SSLTY SHY STKS N FLU
47	6557.0-58.0	3872	33.4						SD MG SSHY N FLU
48	6558.0-59.0	1770	33.6						SD F-MG SSHY N FLU
49	6559.0-60.0	4022	33.3						SD F-MG SSHY N FLU
50	6560.0-61.0	1739	32.6						SD F-MG SSHY N FLU
51	6561.0-62.0	486	31.6						SD F-MG SHY STKD N FLU
52	6562.0-63.0	137	24.8						SD F-MG VSHY STKD N FLU
	6563.0-83.0	CORE NO. 9 CUT 20 FT. REC. 20 FT.							
53	6563.0-64.0	3073	34.4						SD MG CLN N FLU
54	6564.0-65.0	3407	30.0						SD MG CLN N FLU
55	6565.0-66.0	2993	35.4						SD MG CLN N FLU
56	6566.0-67.0	3044	34.2						SD MG CLN N FLU
57	6567.0-68.0	3562	33.7						SD MG CLN N FLU
58	6568.0-69.0	2979	33.2						SD MG CLN N FLU
59	6569.0-70.0	456	31.3						SD MG SHY STKS N FLU
60	6570.0-71.0	1162	32.3						SD MG SSHY-CLN N FLU
61	6571.0-72.0	736	30.7						SD MG SHY STKS N FLU

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GOLDEN [illegible]RATA SERVICES, INC.
WASTE DISPOSAL

DATE: [illegible]-25-78
FORMATION:

FILE NO: [illegible]2-10051-1
LABORATORY: HOUSTON, TEX.

SMP NO	DEPTH	PERM MD HORZ(KA)	POR %	OIL% PORE	WTR% PORE	PROB PROD	GAS% BULK	CRIT WTR%	DESCRIPTION
62	6572.0-73.0	1387	31.2						SD F-MG SLTY N FLU
63	6573.0-74.0	849	26.5						SD F-MG SLTY SHY STKS N FLU
64	6574.0-75.0	552	28.8						SD F-MG SLTY SHY STKS N FLU
65	6575.0-76.0	764	26.0						SD F-MG SLTY SHY-VSHY STKS N FLU
66	6576.0-77.0	2814	34.0						SD MG SSLTY N FLU
67	6577.0-78.0	2602	35.1						SD MG SSLTY N FLU
68	6578.0-79.0	2849	35.2						SD MG SSLTY N FLU
69	6579.0-80.0	3203	34.6						SD MG SSLTY N FLU
70	6580.0-81.0	3347	29.0						SD MG SSLTY SHY STKS N FLU
71	6581.0-82.0	3162	34.6						SD MG CLN (81-81.5 VSHY LAM) N FLU
72	6582.0-83.0	3453	32.6						SD MG SSHY N FLU
	6773.0-93.0	CORE NO. 10 CUT 20 FT. REC. 20 FT.							
73	6773.0-74.0	839	33.5						SD F-VFG SSLTY N FLU
74	6774.0-75.0	976	34.9						SD F-VFG N FLU
75	6775.0-76.0	854	34.1						SD F-VFG SSLTY W/SML SH STK IN TOP 1/4' N FLU
76	6776.0-77.0	911	35.1						SD F-VFG SSLTY N FLU
77	6777.0-78.0	1232	33.6						SD F-VFG SSLTY W/SML SH STKS N FLU
78	6778.0-79.0	411	34.4						SD F-VFG SSLTY-SLTY W/SML SH STK N F
79	6779.0-80.0	786	29.2						SD F-VFG SSLTY-SLTY W/SML SH STK N F
80	6780.0-81.0	417	24.8						SD F-VFG VSHY STKD SLTY N FLU
81	6781.0-82.0	1112	29.0						SD FG SSLTY-SLTY N FLU
82	6782.0-83.0	351	30.0						SD F-MG SHY STKD SLTY N FLU
83	6783.0-84.0	581	30.3						SD F-MG SLTY N FLU
84	6784.0-85.0	1462	24.5						SD M-CG SHY STKD SLTY N FLU
	6785.0-86.0								MUD
	6786.0-87.0								SHALE W/SML VSLTY SD STKS N FLU
	6787.0-88.0								SHALE W/SML VSLTY SD STKS N FLU
85	6788.0-89.0	1031	30.3						SD VFG SLTY MUDSHOT N FLU
	6789.0-90.0								SHALE W/SML VSLTY SD STKS N FLU

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operations, or profitableness of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

GOLDEN [illegible]RATA SERVICES, INC.
WASTE DISPOSAL

DATE: [illegible]-25-78
FORMATION: [illegible]

FILE NO: [illegible]2-10051-1
LABORATORY: HOUSTON, TEX.

SMP NO	DEPTH	PERM MD HORZ(KA)	POR %	OIL% PORE	WTR% PORE	PROB PROD	GAS% BULK	CRIT WTR%	DESCRIPTION
	6790.0-91.0								SHALE W/SML VSLTY SD STKS N FLU
86	6791.0-92.0	807	33.5						SD F-VFG SSHY STK SLTY WITH 1/4' SH STK AT BOTTOM N FLU
87	6792.0-93.0	1679	35.3						SD FG W/SML SH STKS N FLU

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Petroleum Rece. Engineering
DALLAS TEXAS

GOLDEN STRATA SERVICES
W.D.W. NO. 148
WILDCAT
HARRIS COUNTY, TEXAS

DATE: 6-13-78
FORMATION:
DRLG. FLUID:

FILE NO: 2202-10051-5
ANALYSTS: BRAXTON
LABORATORY: HOUSTON
CORES: SCHLUMBERGER

SIDE WALL CORE ANALYSIS

REC IN	DEPTH FEET	PERM MD	POR %	OIL% PORE	WTR% PORE	PROB PROD	OIL% BULK	GAS% BULK	GAS DET	CRIT WTR%	DESCRIPTION
1.2	5290.0	2500	30.6								SD MG SSLTY SLMY N FLU
1.2	5300.0	900	25.1								SD F-MG CLN SLMY N FLU
1.0	5306.0	1950	28.8								SD F-MG CLN SLMY N FLU
1.3	5308.0	1350	32.8								SD F-MG SSLTY SLMY N FLU
0.6	5310.0	3000	31.6								SD F-MG CLN SLMY N FLU
1.1	5320.0	3200	34.3								SD F-MG CLN SLMY N FLU
0.7	5322.0	2700	29.8								SD F-MG CLN SLMY N FLU
	5330.0										NO RECOVERY
1.2	5340.0	850	32.8								SD F-MG SSLTY SLMY N FLU
1.4	5350.0	1550	31.5								SD F-MG CLN SH INCLS SLMY N FLU
1.8	5894.0	750	32.0								SD FG SSLTY W/SH STKS SLMY N FLU
0.6	5900.0	1650	31.9								SD F-MG CLN W/SML SH INCLS SLMY N FLU
0.5	5908.0	2500	33.8								SD F-MG CLN SLMY N FLU
0.7	5934.0	1950	34.2								SD VF-MG CLN SLMY N FLU
1.2	5944.0	3600	33.6								SD MG CLN SLMY N FLU
1.1	5950.0	2700	33.4								SD F-MG CLN SLMY N FLU
1.3	5960.0	2900	34.0								SD F-MG CLN SLMY N FLU
1.2	6072.0	700	30.3								SD F-MG CLN SLMY N FLU
1.1	6080.0	2300	32.7								SD F-MG CLN SLMY N FLU
0.7	6086.0	3600	34.5								SD MG CLN SLMY N FLU
1.3	6600.0	1900	30.8								SD MG SSLTY N FLU
1.3	6608.0	1900	30.8								SD MG SSLTY N FLU
1.0	6616.0	3000	32.0								SD MG SSLTY N FLU

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Petroleum Rese Engineering
DALLAS TEXAS

GOLDEN STRATA SERVICES
W.D.W. NO. 148

DATE: 6-13-78
FORMATION:

FILE NO: 2202-10051-5
ANALYSTS: BRAXTON

REC IN	DEPTH FEET	PERM MD	POR %	OIL% PORE	WTR% PORE	PROB PROD	OIL% BULK	GAS% BULK	GAS DET	CRIT WTR%	DESCRIPTION
1.2	6660.0	1850	32.6								SD F-VFG CLN N FLU
0.4	6670.0	2500	33.2								SD FG CLN N FLU
1.4	6682.0	4.5	23.8								SD VFG VSLTY VSHY W/LM INCL N FLU
1.3	6684.0	240	31.5								SD F-VFG SSLTY W/SH LAMS N FLU
1.3	6692.0	1250	30.7								SD F-MG SSLTY-CLN N FLU
1.4	6708.0	2300	33.5								SD F-MG SSLTY N FLU
1.2	6710.0	915	32.4								SD F-VFG SSLTY N FLU
1.2	6712.0	1050	31.4								SD VFG SSLTY-CLN N FLU
1.3	6720.0	627	30.1								SD VFG SSLTY-CLN N FLU
1.1	6730.0	900	32.6								SD F-VFG SSLTY-CLN N FLU
1.1	6740.0	2000	30.3								SD F-MG SSLTY-CLN N FLU
1.3	6750.0	562	29.0								SD F-VFG SSLTY-CLN N FLU
1.0	6882.0	152	30.9								SD VFG SHY N FLU
1.3	6883.0	105	29.3								SD VFG SLTY SHY N FLU
1.3	6890.0	1800	33.8								SD F-VFG SSLTY-CLN N FLU
1.3	6900.0	2000	33.5								SD FG SSLTY-CLN N FLU
2.5	6910.0	2600	35.1								SD FG SSLTY-CLN N FLU (ONE SMPL SH)
1.5	6911.0	6000	33.2								SD M-CG CLN N FLU
1.0	6912.0	6900	32.4								SD M-CG CLN N FLU
1.1	6917.0	4100	34.4								SD F-MG CLN N FLU
1.3	6930.0	280	29.7								SD F-MG SLTY N FLU
1.5	6973.0	7.9	26.9								SD VFG VSHY N FLU
0.7	6982.0	814	33.3								SD F-VFG SSLTY VLMY N FLU
1.0	6984.0	1250	30.7								SD F-VFG SSLTY-CLN N FLU
1.3	6990.0	1300	28.4								SD F-MG SSLTY-CLN N FLU
0.6	6996.0	3100	31.6								SD F-MG CLN N FLU
1.0	6997.0	1600	29.8								SD FG SSLTY N FLU
0.7	7000.0	1950	34.1								SD F-VFG CLN N FLU

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Petroleum Reservoir Engineering
DALLAS TEXAS

GOLDEN STRATA SERVICES
W.D.W. NO. 148

DATE: 6-13-78
FORMATION:

FILE NO: 2202-10051-5
ANALYSTS: BRAXTON

REC IN	DEPTH FEET	PERM. MD	POR %	OIL% PORE	WTR% PORE	PROB PROD	OIL% BULK	GAS% BULK	GAS DET	CRIT WTR%	DESCRIPTION
0.7	7005.0	1850	32.9								SD VFG CLN N FLU
1.3	7006.0	1650	32.4								SD VFG CLN N FLU
1.0	7016.0	1600	32.2								SD F-VFG CLN N FLU
1.1	7020.0	1200	32.7								SD FG SSLTY-CLN N FLU
1.3	7024.0	1750	29.6								SD FG SSLTY-CLN N FLU
1.1	7088.0	45	26.5								SD VFG SHY W/LAMS N FLU
1.2	7094.0	105	29.1								SD VFG SHY N FLU
1.0	7106.0	4800	29.2								SD MG CLN N FLU
1.3	7104.0	2300	31.9								SD F-MG SSLTY-CLN N FLU
1.4	7120.0	3300	32.2								SD F-MG SSLTY-CLN N FLU
1.3	7140.0	155	30.3								SD F-VFG SLTY N FLU
0.6	7144.0	2800	31.3								SD F-MG SSLTY-CLN N FLU

CORE ANALYSIS REPORT

ELF ATOCHEM WDW-230

DETERMINATION OF INPUT DATA
ELF ATOCHEM NORTH AMERICA, INC. PLANT WELL 2 (WDW-230)
WHOLE CORE AND SIDEWALL CORE DATA

CONVENTIONAL CORE ANALYSIS,

SIDEWALL & GEOLOGICAL ANALYSIS

Envirocorp Well Services, Inc.
W.D.W.-230 Well
Harris County, Texas
SRS 1844/RSH 2970

Basic Rock Properties
Specific Permeability To Brine
Percussion Sidewall Core Analysis
X-Ray Diffraction
Sieve Analysis

Reservoirs
Inc.

RESERVOIRS, INC.

GEOLOGICAL ANALYSIS • CLASTICS/CARBONATES
SINGLE WELL/FIELD/REGIONAL STUDIES
WELL COMPLETION/STIMULATION STUDIES
ROUTINE AND SPECIAL CORE ANALYSIS

1161 BRITTMORE ROAD HOUSTON, TEXAS 77043 (713) 932-7183 FAX (713) 932-0520

August 15, 1994

Mr. Sid Ruiz
Envirocorp Well Services, Inc.
7020 Portwest Drive, Suite 100
Houston, Texas 77024

Dear Mr. Ruiz:

During April 10, 1994 to April 16, 1994, Reservoirs, Inc. was requested and authorized to provide wellsite services and preserve and package five (5) well cores obtained from the following well:

Envirocorp Well Services, Inc.
W.D.W.-230 Well
Harris County, Texas

The well cores were retrieved within the aluminum, inner-liner of the core barrel which was cut into sections, three (3) feet in length, and sealed with rubber end caps. Reservoirs' personnel marked the cores with respect to depth and packaged and transported the cores in dry ice, from the wellsite to the laboratory, in order to preserve the integrity of the cores. Upon arrival at the laboratory, the cores were refrigerated until required for analysis. The following depth intervals were recovered from the well:

Core No.	Depth Interval (ft.)
1	3830 - 3834
2	3840 - 3847
3	4532 - 4542
4	5932 - 5933
5	6202 - 6232

On May 19, 1994, two (2) boxes containing forty (40) glass sidewall jars were delivered to the Special Core Analysis Laboratory of Reservoirs, Inc. by Mr. Larry Fizer, Jr. of Envirocorp Well Services, Inc. Mr. Fizer authorized standard percussion sidewall analysis of the samples on May 20, 1994, and preliminary test results of the analysis were electronically transmitted to Mr. Fizer via facsimile on May 20, 1994, by Mr. Paul Delacoe of Reservoirs, Inc.

On June 7, 1994, following telephone conversations between Mr. Fizer and Mr. Delacoe, Reservoirs, Inc. was authorized to complete the petrophysical and geological analyses of the well cores. Each of the aluminum tubes was cut longitudinally along both sides in order to expose the frozen core material for sample preparation. Conventional core analysis was performed on one (1) vertically oriented shale sample obtained from Core 1 (3830 - 3834 ft.), two (2) vertically oriented shale samples obtained from Core 2 (3840 - 3847 ft.) and one (1) vertically oriented shale sample obtained from Core 3 (4532 - 4542 ft.). Conventional core analysis was also performed on fifteen (15) horizontally oriented sandstone samples obtained from Core 5 (6202 - 6232 ft.). In addition, specific liquid permeability determinations were performed on the four (4) vertically oriented shale samples using a simulated formation brine.

Thirteen (13) samples (six shale and seven sandstone) were selected for mineralogical/compositional analyses by the x-ray diffraction method, and one (1) sample from the depth interval of 6214.4 ft. (Core 5) was selected for sieve/grain size analysis.

This report presents the requested analyses in both tabular and graphical formats. Table 1 and Figures 1 and 2 present the results of the conventional core analysis performed at confining pressure. Examination of Table 1 indicates the specific permeabilities to gas ranged from 1.27 md to 33.0 md for the vertically oriented shale samples and from 1834 md to 7031 md for the horizontally oriented sandstone samples. Porosities ranged from 21.8 to 34.0 percent of the bulk volume and grain densities and bulk densities ranged from 2.56 to 2.75 g/cc and from 1.74 to 2.15 g/cc, respectively. Figure 1 presents the relationship of specific permeability to gas-porosity and Figure 2 presents the relationship of bulk density-porosity.

Specific liquid permeabilities to simulated formation brine were performed for each of the four (4) vertical shale samples. Table 2 presents the composition of the brine used during testing and Table 3 presents the test results. Each of the samples indicated specific liquid permeabilities of less than 0.001 md.

Percussion sidewall core analysis was performed for samples obtained from the depth interval of 4370 - 6558 ft. and the data is presented in Table 4 and in Figure 3, which presents the relationship of permeability-porosity. Figure 4 presents a

composite for the conventional core plug samples and the percussion sidewall samples.

The geological analysis is presented in Tables 5 and 6 which presents the results of the x-ray diffraction and also Tables 7 and 8 and Figures 5 and 6 which present the results of the sieve analysis/grain size analysis.

It has been a pleasure to be of service to you and Envirocorp Well services, Inc. with this project, and Reservoirs, Inc. looks forward to being of service to you on future projects. If you should have any questions pertaining to the geological analysis, please do not hesitate to contact Dr. John Whynot of Reservoirs' Geological Department at (713) 935-4243. If you should have any questions pertaining to the conventional core analysis test results, procedures used to obtain the test results, or if Reservoirs, Inc. can be of any further service, please do not hesitate to contact me at (713) 932-9670.

Sincerely,

Paul Delacoe

Paul Delacoe
Manager
Special Core Analysis
RESERVOIRS, INC.

LABORATORY PROCEDURES

Sample Preparation

One inch diameter core plug samples were drilled from the frozen full diameter core material using liquid nitrogen as the drill bit coolant and lubricant. The samples were trimmed to form right cylinders using a diamond rimmed sawblade. Two (2) stainless steel meshed screens were placed on each end of the samples and the sample and screens were mounted in a thin walled lead sleeve. The weights of the sample, screens and sleeve were recorded. The frozen sleeved samples were placed in a hydrostatic core holder and a confining pressure of 1000 psig was applied to seat the sleeve to the samples.

The samples were subsequently removed from the core holder and cleaned by a "cool solvent" extraction method in a large glass soxhlet. Toluene followed by methanol were the two (2) solvents utilized during the process to remove any fluids and salts present from the pore spaces of the samples. The samples were subsequently dried in a temperature and humidity controlled chamber at a temperature of 140°F and a relative humidity of 40% for forty-eight (48) hours. The samples were subsequently removed from the chamber and allowed to cool to room temperature in a sealed desiccator containing silica-gel.

Basic Rock Properties

The grain volume was determined by the Boyle's law method using helium. Each sample was individually placed in a sealed chamber of known volume which was opened to a second chamber of known volume containing helium a pre-selected pressure. Sufficient time was allowed for the helium to reach an equilibrium pressure between the two (2) chambers. This pressure was recorded and used to calculate the grain volume of the sample.

The grain volume and the weight of the clean and dry sample were used to establish the grain density. The grain density is the weight

of the core material per unit volume of the core material (grain volume). The pore volume was determined by placing each sample in a hydrostatic core holder and a confining pressure equivalent to the depth (ft.) multiplied by 0.440, expressed as psig, was applied to the sample. A known volume of helium gas was introduced into the system and allowed to attain an equilibrium pressure. Using Boyle's law, the pore volume of the sample was determined. The porosity was calculated by the summation of the pore volume with the grain volume of the sample, which results in the bulk volume of the sample. Porosity is the pore volume expressed as a percentage of the bulk volume.

The specific permeability to gas was determined in a hydrostatic core holder. A confining pressure equivalent to the depth (ft.) multiplied by 0.440, expressed as psig, was applied to the sample. Nitrogen gas was injected into each sample at a constant pressure until a constant flow rate of gas was attained (steady-state conditions). The specific permeability to gas was calculated using the Darcy equation.

Sample Saturation (Vacuum-Pressure Method)

Each clean and dry vertical sample selected for specific permeability to brine determination was weighed and placed in a vacuum-pressure saturation chamber. The system was evacuated to a pressure of fifty (50) microns for a period of twelve (12) hours. A simulated formation brine (Table 2) was injected into the chamber until the level of the fluid was above the samples. A pressure of 2000 psig was applied to the system for a minimum of six (6) hours. The chamber was depressured and each sample was removed from the fluid and weighed. The pore volume was calculated gravimetrically using the dry weight and the saturated weight of each sample and the corresponding density of the fluid. This pore volume was compared to the pore volume previously derived by the Boyle's Law helium porosity method, to ensure one hundred percent (100%) saturation.

Specific Permeability To Brine At Confining Pressure

Each brine saturated sample was placed in a hydrostatic core holder and a confining pressure equivalent to the depth (ft.) multiplied by 0.440, expressed as psig, was applied to the sample. The simulated formation brine was injected at a constant injection pressure until a constant flow rate of brine was attained. The specific permeability to brine of each sample was then calculated.

Percussion Sidewall Analysis

Each percussion sidewall sample was removed from the glass sidewall sample jar, and that portion of the sidewall sample which had been invaded by drilling fluids was removed using a stainless steel edged razor knife. A small portion of the sidewall sample was then viewed under an ultra-violet light source for fluorescence and tested with trichloroethane for potential cut.

The remainder of the sample was weighed and placed into a mercury pycnometer chamber. The sample was then submersed in mercury and the bulk volume of the sample was recorded. A pressure of 750 psig was applied to the system. The volume of mercury that was injected into the sample was monitored and recorded. This volume is assumed to equal the volume of gas present in the sample.

The sample was unloaded and broken open to disclose the penetration profile of the mercury throughout the sample. The sample was then placed in a sidewall retort container and sealed. The retort container was subsequently placed in a temperature controlled oven. The temperature of the oven was increased until the fluids present in the sidewall sample were distilled and collected in a graduated test tube.

The volume of distilled fluids added to the mercury volume represents the pore volume of the sample. The porosity and the fluid saturations are calculated on the basis of the pore volume and the bulk volume. The specific permeability to gas cannot be determined by this type of analysis; however, an empirical permeability has been included based on previous experience.

Table 1

CONVENTIONAL CORE ANALYSIS

Envirocorp Well Services, Inc.
W.D.W.-230 Well
Harris County, Texas
SRS 1844/RSH 2970

Depth Interval: 3830.4 - 6230.5 ft.

Sample	Depth (ft.)	Perm. To Gas (md)	Porosity (% BV)	Grain Density (g/cc)	Bulk Density (g/cc)	Lithological Description
C 420V	3830.4	33.0	29.5	2.62	1.85	Sh gry sft sdy slty
C 421V	3843.3	2.90	27.4	2.59	1.88	Sh gry sft vcalc
C 422V	3846.3	10.3	29.9	2.56	1.79	Sh gry sft vcalc foss sli slty
C 424V	4536.8	1.27	21.8	2.75	2.15	Sh gry sft vcalc foss sli slty
C 426	6203.4	1834	32.7	2.63	1.77	Sd gry f-med gr unconsol sli slty
C 427	6204.2	2451	32.3	2.64	1.79	Sd gry f-med gr unconsol sli slty
C 428	6206.6	2657	32.9	2.61	1.75	Sd gry f-med gr unconsol sli slty
C 429	6208.7	4101	34.0	2.63	1.74	Sd gry f-med gr unconsol sli slty
C 430	6210.2	4274	34.0	2.64	1.74	Sd gry f-med gr unconsol sli slty
C 431	6212.5	3820	32.3	2.63	1.78	Sd gry f-med gr unconsol sli slty
C 432	6214.6	3589	32.1	2.63	1.79	Sd gry f-med gr unconsol sli slty
C 433	6216.3	3222	29.6	2.63	1.85	Sd gry f-med gr unconsol sli slty
C 434	6218.5	2422	29.2	2.63	1.86	Sd gry f-med gr unconsol sli slty
C 435	6220.7	4958	30.0	2.63	1.84	Sd gry f-med gr unconsol sli slty
C 436	6222.3	7031	33.2	2.63	1.76	Sd gry f-med gr unconsol sli slty
C 437	6224.5	4537	31.0	2.62	1.81	Sd gry f-med gr unconsol sli slty
C 438	6226.6	4461	31.6	2.62	1.79	Sd gry f-med gr unconsol sli slty
C 439	6228.4	7013	32.3	2.62	1.77	Sd gry f-med gr unconsol sli slty
C 440	6230.5	4241	28.9	2.62	1.86	Sd gry f-med gr unconsol sli slty

"V" Denotes vertically oriented sample.

Figure 1

SPECIFIC PERMEABILITY TO GAS - POROSITY RELATIONSHIP

Envirocorp Well Services, Inc.
W.D.W.-230 Well
Harris County, Texas
SAS 1844/RSH 2970

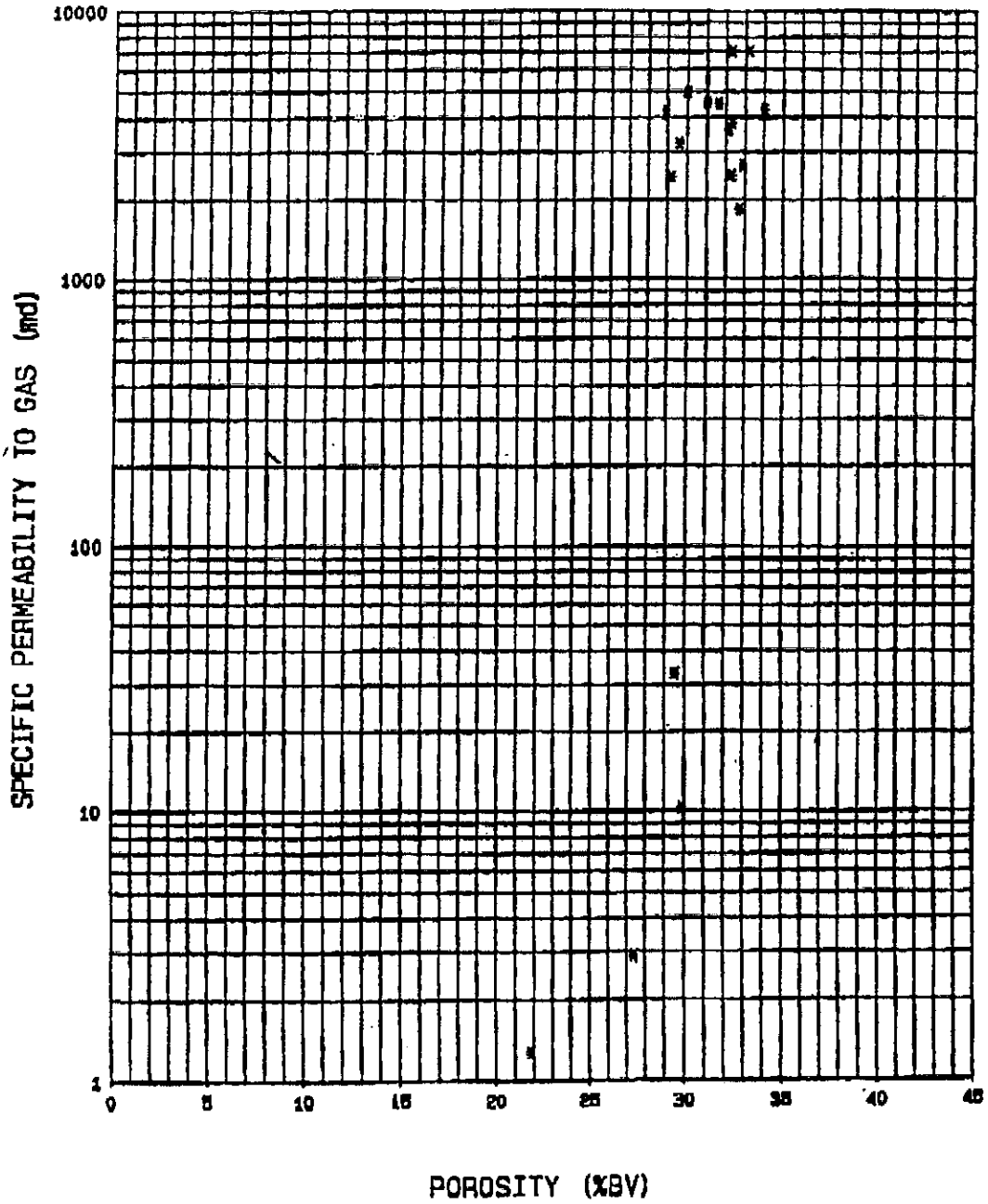
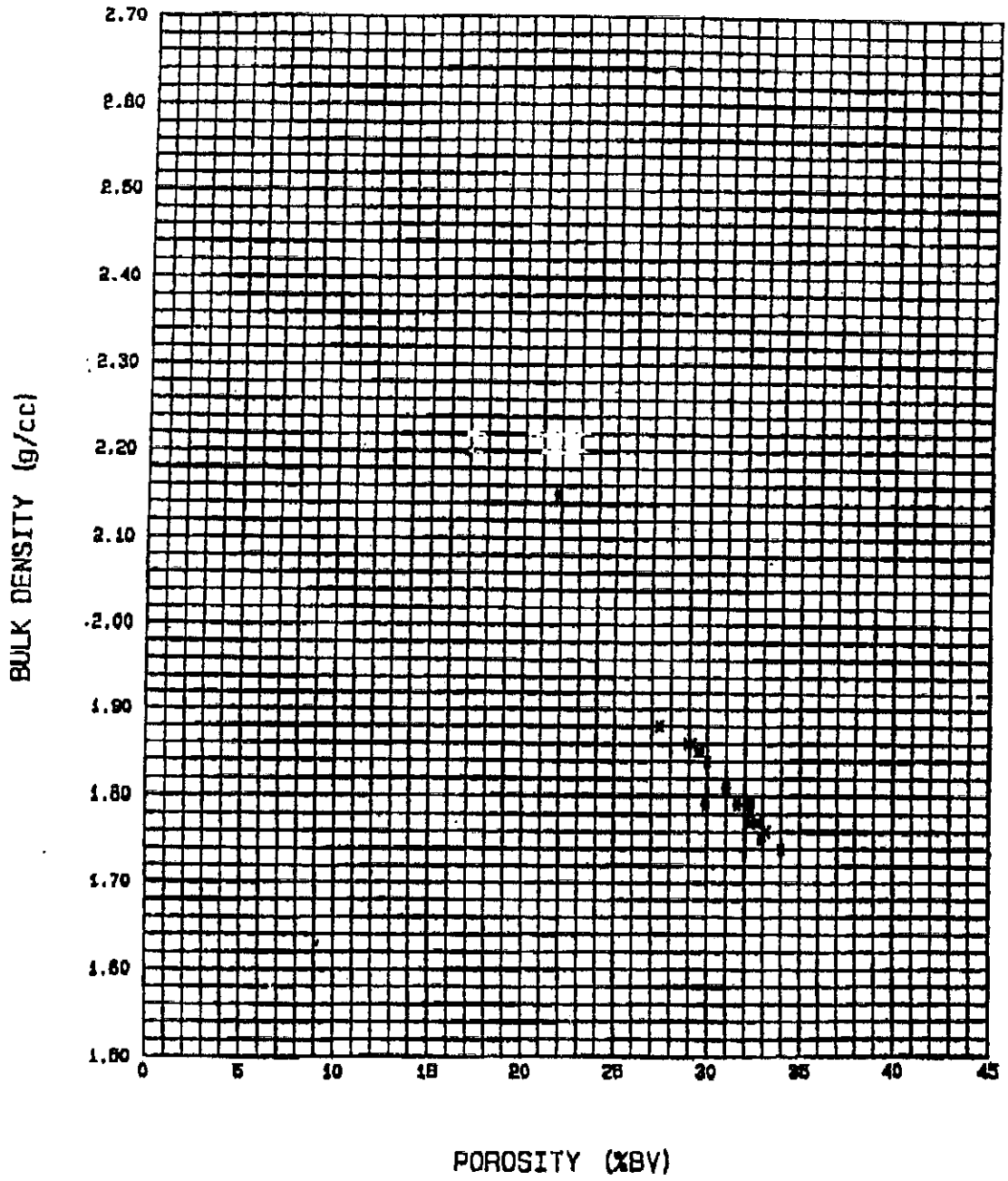


Figure 2

BULK DENSITY - POROSITY RELATIONSHIP

Envirocorp Well Services, Inc.
W.D.W.-230 Well
Harris County, Texas
SRS 1844/RSH 2970



Envirocorp Inc.

Table 2

SIMULATED FORMATION BRINE ANALYSIS

Envirocorp Well Services, Inc.
W.D.W.-230 Well
Harris County, Texas
SRS 1844/RSH 2970

Constituent(s)	mg/L
Sodium (added as NaCl)	44,000
Calcium (added as $CaCl_2$)	2,500
Magnesium (added as $MgCl_2$)	400

Table 3

SPECIFIC PERMEABILITY TO SIMULATED FORMATION BRINE

Envirocorp Well Services, Inc.
W.D.W.-230 Well
Harris County, Texas
SRS 1844/RSH 2970

Sample	Depth (ft.)	Perm. To Gas, (md)	Porosity (% BV)	Grain Density (g/cc)	Perm. To Brine (md)
C 420V	3830.4	33.0	29.5	2.62	<0.001
C 421V	3043.3	2.90	17.3	2.59	<0.001
C 422V	3046.3	10.3	29.9	2.56	<0.001
C 424V	4536.8	1.27	21.8	2.75	<0.001

Table 4

PERCUSSION SIDEWALL CORE ANALYSIS

Envirocorp Well Services, Inc.
W.D.W.-230 Well
Harris County, Texas
SRS 1844/RSH 2970

IN REC.	DEPTH FEET	PERM MD	POR %	OIL% PORE	WTR% PORE	PROB PROD	OIL% VOL.	GAS% VOL.	COMB GAS	CRIT WTR%	FORMATION DESCRIPTION
0.0	4370.0	—	—	—	—	—	—	—	—	—	NO RECOVERY
2.0	4390.0	—	—	—	—	—	—	—	0	—	SHALE DK GY SSLTY VLMY NO FLU
2.0	4430.0	—	—	—	—	—	—	—	0	—	SHALE DK GY LMY NO FLU
1.8	4474.0	—	—	—	—	—	—	—	0	—	SHALE DK GY LMY NO FLU
1.9	4550.0	—	—	—	—	—	—	—	0	—	SHALE DK GY VLMY NO FLU
0.0	5479.0	—	—	—	—	—	—	—	—	—	NO RECOVERY
1.0	5483.0	2350	30.7	0.0	94.9	GAS	0.0	1.6	0	35	SD FG SSLTY NO FLU
0.1	5487.0	—	—	—	—	(1)	0.0	—	0	—	SD F-VFG SSLTY-SLTY VLMY NO FLU
1.7	5492.0	4700	30.0	0.0	56.8	GAS	0.0	12.9	0	33	SD MG CLN SLMY NO FLU
1.8	5583.0	2200	31.8	0.0	76.1	GAS	0.0	7.6	0	36	SD FG SSLTY SLMY NO FLU
1.5	5587.0	4200	31.0	0.0	42.4	GAS	0.0	17.8	0	34	SD F-MG SSLTY SLMY NO FLU
1.7	5590.0	2300	32.3	0.0	40.7	GAS	0.0	19.1	0	36	SD FG SSLTY SLMY NO FLU
1.4	5592.0	5400	31.0	0.0	83.5	WTR	0.0	5.1	0	34	SD M-CG CLN NO FLU
1.4	5610.0	2450	32.1	0.0	89.2	WTR	0.0	3.4	0	36	SD FG SSLTY SLMY NO FLU
0.0	5614.0	—	—	—	—	—	—	—	—	—	NO RECOVERY
0.0	5624.0	—	—	—	—	—	—	—	—	—	NO RECOVERY
1.3	5626.0	3100	30.0	0.0	89.0	WTR	0.0	3.3	0	34	SD F-MG SSLTY SLMY NO FLU
0.0	5864.0	—	—	—	—	—	—	—	—	—	NO RECOVERY
0.0	5869.0	—	—	—	—	—	—	—	—	—	NO RECOVERY
1.3	5876.0	1000	32.5	0.0	93.4	WTR	0.0	2.2	0	38	SD F-VFG SLTY SLMY NO FLU
0.0	5879.0	—	—	—	—	—	—	—	—	—	NO RECOVERY
0.0	5922.0	—	—	—	—	—	—	—	—	—	NO RECOVERY

Reservoir Inc.

Table 4 (Continued)

PERCUSSION SIDEWALL CORE ANALYSIS

Envirocorp Well Services, Inc.
W.D.W.-230 Well
Harris County, Texas
SRS 1844/RSH 2970

IN REC.	DEPTH FEET	PERM MD	POR %	OIL% PORE	WTR% PORE	PROB PROD	OIL% VOL.	GAS% VOL.	COMB GAS	CRIT MTR%	FORMATION DESCRIPTION
0.0	5970.0	—	—	—	—	—	—	—	—	—	NO RECOVERY
0.1	5975.0	—	—	—	—	—	—	—	0	—	MUD CAKE
0.0	5991.0	—	—	—	—	—	—	—	—	—	NO RECOVERY
0.0	5996.0	—	—	—	—	—	—	—	—	—	NO RECOVERY
0.0	6002.0	—	—	—	—	—	—	—	—	—	NO RECOVERY
0.0	6008.0	—	—	—	—	—	—	—	—	—	NO RECOVERY
0.0	6044.0	—	—	—	—	—	—	—	—	—	NO RECOVERY
0.1	6104.0	—	—	—	—	—	—	—	0	—	MUD CAKE
0.1	6107.0	—	—	—	—	—	—	—	0	—	MUD CAKE
0.0	6110.0	—	—	—	—	—	—	—	—	—	NO RECOVERY
1.5	6122.0	130	30.4	0.0	89.3	WTR	0.0	3.3	0	53	SD F-VFG SLTY-VSLTY SLMY NO FLU
0.0	6140.0	—	—	—	—	—	—	—	—	—	NO RECOVERY
0.1	6163.0	—	—	—	—	(1)	0.0	—	0	—	SD VFG SSLTY SLMY NO FLU
0.1	6170.0	—	—	—	—	(1)	0.0	—	0	—	SD F-VFG SSLTY SLMY NO FLU
0.0	6186.0	—	—	—	—	—	—	—	—	—	NO RECOVERY
1.0	6198.0	—	—	—	—	—	—	—	0	—	MUD CAKE
0.0	6214.0	—	—	—	—	—	—	—	—	—	NO RECOVERY
0.8	6224.0	2900	30.9	0.0	85.8	WTR	0.0	4.4	0	35	SD FG CLN NO FLU
0.1	6232.0	—	—	—	—	—	—	—	0	—	MUD CAKE
0.1	6239.0	—	—	—	—	—	—	—	0	—	MUD CAKE
0.0	6253.0	—	—	—	—	—	—	—	—	—	NO RECOVERY

Table 4 (Continued)

PERCUSSION SIDEWALL CORE ANALYSIS

Envirocorp Well Services, Inc.
W.D.W.-230 Well
Harris County, Texas
SRS 1844/RSH 2970

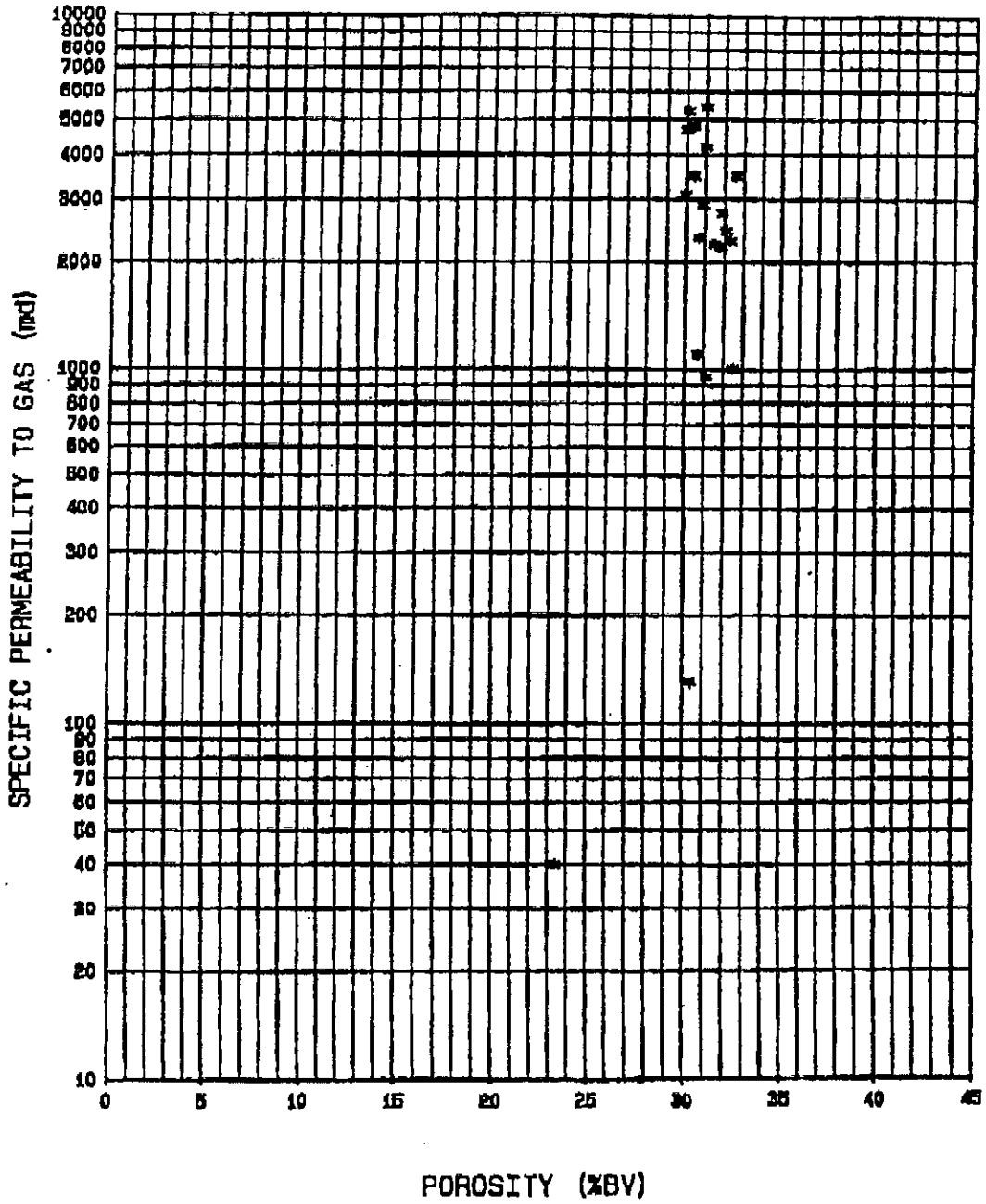
IN REC.	DEPTH FEET	PERM MD	POR %	OIL% PORE	WTR% PORE	PROB PROD	OIL% VOL.	GAS% VOL.	COMB GAS	CRIT WTR%	FORMATION DESCRIPTION
1.6	6266.0	2250	31.5	0.0	37.2	GAS	0.0	19.8	0	35	SD FG SSLTY SLMY NO FLU
0.1	6305.0	--	--	--	--	--	--	--	0	--	MUD CAKE
0.0	6309.0	--	--	--	--	--	--	--	--	--	NO RECOVERY
0.2	6313.0	--	--	--	--	--	--	--	0	--	MUD CAKE
0.7	6320.0	2900	30.9	0.0	70.6	GAS	0.0	9.1	0	35	SD FG CLN NO FLU
1.0	6324.0	2750	31.9	0.0	81.4	GAS	0.0	5.9	0	36	SD FG CLN NO FLU
1.3	6329.0	3500	32.6	0.0	50.3	GAS	0.0	16.2	0	37	SD F-MG SSLTY NO FLU
1.0	6402.0	--	--	--	--	--	--	--	0	--	MUD CAKE
0.9	6431.0	4800	30.4	0.0	90.3	WTR	0.0	3.0	0	33	SD MG SSLTY NO FLU
1.0	6437.0	5300	30.1	0.0	91.7	WTR	0.0	2.5	0	33	SD M-CG CLN NO FLU
0.0	6458.0	--	--	--	--	--	--	--	--	--	NO RECOVERY
1.8	6461.0	40	23.4	0.0	70.6	WTR	0.0	6.9	0	58	SD VFG SLTY W/LG SH LAM NO FLU
1.2	6469.0	950	31.1	0.0	90.0	WTR	0.0	3.1	0	37	SD F-VFG SLTY NO FLU
0.0	6480.0	--	--	--	--	--	--	--	--	--	NO RECOVERY
0.5	6544.0	--	--	--	--	--	--	--	0	--	MUD CAKE
1.1	6548.0	3500	30.4	0.0	84.4	WTR	0.0	4.7	0	34	SD F-VFG SSLTY NO FLU
1.1	6558.0	1100	30.7	0.0	86.9	WTR	0.0	4.0	0	36	SD FG SLTY SLMY NO FLU

(1) ALTERED CORE

Figure 3

EMPIRICAL PERMEABILITY TO GAS - POROSITY RELATIONSHIP

Envirocorp Well Services, Inc.
W.D.W.-230 Well
Harris County, Texas
SRS 1844/RSH 2970

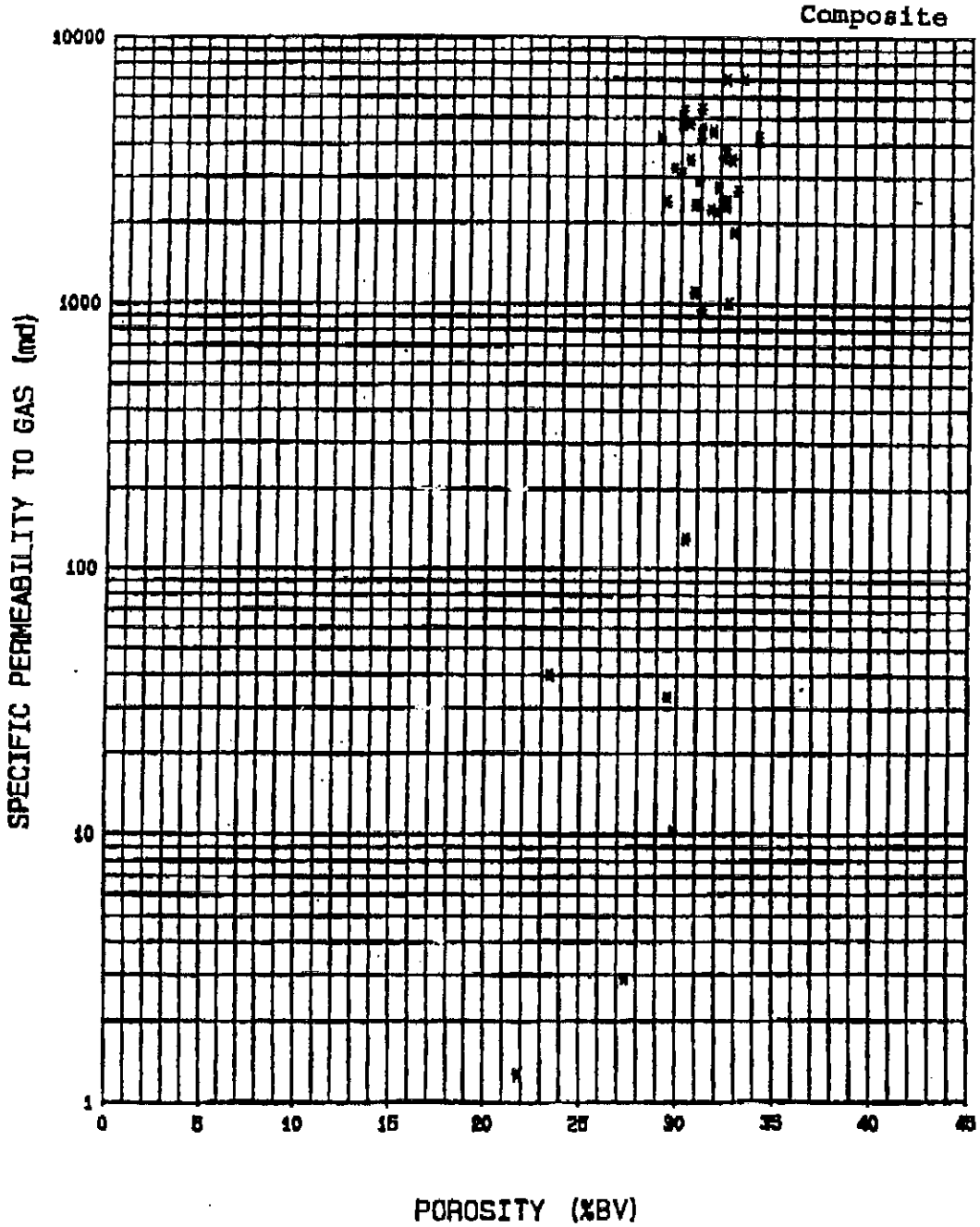


Endeavours Inc.

Figure 4

PERMEABILITY TO GAS - POROSITY RELATIONSHIP

Envirocorp Well Services, Inc.
W.D.W.-230 Well
Harris County, Texas
SRS 1844/RSH 2970



Envirocorp Inc.

Table 5

MINERALOGICAL ANALYSIS BY X-RAY DIFFRACTION

Job Number: SRS 1844/RSH 2970
Client: ENVIROCORP WELL SERVICES, INC.
Well: WASTE DISPOSAL WELL-230
Location: HARRIS COUNTY, TEXAS
Formation: ANAHUAC/FRIO

MINERALOGY OF WHOLE ROCK SAMPLE

Relative Abundance in Percent

Depth (ft.)	Qtz	Ksp	Plag	Cal	Hal	Clay	Total	Gd
3830.4	53	24	6	0	0	17	100	2.62
3843.3	13	3	1	64	0	19	100	2.69
3846.3	19	3	0	37	0	41	100	2.67
4533.0	41	3	2	4	1	49	100	2.64
4536.8	37	3	2	39	0	19	100	2.67
4540.0	39	3	1	11	0	46	100	2.65
5932.0	49	3	1	44	0	3	100	2.67
6203.4	96	0	0	0	0	4	100	2.65
6208.7	95	3	0	0	0	2	100	2.65
6212.5	95	2	0	0	0	3	100	2.65
6218.5	83	14	0	0	0	3	100	2.64
6224.5	88	3	3	0	0	6	100	2.65
6230.5	90	6	0	0	0	4	100	2.64
Min	13	0	0	0	0	2		2.62
Max	96	24	6	64	1	49		2.69
Avg	61	5	1	15	0	17		2.65
	91%	4.6%	<1 bar			3.6		

KEY:
Qtz = quartz
Ksp = K-feldspar
Plag = plagioclase
Cal = calcite
Hal = halite
Hem = hematite
Clay = total clay
Gd = calculated grain density

Table 6

MINERALOGICAL ANALYSIS BY X-RAY DIFFRACTION

Job Number: SRS 1844/RSH 2970
Client: ENVIROCORP WELL SERVICES, INC.
Well: WASTE DISPOSAL WELL-230
Location: HARRIS COUNTY, TEXAS
Formation: ANAHUAC/FRIO

MINERALOGY OF < 5 MICRON SIZE FRACTION

Relative Abundance in Percent

Depth (ft)	I/S	Smec	Chl	Ill	Kaol	Total	I/S comp
3830.4	0	72	0	24	4	100	0
3843.3	0	56	0	24	20	100	0
3846.3	0	57	0	29	14	100	0
4533.0	0	24	0	46	30	100	0
4536.8	0	33	0	43	24	100	0
4540.0	0	38	0	44	18	100	0
5932.0	0	100	0	0	0	100	0
6203.4	0	30	0	30	40	100	0
6208.7	64	3	0	12	21	100	69
6212.5	0	0	0	53	47	100	0
6218.5	0	0	0	21	79	100	0
6224.5	0	10	0	46	44	100	0
6230.5	0	0	0	39	61	100	0
Min	0	0	0	0	0		0
Max	64	100	0	53	79		69
Avg	5	33	0	32	31		7

KEY:
I/S = mixed-layer illite/smectite
Smec = smectite
Chl = chlorite
Ill = illite
Kaol = kaolinite
I/S comp = percent illite layers in I/S

Table 8

GRAIN SIZE ANALYSIS

ENVIROCORP WELL SERVICES, INC.
W.D.W.-230 WELL
SAMPLE DEPTH: 6214.4 FT.

f(m-x)^2									
Sample Depth (ft)	Ave. Gr. Sz. (phi)	Class Mid-Point (mm) 0.420	0.297	0.210	0.149	0.105	0.074	0.053	Std. Dev. (mm)
6214.4	0.177	0.110	19.491	177.953	296.471	43.752	11.987	4.612	0.766

GRAPHIC STATISTICS											
Sample Depth (ft)	5%	16%	25%	50%	75%	84%	95%	Mean	Std Dev	Skew	Kurtosis
6214.4	0.337	0.277	0.259	0.210	0.173	0.162	0.139	0.211	0.339	-0.044	0.904

Table 7

GRAIN SIZE ANALYSIS

ENVIROCORP WELL SERVICES, INC.
W.D.W.-230 WELL
SAMPLE DEPTH: 6214.4 FT.

WEIGHTS

Sample Depth (ft)	Initial Weight (g)	Class Mid-Point (mm) 0.420	0.297	0.210	0.149	0.105	0.074	0.053	Final Weight	Lost Weight	% Lost
6214.4	16.381	0.0154	1.275	6.703	7.249	0.75	0.152	0.045	16.189	0.192	1.17

WEIGHT PERCENT

Sample Depth (ft)	Final Weight (g)	Class Mid-Point (mm) 0.420	0.297	0.210	0.149	0.105	0.074	0.053
6214.4	16.189	0.095	7.876	41.404	44.776	4.633	0.939	0.278

CUMULATIVE PERCENT

Sample Depth (ft)	Final Weight (g)	Class Mid-Point (mm) 0.420	0.297	0.210	0.149	0.105	0.074	0.053
6214.4	16.189	0.095	7.971	49.374	94.150	98.783	99.722	100.000

*1 * m*

Sample Depth (ft)	Final Weight (g)	Class Mid-Point (mm) 0.420	0.297	0.210	0.149	0.105	0.074	0.053	Avg. GS (mm)
6214.4	16.189	0.119	13.782	93.158	123.135	15.056	3.521	1.181	0.177

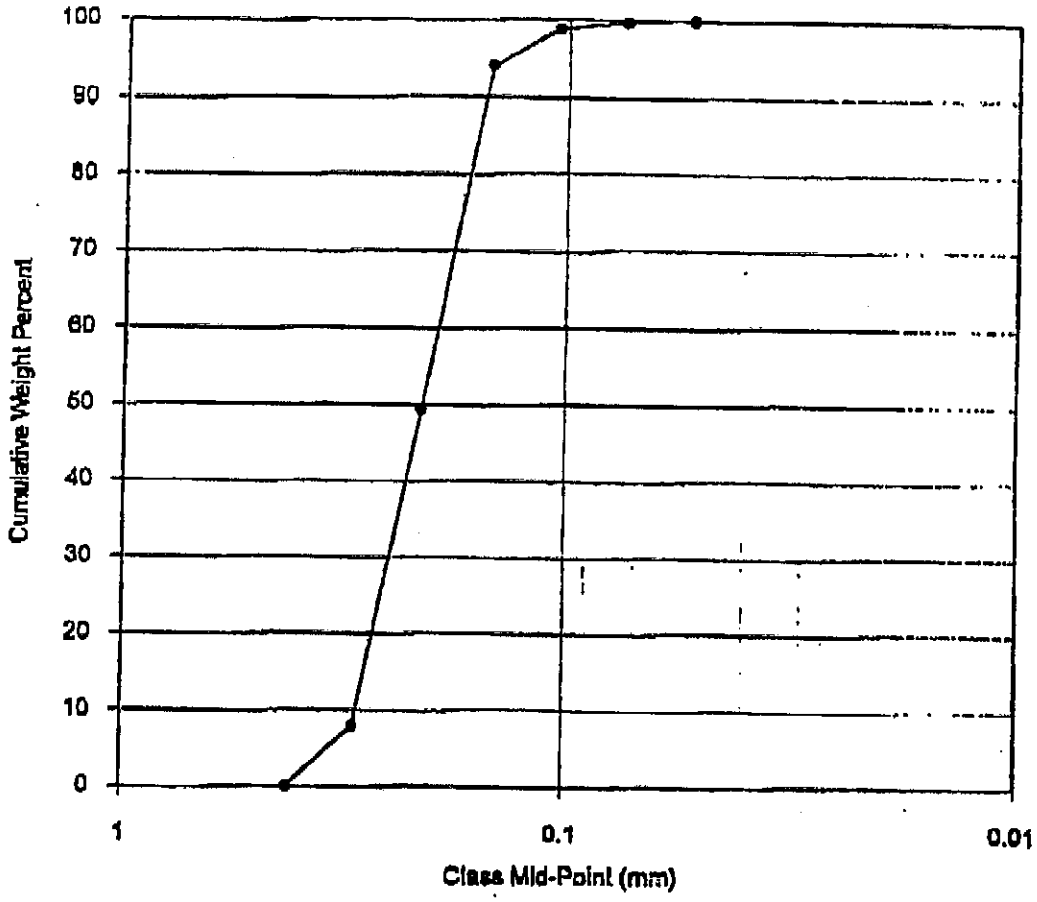
Resource Inc.

Figure 5

SIEVE DATA

ENVIROCORP WELL SERVICES, INC.
W.D.W.-230 WELL
SAMPLE DEPTH: 6214.4 FT.

MEAN GRAIN SIZE: 0.177 mm SORTING: Well Sorted

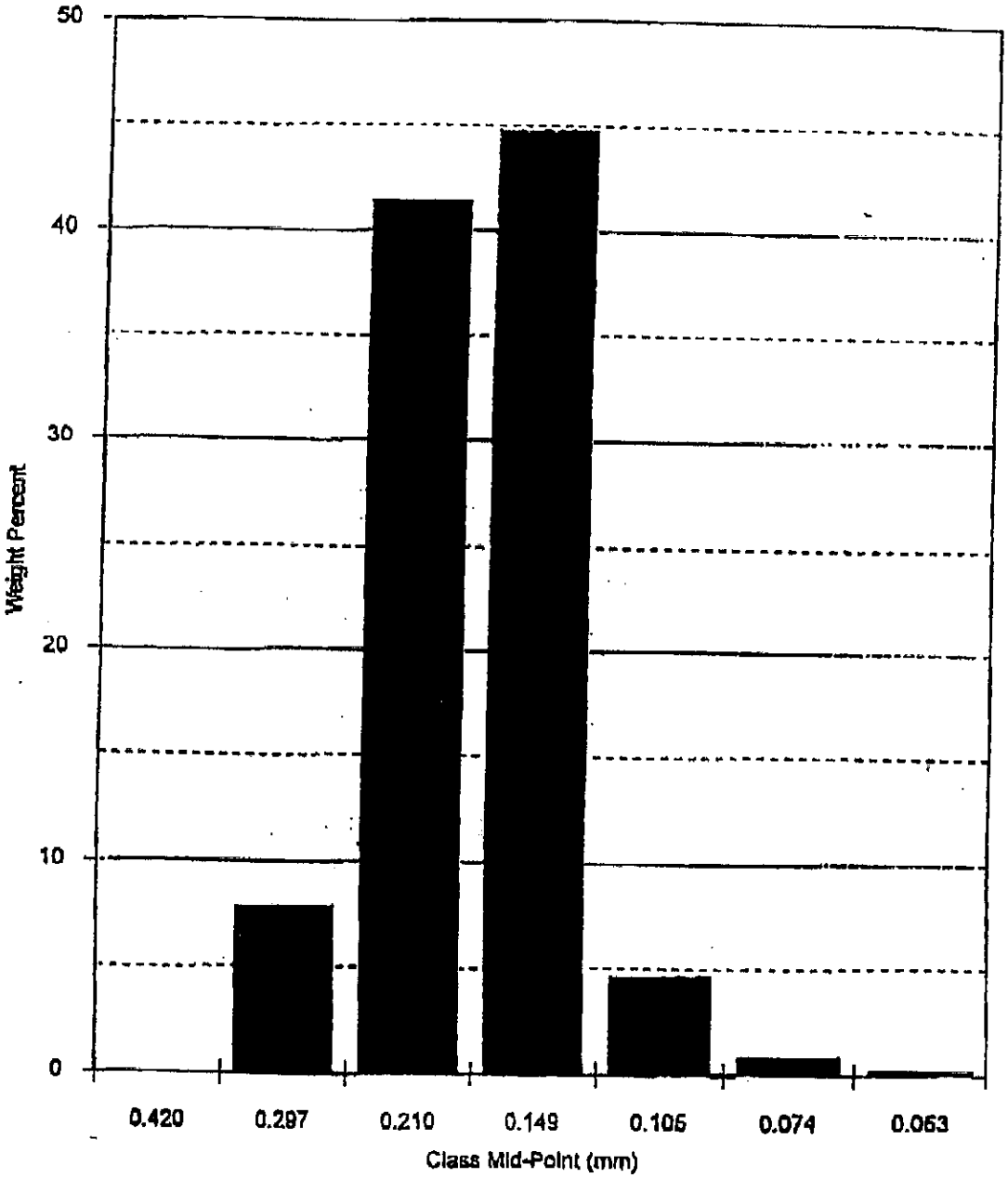


Class Mid-Point (mm)	Standard Mesh Size	Weight Percent	Cumulative Weight Percent
0.420	45	0.10	0.10
0.297	60	7.88	7.97
0.210	80	41.40	49.37
0.149	120	44.78	94.15
0.105	170	4.63	98.78
0.074	230	0.94	99.72
0.053	325	0.28	100.00

Figure 6

HISTOGRAM

ENVIROCORP WELL SERVICES, INC.
W.D.W.-230 WELL
SAMPLE DEPTH: 6214.4 FT.



RESERVOIR BRINE ANALYSIS

FRIO E & F and FRIO A/B/C SANDS

TABLE 2-9
CHEMICAL ANALYSES OF FRIO FORMATION FLUIDS

	Merisol WDW-147 mg/l	Merisol WDW-319 mg/l	Lyondell WDW-148 mg/l	Equistar WDW-36 mg/l	GNI WDW-169 mg/l	Hampshire WDW-222 mg/l
Sample Depth	6,700 - 6780	6,850 – 7,260	6,881 – 7,167	6,590 – 6,650	7,103-7415	7,194-7,508
Interval	Frio E&F	Frio A/B/C	Frio A/B/C	Frio F	Frio E/F/A/B	Frio E/F/A/B
Calcium	2,250	1,610	2,700	6,400	2,400	2,200
Magnesium	475	214	340	1,440	480	457
Barium	66	494	44	190	60	63
Strontium	150	853	160	-	112	113
Sodium	55,664	45,700	39,200	43,000	39,400	41,200
Chloride	60,247	82,000	70,000	63,548	70,400	±70,520
Sulfate	-	654	5	18	12	<100
Iron	-	1,170	-	5	35	60.5
Alkalinity Bicarbonate	-	<5	115	99	463.6	80.1
pH	7.0	4.5	7.2	6.7	6.85	6.7
Specific Gravity	1.073 @ 21°C	-	1.074	1.074	1.0836	1.059 @ 150°F
Total Solids	-	135,000	-	127,318	119,018	113,400

***Note, analyses are included in Appendix 2-6**

MERISOL

PLANT WELL 1 (WDW-147)

FRIO E & F SAND FORMATION FLUID SAMPLE - JUNE 1979

MERICHEM COMPANY

Chemicals for Industry

HOUSTON

TO: GED

FROM: JEF

DATE: June 27, 1979

LAB: 79-168

SUBJECT: ANALYSES OF THE FORMATION BRINE SAMPLE OF 6/8/79

ANALYSES OF THE FORMATION BRINE SAMPLE OF 6/8/79 ARE AS FOLLOWS:

*pH	7.0
Sp. Gr.	1.073 @ 21.0°C
Bicarbonate (HCO_3)	NIL
Sulfate (SO_4)	18 mg/L
Chloride (Cl^-)	60,247 mg/L
*Barium (Ba)	66 mg/L
*Calcium (Ca)	22,500 mg/L
*Magnesium (Mg)	475 mg/L
*Strontium (Sr)	150 Mg/L

* ANALYSES BY EDNA WOOD LABORATORIES (See Attachment)
RDNB 68 PP 1-3
LSR 79-42

JEF/rc

EDNA WOOD LABORATORIES, INC.

WATER TECHNOLOGISTS . . CHEMISTS . . MICROBIOLOGISTS

TEL.: (713) 747-7271

4820 OLD SPANISH TRAIL

HOUSTON, TEXAS 77021

25 June 1979

To: The Merichem Company
1914 Haden Road
Houston, Texas 77015

Req. No. 6435-L

For: Mr. Jack Flynn

Sample marked: Formation Brine Sample of 6-8-79

Received: 6-21-79

ANALYSIS
mg/l except pH

Appearance	Clear
pH	7.0
By Atomic Absorption	
Barium, Ba	66
Calcium, Ca	22,500
Magnesium, Mg	475
Strontium, Sr	150

Edna Wood Laboratories, Inc.

By: Edna Wood
Edna Wood

5169
pm

FORMATION FLUID ANALYSIS – MERISOL PLANT WELL 2 (WDW-319)

Accutest LabLink@5419 11:34 22-Sep-2000 Preliminary Data

Report of Analysis

Client Sample ID:	WDW 319		
Lab Sample ID:	T855-1	**Date Sampled:**	09/17/00
Matrix:	AQ - Water	**Date Received:**	09/18/00
		Percent Solids:	n/a
Project:	Merisol		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total	<5.0	5.0	mg/l	1	09/21/00	EJ	EPA 310.1
Chloride	82000	2000	mg/l	10000	09/21/00	JA	EPA 325.3
Fluoride	0.10	0.10	mg/l	1	09/20/00	EJ	EPA 340.2
Hardness, Total [a]	4900	50	mg/l	10	09/18/00	JA	EPA 130.2
Nitrogen, Ammonia	8.0	1.0	mg/l	10	09/19/00	LN	EPA 350.1
Nitrogen, Nitrate [b]	<2.2	2.2	mg/l	1	09/18/00	LN	SM18 4500NO3B/NO2B
Nitrogen, Nitrate + Nitrite	2.6	2.0	mg/l	40	09/18/00	LN	EPA 353.2
Nitrogen, Nitrite	1.2	0.25	mg/l	5	09/18/00	LN	EPA 353.2
Nitrogen, Total Kjeldahl	27.7	4.0	mg/l	40	09/21/00	LN	EPA 351.1
Phosphorus, Total	16.2	1.2	mg/l	62.5	09/21/00	LN	EPA 365.2
Silica, Dissolved	54.2	2.5	mg/l	50	09/22/00	EJ	EPA 370.1
Solids, Total Dissolved	135000	250	mg/l	25	09/19/00	LN	EPA 160.1
Solids, Total Suspended	896	6.0	mg/l	6	09/18/00	EJ	EPA 160.2
Sulfate	654	40	mg/l	4	09/19/00	LN	EPA 375.3
Sulfide	1.3	0.20	mg/l	1	09/20/00	LN	EPA 376.1
Total Organic Carbon	31.0	10	mg/l	10	09/18/00	LN	EPA 415.1

(a) By EPA Method 6010B; Calculated as: (2.497 x Ca in mg/l) + (4.118 x Mg in mg/l)
(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Accutest LabLink@5419 11:34 22-Sep-2000 Preliminary Data

Report of Analysis

Client Sample ID:	WDW 319		
Lab Sample ID:	T855-1	Date Sampled:	09/17/00
Matrix:	AQ - Water	Date Received:	09/18/00
		Percent Solids:	n/a
Project:	Merisol		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	283000	250	ug/l	5	09/18/00	09/18/00	JA	SW846 6010B
Arsenic	86.2	50	ug/l	5	09/18/00	09/18/00	JA	SW846 6010B
Barium	49400	50	ug/l	5	09/18/00	09/18/00	JA	SW846 6010B
Boron	13400	2500	ug/l	5	09/18/00	09/18/00	JA	SW846 6010B
Cadmium	77.5	20	ug/l	5	09/18/00	09/18/00	JA	SW846 6010B
Calcium	1610000	50000	ug/l	50	09/18/00	09/20/00	JA	SW846 6010B
Copper	28400	100	ug/l	5	09/18/00	09/18/00	JA	SW846 6010B
Iron	1170000	15000	ug/l	50	09/18/00	09/20/00	JA	SW846 6010B
Lead	1820	50	ug/l	5	09/18/00	09/18/00	JA	SW846 6010B
Magnesium	214000	5000	ug/l	5	09/18/00	09/18/00	JA	SW846 6010B
Manganese	12300	50	ug/l	5	09/18/00	09/18/00	JA	SW846 6010B
Mercury	1.6	0.20	ug/l	1	09/18/00	09/20/00	JA	SW846 7470A
Molybdenum	538	25	ug/l	5	09/18/00	09/18/00	JA	SW846 6010B
Nickel	633	100	ug/l	5	09/18/00	09/18/00	JA	SW846 6010B
Potassium	463000	50000	ug/l	50	09/18/00	09/20/00	JA	SW846 6010B
Selenium	<50	50	ug/l	5	09/18/00	09/18/00	JA	SW846 6010B
Sodium	45700000	500000	ug/l	1	09/18/00	09/20/00	JA	SW846 6010B
Strontium	85300	2500	ug/l	1	09/18/00	09/20/00	JA	SW846 6010B
Vanadium	771	50	ug/l	5	09/18/00	09/18/00	JA	SW846 6010B
Zinc	4200	150	ug/l	5	09/18/00	09/18/00	JA	SW846 6010B

RL = Reporting Limit

LYONDELL CHEMICAL WORLDWIDE, INC. CHANNELVIEW PLANT WELL 1 (WDW-148)
FORMATION FLUID SAMPLE – JULY 8. 1978

DIXIE SERVICES
INCORPORATED

P. O. Box 451 Galena Park, Texas 77547 713 672 1619

RECEIVED Golden Strata Services, Inc.

CERTIFICATE OF ANALYSIS
Number 0973

JUL 26 1978

Company: Golden Strata Services, Inc.
1100 Milam Building, Suite 2000
Houston, Texas 77002

Attn: Mr. Jack Marr

Sample: Water from WDW 148 Plant Well No. 1 (Unfiltered), submitted July 13, 1978

Date: July 24, 1978

pH	7.2	
Specific Gravity	1.074	
	mg/l	meq/l
Calcium	2,740	137
Magnesium	340	28
Barium	44	0.6
Strontium	160	3.7
Sodium (by difference)	39,200	1,704
Chloride	70,000	1,972
Sulfate	5	0.1
Alkalinity		
Bicarbonate	115	1.6
Carbonate	0	0
Hydroxide	0	0
Sulfide	<1	<1

Dixie Services Incorporated

Lee Magnon

Lee Magnon

EQUISTAR
PLANT WELL 1 (WDW-36)
LOWER FRIO FORMATION FLUID SAMPLE - MAY 1977

TELEPHONE:
(318) 984-2374

Southern PETROLEUM Laboratories, INC.

P. O. BOX 20807
Houston, Texas 77025

CERTIFICATE OF ANALYSIS NO.

ample Marked:

mitted By:

or: Subsurface Disposal Corp. May 31, 1977
5555 West Loop South - Suite 646
Bellaire, Texas 77401 Invoice No. 63803

ield:

form or Well: ARCO Chem Co.

ample Of: Formation Water

pling Point: W.D.W. 6590' to 6650' ZONE 'C'

ate Sampled:

pled By:

DISSOLVED SOLIDS

Ions	mg/L	Anions	mg/L
li Na, (Calc)	55664	Chlorides, CL	63548
cium, Ca	6400	Sulfate, SO4	12
gnesium, Mg	1400	Carbonate, CO3	0
ium, Ba	190	Bicarbonate, HCO3	99

, Fe (Total) 5

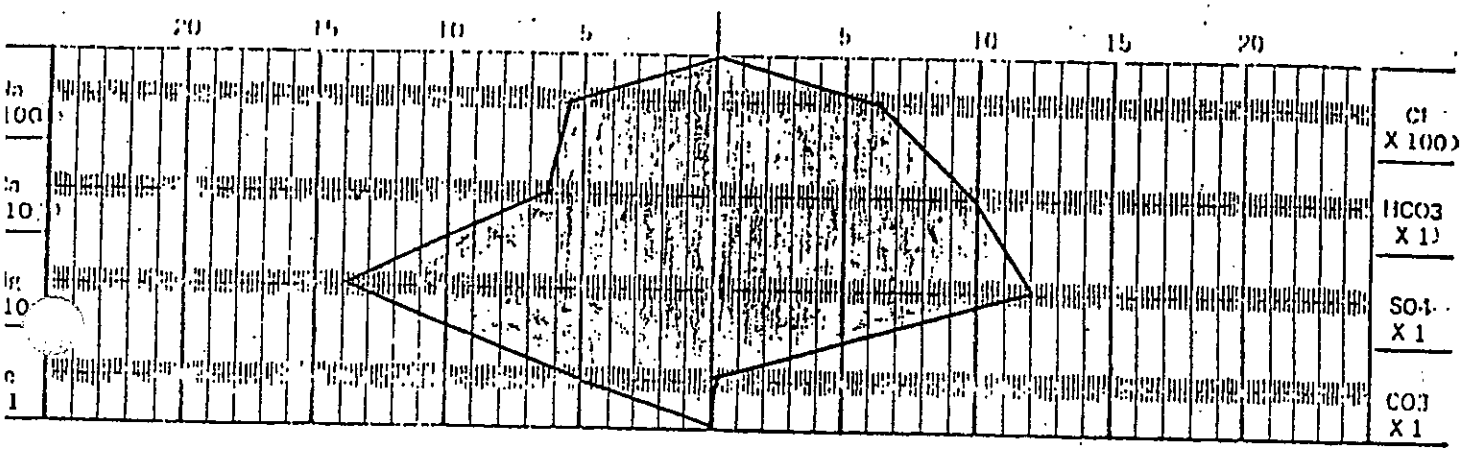
al Dissolved Solids (Calc) 127,318

OTHER PROPERTIES

Specific Gravity 60/60° F	1.074
Resistivity (OHM - Meters)	F ~~68,000~~
pH	6.70

MINERAL ANALYSIS PATTERN

(Number Below Ion Name Indicates meq./1/Scale Unit)



GNI
PLANT WELL 1 (WDW-169)
LOWER FRIO FORMATION FLUID SAMPLE - MAY 1981

cc: CG
CJL
AS

EDNA WOOD LABORATORIES, INC.

WATER TECHNOLOGISTS . . CHEMISTS . . MICROBIOLOGISTS

6 May 1981

TEL.: (713) 747-7271
4020 OLD SPANISH TRAIL
HOUSTON, TEXAS 77021

To: Subsurface Disposal Corporation
5555 West Loop South - Suite 646
Bellaire, Texas 77401

Job No. DT05TX0
Project DSI Transports

For: Miss Carol Lee

Sample marked: DT05TX0-2

2nd cleaner Formation water

Received: 4-20-81

ANALYSIS
mg/l except pH

Appearance	Turbid, colored, solids
pH	6.85
Biochemical Oxygen Demand 5-day, 20°C. (seeded)	6
Chemical Oxygen Demand Ag_2SO_4 + $HgSO_4$ Method	697
Total Organic Carbon	36
Silica, SiO_2	15
Chloride, Cl	70,400
Sulfate, SO_4	< 100
Total Phosphate, PO_4	0.17
Free Carbon Dioxide, CO_2	33
Cyanide, CN	< 0.1
By Atomic Absorption	
Barium, Ba	60
Calcium, Ca	2,400
Total Iron, Fe	35
Magnesium, Mg	480
Sodium, Na	43,000
Strontium, Sr	110

Edna Wood Laboratories, Inc.

By: Alice Perry
Alice Perry
Supervising Chemist

9916
pm

PLANT WELL 1 (WDW-222) & PLANT WELL 2 (WDW-223)
LOWER FRIO SAND FORMATION FLUID SAMPLE - JULY 1983

DIXIE SERVICES
INCORPORATED

P. O. Box 451 Galena Park, Texas 77547 713 672 1619

CERTIFICATE OF ANALYSIS

Number 11273 August 6, 1983

Company: Golden Strata Services
1100 Milam, Suite 2000
Houston, Texas 77002

Attn: Stuart Raef

Sample: Two formation water samples, submitted 7-19-83

	WDW 222	WDW 223
pH	6.7	6.5
Specific gravity, 150°F	1.059	1.062
Viscosity, cpu @ 150°F	0.5423	0.5468
Total dissolved solids, mg/l	113,400	115,400
Total alkalinity, as $CaCO_3$, mg/l	80.1	109.1
Total organic carbon, mg/l	13[illegible]	12
Sodium, mg/l	39,400	41,200
Potassium, mg/l	360	368
Calcium, mg/l	2,200	2,160
Magnesium, mg/l	457	455
Iron, mg/l	60.5	59.4
Manganese, mg/l	2.32	2.39
Barium, mg/l	63	46
Strontium, mg/l	112	113
Boron, mg/l	2.75	2.63
Selenium, mg/l	0.01	<0.01
Nitrate, as N, mg/l	0.10	0.10
Sulfide, mg/l	1.0	0.4
Fluorine, mg/l	4.60	5.50

Dixie Services Incorporated,

Mical C. Renz

MCR/ar

SHELL

PLANT WELL 2 (WDW-173)

LOWER FRIO SAND FORMATION FLUID SAMPLE – JULY 1983

CHEMICAL ANALYSIS OF BRINE FROM
SHELL WELL #2

Silica	29
Magnesium	1850
Manganese	1.5
Sodium	34,500
Potassium	1590
Bicarbonate	150
Carbonate	<10
Chloride	60,140
Fluoride	0.8
H_2S	<0.1
Nitrate	<0.5
Iron	13
Barium	43
Boron	25
Cadmium	<0.03
Strontium	103
TDS	124,900
Specific Gravity	1.0649
Viscosity	0.995 centistokes
Conductivity	0.139 MHO/cm

All units in mg/l except Specific Gravity, Viscosity, and Conductivity.

APPENDIX C

USEPA NO MIGRATION PETITION

DOCUMENTS

REISSUANCE APPROVAL PACKAGE
DATED: OCTOBER 29, 2019

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1201 ELM STREET, SUITE 500
DALLAS, TX 75270

October 29, 2019

CERTIFIED MAIL 7007 3020 0000 1523 1328 RETURN RECEIPT REQUESTED

Mr. Dieter J. Schultz
Project Manager - U.S. South Execution
ExxonMobil Environmental & Property Solutions Company
ExxonMobil Houston Campus - W3.2A.581
22777 Springwoods Village Pkwy
Spring, TX 77389

RE: ExxonMobil UIC Petition Reissuance Final Approval Decision for Wells WDW-397 & WDW-398

Dear Mr. Schultz:

The land disposal restrictions prohibit the injection of hazardous waste unless a petitioner can demonstrate to EPA, to a reasonable degree of certainty, that there will be no migration of hazardous constituents from the injection zone for as long as the wastes remain hazardous. The land disposal restrictions for injection wells codified in 40 CFR Part 148 provide the standards and procedures by which petitions to dispose of an otherwise prohibited waste by injection will be reviewed and by which exemptions pursuant to these petitions will be granted or denied. Part 148 also provides for the reissuance of an exemption if the reissuance complies with the above-mentioned standards.

A letter dated 5/29/19 informed ExxonMobil that EPA was proposing to approve its petition reissuance request for an exemption to the land disposal restrictions. There were two public comment periods for this decision because the newspaper failed to publish the first notice. They were 6/12 – 7/29/19 and 8/21 – 10/7/19 and no comments were received.

Based on a detailed technical review of the petition reissuance request and support documents, EPA has determined that this information for the ExxonMobil site meets the requirements of 40 CFR Part 148 by demonstrating that, to a reasonable degree of certainty, there will be no migration of hazardous constituents from the injection zone for 10,000 years.

The following are conditions of this land disposal restrictions exemption.

Final Petition Reissuance Approval Conditions

This approval of a petition for reissuance of an exemption to allow the injection of restricted hazardous wastes is subject to the following conditions, which are necessary to assure that the standard in 40 CFR §148.20(a) is met. Noncompliance with any of these conditions is grounds for termination of the exemption in accordance with 40 CFR §148.24(a)(1). This exemption is applicable to the ExxonMobil injection wells: WDW-397 and WDW-398, located at the PCI Nitrogen fertilizer plant in Pasadena, TX.

Recycled/Recyclable • Printed with Vegetable Oil Based Inks on Recycled Paper (Minimum 50% Postconsumer content)

1. Injection of restricted waste shall be limited to the following injection zone and intervals:

Well	Injection Zone Depths (feet)	Injection Interval Depths (feet) Frio D, E&F, and A/B Sands
WDW-397	5347'-7272' KB	5922'-7272' KB
WDW-398	5370'-7295' KB	5965'-7295' KB

(WDW-397 depths are referenced to 3/08/06 High Resolution Array Induction Density Neutron Longspace Sonic Log using Kelly Bushing (KB) depths in feet; WDW-398 depths are referenced to 7/18/09 Array Induction Log using KB depths in feet)

Note that the Injection Zone and Interval bases are below the total depth of each well.

Injection of restricted waste shall also be limited to completion intervals which are within the defined injection interval and below a depth of 6210' KB in WDW-397 and 6276' KB in WDW-398.

2. The limit for the cumulative volume injected into WDW-397 and WDW-398 on a monthly basis is as follows:

   Frio D Sand: (408 gpm) X (1440 minutes/day) X (number of days in that month)*
   Frio E & F Sand: (1200 gpm) X (1440 minutes/day) X (number of days in that month)
   Frio A/B Sand: (1200 gpm) X (1440 minutes/day) X (number of days in that month)

   In addition, the total cumulative monthly wellhead volume for WDW-397 and WDW-398 shall not exceed (1,200 gpm) X (1440 minutes/day) X (number of days in that month).

   *WDW-398 is not, and will not be, completed to inject into the Frio D Sand

3. The facility shall cease injection by December 31, 2040.

4. The characteristics of the injected waste stream shall at all time conform to those discussed in Section 6.0 and listed in Table 6-3 in the 2017 petition reissuance document. The specific gravity of the waste stream shall remain within a range of 1.00 to 1.05 as measured at 68°F and 1 atmosphere. The reference temperature for the specific gravity analyzer will be 60°F.

5. This approval for injection is limited to the following hazardous wastes:
   D002, D004, D005, D006, D007, D008, D009, D023, D024, D0025, D030, and F039 (for the constituents listed in Table 6-3 in the 2017 petition reissuance document)

6. The facility must petition for approval to inject additional hazardous wastes which are not included in Condition No. 5 above. The facility must also petition for approval to increase the concentration of any waste which would necessitate the recalculation of the limiting concentration reduction factor and the extent of the waste plume. Petition modifications and reissuance should be made pursuant to 40 CFR §148.20 (e) or (f).

7. A flow profile survey, acceptable to the Agency, shall be run annually in both WDW-397 and WDW-398 to confirm flow distribution into the Frio D, E&F and A/B Sands. The flow profile survey in WDW-397 will confirm that the injection rate into the Frio D Sand does not exceed 408 gpm for any monthly average total injection rate into WDW-397.

   In addition, for either WDW-397 or WDW-398, upon recompletion into any newly perforated portion of the Injection Interval, the following must be done:

A flow profile survey, acceptable to the Agency, shall be run. If the flow rate into the existing perforations becomes less than that currently modeled, the transmissivity and porosity employed in the modeling demonstration must be re-evaluated. This must be done prior to the re-establishment of injection of the wastes covered by this petition approval into the affected well and redemonstrated on an annual basis.

8. ExxonMobil shall annually submit to EPA the results of a bottomhole pressure survey for WDW-397 and WDW-398. These surveys shall be performed after shutting in each well for a period sufficient to allow the pressure in the injection interval to reach equilibrium, in accordance with 40 CFR §146.68(e)(1). The annual report should include a comparison of reservoir parameters determined from the falloff test with parameters used in the approved no migration petition reissuance. This should include a comparison of the current year's test results for the static and flowing bottomhole pressures with the values demonstrated in the approved petition reissuance and a comparison of the test results for transmissibility [Kh/μ (mD-ft/cP)] with the transmissibilities used in the approved petition reissuance demonstration for the pressure buildup and 10,000 year plume modeling.

9. ExxonMobil shall also annually submit to EPA a radioactive tracer survey and annulus pressure test for WDW-397 and WDW-398.

10. ExxonMobil shall notify EPA if WDW-397 or WDW-398 loses mechanical integrity, prior to any well work on WDW-397 or WDW-398, or if ExxonMobil plans to plug WDW-397 or WDW-398. If any well work or plugging is being planned, ExxonMobil shall also submit the procedures to EPA for review prior to commencing any work.

11. Upon the expiration, cancellation, reissuance, or modification, of the Texas Commission on Environmental Quality's Underground Injection Control (UIC) permit for WDW-397 and/or WDW-398, this exemption is subject to review. A new demonstration may be required if information shows that the basis for granting the exemption is no longer valid under 40 CFR §148.23 and §148.24.

In addition to the above conditions, this approval of a petition for reissuance of an exemption is contingent on the validity of the information submitted in the ExxonMobil petition reissuance request for an exemption to the land disposal restrictions. This final reissuance decision is subject to termination when any of the conditions occur which are listed in 40 CFR §148.24, including noncompliance, misrepresentation of relevant facts, or a determination that new information shows that the basis for approval is no longer valid.

If you have any questions or comments, please call Brian Graves at (214) 665-7193 or email him at graves.brian@epa.gov.

Sincerely,

Rahul Rai for

Charles W. Maguire
Director
Water Division

ecc: Ms. Lorrie Council, TCEQ
Mr. Richard Heitzenrater, TCEQ Region 14

REISSUANCE APPROVAL PACKAGE
DATED: MAY 29, 2019

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS TX 75202-2733

May 29, 2019

CERTIFIED MAIL 7007 3020 0000 1522 3729 RETURN RECEIPT REQUESTED

Mr. Dieter J. Schultz
Project Manager - U.S. South Execution
ExxonMobil Environmental & Property Solutions Company
ExxonMobil Houston Campus - W3.2A.581
22777 Springwoods Village Pkwy
Spring, TX 77389

RE: ExxonMobil Proposed Petition Reissuance Approval Decision for Wells WDW-397 & WDW-398

Dear Mr. Schultz:

Based on a detailed technical review of the submitted petition reissuance, including supporting documents, EPA is proposing to approve ExxonMobil's request for reissuance of the exemption to the land disposal restrictions of the Hazardous and Solid Waste Amendments of 1984, to the Resource Conservation and Recovery Act. This exemption applies to existing wells WDW-397 and WDW-398. Enclosed are the public notice and the fact sheet documents associated with this proposed decision. A final decision regarding the ExxonMobil petition reissuance will be made after the end of the public comment period.

We appreciate your cooperation during the petition reissuance review process. If you have any questions or comments regarding this matter, please call Brian Graves at (214) 665-7193.

Sincerely yours,

for Charles W. Maguire
Director
Water Division

Enclosures

ecc: Ms. Lorrie Council, TCEQ
Mr. Richard Heitzenrater, TCEQ Region 14

PUBLIC NOTICE OF A PROPOSED HAZARDOUS WASTE EXEMPTION REISSUANCE

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 6
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

The U.S. Environmental Protection Agency (EPA), Region 6, proposes to reissue an exemption to the land disposal restrictions of the Hazardous and Solid Waste Amendments of 1984 (HSWA) to the Resource Conservation and Recovery Act (42 U.S.C. §6901, et seq) for the following facility:

Applicant:	ExxonMobil Corporation 22777 Springwoods Village Parkway, Science 2.2B.359 Spring, TX 77389
Facility Location:	2001 Jackson Road Pasadena, TX 77501-3447

Injection Well Permit Numbers: WDW-397 & WDW-398

Development of the proposed decision was based on a detailed technical review of the submitted reissuance request with support documents.

The land disposal restrictions of HSWA prohibit the injection of restricted hazardous waste. However, these amendments provide that an exemption to these restrictions may be granted if the Administrator determines that the method of land disposal (i.e., injection well) is protective of human health and the environment. A method of land disposal may not be determined to be protective, "unless, upon application by an interested person, it has been demonstrated to the Administrator, to a reasonable degree of certainty, that there will be no migration of hazardous constituents from the disposal unit or injection zone for as long as the wastes remain hazardous" (42 U.S.C. §6924(g)(5)). Regulations establishing the criteria for petitioning for an exemption to the land disposal restrictions were published in Volume 53, Number 143 of the Federal Register, July 26, 1988, [53 Fed. Reg. 28118 (1988)]. These regulations are now codified at 40 C.F.R. Part 148. ExxonMobil Corporation (ExxonMobil), successfully demonstrated no migration for its first injection well, WDW-397, at the Pasadena, Texas facility and obtained an exemption to the land disposal restrictions on January 15, 2009. On June 13, 2011, a final petition reissuance decision added a second injection well, WDW-398, increased the Frio D Sand injection rate from 140 gpm to 360 gpm, and increased the Frio A/B and E&F Sands injection rate from 700 gpm to 1200 gpm each. It also increased the maximum cumulative wellhead injection volume from 700 gpm (WDW-397) to 1200 gpm (WDW-397 & WDW-398).

The regulations described above also allow for reissuance of an approved petition if the reissuance also meets the no migration criteria in these regulations. ExxonMobil has demonstrated that their approved no migration petition continues to remain valid with the currently requested changes to their existing petition which are increased injection volumes in the Frio D Sand from 360 gpm to 408 gpm and the extension of the operating life of the wells from 12/31/20 to 12/31/40.

A final decision to approve or deny the reissuance will be made after the close of the comment period, which ends at the close of business on July 29, 2019. All persons, including the applicant, who wish to comment on the proposed decision to reissue the exemption, may do so by submitting comments along with their name and address, to the EPA address shown below. All written comments must be postmarked by July 29, 2019, to be considered in formulating a final decision.

EPA is not required to hold a public hearing. However, if there is sufficient public interest in this proposed decision, EPA may hold a public hearing. Anyone desiring such a hearing must submit a written request, identifying the issue(s) for discussion at the hearing, to the EPA office in Dallas, Texas before the close of business on July 29, 2019. EPA will give at least 30 days notice of the public hearing, if the hearing is held.

Written comments, requests for information regarding the Agency's decision on this reissuance, and requests for copies of the fact sheet (description of the reasons supporting the proposed decision) should be sent to EPA Region 6 at the address shown below. Information on the Agency's decision may also be obtained by contacting Brian Graves at (214) 665-7193 or graves.brian@epa.gov.

U.S. EPA Region 6
Brian Graves (WDDG)
1201 Elm Street, Suite 500
Dallas, TX 75270-2101

The administrative record and reissuance document for the proposed petition decision is available for review beginning June 12, 2019, between 8:00 a.m. and 4:00 p.m., Monday through Friday, for the extent of the comment period, at EPA's Dallas office located at the address above. Before you come to review the administrative record and reissuance documents please contact Brian Graves at the phone number or email above or Jana Harvill at (214) 665-8369 or Phil Dellinger at (214) 665-8324. A copy of the reissuance document is also available for review during normal business hours at the following location:

Pasadena Library
1201 Jeff Ginn Memorial Drive
Pasadena, TX 77506
(713) 477-0276

Pertinent EPA comment and public hearing procedures may be found in 40 C.F.R. §124.10 and §124.12.

The EPA will notify the applicant and each person who has submitted written comments of the final reissuance decision. The final decision will also be published in the Federal Register.

May 23, 2019

FACT SHEET

EPA is proposing to approve a reissuance of an exemption to the land disposal restrictions for the following injection well facility:

Applicant:	Exxon Mobil Corporation Pasadena Fertilizer Plant
Street Address:	2001 Jackson Road Pasadena, Tx 77501-3447
Mailing Address:	22777 Springwoods Village Parkway, Science 2.2B.359 Spring, TX 77389
Permit Number:	WDW-397 and WDW-398
Issuing Office:	U.S. EPA Region 6 1445 Ross Avenue Dallas, TX 75202-2733

Summary of Reissuance Demonstration Basis

In this reissuance the geology, reservoir parameters, and the various demonstration model configurations remain largely unchanged from the June 13, 2011, approved reissuance. Therefore, the detailed April 14, 2011, reissuance fact sheet is incorporated into this reissuance fact sheet and attached for reference. The primary changes are the increased injection rate into the Frio D Sand to 408 gpm (gallons per minute) from 360 gpm and the extension of the operational life from December 31, 2020, to December 31, 2040.

Results from the most recent mechanical integrity tests for WDW-397 and WDW-398 are summarized below:

Well Number	Annulus Pressure Test	Radioactive Tracer Survey
WDW-397	10/22/18	10/22/18
WDW-398	12/04/18	12/06/18

1. Operational Life

End of Operational Life: December 31, 2040

Maximum Incremental Pressure Buildup:

Frio D Sand: 1406 psi in WDW-397 at 6650 feet Kelly Bushing depth (KB)
618 psi in WDW-398

Frio E&F Sand: 836 psi in WDW-397 at 6787 feet KB
810 psi in WDW-398

Frio A/B Sand: 933 psi in WDW-397 at 7022 feet KB
907 psi in WDW-398

2. <u>10,000 Year Post-Injection Period:</u>

Background gradient: 0 ft/yr updip and 1.2 ft/yr downdip
Waste density effects considered? Yes
Hydrocarbon production in the injection interval present to impact demonstration? No
Waste concentration reduction factor: $1x10^{-5}$
Maximum lateral waste movement:
Light plume:
Approximately 48,700 feet (9.22 miles) updip in a northwest direction from WDW-397.
Heavy plume:
Approximately 22,000 feet (4.17 miles) downdip in a southeast direction.
Maximum vertical waste movement:
Approximately 690.5 feet through intact strata and 805 feet in a mud-filled borehole.

Therefore, after a detailed and thorough review of ExxonMobil's 2019 petition for reissuance of the exemption, the EPA proposes that ExxonMobil has demonstrated, to a reasonable degree of certainty, that there will be no migration of hazardous constituents from the injection zone for as long as the waste remains hazardous. This time period is defined by 40 CFR §148.20 as 10,000 years. Accordingly, the proposed reissuance conditions are as follows:

<u>Proposed Petition Reissuance Approval Conditions</u>

This proposed approval of a petition for reissuance of an exemption to allow the injection of restricted hazardous wastes is subject to the following conditions, which are necessary to assure that the standard in 40 CFR §148.20(a) is met. Noncompliance with any of these conditions is grounds for termination of the exemption in accordance with 40 CFR §148.24(a)(1). This proposed exemption is applicable to the ExxonMobil injection wells: WDW-397 and WDW-398, located at the PCI Nitrogen fertilizer plant in Pasadena, TX.

1. Injection of restricted waste shall be limited to the following injection zone and intervals:

Well	Injection Zone Depths (feet)	Injection Interval Depths (feet) Frio D, E&F, and A/B Sands
WDW-397	5347'-7272' KB	5922'-7272' KB
WDW-398	5370'-7295' KB	5965'-7295' KB

(WDW-397 depths are referenced to 3/08/06 High Resolution Array Induction Density Neutron Longspace Sonic Log using Kelly Bushing (KB) depths in feet; WDW-398 depths are referenced to 7/18/09 Array Induction Log using KB depths in feet) Note that the Injection Zone and Interval bases are below the total depth of each well.

Injection of restricted waste shall also be limited to completion intervals which are within the defined injection interval and below a depth of 6210' KB in WDW-397 and 6276' KB in WDW-398.

2. The limit for the cumulative volume injected into WDW-397 and WDW-398 on a monthly basis is as follows:

Frio D Sand: (408 gpm) X (1440 minutes/day) X (number of days in that month)*
Frio E & F Sand: (1200 gpm) X (1440 minutes/day) X (number of days in that month)
Frio A/B Sand: (1200 gpm) X (1440 minutes/day) X (number of days in that month)

In addition, the total cumulative monthly wellhead volume for WDW-397 and WDW-398 shall not exceed (1,200 gpm) X (1440 minutes/day) X (number of days in that month).

*WDW-398 is not, and will not be, completed to inject into the Frio D Sand

3. The facility shall cease injection by December 31, 2040.

4. The characteristics of the injected waste stream shall at all time conform to those discussed in Section 6.0 and listed in Table 6-3 in the 2017 petition reissuance document. The specific gravity of the waste stream shall remain within a range of 1.00 to 1.05 as measured at 68°F and 1 atmosphere. The reference temperature for the specific gravity analyzer will be 60°F.

5. The proposed approval for injection is limited to the following hazardous wastes:
   D002, D004, D005, D006, D007, D008, D009, D023, D024, D0025, D030, and F039 (for the constituents listed in Table 6-3 in the 2017 petition reissuance document)

6. The facility must petition for approval to inject additional hazardous wastes which are not included in Condition No. 5 above. The facility must also petition for approval to increase the concentration of any waste which would necessitate the recalculation of the limiting concentration reduction factor and the extent of the waste plume. Petition modifications and re-issuance should be made pursuant to 40 CFR §148.20 (e) or (f).

7. A flow profile survey, acceptable to the Agency shall be run annually in both WDW-397 and WDW-398 to confirm flow distribution into the Frio D, E&F and A/B Sands. The flow profile survey in WDW-397 will confirm that the injection rate into the Frio D Sand does not exceed 408 gpm for any monthly average total injection rate into WDW-397.

   In addition, for either WDW-397 or WDW-398, upon recompletion into any newly perforated portion of the Injection Interval, the following must be done:

   A flow profile survey, acceptable to the Agency shall be run. If the flow rate into the existing perforations becomes less than that currently modeled, the transmissivity and porosity employed in the modeling demonstration must be re-evaluated. This must be done prior to the re-establishment of injection of the wastes covered by this petition approval into the affected well and redemonstrated on an annual basis.

8. ExxonMobil shall annually submit to EPA the results of a bottomhole pressure survey for WDW-397 and WDW-398. These surveys shall be performed after shutting in each well for a period sufficient to allow the pressure in the injection interval to reach equilibrium, in accordance with 40 CFR §146.68(e)(1). The annual report should include a comparison of reservoir parameters determined from the falloff test with parameters used in the approved no migration petition reissuance. This should include a comparison of the current year's test results for the static and flowing bottomhole pressures with the values demonstrated in the approved petition reissuance and a comparison of the test results for transmissibility [Kh/μ (mD-ft/cP)] with the transmissibilities used in the approved petition reissuance demonstration for the pressure buildup and 10,000 year plume modeling.

9. ExxonMobil shall also annually submit to EPA a radioactive tracer survey and annulus pressure test for WDW-397 and WDW-398.

10. ExxonMobil shall notify EPA if WDW-397 or WDW-398 loses mechanical integrity, prior to any well work on WDW-397 or WDW-398, or if ExxonMobil plans to plug WDW-397 or WDW-398. If any well work or plugging is being planned, ExxonMobil shall also submit the procedures to EPA for review prior to commencing any work.

11. Upon the expiration, cancellation, reissuance, or modification, of the Texas Commission on Environmental Quality's Underground Injection Control (UIC) permit for WDW-397 and/or WDW-398, this exemption is subject to review. A new demonstration may be required if information shows that the basis for granting the exemption is no longer valid under 40 CFR §148.23 and §148.24.

In addition to the above conditions, this proposed approval of a petition for reissuance of an exemption is contingent on the validity of the information submitted in the ExxonMobil petition reissuance request for an exemption to the land disposal restrictions. Any final reissuance decision is subject to termination when any of the conditions occur which are listed in 40 CFR §148.24, including noncompliance, misrepresentation of relevant facts, or a determination that new information shows that the basis for approval is no longer valid.

April 14, 2011

FACT SHEET

EPA is proposing to approve a reissuance of an exemption to the land disposal restrictions for the following injection well facility:

Applicant:	Exxon Mobil Corporation Agrifos Pasadena Fertilizer Plant
Street Address:	2001 Jackson Road Pasadena, TX 77501-3447
Mailing Address:	1545 Rt 22 East, Room CC302 Annandale, New Jersey 08801
Permit Number:	WDW-397 WDW-398
Issuing Office:	U.S. Environmental Protection Agency Region 6 Fountain Place 1445 Ross Avenue Dallas, TX 75202-2733

Decision

Proposes to approve the Exxon Mobil Corporation (ExxonMobil) petition for reissuance request for the following injection well facility:

1. Approve injection wells WDW-397 and WDW-398, located at the Agrifos Pasadena Fertilizer Plant, for injection into the Frio D, E&F, and A/B Sands Injection Interval.

2. Define injection interval and injection zone with the following correlative depths:

Well	Injection Zone Depths (feet)	Injection Interval Depths (feet) Frio D, E&F, and A/B Sands
WDW-397	5347' - 7272'	5922' - 7272'
WDW-398	5370' - 7295'	5965' - 7295'

(WDW-397 depths referenced to 3/08/06 High Resolution Array Induction Density Neutron Longspace Sonic Log using Kelly Bushing (KB) depths in feet; WDW-398 depths referenced to 7/18/09 Array Induction Log using KB depths in feet; and Injection Zone and Interval bases are below the total depth of the corresponding well).

3. Define the specific gravity range of the waste stream as 1.00 to 1.05 at 68^0F and 1 atmosphere.

4. Define the limit for the cumulative volume injected into WDW-397 and WDW-398 on a monthly basis as follows:

   Frio D Sand: (360 gpm)(1440 minutes/day)(number of days in that month)*
   Frio E&F Sand: (1200 gpm)(1440 minutes/day)(number of days in that month)
   Frio A/B Sand: (1200 gpm)(1440 minutes/day)(number of days in that month)
   *WDW-398 will not be completed into the Frio D Sand

5. Define the operational life of WDW-397 and WDW-398 to December 31, 2020.

6. Define the list of exempted waste codes as D002, D004, D005, D006, D007, D008, D009, D023, D024, D025, D030, and F039 (for the constituents listed in Table 6-3 of the 2009 reissuance document).

7. Define the limiting concentration reduction factor as $1x10^{-5}$.

The following explains the derivation of the proposed decision, which is categorized according to the criteria outlined in 40 CFR Part 148. [53 Fed. Reg., 28118, (7/26/88)]

Summary

EPA land disposal restrictions promulgated under Section 3004 of the Resource Conservation and Recovery Act prohibit the injection of restricted hazardous waste unless a petitioner demonstrates to EPA there will be no migration of hazardous constituents from the injection zone for as long as the waste remains hazardous. These no migration demonstrations must meet the regulatory standards promulgated in 40 CFR 148 Subpart C. The demonstration includes a description of the well operations, geologic siting, and waste stream characteristics. The demonstration also includes modeling strategies which incorporate all the previously mentioned information and utilize mathematical equations to predict pressure buildup and waste movement. ExxonMobil successfully demonstrated no migration for the injection wells at the Agrifos Pasadena Fertilizer Plant. In accordance with 40 CFR §148.22(a)(4), ExxonMobil also submitted a signed certification statement from an authorized representative verifying that all submitted materials are true, accurate, and complete.

The ExxonMobil petition described the operation of its wells through a discussion of well construction, injection pressures, and injection volumes for both injection wells. The site location and geologic conditions were presented through a discussion of the depositional environments, well logs, cross-sections, well tests, geologic maps, and well records. The characteristics of the waste stream were described and evaluated for compatibility with the injection and confining zones. ExxonMobil incorporated all this information into a modeling strategy which predicted the pressure buildup and waste movement for the Agrifos site. The waste plume, under worst case conditions, was predicted to move up-gradient approximately 48,200 feet within the Frio A/B Sand in 10,000 years. Maximum vertical waste movement is approximately 805 feet in a mud-filled borehole and 759 feet within the injection zone strata. All of these distances are within the injection zone.

In addition to the reasonably conservative data and assumptions used in the no migration petition reissuance, the demonstration is even more conservative as it excludes degradation of the hazardous constituents in the injection zone. Examples of degradation which were not considered in the no migration demonstration are adsorption, oxidation, hydrolysis, temperature, and microbiological degradation.

Therefore, after a detailed and thorough review of ExxonMobil's petition for reissuance of the exemption, EPA proposes that ExxonMobil has demonstrated, to a reasonable degree of certainty, that there will be no migration of hazardous constituents from the injection zone for as long as the waste remains hazardous. This time period is defined by 40 CFR §148.20 as 10,000 years.

The factors considered in the formulation of this proposed petition decision are described below.

Hydrogeology

According to 40 CFR §148.20(a), a petitioner must submit hydrogeologic information in order to study the effects of the injection well activity. ExxonMobil provided hydrogeologic information in the petition which demonstrates that Underground Sources of Drinking Water (USDW) are properly protected. The base of the lowermost USDW is at approximately 3220 feet KB depth at the facility in WDW-397.

Artificial Penetrations

ExxonMobil submitted updated information on all artificial penetrations (wells) which penetrated the injection or confining zones within the area of review (area within a 2.0 mile radius of the injection well - 40 CFR §146.63) and the 10,000 year waste plume boundary. ExxonMobil actually submitted information on all artificial penetrations within a composite 2.0 mile radius around both the injection wells. All of these wells were evaluated and are plugged or constructed so that no waste would migrate from the injection zone due to pressure, buoyancy, or molecular diffusion in an artificial penetration. [40 CFR §§148.20(a)(1) & (2)(i)-(iii)]

Mechanical Integrity Testing Information

To assure that the wastes will reach the injection interval, a petitioner must submit the results of pressure and radioactive tracer tests according to 40 CFR §148.20(a)(2)(iv). These tests demonstrate mechanical integrity of a well's long string casing, injection tubing, annular seal, and bottom hole cement. The tests confirm that all injected fluids are entering the approved injection interval and that no fluids are channeling up the wellbore out of the injection zone near the wellbore. This petition for reissuance request demonstrates that ExxonMobil's disposal wells were tested and satisfy the above criteria:

Well Number	Pressure Test	Radioactive Tracer Survey
WDW-397	09/19/09	09/19/09
WDW-398	09/25/09	09/25/09

Regional and Local Geology

Class I hazardous waste injection wells must be located in areas that are geologically suitable. The injection zone must have sufficient permeability, porosity, thickness, and areal extent to prevent migration of fluids into USDWs. The confining zone must be laterally continuous and free of transmissive faults or fractures to prevent the movement of fluids into a USDW and must contain at least one formation capable of preventing vertical propagation of fractures. The ExxonMobil facility is sited in an area meeting these geologic criteria.

An evaluation of the structural and stratigraphic geology of the local and regional area determined that the ExxonMobil facility is located at a geologically suitable site. The injection zone is of sufficient permeability, porosity, thickness, and areal extent to meet requirements stated in 40 CFR Part 148. The containment interval is laterally continuous and free of transecting, transmissive faults or fractures over an area sufficient to prevent the movement of fluids out of the injection zone.

The geologic conditions for the ExxonMobil site were presented throughout the entire document with extensive discussions of the depositional environments, well logs, cross-sections, well tests, and geologic maps. The geologic cross-sections demonstrated the lateral relationships of the injection and confining zones. This information justified pressure buildup and 10,000 year modeling assumptions. Well pressure falloff tests at WDW-397 and WDW-398 and from offset injection wells support the injection zone permeability values used in the modeling.

Approximate depths to the tops of the geologic zones are as follows:

Geologic Zone	WDW-397	WDW-398
Confining Zone:	4850' - 5347'	4893' - 5370'
Injection Zone:	5347' - 7272'	5370' - 7295'
Injection Interval: Frio D, E&F, and A/B Sands	5922' - 7272'	5965' - 7295'

(WDW-397 depths referenced to 3/08/06 High Resolution Array Induction Neutron Density Longspace Sonic Log using KB depths in feet; WDW-398 depths referenced to 7/18/09 Array Induction Log using KB depths in feet; and Injection Zone and Interval bases are below the total depth of the corresponding well).

Modeling Strategy

According to 40 CFR §148.21(a)(3), in demonstrating no migration of hazardous constituents from the injection zone, predictive models shall have been verified and validated, shall be appropriate for the specific site, waste streams, and injection conditions of the operation, and shall be calibrated for existing sites. The modeling strategy for ExxonMobil's no migration demonstration consisted of a combination of numerical and analytical models. All the models used were identified as being verified and validated according to the information submitted in the petition for reissuance request. This information consisted of actual model documentation or references of methods or techniques that are widely accepted by the technical community. The petition reissuance document described the predictive models used and demonstrated the above criteria are met.

According to 40 CFR §148.21(a)(5), reasonably conservative values shall be used whenever values taken from the literature or estimated on the basis of known information are used instead of site-specific measurements. Many variables were required to be quantified in order to use the models used in the petition for reissuance request. All parameters were conservatively assigned to produce worst case conditions for pressure buildup and waste movement.

According to 40 CFR §148.21(a)(6), a petitioner must perform a sensitivity analysis in order to determine the effect of uncertainties associated with model parameters. ExxonMobil provided this sensitivity analysis in its petition for reissuance request. Through conservative model parameter assignments within this analysis, worst case scenarios for pressure buildup and waste movement were investigated and reported.

ExxonMobil incorporated two timeframes, the operational and post-operational periods, to complete the modeling demonstration for the petition reissuance request. The operational period included the maximum future injection volumes starting from the beginning of well operations through December 31, 2020, to predict the maximum pressure buildup in each injection interval. The 10,000 year post injection period was modeled to predict the maximum vertical molecular diffusion and the horizontal drift of the waste plumes.

To determine appropriate values to be used in the no migration demonstration, ExxonMobil reviewed site specific data acquired during the drilling of WDW-397 and WDW-398, well testing, and mechanical integrity tests. ExxonMobil also reviewed offset well information and applicable literature. Appropriate estimation techniques and testing protocols were used in accordance with 40 CFR §148.21(a)(2). A range was assigned to some parameters to maximize their impact on the demonstration. For example, higher permeabilities were assigned to maximize the lateral waste plume movement while lower permeabilities were assigned to maximize the predicted pressure buildup from injection operations in Frio Sands D, E&F, and A/B, within the injection interval. Area offset Class I and II injection wells were considered in the pressure buildup demonstration. Area faulting was also considered in the pressure buildup modeling. Faults A and B are located to the southeast of WDW-397 with Fault B, located approximately 1.4 miles away. Fault B was sealed in the pressure buildup models for Frio Sands E&F and A/B. The pressure buildup demonstration used lower transmissibility values and maximum future injection rates along with the sealing of Fault B to maximize the predicted pressure buildup in the Frio reservoir.

A conservative 10,000 year plume demonstration was constructed using worst-case reservoir characteristics for each sand, Frio D, E&F, and A/B Sands, within the injection interval to project the maximum movement of both the low and high density waste plumes. To maximize plume movement, these demonstrations included thinner net thickness, maximum future injection volumes, and higher mobilities based on historical pressure transient test results from WDW-397, WDW-398, and area injection wells. The low density plume used the low end of the requested density range and did not include a background gradient to maximize the updip plume movement. The high end of the requested density range was modeled using a 1.2 ft/year background gradient to maximize the downdip movement of the waste plume for Frio E&F and

A/B Sands, while the Frio D Sand's high density plume model did not include a background gradient due to being faulted downdip against a shale.

A vertical diffusion demonstration was included in this petition for reissuance request that calculated the maximum vertical movement into intact strata and a mud-filled wellbore. The demonstrations (lateral plume and diffusion) demonstrated the injected waste stream for each interval will not migrate vertically upward out of the injection zone or laterally within the injection zones to a point of discharge or interface with a USDW for the required 10,000 year demonstration period.

Quality Assurance

According to 40 CFR §148.21(a)(4), the ExxonMobil petition must demonstrate that proper quality assurance and quality control plans were followed in preparing the petition demonstrations. Specifically, ExxonMobil followed appropriate protocol in identifying and locating records for artificial penetrations within the area of review (AOR). Information regarding the geology, waste characterization [40 CFR §148.21(a)(1)], hydrogeology, reservoir modeling, and well construction was adequately verified or bounded by worst-case scenarios within the no migration petition reissuance demonstration.

Geochemistry and Injected Waste Compatibility

According to 40 CFR §148.21(b)(5), a petitioner must describe the geochemical conditions of the well site. The physical and chemical characteristics of the injection zone and the formation fluids in the injection zone were described in the petition. This description included a discussion of the compatibility of the injected waste with the injection zone. ExxonMobil also provided evaluations which demonstrated that the waste stream would not adversely alter the confining capabilities of the injection and confining zones.

Characteristics of Injected Fluids

According to 40 CFR §148.22(a), the characteristics of the injection waste stream must be adequately described. These characteristics are described in the petition reissuance and the descriptions are adequate and complete. The demonstration included injectate waste analysis that conformed to the standards outlined in 40 CFR §148.21(a)(1).

1. Operational Life

   End of Operational Life: December 31, 2020

   Maximum Incremental Pressure Buildup:

   Frio D Sand: 716 psi in WDW-397 at 6618 feet subsea depth (SS)
   688 psi in WDW-398

   Frio E&F Sand: 486 psi in WDW-397 at 6755 feet SS
   480 psi in WDW-398

   Frio A/B Sand: 543 psi in WDW-397 at 6990 feet SS
   537 psi in WDW-398

2. 10,000 Year Post-Injection Period:

Background gradient: 0 ft/yr updip and 1.2 ft/yr downdip
Waste density effects considered? Yes
Hydrocarbon production in the injection interval present to impact demonstration? No
Waste concentration reduction factor: $1x10^{-5}$
Maximum lateral waste movement:
Light plume:
Approximately 48,200 feet (9.13 miles) updip in a northwest direction from WDW-397 in the Frio D Sand
Heavy plume:
Approximately 19,300 feet (3.66 miles) downdip in a southeast direction from WDW-397 in the Frio A/B Sand
Maximum vertical waste movement:
Approximately 759 feet through intact strata and 805 feet in a mud-filled borehole.

Proposed Petition Reissuance Approval Conditions

This proposed petition for reissuance of exemption approval to allow the continued injection of restricted hazardous wastes is subject to the following conditions, which are necessary to assure that the standard in 40 CFR §148.20(a) is met. Noncompliance with any of these conditions is grounds for termination of the exemption in accordance with 40 CFR §148.24(a)(1). This proposed exemption reissuance is applicable to the ExxonMobil injection wells, WDW-397 and WDW-398, located at the Agrifos Fertilizer Plant in Pasadena, Texas.

1. Injection of restricted waste shall be limited to the following injection zone:

Well	Depth of Injection Zone
WDW-397	5347'-7272' KB
WDW-398	5370'-7295' KB

(WDW-397 depths referenced to 3/08/06 High Resolution Array Induction Density Neutron Longspace Sonic Log using KB depths in feet; WDW-398 depths referenced to 7/18/09 Array Induction Log using KB depths in feet).

The injection interval shall be defined by the following correlative log depths:

Well	Injection Interval	Depth of Injection Interval
WDW-397	Frio D, E&F, and A/B Sands	5922'-7272' KB
WDW-398	Frio D, E&F, and A/B Sands	5965'-7295' KB

(WDW-397 depths referenced to 3/08/06 High Resolution Array Induction Density Neutron Longspace Sonic Log using KB depths in feet; WDW-398 depths referenced to 7/18/09 Array Induction Log using KB depths in feet).

Injection of restricted waste shall also be limited to completion intervals which are within the defined injection interval and below a depth of 6210' KB in WDW-397 and 6276' KB in WDW-398.

2. The limit for the cumulative volume injected into WDW-397 and WDW-398 on a monthly basis is as follows:

Frio D Sand: (360 gpm)(1440 minutes/day)(number of days in that month)*
Frio E&F Sand: (1200 gpm)(1440 minutes/day)(number of days in that month)
Frio A/B Sand: (1200 gpm)(1440 minutes/day)(number of days in that month)
*WDW-398 will not be completed into the Frio D Sand

Additionally for WDW-397 and WDW-398 the total cumulative monthly wellhead volume shall not exceed (1200 gpm)(1440 minutes/day)(number of days in that month).

3. The facility shall cease injection into WDW-397 and WDW-398 by December 31, 2020.

4. The characteristics of the injected waste stream shall for WDW-397 and WDW-398 at all times conform to those discussed in Section 6 of the 2009 Petition Reissuance document for WDW-397 and WDW-398. The specific gravity of the wastestream for WDW-397 shall remain within a range from 1.00 to 1.05 at 68°F and 1 atmosphere.

5. The proposed approval for injection is limited to the following hazardous wastes: D002, D004, D005, D006, D007, D008, D009, D023, D024, D025, D030 and F039 (for the constituents listed in Table 6-3 in the 2009 Petition Reissuance document)

6. The facility must petition for approval to inject additional hazardous wastes which are not included in Condition No. 5, above. The facility must also petition for approval to increase the concentration of any waste which would necessitate the recalculation of the limiting concentration reduction factor and the extent of the waste plume. Petition reissuances and modifications should be made pursuant to §148.20(e) or (f).

7. For WDW-397 and WDW-398, a flow profile, acceptable to the Agency, shall be run in both wells annually to confirm flow distribution in the Frio D, E&F, and A/B Sands. The flow profile for WDW-397 should confirm that the injection rate into the Frio D Sand does not exceed 360 gpm.

In addition, for either WDW-397 or WDW-398, upon recompletion into any currently unperforated portion of the injection interval, a flow profile survey, acceptable to the Agency, shall be run to confirm flow distribution in the Frio D, E&F and A/B Sands.

8. ExxonMobil shall annually submit to EPA the results of a bottom hole pressure survey each for WDW-397 and WDW-398. These surveys shall be performed after shutting in each well for a period of time sufficient to allow the pressure in the injection interval to reach equilibrium, in accordance with §146.68(e)(1). The annual report should include a comparison of reservoir parameters determined from the falloff test with parameters used in the approved no migration petition.

9. Upon the expiration, cancellation, reissuance, or modifications of the Texas Commission on Environmental Quality's Underground Injection Control permit for Well Nos. WDW-397 and/or WDW-398, this exemption is subject to review. A new demonstration may be required if information shows that the basis for granting the exemption is no longer valid under 40 CFR §148.23 and §148.24.

In addition to the above conditions, this proposed petition for reissuance of exemption approval is contingent on the validity of the information submitted in the ExxonMobil petition reissuance request for an exemption to the land disposal restrictions. Any final reissuance decision is subject to termination when any of the conditions occur which are listed in 40 CFR §148.24, including noncompliance, misrepresentation of relevant facts, or a determination that new information shows that the basis for approval is no longer valid.

APPENDIX D

WELL CONSTRUCTION SUPPORTING DOCUMENTS

APPENDIX E

AOR SEARCH PROTOCOL AND NON-FRESHWATER ARTIFICIAL PENETRATIONS IN AOR

AOR SEARCH PROTOCOL

SOURCES OF IDENTIFICATION OF NON-FRESHWATER ARTIFICIAL PENETRATIONS

SOURCE	***TYPE OF INFORMATION ACQUIRED***
Texas Railroad Commission (TRC)	State Repository for oil and gas well records.
Maps	Commercially prepared oil and gas base maps which show operator, well name, approximate drilling data and field name.
County Maps	Commercially prepared oil and gas base maps compiled from "scout" tickets (completion information received from individual oil companies).
Field Maps	Maps prepared by TRC personnel for commercial base maps. Data include survey name, fee name, acreage configuration of tracts of land, operator name, and well location data.
Microfiche and Microfilm Records	Records filed with the TRC prior to 1973 are on microfiche and microfilm. Some TRC districts records are filmed through 1980.
Unit Cards	Microfiche records for wells which had records filed with the TRC prior to 1962.
Well Records; Folder Rolls	Duplicate copies of unit cards which sometimes contain information that was not included in the initial filming of the unit cards.
Well Records: Run 20 to 30 and A to I	Folder rolls which encompass a period of time from 1945 to 1960 and commonly have three to five rolls for a specific year and operator number.
Well Records: Major Runs	Special set of film that contains only information on records filed by major operators.
Well Records: Old Warehouse Film	Film set which contains some of the very earliest information filed with the TRC and includes oil and gas well records filed from 1919 to 1939.
Well Records: K, L, and M Film	Film set which includes portions of oil and gas well records filed with the TRC from 1963 to March 1966.
Potential Film	Filing system currently used at the TRC which contains film records of all wells that produce oil and/or gas and were placed in a designated oil or gas field.
Wildcat and Suspense Film	The wells on this set of film differ in that they were to be drilled in wildcat fields or fields which were not producing at the time the Application to Drill was submitted to the TRC.
Well Records Files	Hard copy files of data not yet placed on microfilm.
Suspense Files	These files contain the most recent information to be filed with the TRC Central Records Department.
Balcones Research Center University of Texas	The Balcones Research Center maintains a well sample library that contains approximately 750,000 drillers logs from the 1920s to the early 1960s. Drillers logs contain well location data, formation records, casing records, initial production potential, and sometimes the plugging information.
Commercial Log Libraries	Commercial libraries maintain extensive electric log collections as well as scout ticket files.
Scout Tickets	Scout tickets or "completion cards" usually include information on well name, location, drilling dates, total depth, elevation of ground surface, casing records, results of well, and completion data if the well was completed. Today, scout tickets of wells from a certain geographical area are sold by commercial companies which provide scout ticket data.

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MAP ID NO. 1

WILHITE OIL CO.
H.S.C. NAVIGATION DIST.

FORM 1

RAILROAD COMMISSION OF TEXAS—OIL AND GAS DIVISION

Austin, Texas

IMPORTANT NOTICE: This is the first record the RAILROAD COMMISSION has of any well. It is made the basis of all subsequent correspondence. **Hence it Must be correct.**

NOTICE OF INTENTION TO DRILL OR DEEPEN

(USE FORM ... FOR NOTICE OF INTENTION TO PLUG)

To comply with Rules ... Railroad Commission of Texas governing Oil and Gas Conservation in Texas.)

READ CAREFULLY AND COMPLY FULLY

In order that it may be ascertained whether or not the proposed location covered by this notice conforms to the applicable spacing regulations set down by the Railroad Commission, there are two important footages that must be shown, that is, THE NEAREST DISTANCE OF PROPOSED LOCATION FROM LEASE OR PROPERTY LINE AND DISTANCE OF PROPOSED LOCATION FROM THE NEAREST WELL ON THE SAME LEASE. Do not begin operations on any location before filing Form 1, and do not begin operations on any location not conforming to the spacing rules for such location until you receive written order from the commission granting permission.

For the purpose of this determination draw on the back hereof a neat, accurate sketch, made to scale, of this lease, block or lot locating thereon the proposed site for this location with reference to the two nearest lease lines. Also show the nearest wells on all sides of this location and the distances from the proposed location to those wells. Give names and addresses of adjoining lease or property owners, and designate all property by lease and company name. You may attach a blue print showing this information if you so desire.

DO NOT CONFUSE SURVEY LINES WITH LEASE LINES. IF THE SKETCH OR BLUE PRINT SHOWS ONLY A SECTION, BLOCK, OR LOT OUT OF YOUR LEASE, DESIGNATE SAME AS BEING ONLY THAT PART OF THE LEASE.

Where the size of the tract will permit, use scale of one ... feet ... of less than ... acres use scale of one ... DESIGNATE SCALE TO WHICH PLAT OR SKETCH IS DRAWN. ALSO DESIGNATE NORTHERLY DIRECTION ON THE SKETCH OR PLAT.

* * * * *

FILL IN BELOW IN THE SPACES RESERVED FOR THIS PURPOSE THE FOOTAGES ASKED FOR:

... distance from proposed location to property or ... 950 feet

... proposed location to nearest drilling, completed ... well ... feet

* * * * *

... REFERRED TO ON REVERSE ... ATTACH TO THIS NOTICE A BLUE PRINT ... THIS INFORMATION

This notice must be delivered to Deputy Supervisor of your district before drilling, or deepening. He will forward to the Railroad Commission, Austin, Texas.

Date July 7, 1939.

Name of company or operator

Name Roy Wilhite et al.

Address c/o W. L. Hood 506 Citz State Bnk Bldg

City Houston

Description of farm or lease:

Name (Fee owner) Harris Co Navigation Dist.

Number of Acres 721 Well No. 1

Survey Ezekiel Thomas

Section No. — Block No. —

Located in — Field

Harris Co County

1½ Miles N direction from

Galena Park nearest postoffice or town.

Rotary or Cable Tools Rotary

Date work will start drilling at once

Depth to which you propose to drill 5000 feet.

Date work will start deepening

If Lease Purchased with one or more wells drilled From Whom Purchased?

Name

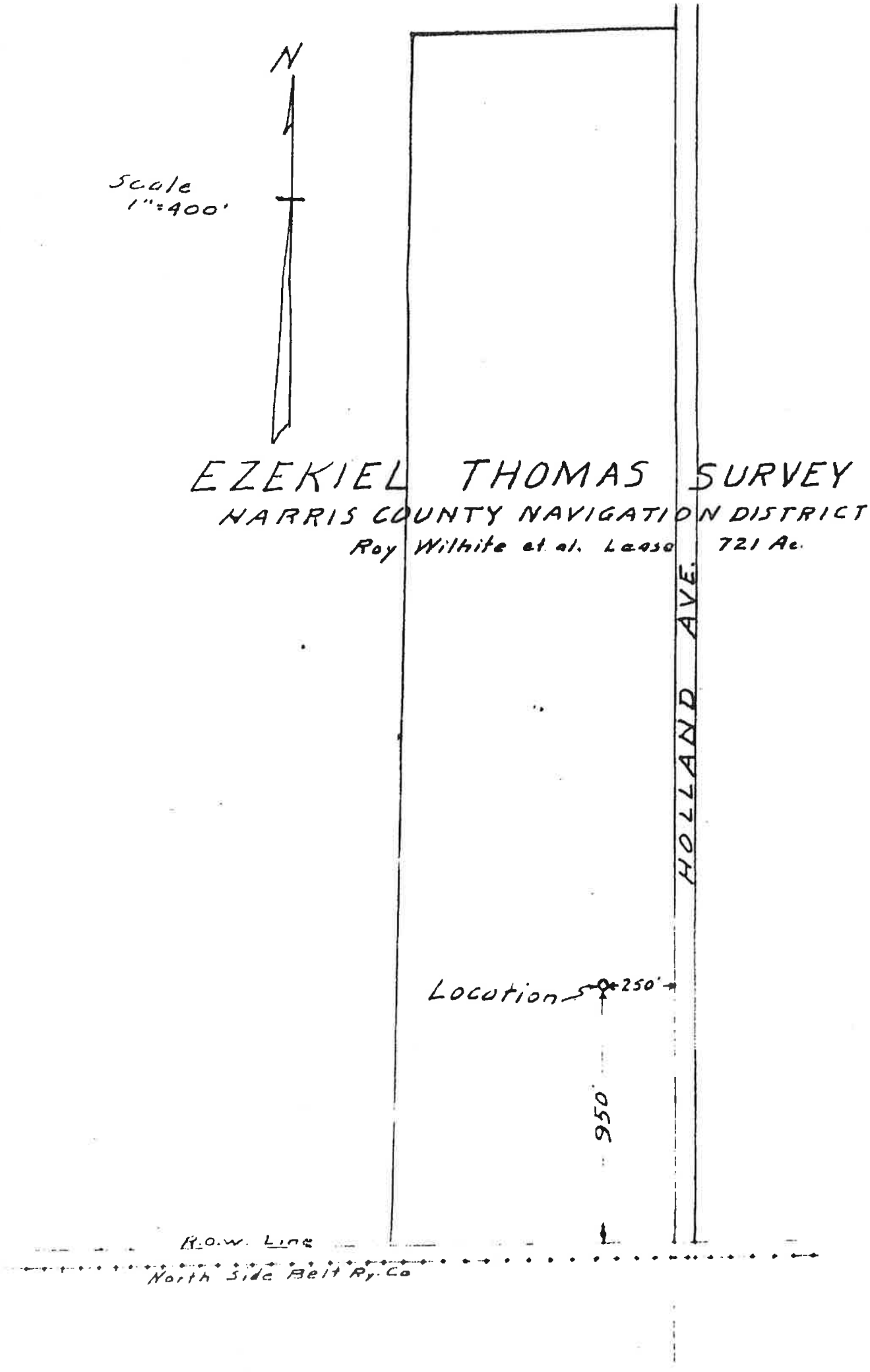
Address

RECEIVED AUSTIN ... 1939 OIL AND GAS DIVISION

RECEIVED 1939 OIL & GAS DIVISION

... in which well is located.

1


N
Scale
1"=400'
EZEKIEL THOMAS SURVEY
HARRIS COUNTY NAVIGATION DISTRICT
Roy Wilhite et al. Lease 721 Ac.
HOLLAND AVE.
Location
250'
950'
R.O.W. Line
North Side Belt Ry. Co

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PI/Dwights PLUS Online Scout Ticket

Date: 10/22/2002
Time: 7:09 AM

1

1 HOUSTON-HARRIS
State: TEXAS
County: HARRIS
Operator: WILHITE L R
API: 42201062140000 IC:
Initial Class: WF
Target Objective:
Final Well Class: WF
Status: D&A
Field: WILDCAT
Permit: on DEC 15, 1939
First Report Date: DEC 15, 1939
Projected TD: Formation:
Hole Direction: VERTICAL

Location
NS EW Footage:
Dist, Abs, Survey: RR DISTRICT 03 73 E THOMAS
Blk, Lge, Lot, Labor:
Township, Dir, Sect:
Surface remark:
Lat/Long: 29.7482500/ -95.2332700 TB
PBHL:
Dist, Abs, Survey: RR DISTRICT 03
Blk, Lge, Lot, Labor:
Township, Dir, Sect:
From Surface: TVD:
PBHL Remark:
ABHL:
Dist, Abs, Survey: RR DISTRICT 03
Blk, Lge, Lot, Labor:
Township, Dir, Sect:
ABHL: From Surface: TVD:
ABHL Remark:
Location Narrative: Type Remark
LOCATION 950 FS 250 FE TR

Dates and Depths
Spud: AUG 15, 1939 Spud Date Code:
TD: 5508 on
LTD:
PlugBack Depth:
Completed: NOV 22, 1939
Formation @ TD: 000UNKWN Name: UNKNOWN
Ref. Elevation: 39 DF
KB. Elevation:
Ground Elevation: 33 GR
Contractor:
Rig Release Date: Rig #

Core Id: 001
Formation:
Interval: 1610 -1610 Rec:
Core Type: SDWL Show Type: WET
Description: SD SW

(1)

Core Id: 002
Formation:
Interval: 3230 -3230 Rec:
Core Type: SDWL Show Type: WET
Description: A A

Core Id: 003
Formation:
Interval: 3440 -3440 Rec:
Core Type: SDWL Show Type: WET
Description: A A

Core Id: 004
Formation:
Interval: 4265 -4265 Rec:
Core Type: SDWL Show Type: WET
Description: A A

Core Id: 005
Formation:
Interval: 4272 -4272 Rec:
Core Type: SDWL Show Type:
Description: NO REC

Core Id: 006
Formation:
Interval: 4345 -4345 Rec:
Core Type: SDWL Show Type: WET
Description: SD SW

Core Id: 007
Formation:
Interval: 4460 -4460 Rec:
Core Type: SDWL Show Type:
Description: NO REC

Core Id: 008
Formation:
Interval: 4655 -4655 Rec:
Core Type: SDWL Show Type: WET
Description: SD SW

Core Id: 009
Formation:
Interval: 4830 -4830 Rec:
Core Type: SDWL Show Type:
Description: NO REC

Core Id: 010
Formation:
Interval: 5135 -5135 Rec:
Core Type: SDWL Show Type:
Description: NO REC

Casing, Liner, Tubing
Casing 10 3/4 IN @ 130 w/ sx

Drilling Journal
Participating Interests 1PART INTERESTS-

Formations and Logs
Log # 1 EL @ 0 - 5160
Logging Co. 153789

Top Formation	Measured Depth	Top TVD	Base Depth	Base TVD	Source	Lith-ology	Age code
DISCORBIS	4409				SPL		653
DISCORBIS	4560				SPL		653
HET /HETEROSTEGINA/	4830				SPL		653

Operator Address
Street or PO Box:

MAP ID# 1

LANE Electrolog WELLS COMPANY

Location of Well
250' W HOLLAND AVE. 350' N OF N RT OF WAY LINE OF NORTH SIDE RWY. N OF GALENA PARK

COMPANY: WILMITE OIL CO.
WELL: HARRIS CO. NAVIGATION DIST. #1
RUN NO.: 1 FILING NO.: [illegible]
FIELD: WILDCAT
SURVEY: E. THOMAS
COUNTY OR PARISH: HARRIS
STATE: TEXAS
DATE: 11/18/[illegible]

COUNTY OR PARISH: HARRIS
WELL: HARRIS CO. NAV. DIST. #1
SURVEY: E. THOMAS
COMPANY: WILMITE OIL CO.

WELL RECORD

Casing Shoe Depth — Bottom Log: [illegible] ft. Electrolog: [illegible] ft.
Bottom Depth Max. Depth Reached — Bottom Log: [illegible] ft. Electrolog: [illegible] ft.
Footage Recorded: [illegible] ft.

DIAMETER OF HOLE
[illegible]

MUD RECORD

NATURAL 9.5 — Mud: NATURAL — Weight: [illegible] — Viscosity: [illegible] — Resistivity: [illegible] @ [illegible] °F — 46 — 4.4 @ 80 °F

REMARKS

THIRD CURVE DEPTH OF INVESTIGATION SIX FEET
FOURTH CURVE DEPTH OF INVESTIGATION FOURTEEN FEET
FIFTH CURVE DEPTH OF INVESTIGATION TWENTY-FIVE FEET

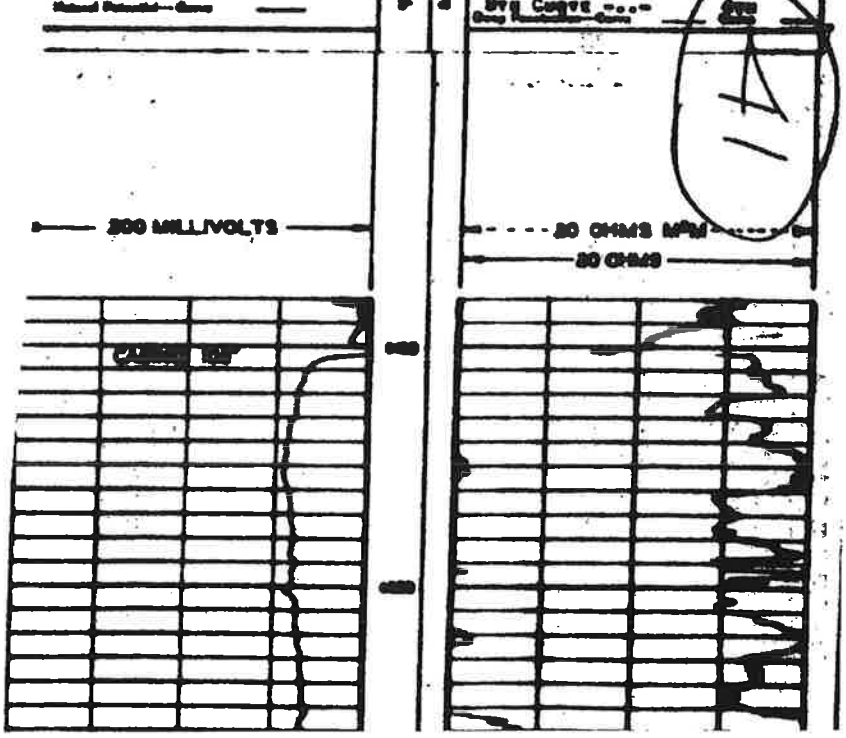
Depths Measured from ROTARY TABLE — Ordered By: WILMITE
Recorded By: [illegible] — Witnessed By: WILMITE

NATURAL POTENTIAL

Natural Potential—Curve

RESISTIVITY

Shallow Penetration—Curve
Dry Curve
Deep Penetration—Curve



42201062140000

General Information

1 HOUSTON-HARRIS

Data Source:	PI	**Country:**	UNITED STATES
API/UWI:	42201062140000	**IC:**	
State/Prov:	TEXAS	**County:**	HARRIS
Field:	WILDCAT	**Operator:**	WILHITE L R
Current Status:		**Current Operator:**	WILHITE L R
Reg. Well Status/Date:			
Initial Class:	NEW FIELD WILDCAT (WF)	**Final Well Class:**	NEW FIELD WILDCAT-DRY (INCLUDING TEMPORARILY ABANDONED WELL) (WF)
Final Status:	DRY & ABANDONED	**Target Objective:**	
Permit:	on Aug 05, 1939	**Hole Direction:**	VERTICAL
First Report Date:	Dec 15, 1939	**Abandonment Date:**	
Projected TD:		**Projected Formation:**	
Basin:	GULF COAST BASIN	**Formation at TD:**	UNKNOWN
		PRODFit Form at TD:	
Play Name:	MISC GULF COAST BASIN	**Play Type:**	CONVENTIONAL ONSHORE (CONV ONSHR)

Location

Footage NS EW Origin:	3925 FN 5875 FE TX SUR/POR/GRANT			**Data Source:**	PI
Dist, Abs, Survey:	RR DISTRICT 03 73	THOMAS EZEKIEL			
Blk, Lge, Lot, Labor:					
Township, Section:					
Lat/Long:	+29.7481221 -95.2357676	**Lat/Long Source:**	IH	**Datum:**	NAD27

Location Narrative

Data Source	Type	Remark
PI	LOCATION	950 FS 250 FE TR

Dates and Depths

Data Source:	PI		
Spud:	Aug 15, 1939	**Spud Date Code:**	
TD:	5,508 FT	**TD Date:**	
TVD:		**PlugBack Depth:**	
Formation Code TD:	000UNKWN	**Formation Name TD:**	UNKNOWN
PRODFit Form Code TD:		**PRODFit Form Name TD:**	
Ref. Elevation:	39 FT DF	**KB. Elevation:**	
Ground Elevation:	33 FT GR	**LTD:**	
Contractor:			
Completed:	Nov 22, 1939	**Final Drilling:**	
Rig Release Date:		**Rig #:**	
Tool:			

Cores

CORE ID: 001

Formation:		**Data Source:**	PI
PRODFit Top Form:		**PRODFit Base Form:**	
Interval:	1610-1610	**Rec:**	
Core Type:	SDWL	**Show Type:**	WET
Description:	SD SW		

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CORE ID: 002

Formation:		**Data Source:**	PI
PRODFit Top Form:		**PRODFit Base Form:**	
Interval:	3230-3230	**Rec:**	
Core Type:	SDWL	**Show Type:**	WET
Description:	A A		

CORE ID: 003

Formation:		**Data Source:**	PI
PRODFit Top Form:		**PRODFit Base Form:**	
Interval:	3440-3440	**Rec:**	
Core Type:	SDWL	**Show Type:**	WET
Description:	A A		

CORE ID: 004

Formation:		**Data Source:**	PI
PRODFit Top Form:		**PRODFit Base Form:**	
Interval:	4265-4265	**Rec:**	
Core Type:	SDWL	**Show Type:**	WET
Description:	A A		

CORE ID: 005

Formation:		**Data Source:**	PI
PRODFit Top Form:		**PRODFit Base Form:**	
Interval:	4272-4272	**Rec:**	
Core Type:	SDWL	**Show Type:**	
Description:	NO REC		

CORE ID: 006

Formation:		**Data Source:**	PI
PRODFit Top Form:		**PRODFit Base Form:**	
Interval:	4345-4345	**Rec:**	
Core Type:	SDWL	**Show Type:**	WET
Description:	SD SW		

CORE ID: 007

Formation:		**Data Source:**	PI
PRODFit Top Form:		**PRODFit Base Form:**	
Interval:	4460-4460	**Rec:**	
Core Type:	SDWL	**Show Type:**	
Description:	NO REC		

CORE ID: 008

Formation:		**Data Source:**	PI
PRODFit Top Form:		**PRODFit Base Form:**	
Interval:	4655-4655	**Rec:**	
Core Type:	SDWL	**Show Type:**	WET
Description:	SD SW		

CORE ID: 009

Formation:		**Data Source:**	PI
PRODFit Top Form:		**PRODFit Base Form:**	
Interval:	4830-4830	**Rec:**	
Core Type:	SDWL	**Show Type:**	
Description:	NO REC		

CORE ID: 010

Formation:		**Data Source:**	PI
PRODFit Top Form:		**PRODFit Base Form:**	
Interval:	5135-5135	**Rec:**	
Core Type:	SDWL	**Show Type:**	

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Description: NO REC

Casing, Liner, Tubing

Casing	Data Source	Size	Base Depth		Cement	PRODFit Top Formation Code	PRODFit Base Formation Code
CASING	PI	10 3/4 IN	130	FT			

Participating Interests Journal

Nbr	Data Source	Remark
1	PI	PART INTERESTS-

Formations

Form Code	Top Source	Interpreter	Form Name	Top Depth	Top TVD	Base Depth	Base TVD	Desc	Lithology	Age Code
653DCRB	PI		DISCORBIS	4,409				SPL		653
653DCRB	PI		DISCORBIS	4,560				SPL		653
653HRSG	PI		HETEROSTEGINA	4,830				SPL		653

Logs

Log	Data Source	Type	Top Depth	Base Depth	Logging Co.	BHT	since circ.
1	PI	EL	0	5,160	153789		

Dwights Energydata Narrative

Accumulated through 1997

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MAP ID NO. 2

RYCADE OIL CORP.
W.R. PARKER 1

FORM 1.

RAILROAD COMMISSION OF TEXAS—OIL AND GAS DIVISION

Austin, Texas.

IMPORTANT NOTICE—This is the first record the Railroad Commission has of any well. It is made the basis of all subsequent records. Hence it must be accurate.

NOTIFICATION OF INTENTION TO DRILL, DEEPEN, PLUG OR SHOOT

(To comply with Rules of the Railroad Commission of Texas, governing Oil and Gas Conservation in Texas.)

DESCRIPTION OF PROPERTY:

In order that the well covered by this notice may be definitely and accurately located on maps in the office of the commission, draw in the space below, in ink a sketch of the lease or block and lot, giving name and number, and indicate thereon the exact location of the well. Also show the distance, in feet, of the well from the two nearest boundaries of the lease and from the nearest well. Give names of the adjoining lease or property owners.

Scale: 400 feet to 1 inch. If less than 2 acres, 40 feet to 1 inch.

Use back hereof for sketch if necessary.

NORTH

WEST

EAST

SOUTH

8132

RECEIVED

APR 15 1925

HOUSTON

2

This notice must be delivered to Deputy Supervisor or to the Railroad Commission as prescribed by Rules 9, 10 and 23, before drilling, deepening, plugging or shooting, so that the Commission may, if it desires, have a representative present.

Date April 14, 1925.

Name of company or operator

Name Ryeade Oil Corporation.

Address Box 1817, Houston, Texas.

Name of farm or lease

Name W. R. Parker.

Address Houston, Texas.

County Harris County.

Sec. No. ..... Block No. .....

Survey Harris A. Wilson

Number of acres 126

Well No. 1 Elevation .....
(Above sea level).

Date drilling is to start April 18, 1925.

Depth to which you propose to drill 4500 feet.

Date you wish to plug ..... Well No. .....
(You must also give notice to adjacent lessees).

Date you wish to shoot ..... Well No. .....

Number of quarts to be used .....

Deliver to Deputy Supervisor in charge of that field or mail to

RAILROAD COMMISSION OF TEXAS, Austin, Texas.

Rule 37. No well for oil or gas shall hereafter be commenced nearer than three hundred (300) feet to any other completed or drilling well on the same or adjacent tract or farm; and no well shall be drilled nearer than one hundred and fifty (150) feet to any property line; provided, that the Commission, in order to prevent waste or to protect vested rights, will grant exceptions permitting drilling within shorter distances than as above prescribed, upon application filed fully stating the facts, notice thereof having first been given to all adjacent lessees affected thereby. Rule 37 shall not for the present be enforced within the proven oil fields of the Gulf Coast.

Form 1018b-M228-524-6m

FORM 1.

RAILROAD COMMISSION OF TEXAS—OIL AND GAS DIVISION

Austin, Texas

[illegible] the Railroad Commission [illegible] Hence it must be accurate.

NOTICE AND OF INTENTION TO DRILL, DEEPEN, PLUG OR SHOOT

[illegible] the Railroad Commission of Texas governing oil and gas conservation in [illegible]

DESCRIPTION OF PROPERTY.

In order that the well referred to in this notice may be definitely and accurately located on maps in the office of the commission, draw in the space below, in ink a sketch of the lease or block and lot, giving name and number, and indicate thereon the **exact location** of the well. **Also show the distance, in feet, of the well from the two nearest boundaries of the lease and from the nearest well.** Give names of the adjoining lease or property owners.

Scale: 100 feet to 1 inch. If less than 2 acres, 10 feet to 1 inch.

Use back hereof for sketch if necessary.

NORTH

WEST

EAST

8132

RECEIVED

APR 15 1925

[illegible]

HOUSTON

SOUTH

This notice must be delivered to Deputy Supervisor or to the Railroad Commission as prescribed by Rules 9, 10 and 23, before drilling, deepening, plugging or shooting, so that the Commission may, if it desires, have a representative present.

Date April 14, 1925.

Name of company or operator

Name Rycade Oil Corporation.

Address Box 1317, Houston, Texas.

Name of farm or lease

Name W. R. Parker.

Address Houston, Texas.

County Harris County.

Sec. No. ..... Block No. .....

Survey Harris & Wilson

Number of acres 126

Well No. 1 Elevation .....
(Above sea level).

Date drilling is to start April 18, 1925.

Depth to which you propose to drill 4500 feet.

Date you wish to plug ..... Well No. .....
(You must also give notice to adjacent lessees).

Date you wish to shoot ..... Well No. .....

Number of quarts to be used .....

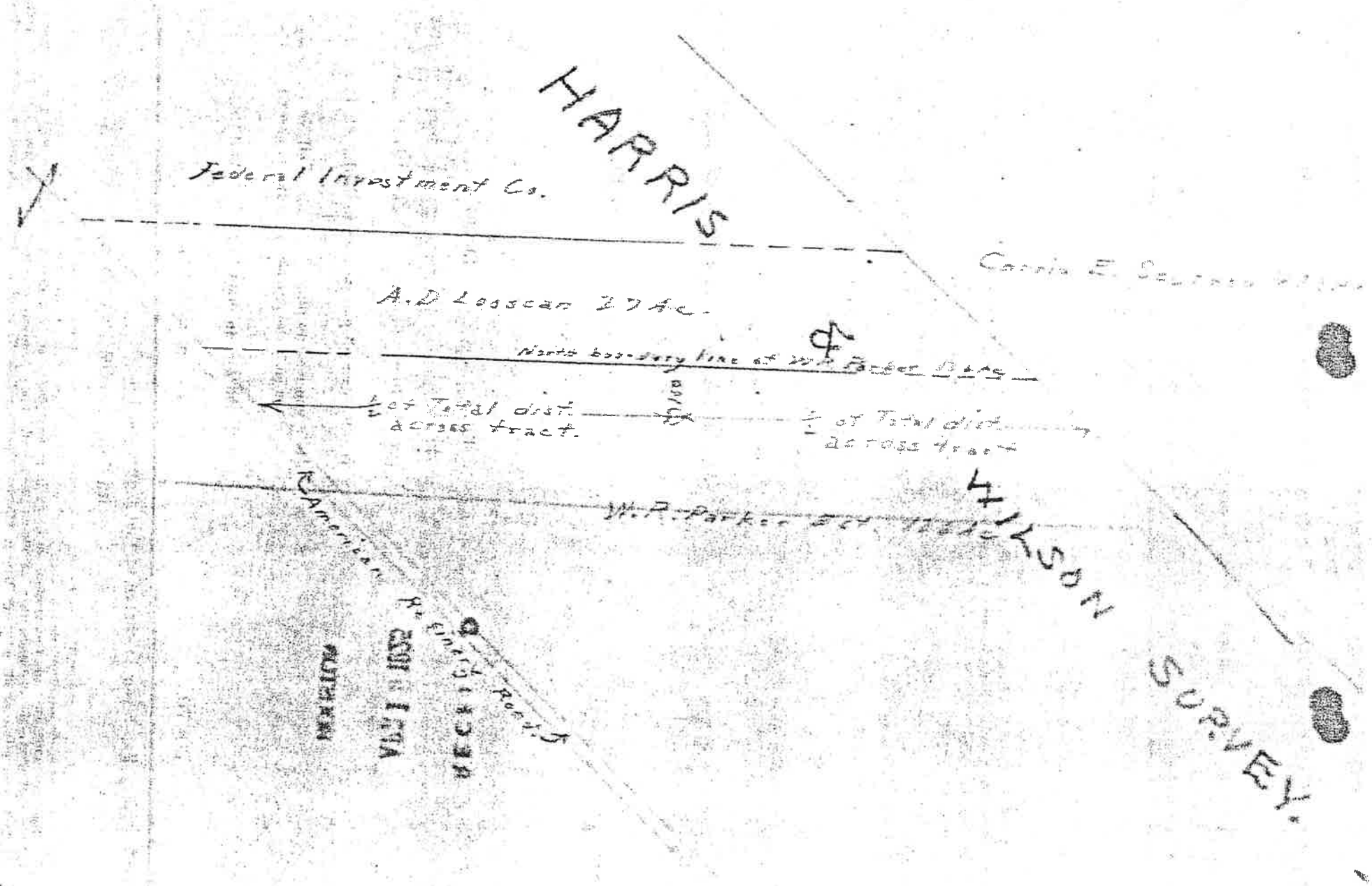
Deliver to Deputy Supervisor in charge of that field or mail to

RAILROAD COMMISSION OF TEXAS, Austin, Texas.

Rule 37. No well for oil or gas shall hereafter be commenced nearer than three hundred (300) feet to any other completed or drilling well on the same or adjacent tract or farm; and no well shall be drilled nearer than one hundred and fifty (150) feet to any property line; provided, that the Commission, in order to prevent waste or to protect vested rights, will grant exceptions permitting drilling within shorter distances than as above prescribed, upon application filed fully stating the facts, notice thereof having first been given to all adjacent lessees affected thereby. Rule 37 shall not for the present be enforced within the proven oil fields of the Gulf Coast.

BURKAN STA. CO., AUSTIN

Form 1013b-9336-521-5m


HARRIS
Federal Investment Co.
A.D Loosean 27 Ac.
North boundary line of W.P. Parker
½ of Total dist. across tract.
½ of Total dist. across tract
W.P. Parker
WILSON SURVEY.
American Refinery Road
MARION
VOL 1 1032
RECEIVED

RECEIVED

JUN 20 1925

FORM 1.

RAILROAD COMMISSION OF TEXAS—OIL AND GAS DIVISION

Austin, Texas

IMPORTANT NOTICE: This is the first record the Railroad Commission has of any well. It is taken as basis of all subsequent correspondence. Hence it must be accurate.

NOTIFICATION OF INTENTION TO DRILL, DEEPEN, PLUG OR SHOOT

(To comply with Rules of the Railroad Commission of Texas, governing Oil and Gas Conservation in Texas.)

DESCRIPTION OF PROPERTY:

In order that the well covered by this notice may be definitely and accurately located on maps in the office of the commission, draw in the space below, in ink a sketch of the lease or block and lot, giving name and number, and indicate thereon the **exact location** of the well. **Also show the distance, in feet, of the well from the two nearest boundaries of the lease and from the nearest well.** Give names of the adjoining lease or property owners.

Scale: 400 feet to 1 inch. If less than 2 acres, 40 feet to 1 inch.

Use back hereof for sketch if necessary.

NORTH

8132

WEST

EAST

RECEIVED

SOUTH

This notice must be delivered to Deputy Supervisor or to the Railroad Commission as prescribed by Rules 9, 10 and 23, before drilling, deepening, plugging or shooting, so that the Commission may, if it desires, have a representative present.

Date June 20, 1925

Name of company or operator

Name Ryonde Oil Corporation,

Address Box 1917, Houston, Texas

Name of farm or lease

Name W. R. Parker,

Address Houston, Texas.

County Harris County

Sec. No. ..... Block No. .....

Survey Harris & Wilson

Number of acres 126

Well No. 1 Elevation .....
(Above sea level).

Date drilling is to start .....

Depth to which you propose to drill ..... feet.
Drilled to depth of 4025'

Date you wish to plug 6-25-25 Well No. .....
(You must also give notice to adjacent lessees).

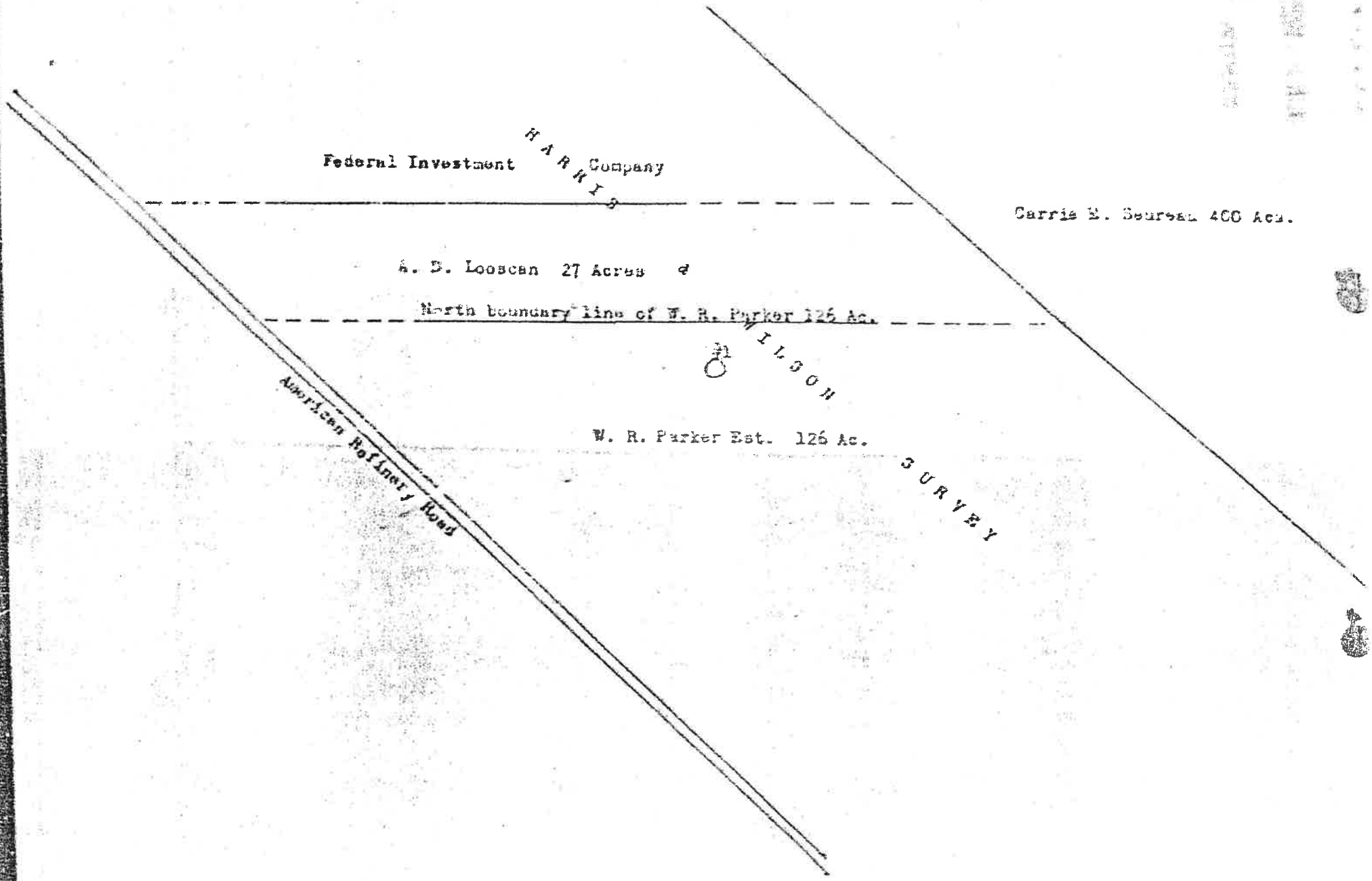
Date you wish to shoot ..... Well No. .....

Number of quarts to be used .....

Deliver to Deputy Supervisor in charge of that field or mail to

RAILROAD COMMISSION OF TEXAS, Austin, Texas.

Rule 37. No oil or gas shall hereafter be commenced nearer than three hundred (300) feet to any other completed or drilling well on the same or adjacent tract or farm; and no well shall be drilled nearer than one hundred and fifty (150) feet to any property line, provided that the Commission, in order to prevent waste or to protect vested rights, will grant exceptions permitting drilling within shorter distances than as above prescribed, upon application filed fully stating the facts, notice thereof having been given to all adjacent lessees affected thereby. Rule 37 shall not for the present be enforced within the proven oil fields of the Gulf Coast.


Federal Investment Company
HARRIS
Carrie E. Seureau 400 Acs.
A. D. Looscan 27 Acres
North boundary line of W. R. Parker 126 Ac.
WILSON
W. R. Parker Est. 126 Ac.
SURVEY
American Refinery Road

41372

Form No. 2

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SEP 15 1925
HOUSTON

WELL RECORD

Mail to Railroad Commission of Texas, Austin, Texas

Company Rycade Oil Corporation Address P. O. Box 1017, Houston, Texas.

County Harris Survey Harris & Wilson Block No. Sec. No.

Lessor W. R. Parker Well No. 1 Elevation (Above sea level)

Drilling commenced April 24, 1925. Drilling completed June 25, 1925.

Correspondence regarding this well should be sent to: Name Rycade Oil Corporation Address P. O. Box 1017, Houston, Texas.

CASING RECORD

SIZE	PUT IN WELL Ft.	PUT IN WELL In.	PULLED OUT Ft.	PULLED OUT In.	LEFT IN WELL Ft.	LEFT IN WELL In.	PACKERS AND SHOES
12"	314	0	240	0	274	0	Set Shoe

41372

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SEP 1 1925
RAILROAD COMMISSION

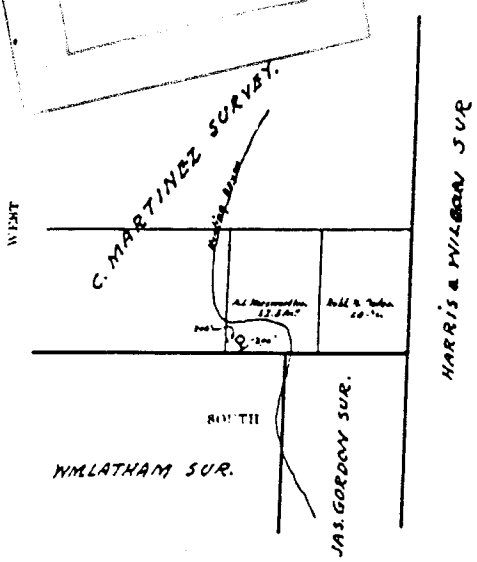
Initial Production of Gas—Volume None Pressure None

Initial Production of Oil: Barrels None

Remarks:

OCT 2 2000

DESCRIPTION OF PROPERTY:



GENERAL REMARKS:

Very light oil show at 1903 no other shows in well. Pumped hole full of mud, pulled part of casing and set plug in top of well.

Form 1013B-8824-425-10m

FORMATION RECORD

Show all Formations, especially all sands and character and contents thereof.

FORMATIONS	TOP	BOTTOM	REMARKS
Surface	0	20	
Clay	20	140	
Sand	140	165	
Red shale	165	235	
Sand and gravel	235	245	
Gumbo	245	325	
Boulders and gravel	325	360	
Gumbo	360	380	
Shale with streaks of rock sand	380	437	
Gummy shale and gumbo	437	514	
Gumbo	514	526	Set 12" casing 514'
Sand	526	535	
Gumbo	535	600	
Sand and boulders	600	650	
Gumbo shale and boulders broken	650	720	
Gumbo	720	730	
Sand and boulders	730	750	
Gumbo	750	800	
Sand shale and boulders	800	870	
Gumbo	870	895	
Sand and boulders	895	920	
Gumbo	920	980	
Sand and boulders	980	1000	
Gumbo	1000	1040	
Sand shale and boulders	1040	1080	
Gumbo	1080	1105	
Sand	1105	1120	
Gumbo and boulders	1120	1200	
Sand and boulders	1200	1260	
Gumbo	1260	1360	

OCT 2 2000

Method of shutting off water Pumping in mud & setting casing set shoe Is water completely shut off? Yes

Amount of water with oil No water; no oil per cent

I, Fred W. Dallas being first duly sworn, on oath state that I have knowledge of the facts and matter herein set forth and that the same are true and correct.

Fred W Dallas
Representative of Company

Subscribed and sworn to before me this the 12th day of September 1925

[signature]
Notary Public

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SEP 15 1925

Formation Record #2

Formation	Top	Bottom	Remarks
Boulders and gumbo	1360	1390	
Pack sand and boulders	1390	1395	
Sand and boulders	1395	1400	Cored 1395 N S
Gumbo and boulders	1400	1440	
Sand	1440	1445	
Gumbo	1445	1480	
Boulders and shale	1480	1555	
Gumbo	1555	1575	
Sand	1575	1580	Cored 1580 N S
Hard sand	1580	1590	
Lime and boulders	1590	1620	
Sand and boulders	1620	1680	
Gumbo	1680	1715	
Gumbo and boulders	1715	1735	
Gumbo lime and boulders	1735	1763	
Boulders	1763	1795	
Gumbo	1795	1813	
Gumbo and boulders	1813	1873	
Gumbo	1873	1898	
Hard sand	1898	1918	Cored 1903 slight sho
Gumbo	1918	1935	
Hard rock and sand	1935	1950	" 1950 N S
Hard sand rock	1950	1963	
Sand	1963	1965	" 1965 N S
Sand and lime hard streaks	1965	2012	" 2010 N S
Gumbo	2012	2035	
Pack sand and boulders	2035	2044	
Sand	2044	2055	Cored 2050 N S
Hard lime and boulders	2055	2070	
Gumbo	2070	2165	
Sandy lime and pyrites	2165	2115	
Gumbo and lime	2115	2305	
Sand	2305	2325	Cored 2308 N S
Sandy lime and shale	2325	2350	
Gumbo and lime	2350	2380	
Sandy shale	2380	2385	Cored 2380 N S
Soft Blue lime rock	2385	2390	
Gumbo and lime	2390 ?	2480	
Hard lime shale and boulders	2480	2560	
Shale lime and gumbo	2560	2626	
Lime shale and gumbo	2626	2690	Cored 2630 N S
Gumbo	2690	2720	
Gumbo lime and boulders	2720	2750	
Lime and shale	2750	2770	
Sandy lime, shale & boulders	2770	2855	
Shale and gumbo	2855	2873	
Sand	2873	2880	Cored 2875 N S
Gumbo	2880	2900	
Lime shale and boulders	2900	2960	
Gumbo	2960	3014	
Sand	3014	3027	Cored 3015
Gumbo	3027	3035	
Shale lime and sand	3035	3053	
Hard gumbo and lime	3053	3073	
Shale and lime	3073	3132	Reduced hole to 8 7/8
Sand	3132	3145	Cored 3143
Gumbo and lime	3145	3198	
Limey shale and boulders	3198	3250	
Hard sandy lime and boulders	3250	3255	
Sand and boulders	3255	3259	
Hard sticky shale	3259	3355	
Hard shale and lime	3355	3358	Cored 3358
Gumbo and shale	3358	3393	
Gumbo	3393	3428	
Sand shale "Hard"	3428	3440	Cored 3433
Gummy shale	3440	3452	
Hard lime & shale	3452	3487	Cored 3452

GWQ-S
OCT 2 2000

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SEP 1 5 1925
RAILROAD COMM

Formation Record--#3

SEP 15 1

Formation	Top	bottom	Remarks
Gummy shale and lime	3487	3515	
Sticky shale	3515	3535	
Sand and lime	3535	3537	Cored 3537
Hard sand	3537	3545	Cored 3545
Hard sand shale & lime	3545	3580	
Shale	3580	3605	
Gummy shale	3605	3620	
Sand and shale	3620	3640	Cored 3675
Gummy shale	3640	3665	
Shale gumbo and boulders	3665	3690	
Shale and gumbo	3690	3720	
Shale hard	3720	3745	
Gummy shale	3745	3795	
Sand and shale	3795	3800	Cored 3797
Shale	3800	3829	
Shale and boulders	3829	3834	
Hard sand	3834	3838	
Hard sand and pyrites boul.	3838	3845	
Shale	3845	3895	Cored 3848
Shale and lime	3895	3912	
Hard shale	3912	3915	
Lime shale and boulders	3915	3950	
hard shale	3950	3953	Cored 3950
Shale and boulders lime	3953	3967	
Sand rock	3967	3972	
Lime and gumbo	3972	4005	
Gummy shale	4005	4020	Cored 4020 N S

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SEP 1 1925
RAILROAD COMMISSION

OCT 2 2000

FORM 4

SEP 15 1925

RAILROAD COMMISSION OF TEXAS

Rule 10. Plugging Dry and Abandoned Wells.—(a) All abandoned or dry wells shall immediately be plugged according to the following rules:

(b) Manner of Plugging.—All dry or abandoned wells must be plugged by confining all oil, gas or water to the strata in which they occur by the use of mud laden fluid filling well to the top as directed by the Commission or by some other method approved by the Commission. In case of rotary drilling, in addition to mud laden fluid, cement and plugs may be used, and shall be used when so directed.

(c) Notice of Intention to Plug.—Before plugging dry and abandoned wells, notice shall be given to the Railroad Commission of Texas or its conservation agent in the field, and to all available adjoining lease and property owners, and representatives of such lease and property owners may, in addition to the oil and gas conservation agent of the Commission, be present to witness the plugging of these wells if they so desire, but plugging shall not be delayed because of inability to deliver notices to adjoining lease or property owners. (Rule 10 amended November 13, 1921.)

Rule 11. Log and Plugging Record to Be Filed with Commission.—The owner or operator shall, upon the completion of any well, file with the Railroad Commission of Texas a complete record or log of the same, duly signed and sworn to, upon blanks to be furnished by the Commission upon application; and upon plugging any well for any cause whatsoever, a complete record of the plugging thereof shall be made out and duly verified on blanks to be furnished by the Commission.

PLUGGING RECORD

Company Rycade Oil Corporation Address P.O.Box 1817, Houston,Texas.

Sec. No. ..... Blk. No. ..... Survey harris & Wilson County Harris

Well No. 1 Name of Lease W. R. Parker No. of Acres 126

Date well was plugged June 25, 1925.

Character of Well (Whether it was Oil or Gas or Dry) Dry

Total depth 4020 feet. Top of each producing sand No

Was the well filled with mud-laden fluid, according to regulations of the Railroad Commission? Yes

How was mud applied? Pumped

Were plugs used? Yes If so, show all shoulders left for casing, depth of each, and size of casing used, size and kind of plugs used, and depth placed. Also amount of cement and rock.

Was well shot? No

RECEIVED SEP 1 1925 RAILROAD

Show depth found and thickness of all water, oil and gas formations 1898 to 1918 light oil show; 235 to 245 water; 730 to 750 water; 1200 to 1260 water; 3132 to 3145 water.

The names of adjacent lease, royalty and land-owners with their address in each instance is as follows:

6W0-5 OCT 2 2000

Was notice given before plugging to all available adjacent lease owners as required by subdivision (c) of Rule 10? Yes

I, Fred W. Dallas being first duly sworn on oath, state that I have knowledge of the facts and matter herein set forth and that the same are true and correct.

Name Fred W Dallas Title Supt
Representative of Company

Subscribed and sworn to before me this 12th day of September, 1925.

Notary Public Harris County, Texas.

Correspondence regarding this well should be addressed to:

Name Rycade Oil Corporation Address P. O. Box 1817, Houston, Texas.

Form 117b-M494-125-8m

42201028310000

General Information

1 PARKER W P

Data Source:	PI	**Country:**	UNITED STATES
API/UWI:	42201028310000	**IC:**	
State/Prov:	TEXAS	**County:**	HARRIS
Field:	WILDCAT	**Operator:**	RYCADE OIL CORP
Current Status:		**Current Operator:**	RYCADE OIL CORP
Reg. Well Status/Date:			
Initial Class:	NEW FIELD WILDCAT (WF)	**Final Well Class:**	NEW FIELD WILDCAT-DRY (INCLUDING TEMPORARILY ABANDONED WELL) (WF)
Final Status:	DRY & ABANDONED	**Target Objective:**	
Permit:	on Apr 21, 1925	**Hole Direction:**	VERTICAL
First Report Date:	Dec 17, 1991	**Abandonment Date:**	
Projected TD:		**Projected Formation:**	
Basin:	GULF COAST BASIN	**Formation at TD:**	FRIO
		PRODFit Form at TD:	
Play Name:	MISC GULF COAST BASIN	**Play Type:**	CONVENTIONAL ONSHORE (CONV ONSHR)

Location

Footage NS EW Origin:	10414 FN 3000 FW TX SUR/POR/GRANT			**Data Source:**	PI
Dist, Abs, Survey:	RR DISTRICT 03 32	HARRIS WM P & WILSON R			
Blk, Lge, Lot, Labor:					
Township, Section:					
Lat/Long:	+29.7626296 -95.2087399	**Lat/Long Source:**	IH	**Datum:**	NAD27

Location Narrative

Data Source	Type	Remark
PI	LOCATION	3000 FWL OF SUR 1600 S OF MARKET ST TOAD 10 MI E HOUSTON, TX
PI	SCALED_FOOT	SCALED
PI	DST_TOWN	2.0 MI NE GALENA PARK, TX
PI	DST_FIELD	2.1 MI SE CLINTON SOUTH FLD(VICKSBURG)

Dates and Depths

Data Source:	PI		
Spud:	May 01, 1925	**Spud Date Code:**	A
TD:	4,020 FT	**TD Date:**	
TVD:		**PlugBack Depth:**	
Formation Code TD:	653FRIO	**Formation Name TD:**	FRIO
PRODFit Form Code TD:		**PRODFit Form Name TD:**	
Ref. Elevation:		**KB. Elevation:**	
Ground Elevation:	28 FT EG	**LTD:**	
Contractor:	NOT REPORTED		
Completed:	Jun 22, 1925	**Final Drilling:**	
Rig Release Date:		**Rig #:**	
Tool:			

Casing, Liner, Tubing

Narrative	Data Source	Type	Remark
	PI	CASING	CSG DETAILS NOT AVAILABLE

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Dwights Energydata Narrative

Accumulated through 1997

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MAP ID NO. 3

J.C. STRIBLING & CO.
C.E. SEUREAU 1

[illegible]

[illegible]

IMPORTANT NOTICE: This is the [illegible] basis of all subsequent correspondence. [illegible]

NOTIFICATION OF INTENTION TO DRILL, DEEPEN, PLUG OR SHOOT

(To comply with Orders of the Railroad Commission of Texas, governing Oil and Gas Operations in Texas.)

DESCRIPTION OF PROPERTY:

In order that the well covered by this notice may be definitely and accurately located on maps in the office of the Commission, draw in the space below, in ink a sketch of the lease or block and lot, giving name and number, and indicate thereon the exact location of the well. Also show the distance, in feet, of the well from the two nearest boundaries of the lease, and from the nearest well. Give names of the adjoining lease or property owners.

Scale: 400 feet to 1 inch. If less than 2 acres, 40 feet to 1 inch.

Use back hereof for sketch if necessary.

NORTH

Blue Print attached.

WEST

EAST

5168

SOUTH

This notice must be delivered to Deputy Supervisor or to the Railroad Commission as prescribed by Rules 9, 10 and 11, before drilling, deepening, plugging or shooting, so that the Commission may, if it desires, have a representative present.

Date [illegible]

County [illegible]

Survey [illegible]

Block No. ——— Lot No. ———

Number of acres 297½

Lessor or Owner:

Name [illegible]

Address [illegible]

Lessee or Sub-Lessee:

Name J. C. [illegible]

Address [illegible]

Date Drilling is to start [illegible] Well No. 1

Depth to which you propose to drill [illegible] feet.

Date you wish to plug ——— Well No. ———
(You must also give notice to adjacent lessees).

Date you wish to shoot ——— Well No. ———

Number of quarts to be used [illegible]

Deliver to Deputy Supervisor in charge of that field or mail to

RAILROAD COMMISSION OF TEXAS, Austin, Texas.

Rule 37. No well for oil or gas shall hereafter be commenced nearer than three hundred (300) feet to any other completed or drilling well on the same or adjoining tract or farm; and no well shall be drilled nearer than one hundred and fifty (150) feet to any property line; provided, that the Commission, in order to prevent waste or to protect vested rights, will grant exceptions permitting drilling within shorter distances than as above prescribed, upon application filed fully stating the facts, notice thereof having first been given to all adjacent lessees affected thereby. Rule 37 shall not for the present be enforced within the proven oil fields of the Gulf Coast.

[illegible]

NOV 27 1922

LOCATION OF J. C. STRIBLING & CO. NO. 1,
CARRIE SEWREAU LEASE, HARRIS & WILSON SURVEY
ON GREEN'S BAYOU, HARRIS COUNTY,
TEXAS.

5168

1417.6 feet North 45 deg. West along the West line of Carrie Sewreau Lease from a 3" galv. pipe the Southwest corner of same, and at right angles to said West line North 45 deg. East 1841.9 feet is 1363 feet South of the center line of the Market Street Road and 2960 feet West of the waters edge of Green's Bayou.

J. C. Stribling & Co.
By P. A. Harvey.

WELL RECORD

Filed in Railroad Commission of Texas, Austin, Texas

Harris County Company J. C. Stribling Co.

Survey Harris & Wilson Block No. — Lot No. — Acres 3973

Lessor Carrie E. Sorrow, La Porte, Texas. Well No. 1

Drilling Commenced Sept. 15th 19 22 Drilling Completed Nov. 15th, 19 22

Correspondence regarding this well should be sent to Name J. C. Stribling Address Llano, Texas.

CASING RECORD

SIZE	PUT IN WELL Ft.	PUT IN WELL In.	PULLED OUT Ft.	PULLED OUT In.	LEFT IN WELL Ft.	LEFT IN WELL In.	PACKERS AND SHOES
12"	286	—	286	—	0	0	None

5168

Initial Production of Gas—Volume ..... Pressure .....

Initial Production of Oil—Barrels .....

Remarks: Abandoned at 3700 Ft. as dry hole

DESCRIPTION OF PROPERTY:

NORTH

WEST

Blue Print Attached

EAST

SOUTH

GENERAL REMARKS:

Hole was filled with heavy mud after 12" casing was pulled

[illegible]

Formations	Top	Bottom	Remarks: Top	Bottom	
Clay & Sand	0	75	1874	1916	Gumbo & Gyp.
Sandy Gumbo	75	120	1916	1920	Lime Rock
Sand	120	175	1920	1925	Sand Rock
Sand & Gumbo	175	185	1925	1932	Gumbo
Gumbo	185	210	1932	1970	Gyp. & Lime Rock
Sandy Gumbo	210	220	1970	1980	[illegible]
Sand (Water)	220	240	1980	2004	Gumbo
Gumbo (Brown)	240	250	2004	2035	Shale & Sand
Sandy Gumbo	250	360	2035	2040	Rock
Sand	360	390	2040	2050	Sand (Cored Good Gas Sand No water)
Gumbo	390	645			
Sandy Gumbo	645	682	2050	2068	Gumbo
Gumbo	682	730	2068	2072	Sand Rock
Blue Shale	730	738	2072	2125	Sand & Bolders
Gumbo Tough	738	765	2125	2190	Gumbo
Sandy Gumbo	765	800	2190	2216	Sand (Cored Salt Water)
Hard Shale (Took Core)	800	817	2216	2288	Gumbo
Shale & Sand	817	877	2288	2360	Sand (Cored Salt Water)
Sandy Gumbo	877	897	2360	2395	Gumbo Tough
Sandy Gumbo	897	905	2395	2410	Gumbo
Sand	905	915	2410	2425	Shale & Sand
Gumbo	915	935	2425	2445	Gumbo & Bldrs.
Sandy Gumbo	935	950	2445	2450	Gumbo
Sand	950	960	2450	2460	Shale & Sand
Gumbo	960	985	2460	2480	Gumbo
Sandy Gumbo	985	1045	2480	2520	Gummy Shale
Sand Water	1045	1055	2520	2540	Gumbo
Sand "	1055	1059	2540	2545	Shale (Hard) Blue
Gumbo	1059	1086	2545	2595	Gumbo
Sand & Bldrs. (Took Core	1086	1105	2595	2602	Sahle (Hard) Blue
Gumbo	1105	1170	2602	2727	Gumbo-Lime & Shale
Sand & Bldrs.	1170	1180	2727	2739	Lime Rock
" " "	1180	1210	2739	2760	Gumbo & Gyp.
Gumbo	1210	1235	2760	2772	Gumbo
Lime Rock	1235	1238	2772	2792	Gumbo & Gyp.
" "	1238	1243	2792	2875	Gumbo with Lime
Gumbo	1243	1275	2875	2879	Bolders & Shale
Sand	1275	1282	2879	2940	Gumbo (Tough)
Sand (Cored Salt Water)	1282	1314	2940	2960	Sand
Gumbo	1314	1355	2960	3003	Gumbo
Sandy Shale	1355	1375	3003	3025	Shale & Lime
Gumbo	1375	1425	3025	3040	Gumbo & Gyp.
Sandy Gumbo	1425	1439	3040	3200	Gumbo
Gumbo (Tough)	1439	1584	3200	3217	Gumbo & Bolders
Lime Rock	1584	1590	3217	3325	Gumbo
Gumbo & Gyp.	1590	1592	3325	3360	Shale & Bolders
Gumbo	1592	1604	3360	3560	Gumbo
Sand (Cored Salt Water)	1604	1690	3560	3564	Shale (Hard)
Gumbo	1690	1705	3564	3595	Gumbo
Sandy Gumbo	1705	1720	3595	3614	Sand (Cored Salt Water)
Sand & Bolders	1720	1740	3614	3660	Gumbo
Sandy Gumbo	1740	1755	3660	3700	Sand (Hard) Cored Salt Water.
Gumbo	1755	1805			
Shale & Lime	1805	1815			
Shale	1815	1820			
Gumbo	1820	1860			
Sand (Cored showed gas)	1860	1894			

Method of shutting off water ✓ Is water completely shut off? ✓

Amount of water with oil ✓ %

I, R. A. Harvey being first duly sworn on oath, state that I have knowledge of the facts and matter herein set forth and that the same are true and correct.

R. A. Harvey
Representative of Company

Subscribed and sworn to before me this the 20th day of November 19 22

Maude Rogers Hughes
Notary Public

[illegible]

PLUGGING RECORD

County Harris Company J. C. Stribling & Co. Well No. 1

Lessor Carrie E. Seureau Survey Harris & Wilson Block No. _____ Lot No. _____

Date well was plugged November 15th, 1922

Character of well (whether it was Oil or Gas or Dry) Dry

Total depth 3700 feet. Top of each producing sand ✓ feet

Was the well filled with mud-laden fluid according to regulations of the Railroad Commission? Yes

Was well shot? No Show all shoulders left for casing, depth of each, and size of casing used, size and kind of plugs used, and depth placed. Also amount of cement and rock.

5168

Show depth found and thickness of all water, oil and gas formations Log attached

The names of adjacent lease, royalty and land-owners with their address in each instance is as follows:

R. W. Harris

Briscoe Estate

Parker Estate

Galena Signal Oil Co.

Greens Bayou

Was notice given before plugging to all available adjacent lease owners as required by subdivision (c) of Rule 10?

_____ Representative of Company.

Correspondence regarding this well should be addressed to: Name J. C. Stribling

Address Llano, Texas.

I, R. A. Harvey being first duly sworn on oath state that I have knowledge of the facts and matter herein set forth and that the same are true and correct.

Subscribed and sworn to before me this 20th day of November 1922

Maude Rogers Hughes

Notary Public Harris County, Texas

42201028300000

General Information

1 SEUREAUX

Data Source:	PI	**Country:**	UNITED STATES
API/UWI:	42201028300000	**IC:**	
State/Prov:	TEXAS	**County:**	HARRIS
Field:	WILDCAT	**Operator:**	STRIBLING J C ETAL
Current Status:		**Current Operator:**	STRIBLING J C ETAL
Reg. Well Status/Date:			
Initial Class:	NEW FIELD WILDCAT (WF)	**Final Well Class:**	NEW FIELD WILDCAT-DRY (INCLUDING TEMPORARILY ABANDONED WELL) (WF)
Final Status:	DRY & ABANDONED	**Target Objective:**	
Permit:	on Sep 02, 1922	**Hole Direction:**	VERTICAL
First Report Date:	Dec 18, 1991	**Abandonment Date:**	
Projected TD:		**Projected Formation:**	UNKNOWN
Basin:	GULF COAST BASIN	**Formation at TD:**	UNKNOWN
		PRODFit Form at TD:	
Play Name:	MISC GULF COAST BASIN	**Play Type:**	CONVENTIONAL ONSHORE (CONV ONSHR)

Location

Footage NS EW Origin: **Data Source:** PI

Dist, Abs, Survey: RR DISTRICT 03 32 H & W

Blk, Lge, Lot, Labor:

Township, Section:

Lat/Long: +29.7624476 -95.1991845 **Lat/Long Source:** IH **Datum:** NAD27

Location Narrative

Data Source	Type	Remark
PI	LOCATION	AT GREENS BAYOU-1/2 MI W OF GREENS BAYOU ON MARKET ST ROAD

Dates and Depths

Data Source:	PI		
Spud:	Sep 12, 1922	**Spud Date Code:**	
TD:	3,700 FT	**TD Date:**	
TVD:		**PlugBack Depth:**	
Formation Code TD:	000UNKWN	**Formation Name TD:**	UNKNOWN
PRODFit Form Code TD:		**PRODFit Form Name TD:**	
Ref. Elevation:		**KB. Elevation:**	
Ground Elevation:	23 FT EG	**LTD:**	
Contractor:			
Completed:	Dec 27, 1922	**Final Drilling:**	
Rig Release Date:		**Rig #:**	
Tool:			

Dwights Energydata Narrative

Accumulated through 1997

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MAP ID NO. 4

L.U. ROWNTREE
GREENS BAYOU HOMESITE 1

Please Refer to File No._____ Form 1

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

NOTICE OF INTENTION TO DRILL OR DEEPEN

FILE IN DUPLICATE WITH DEPUTY SUPERVISOR OF DISTRICT IN WHICH WELL IS LOCATED

READ CAREFULLY AND COMPLY FULLY

In order that it may be ascertained whether or not the proposed location covered by this notice conforms to the applicable spacing regulations set down by the Railroad Commission, there are two important footages that must be shown; that is, THE NEAREST DISTANCE OF PROPOSED LOCATION FROM LEASE OR PROPERTY LINE AND DISTANCE OF PROPOSED LOCATION FROM THE NEAREST WELL ON THE SAME LEASE. Do not begin operation on any location before filing Form 1, and do not begin operations on any location not conforming to the spacing rules for such location until you receive written order from the Commission granting permission.

For the purpose of this determination draw on the back side hereof a neat, accurate sketch, made to scale, of this lease, block, or lot locating thereon the proposed site for this location with reference to the two nearest lease lines. Also show the nearest wells on all sides of this location and the distances from the proposed location to these wells. Give names and addresses of adjoining lease or property owners, and designate all property by lease and company name. You may attach a blue print showing this information if you so desire.

DO NOT CONFUSE SURVEY LINES WITH LEASE LINES. IF THE SKETCH OR BLUE PRINT SHOWS ONLY A SECTION, BLOCK OR LOT OUT OF YOUR LEASE, DESIGNATE SAME AS BEING ONLY THAT PART OF THE LEASE.

Where the size of the tract will permit, use scale of one inch equaling 400 feet; if less than 2 acres use scale of one inch equaling 100 feet. DESIGNATE SCALE TO WHICH PLAT OR SKETCH IS DRAWN. ALSO DESIGNATE NORTHERLY DIRECTION ON THE SKETCH OR PLAT.

FILL IN BELOW IN THE SPACES RESERVED FOR THIS PURPOSE THE FOOTAGES ASKED FOR:

Nearest distance from proposed location to property or lease line 750 feet.

Distance from proposed location to nearest drilling, completed, or applied for well on same lease X X feet.

This notice must be delivered to Deputy Supervisor of your District before drilling, or deepening, five full days prior to spudding in.

Date December 31, 1940

Name of company or operator

Name L. Underwood Rowntree

Address 1956 West Lamar St.

City Houston Texas

Description of farm or lease:

Name (Fee owner) Green's Bayou Homesite Co.

Number of Acres 750 Well No. 1

Number of wells on lease None

Survey S. C. Hirons

Elevation 33 Feet (Above Sea Level)

Section No. 8 Block No. X X

Located in Green's Bayou Area Field (If Wildcat state above) - Yes - Wildcat

Harris County

12 miles East direction from Houston nearest postoffice or town.

Rotary or Cable Tools Rotary

Date work will start drilling 1-5-41

Depth to which you propose to drill 3000 feet.

Date work will start deepening X X

If Lease Purchased with one or more wells drilled From Whom Purchased?

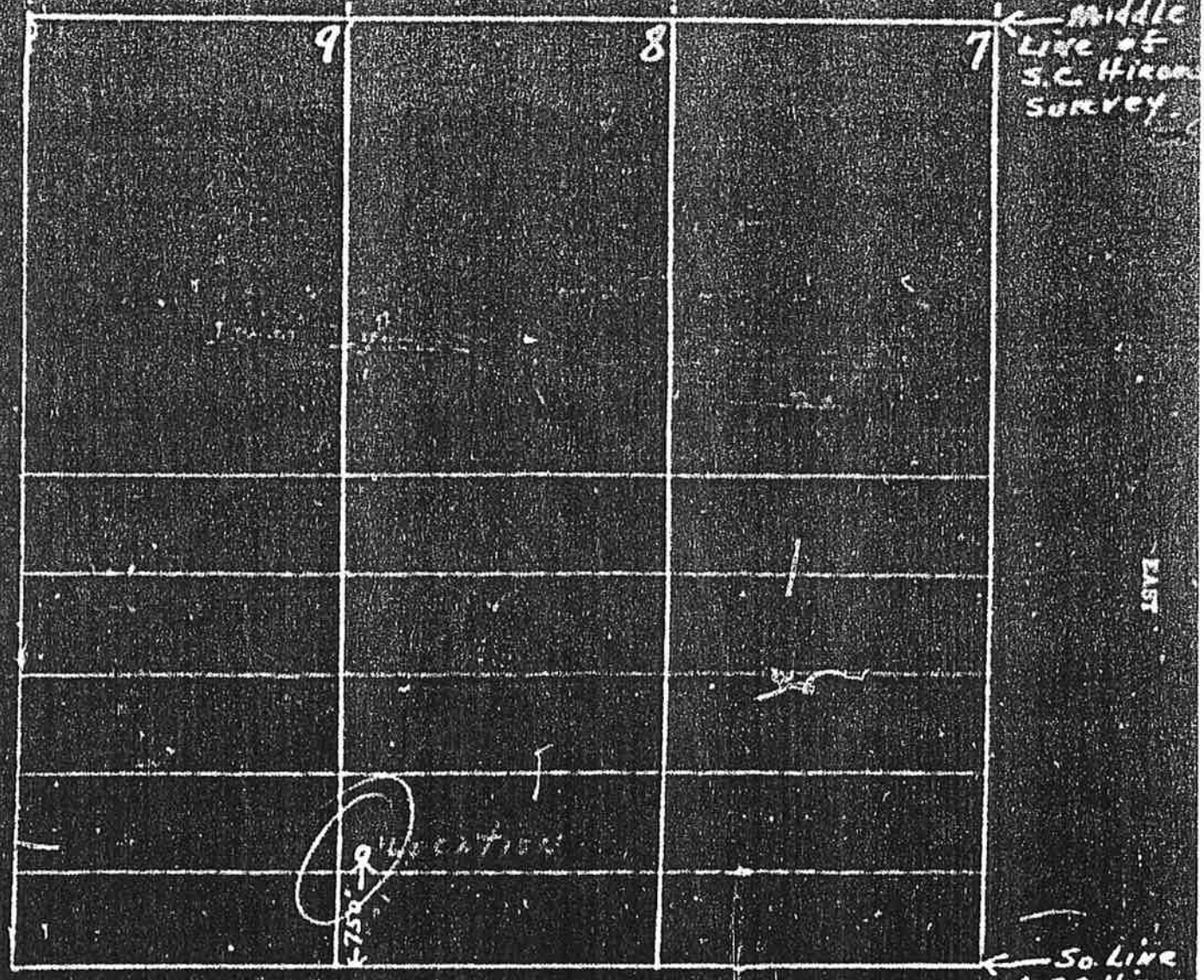
Name X X

Address X X

RECEIVED

DEC 31 1940

NORTH



WEST

EAST

Note: Each Section of Green's Bayou Homesite Co. Lands comprises 200 Acres. Well location is on North 20 of South 40 of Section 8, 750' North of South Line and 100' East of West Line Thereof.

Scale of Plat.....

SOUTH

I, L. Underwood Rountree, being first duly sworn on oath, state that I have knowledge of the facts and matter herein set forth and that the same are true and correct.

Name L. Underwood Rountree Title Operator

Subscribed and sworn to before me this 31 day of Dec 1940

Albert R. Young

Correspondence regarding this well should be addressed to:

==========

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PI/Dwights PLUS Online Scout Ticket

Date: 10/23/2002
Time: 7:25 AM

4

1 GREEN BAYOU HOMESIT
State: TEXAS
County: HARRIS
Operator: ROWNTREE L U
API: 42201028110000 IC:
Initial Class: WF
Target Objective:
Final Well Class: WF
Status: D&A
Field: WILDCAT
Permit: on DEC 23, 1940
First Report Date: DEC 15, 1941
Projected TD: 3000 Formation: MIOCENE
Hole Direction: VERTICAL

Location
NS EW Footage:
Dist, Abs, Survey: RR DISTRICT 03 33 S C HIROMS
Blk, Lge, Lot, Labor:
Township, Dir, Sect:
Surface remark:
Lat/Long: 29.7729200/ -95.1856500 TB
PBHL:
Dist, Abs, Survey: RR DISTRICT 03
Blk, Lge, Lot, Labor:
Township, Dir, Sect:
From Surface: TVD:
PBHL Remark:
ABHL:
Dist, Abs, Survey: RR DISTRICT 03
Blk, Lge, Lot, Labor:
Township, Dir, Sect:
ABHL: From Surface: TVD:
ABHL Remark:
Location Narrative: Type Remark
LOCATION 750 NSL & 150 EWL OF BLK #8

Dates and Depths
Spud: JAN 02, 1941 Spud Date Code:
TD: 2500 on
LTD:
PlugBack Depth:
Completed: APR 21, 1941
Formation @ TD: 000UNKWN Name: UNKNOWN
Ref. Elevation: 34 DF
KB. Elevation:
Ground Elevation: 33 GR
Contractor:
Rig Release Date: Rig #

Casing, Liner, Tubing
Casing 8 IN @ 518 w/ sx

Operator Address
Street or PO Box:

42201028110000

General Information

1 GREEN BAYOU HOMESIT

Data Source:	PI	**Country:**	UNITED STATES
API/UWI:	42201028110000	**IC:**	
State/Prov:	TEXAS	**County:**	HARRIS
Field:	WILDCAT	**Operator:**	ROWNTREE L U
Current Status:		**Current Operator:**	ROWNTREE L U
Reg. Well Status/Date:			
Initial Class:	NEW FIELD WILDCAT (WF)	**Final Well Class:**	NEW FIELD WILDCAT-DRY (INCLUDING TEMPORARILY ABANDONED WELL) (WF)
Final Status:	DRY & ABANDONED	**Target Objective:**	
Permit:	on Dec 23, 1940	**Hole Direction:**	VERTICAL
First Report Date:	Dec 15, 1941	**Abandonment Date:**	
Projected TD:	3,000 FT	**Projected Formation:**	MIOCENE
Basin:	GULF COAST BASIN	**Formation at TD:**	UNKNOWN
		PRODFit Form at TD:	
Play Name:	MISC GULF COAST BASIN	**Play Type:**	CONVENTIONAL ONSHORE (CONV ONSHR)

Location

Footage NS EW Origin:	987 FS 10759 FE TX SUR/POR/GRANT			**Data Source:**	PI
Dist, Abs, Survey:	RR DISTRICT 03 33	HIROMS SAMUEL C			
Blk, Lge, Lot, Labor:					
Township, Section:					
Lat/Long:	+29.7731703 -95.1857870	**Lat/Long Source:**	IH	**Datum:**	NAD27

Location Narrative

Data Source	Type	Remark
PI	LOCATION	750 NSL & 150 EWL OF BLK #8

Dates and Depths

Data Source:	PI		
Spud:	Jan 02, 1941	**Spud Date Code:**	
TD:	2,500 FT	**TD Date:**	
TVD:		**PlugBack Depth:**	
Formation Code TD:	000UNKWN	**Formation Name TD:**	UNKNOWN
PRODFit Form Code TD:		**PRODFit Form Name TD:**	
Ref. Elevation:	34 FT DF	**KB. Elevation:**	
Ground Elevation:	33 FT GR	**LTD:**	
Contractor:			
Completed:	Apr 21, 1941	**Final Drilling:**	
Rig Release Date:		**Rig #:**	
Tool:			

Casing, Liner, Tubing

Casing	Data Source	Size	Base Depth	Cement	PRODFit Top Formation Code	PRODFit Base Formation Code
CASING	PI	8 IN	518 FT			

Dwights Energydata Narrative

Accumulated through 1997

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MAP ID NO. 5

JACK W. FRAZIER
BROOKS 1

Please Refer to File No. 18822

Form 1

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

NOTICE OF INTENTION TO DRILL OR DEEPEN

IS THIS AN APPLICATION TO DRILL OR DEEPEN [illegible]

FILE IN DUPLICATE WITH DEPUTY SUPERVISOR OF DISTRICT IN WHICH WELL IS LOCATED

READ CAREFULLY AND COMPLY FULLY

In order that it may be ascertained whether or not the proposed location covered by this notice conforms to the applicable spacing regulations set down by the Railroad Commission, there are two important footages that must be shown; that is, THE NEAREST DISTANCE OF PROPOSED LOCATION FROM LEASE OR PROPERTY LINE AND DISTANCE OF PROPOSED LOCATION FROM THE NEAREST WELL ON THE SAME LEASE. Do not begin operation on any location before filing Form 1, and do not begin operations on any location not conforming to the spacing rules for such location, until you receive written order from the Commission granting permission.

For the purpose of this determination draw on the back side hereof a neat, accurate sketch, made to scale, of this lease, block, or lot locating thereon the proposed site for this location with reference to the two nearest lease lines. Also show the nearest wells on all sides of this location and the distance from the proposed location to these wells. Give names and addresses of adjoining lease or property owners, and designate all property by lease and company name. You may attach a blue print showing this information if you so desire.

DO NOT CONFUSE SURVEY LINES WITH LEASE LINES. IF THE SKETCH OR BLUE PRINT SHOWS ONLY A SECTION, BLOCK OR LOT OUT OF YOUR LEASE, DESIGNATE SAME AS BEING ONLY THAT PART OF THE LEASE.

Where the size of the tract will permit, use scale of one inch equaling 400 feet; if less than 2 acres use scale of one inch equaling 100 feet. DESIGNATE SCALE TO WHICH PLAT OR SKETCH IS DRAWN. ALSO DESIGNATE NORTHERLY DIRECTION ON THE SKETCH OR PLAT.

* * * * *

FILL IN BELOW IN THE SPACES RESERVED FOR THIS PURPOSE THE FOOTAGES ASKED FOR:

Nearest distance from proposed location to property or lease line 350 feet from NW line, 425 feet from SE line and 500 feet from South line.

Distance from proposed location to nearest drilling, completed, or applied for well on same lease no well [illegible]

This notice must be delivered to Deputy Supervisor of your district before drilling, or deepening, five full days prior to spudding in.

Date January 11, 1946, 19

Name of company or operator

Name [illegible]

Address 1311 [illegible]

City Houston, Texas

Description of farm or lease:

Name (Fee owner) R. R. Brooks Estate

Number of Acres [illegible] Well No. 1

tract out of 1200 acre lease

Number of wells on lease [illegible]

Survey R & R Vince Survey

Elevation _____ Feet (Above Sea Level)

Section No. _____ Block No. _____

Located in wildcat Field (If Wildcat state above)

Harris County

8 Miles NW direction from

Houston, Texas nearest postoffice or town.

Rotary or Cable Tools rotary

Date work will start drilling _____

Depth to which you propose to drill 5500 feet.

Date work will start deepening _____

If Lease Purchased with one or more wells drilled From Whom Purchased?

Name _____

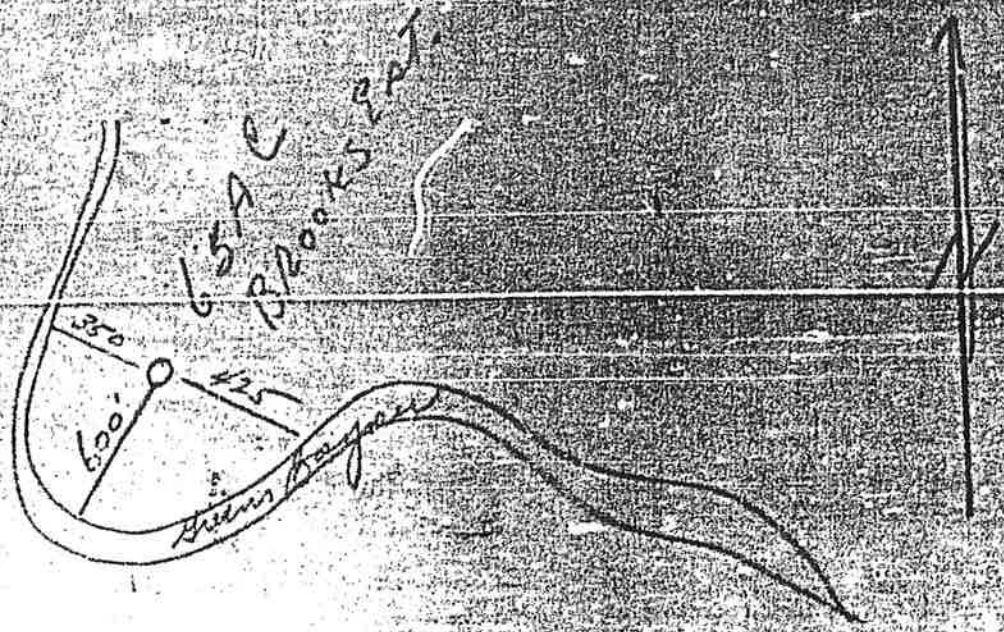
Address _____

5

FILE No.

DRAW SKETCH IN SPACE [illegible] CERTIFIED LEASE PLAT

(Be sure that all required [illegible] and scales are given)



RECEIVED
JAN 1 3 1946

Scale of Plat

I, B. Dowe being first duly sworn on oath, state that I have knowledge of the facts and matter herein set forth and that the same are true and correct.

Name B. Dowe Title Office Mgr.

Subscribed and sworn to before me this 11th day of [illegible] 1946

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PI/Dwights PLUS Online Scout Ticket

Date: 10/23/2002
Time: 7:31 AM

5

1 R E BROOKS ESTATE

State:	TEXAS
County:	HARRIS
Operator:	FRAZIER JACK W
API:	42201028170000 IC:
Initial Class:	WF
Target Objective:	
Final Well Class:	WF
Status:	D&A
Field:	WILDCAT
Permit:	on JAN 13, 1946
First Report Date:	FEB 15, 1946
Projected TD:	5500 Formation: FRIO
Hole Direction:	VERTICAL

Location

NS EW Footage:	
Dist, Abs, Survey:	RR DISTRICT 03 76 R & R VINCE
Blk, Lge, Lot, Labor:	
Township, Dir, Sect:	
Surface remark:	
Lat/Long:	29.7599800/ -95.1905500 TB
PBHL:	
Dist, Abs, Survey:	RR DISTRICT 03
Blk, Lge, Lot, Labor:	
Township, Dir, Sect:	

From Surface: TVD:
PBHL Remark:
5 ABHL:
Dist, Abs, Survey: RR DISTRICT 03
Blk, Lge, Lot, Labor:
Township, Dir, Sect:
ABHL: From Surface: TVD:
ABHL Remark:
Location Narrative:

Type	Remark
LOCATION	SC GO 3725 S AT R/A FROM NL OF SUR FROM W 575 DUE E AT R/A

Dates and Depths

Spud: JAN 23, 1946 Spud Date Code:
TD: 5614 on
LTD:
PlugBack Depth:
Completed: FEB 05, 1946
Formation @ TD: 653FRIO Name: FRIO
Ref. Elevation: 21 DF
KB. Elevation:
Ground Elevation: 14 GR
Contractor:
Rig Release Date: Rig #

Casing, Liner, Tubing

Casing 10 3/4 IN @ 529 w/ 300 sx

Formations and Logs

Log # 1 EL @ 0 - 5614
Logging Co. 153789

Top Formation	Measured Depth	Top TVD	Base Depth	Base TVD	Source	Lith-ology	Age code
DISCORBIS	4614				SPL		653
HET /HETEROSTEGINA/	4886				SPL		653

Operator Address

Street or PO Box:
City:
State, Zip: ,
Country:
Phone: Fax:
E-Mail:
Agent Name: Agent Code:
Agent Remark:

==========

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PI/Dwights PLUS Online Scout Ticket

Date: 10/23/2002
Time: 7:31 AM

12 1 BROOKS E R
State: TEXAS
County: HARRIS
Operator: COCKBURN OIL CORP
API: 42201061100000 IC:
Initial Class: WP
Target Objective:

(5)

SCHLUMBERGER

WELL SURVEYING CORPORATION

Location of Well

Elevation: D.F.: ..... or G.L.: .....

COMPANY: JACK W. FLAZIER

WELL: BROOKS #1

RUN NO.: ONE

FIELD: WC-GREENS BAYOU

SURVEY:

COUNTY: HARRIS

STATE: TEXAS

FILING No. SG-56 DW

COUNTY: HARRIS
FIELD OR SURVEY: WC-GREENS BAYOU
WELL: BROOKS #1
COMPANY: JACK W. FRAZIER

First Reading		5618	ft.
Last Reading		519	ft.
Footage Measured		5099	ft.
#931 Casing Shoe Depth:	SCHLUMBERGER	519	ft.
	DRILLER	519	ft.
Max. depth reached		5618	ft.
Bottom Depth:	DRILLER	5615	ft.
Depth Datum	Drive Bushing		

DIAMETER OF HOLE	MUD DATA	SPACINGS
from 519 to T.D.: 9-7/8"	Nature: Natural-Aqua	AM 96"
from ..... to ..... :	Weight: 10.5#	AM' 63"
from ..... to ..... :	Viscosity 35"	OA 24'
Bottom Temperature ..... °F.	Resistivity: 2.0 @ 78 °F.	

REMARKS

COMPANY ** JACK W. FRAZIER
WELL ** BROOKS # I
RUN NO. ** ONE.
FIELD ** WILDCAT - GREENS BAYOU
SURVEY **
COUNTY ** HARRIS
STATE ** TEXAS
FILLING NO. S.G. 56

DATE FEBRUARY 3, 1946 OBSERVERS J. B. BLAZER

FORM 167-G

SELF-POTENTIAL | DRD | RESISTIVITY

42201028170000

General Information

1 R E BROOKS ESTATE

Data Source:	PI	**Country:**	UNITED STATES
API/UWI:	42201028170000	**IC:**	
State/Prov:	TEXAS	**County:**	HARRIS
Field:	WILDCAT	**Operator:**	FRAZIER JACK W
Current Status:		**Current Operator:**	FRAZIER JACK W
Reg. Well Status/Date:			
Initial Class:	NEW FIELD WILDCAT (WF)	**Final Well Class:**	NEW FIELD WILDCAT-DRY (INCLUDING TEMPORARILY ABANDONED WELL) (WF)
Final Status:	DRY & ABANDONED	**Target Objective:**	
Permit:	on Jan 13, 1946	**Hole Direction:**	VERTICAL
First Report Date:	Feb 15, 1946	**Abandonment Date:**	
Projected TD:	5,500 FT	**Projected Formation:**	FRIO
Basin:	GULF COAST BASIN	**Formation at TD:**	FRIO
		PRODFit Form at TD:	
Play Name:	SOUTH TEXAS CONVENTIONAL	**Play Type:**	CONVENTIONAL ONSHORE (CONV ONSHR)

Location

Footage NS EW Origin:				**Data Source:**	PI
Dist, Abs, Survey:	RR DISTRICT 03	76	VINCE RICHARD & ROBERT		
Blk, Lge, Lot, Labor:					
Township, Section:					
Lat/Long:	+29.7599700	-95.1893890	**Lat/Long Source:** IH	**Datum:**	NAD27

Location Narrative

Data Source	Type	Remark
PI	LOCATION	SC GO 3725 S AT R/A FROM NL OF SUR FROM W COR & 575 DUE E AT R/A

Dates and Depths

Data Source:	PI		
Spud:	Jan 23, 1946	**Spud Date Code:**	
TD:	5,614 FT	**TD Date:**	
TVD:		**PlugBack Depth:**	
Formation Code TD:	653FRIO	**Formation Name TD:**	FRIO
PRODFit Form Code TD:		**PRODFit Form Name TD:**	
Ref. Elevation:	21 FT DF	**KB. Elevation:**	
Ground Elevation:	14 FT GR	**LTD:**	
Contractor:			
Completed:	Feb 05, 1946	**Final Drilling:**	
Rig Release Date:		**Rig #:**	
Tool:			

Casing, Liner, Tubing

Casing	Data Source	Size	Base Depth		Cement		PRODFit Top Formation Code	PRODFit Base Formation Code
CASING	PI	10 3/4 IN	529	FT	300	SACK		

Formations

Form Code	Top Source	Interpreter	Form Name	Top Depth	Top TVD	Base Depth	Base TVD	Desc	Lithology	Age Code
653DCRB	PI		DISCORBIS	4,614				SPL		653
653HRSG	PI		HETEROSTEGINA	4,886				SPL		653

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Logs

Log	Data Source	Type	Top Depth	Base Depth	Logging Co.	BHT	since circ.
1	PI	EL	0	5,614	153789		

Dwights Energydata Narrative

Accumulated through 1997

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MAP ID NO. 6

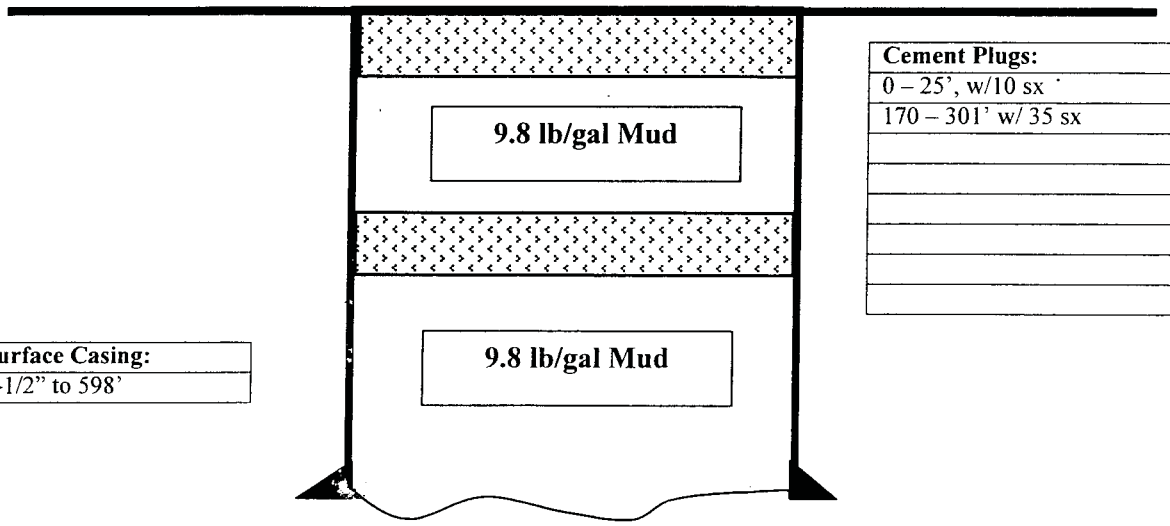
MERICHEM ENERGY CO.
MERICHEM-PENWALT 1

ARTIFICIAL PENETRATION SCHEMATIC

Map ID Number:	6	Status:	Plugged & Abandoned
Operator:	Merichem Energy Co.	Date Drilled:	8/19/80
Lease/Well Number:	Merichem – Pennwalt Unit # 1	Date Plugged:	8/26/80
Distance from Well 1:	100' Feet	Railroad Commission Forms:	W-1, W-3, W-15
Well Depth:	600'		

WELL DIAGRAM

Ground Level



Cement Plugs:
0 – 25', w/10 sx
170 – 301' w/ 35 sx

Surface Casing:
4-1/2" to 598'

USDW - NDE

Production Casing:
N/A

Perforations :
N/A

Injection Zone Top - NDE

Tubing :
N/A

F(6-1
(. 78)

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

API Well No. 42 201-31114
Instruction (7a & b) on back side.

☐ Directional Well ☐ Amended or Corrected Permit

RRC Permit Number, if previously assigned. 090165

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

Check one: [X] DRILL ☐ DEEPEN (Below Casing) ☐ DEEPEN (Within Casing) ☐ PLUG BACK ☐ OTHER (Specify) _____

If Amended Application, explain fully in Remarks or Attach Separate Page.

1. Operator: Merichem Energy Company 561100
2. Address (Including City and Zip Code): P. O. Box 4966, Victoria, Texas 77901 X
3. Is Form P-5 (Organization Report) in Exact Operator Name Filed? YES [XX] NO ☐ (Instruction (2) on back side.) ✓
4. Lease Name and RRC Lease or ID No. (If Assigned): Merichem-Pennwalt Unit
5. Location (Sec., Blk., Survey): Richard & Robert Vince A-76
6. This well is to be located 4 miles north Direction from Pasadena, Tex. Nearest Post Office or Town.
7. RRC District: 3
8. County: Harris
9. Well Number: 1
10. Number of Acres in Lease: 42.12
11. Distance from Proposed Location to Nearest Property or Lease Line (ft.): 599'
12. Total Depth: 800'

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EACH PROPOSED COMPLETION

REFER TO INSTRUCTIONS ON BACK SIDE. READ CAREFULLY AND FURNISH COMPLETE DATA.

13. FIELD NAME (Exactly as shown on R.R.C. Proration Schedule including Reservoir if applicable.) If Wildcat, so state below. 00006 001	14. Completion Depth	15. All Prior Rule 37 Exc. Case Numbers for this wellbore. If none, State None.	16. Applicable Field Rules Spacing Pattern. If no Rules, State 467-1200. (ft.)	17. Applicable Field Rules Density Pattern. If no Rules, State 40. (acres)	18. Number of Acres in Drilling Unit for this Well AND DESIGNATE ON PLAT.	19. Is this acreage presently assigned to another well in same field? (Yes or No. If yes explain in remarks.)	20. Distance and Direction from proposed location to nearest drilling completed or applied for well in same res. on same lease (ft.)	21. Is this a 1. Regular or 2. Rule 37 Exc. Location? Check the appropriate box.	22. Oil, Gas, or other Type Well (Specify)	23. Number of Wells or Permitted locations on this Lease in same Reservoir for which this Permit is Requested? OIL	GAS
Wildcat above 800'	800'	none	467' 1200'	40	40	no	none	Regular 1 [X] Rule 37 2	Gas	None	None
								Regular 1 Rule 37 2			
								Regular 1 Rule 37 2			
								Regular 1 Rule 37 2			

13

24. PERPENDICULAR LOCATION FROM TWO DESIGNATED:
A. Lease Lines 599' FNL & 827' FWL
B. Survey Lines 4,050' FNL & 16,900' FWL of Richard & Robert Vince A-76

a. Is this wellbore subject to SWR 36? Yes [X]
b. If subject to SWR 36, has Form H-9 been filed? (If no, attach explanation.)

NOTICE

NO ALLOWABLE WILL BE ASSIGNED to any well which does not have sufficient surface casing to protect all fresh water sands. Where Commission rules do not specify surface casing requirements, it will be necessary to contact Texas Water Development Board, Austin, Texas, to ascertain the depth to which fresh water sands must be protected.

REMARKS.

CERTIFICATE

I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

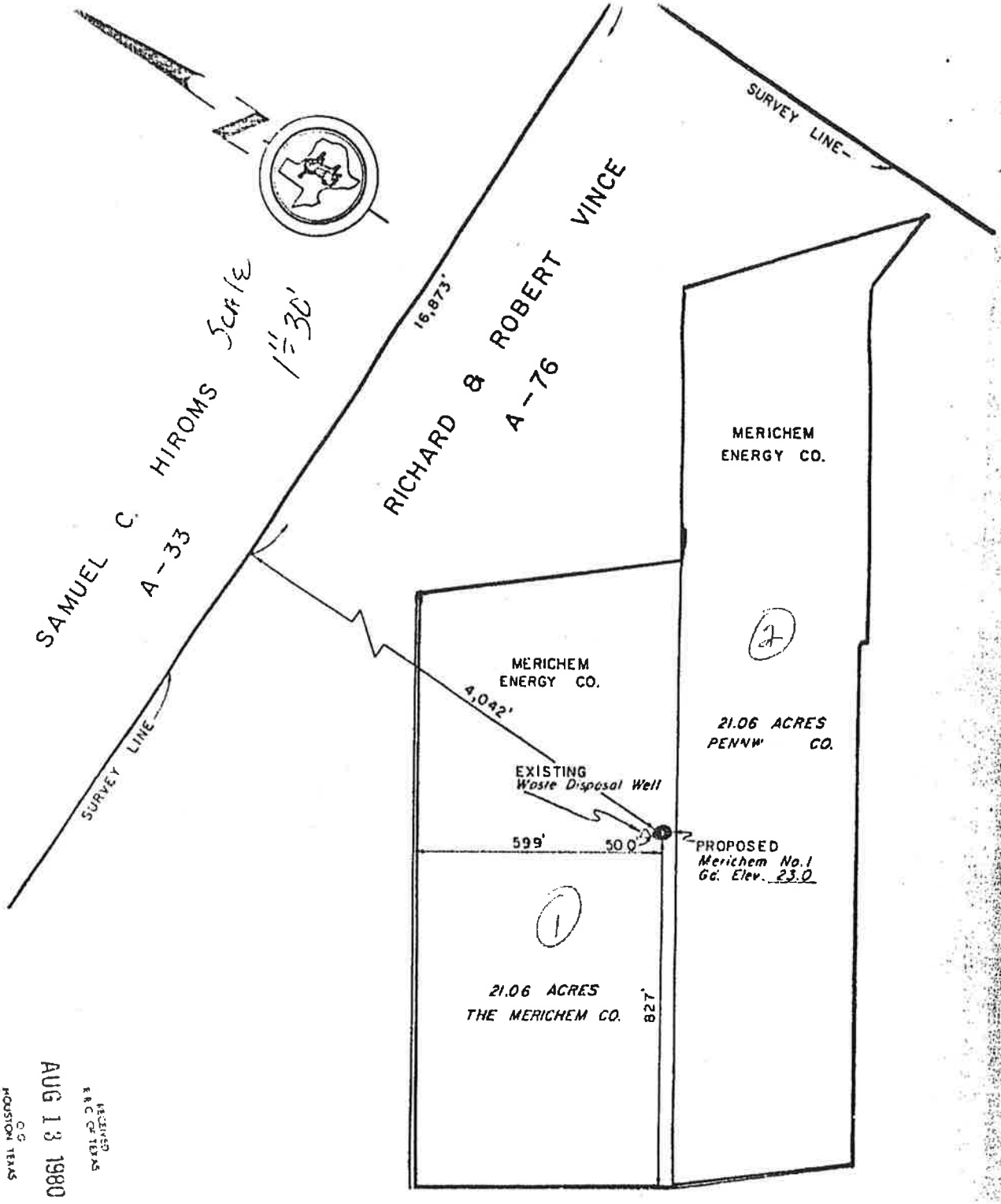
Signature [signature]
Agent
Title
July 17, 1980 AUG 1 1980
Date
Telephone Area Code 512 578-6297 HOUSTON, TEXAS

READ INSTRUCTIONS ON BACK SIDE AND FURNISH COMPLETE DATA.

201-31114

DR-73

6



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R.R.C. OF TEXAS
O.G.
HOUSTON, TEXAS

I HEREBY CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND, THAT THIS PLAT CORRECTLY REPRESENTS THE FACTS FOUND AT THE TIME OF SURVEY AND THAT THIS PROFESSIONAL SERVICE CONFORMS TO THE CURRENT TEXAS SURVEYORS ASSOCIATION STANDARDS AND SPECIFICATIONS FOR A CATEGORY 3, CONDITION 3 SURVEY.

H. WILSON MCCoy No. 1702
DATE: August 1, 1980

MERICHEM ENERGY CO.

MERCHEM CORPORATION
ENGINEERS • SURVEYORS
AUSTIN, TEXAS

WELL LOCATION
MERICHEM ENERGY CO.
RICHARD & ROBERT VINCE, A-76
HARRIS COUNTY, TEXAS

0178 0614

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SEP 4 1980

Plugging Record

P 03

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

FORM W-3
Rev. 10/78

API NO. (if available) 42-201-31114

1. District 3

FILE IN DUPLICATE WITH DISTRICT OFFICE OF DISTRICT IN WHICH WELL IS LOCATED WITHIN THIRTY DAYS AFTER PLUGGING

4. RRC Lease or Id. Number

2. FIELD NAME (as per RRC Records) Wildcat	3. Lease Name Merichem-Pennwalt	5. Well Number #1
6. OPERATOR Merichem Energy	6a. Original Form W-1 Filed in Name of: Merichem Energy	10. County Harris
7. ADDRESS P. O. Box 4966, Victoria, Texas	6b. Any Subsequent W-1's Filed in Name of: Same	11. Date Drilling Permit Issued 8-18-80
8. Location of Well, Relative to Nearest Lease Boundaries of Lease on which this Well is Located: 599 Feet From SW Line and 827 Feet From SW Line of the Merichem Lease		12. Permit Number 090165
9a. SECTION, BLOCK, AND SURVEY Richard & Robert Vince A-76	9b. Distance and Direction From Nearest Town in this County 4 miles north of Pasadena	13. Date Drilling Commenced 8-19-80
16. Type Well (Oil, Gas, Dry) Dry; Total Depth 600'	17. If Multiple Completion List All Field Names and Oil Lease or Gas ID No.'s: GAS ID or OIL LEASE #; Oil-G Gas-G; WELL #	14. Date Drilling Completed 8-20-80
18. If Gas, Amt. of Cond. on Hand at time of Plugging		15. Date Well Plugged 8-26-80

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
*19. Cementing Date:	8-26	8-26-80						
20. Size of Hole or Pipe in which Plug Placed (inches)	4 1/2	4 1/2						
21. Depth to Bottom of Tubing or Drill Pipe (ft.)	301	25						
*22. Sacks of Cement Used (each plug)	35	10						
*23. Slurry Volume Pumped (cu. ft.)	41.5	11.5						
*24. Calculated Top of Plug (ft.)	170	Surface						
25. Measured Top of Plug (if tagged) (ft.)								
*26. Slurry Wt. #/Gal.	15.6	15.6						
*27. Type Cement	H + 2% $CaCl_2$	H + 2% $CaCl_2$						

28. CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT. #/FT.	PUT IN WELL (ft.)	LEFT IN WELL (ft.)	HOLE SIZE (in.)
4 1/2	11.0	598	598	7 7/8

29. Was any Non-Drillable Material (Other than Casing) Left in This Well? ☐ Yes ☒ No

29a. If answer to above is "Yes" state depth to top of "junk" left in hole and briefly describe non-drillable material. (Use Reverse Side of Form if more space is needed.)

30. LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS

FROM 280'	TO 290'	FROM	TO
FROM	TO	FROM	TO
FROM	TO	FROM	TO
FROM	TO	FROM	TO
FROM	TO	FROM	TO

I have knowledge that the cementing operations, as reflected by the information found on this form, were performed as indicated by such information.
* Designates items to be completed by Cementing Company. Items not so designated shall be completed by Operator.

Guy H. Hall
Signature of Cementer or Authorized Representative

THE WESTERN COMPANY
Name of Cementing Company

CERTIFICATE:
I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

T W Tucker
REPRESENTATIVE OF COMPANY
T. W. Tucker

Agent
TITLE

Sept. 16, 1980
DATE

Phone 512 / 578-6297
A/C NUMBER

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SEP 22 1980
OG
HOUSTON, TEXAS

SIGNATURE: REPRESENTATIVE OF RAILROAD COMMISSION

201-31114

31. Was Well filled with Mud-Laden Fluid, according to the regulations of the Railroad Commission	[X] Yes [ ] No	32. How was Mud Applied? Pump	33. Mud Weight 9.8 LBS/GAL

34. Total Depth	Other Fresh Water Zones by T.D.W.R. TOP	BOTTOM	35. Have all Abandoned Wells on this Lease been Plugged according to RRC Rules? [X] Yes [ ] No
603			36. If NO, Explain
Depth of Deepest Fresh Water 2650			

37. Name and Address of Cementing or Service company who mixed and pumped cement plugs in this well: Western Co., P.O.Box841,Liberty, Texas 77575

Date RRC District Office notified of plugging: 8-25-80

38. Names and Addresses of Surface Owner of Well Site and Operators of Offset Producing Leases:

Morichem Energy Co.

No offsets

39. Was Notice Given Before Plugging to Each of the Above? Yes

FILL IN BELOW FOR DRY HOLES ONLY

40. For Dry Holes, this Form must be accompanied by either a Driller's, Electric, Radioactivity or Acoustical/Sonic Log or such Log must be released to a Commercial Log Service.

[ ] Log Attached [X] Log released to Camden Log Service Date 8-30-80

Type Logs:

[ ] Driller's [ ] Electric [ ] Radioactivity [ ] Acoustical/Sonic

41. Date FORM P-8 (Special Clearance) Filed?

42. Amount of Oil produced prior to Plugging zero bbls*

* File FORM P-1 (Oil Production Report) for month this oil was produced

RRC USE ONLY

Nearest Field

REMARKS

0 0 0 0 7 8 0 6 4 5

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

Form W-15
(Rev. 11-1-69)

CEMENTING REPORT

*1. Field Name (as per RRC Records or Wildcat): Wildcat	*2. RRC District: 3
*3. Operator: Merichem Energy Co.	*4. County: Harris
*5. Lease Name(s) and RRC Lease Number(s) or I. D. Number(s): Merichem - Pennwalt Unit	*6. Well Number: # 1
*7. Location (Section, Block, and Survey)	

CASING CEMENTING DATA:	SURFACE CASING	INTERMEDIATE CASING	PRODUCTION CASING: Single String	PRODUCTION CASING: Multiple Parallel Strings	MULTI-STAGE CEMENTING PROCESS: Tool	MULTI-STAGE CEMENTING PROCESS: Shoe
8. Cementing Date			8-20-80			
*9. (a) Size of Drill Bit (inches)			7 7/8			
(b) Estimated % Wash or Hole Enlargement Used in Calculations.			100%			
*10. Size of Casing (inches O.D.)			4 1/2			
*11. Top of Liner (if liner used) (ft.)			—			
*12. Setting Depth of Casing (ft.)						
13. Type API Class Cement & Amount of Additives Used: (a) In First (Lead) or Only Slurry (If additional space is needed, use "REMARKS" on reverse side.)			H + 2% CaCl2			
(b) In Second Slurry			—			
(c) In Third Slurry			—			
14. Sacks of Cement Used: (a) In First (Lead) or Only Slurry			220			
(b) In Second Slurry			—			
(c) In Third Slurry			—			
(d) Total Sacks of Cement Used			220			
15. Slurry Volume per Sack of Cement (cu.ft./sack): (a) In First (Lead) or Only Slurry			1.18			
(b) In Second Slurry			—			
(c) In Third Slurry			—			
16. Volume of Slurry Pumped: (cu. ft.) (Item 14 x Item 15) (a) In First (Lead) or Only Slurry			260			
(b) In Second Slurry			—			
(c) In Third Slurry			—			
(d) Total Slurry Volume Pumped (cu.ft.)			260			
17. Calculated Annular Height of Cement Slurry behind Pipe (ft.)			Surface			
18. Was cement circulated to ground surface (or bottom of cellar) outside casing? (Yes or No)			Yes			

CEMENTING TO PLUG AND ABANDON DATA:	PLUG NO. 1	PLUG NO. 2	PLUG NO. 3	PLUG NO. 4	PLUG NO. 5	PLUG NO. 6
19. Cementing Date	8-26-80	8-26-80				
*20. Size of Hole or Pipe in which Plug Placed (inches)	4 1/2	4 1/2				
*21. Depth to Bottom of Tubing or Drill Pipe (ft.)	301	25				
22. Sacks of Cement Used (each plug)	35	10				
23. Slurry Volume Pumped (cu. ft.)	41.5	11.5				
24. Calculated Top of Plug (ft.)	170	Surface				
*25. Measured Top of Plug (if tagged) (ft.)	-	Visual				

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(CEMENTING COMPANY AND OPERATOR MUST COMPLY WITH THE INSTRUCTIONS ON REVERSE SIDE HEREOF.)

— OVER —

* Designates items to be completed by Operator. Items not so designated shall be completed by Cementing Company.

26. Remarks:

*27. Remarks:

CEMENTING COMPANY

I declare under penalties prescribed in Article 6036c, R. C. S., that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete to the best of my knowledge. This certification covers cementing data only.

Bob Owen

Signature of Cementer or Authorized Representative

Bob Owen, Service Supervisor

Name of Person and Title (type or print)

The Western Co.

Cementing Company

Box 841

Street Address or P.O. Box

Liberty, Texas 77575

City, State Zip Code

Telephone 713 / 336-7218

Area Code

8-20-80

Date

*OPERATOR

I declare under penalties prescribed in Article 6036c, R. C. S., that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct, and complete to the best of my knowledge. This certification covers all well data and information presented herein.

T. W. Tucker

*Signature of Operator or Authorized Representative

T. W. Tucker, Agent

*Name of Person and Title (type or print)

Merichem Energy Co.

*Operator

P. O. Box 4966

*Street Address or P.O. Box

Victoria, Texas 77901

*City, State Zip Code

*Telephone 512 / 578-6297

Area Code

September 16, 1980

*Date

INSTRUCTIONS

1. A. This form shall be filed by the operator in the RRC District Office with:
   (1) Each copy of an initial Form G-1 or W-2 if a cementing report is required by Statewide or Special Rules, or if exception is needed to cementing requirements in Statewide or Special Rules;
   (2) Each copy of Form W-3;
   (3) Each copy of Form W-4 if a multiple parallel casing completion.
   B. At least an original and one copy of this form shall be filed for each cementing company used on a well.
   C. The cementing of different casing strings on a well by one cementing company may be consolidated on one form (to be filed in duplicate).
2. Cementing Company and Operator shall comply with the applicable portions of Statewide Rules 8, 13, and 14. For offshore operations, Cementing Company and Operator shall comply with Statewide Rule 13(E).
3. If setting FULL AMOUNT OF SURFACE CASING:
   A. Depth to protect fresh water determined by:
   (1) Field Rule
   (2) Texas Water Development Board, if no Field Rule
   B. Set surface casing below depth to be protected and cement from casing shoe to ground surface.
4. IF SETTING ANYTHING OTHER THAN THE FULL AMOUNT OF SURFACE CASING, PERMISSION SHALL BE OBTAINED FROM THE RAILROAD COMMISSION.
5. If setting NO SURFACE CASING (See Item 4 above.):
   A. If no multi-stage tool is used, the next deeper casing string shall be cemented from the casing shoe to the surface.
   B. If using the multi-stage tool on the next deeper string, cement from the depth that protects fresh water sands to the surface.
6. If setting SHORT SURFACE CASING (See Item 4 above.):
   A. Cement short surface casing from the shoe to the surface.
   B. Whether the multi-stage tool is or is not used on the next deeper casing string, cement from the depth that protects fresh water sands to:
   (1) the surface, or
   (2) a point midway between shoe of surface string and the surface. Compliance will be considered if a temperature survey shows that the top of the cement is at least one-third of the distance from the shoe of the surface string to the surface.
7. Setting PRODUCTION STRING of Casing: (Statewide Rules; Special Rules may vary.)
   A. Cement to a point at least 600 feet above the casing shoe.
   When 3,000 feet or more of pipe is set for the production or protecting string, a minimum of 30 feet of cement shall be left inside the pipe.
8. PLUGGING and ABANDONING:
   A. Cement plugs shall be placed in the well bore as required by Rules and Regulations of the Commission plus any additional plugs as may be specified by the RRC District Director.
   B. The minimum amount of cement normally used in each plug shall be a slurry volume equal to the amount necessary to fill the calculated volume of 100 feet of the hole in which the plug is placed.
   C. A 10 foot cement plug is required to be placed in the top of the well.

MAP ID NO. 7

MITCHELL ENERGY CORP.
HOUSTON PROT AUTHORITY 1

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

FORM W-1 (2-1-70)

8

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

SPS

Check one: [X] DRILL [ ] DEEPEN [ ] PLUG BACK [ ] OTHER (Specify)

1. Operator: Mitchell Energy Corporation
2. Address (Including City and Zip Code): 3900 One Shell Plaza, Houston, Texas 77002
3. Is Form P-5 (Organization Report) in Exact Operator Name Filed? YES [X] NO [ ]
4. Lease Name: Houston Port Authority
5. Location (Sec., Blk., Survey): Richard and Robert Vince Survey, A-76
6. This well is to be located 4 miles Northeast Direction from Galena Park, Texas Nearest Post Office or Town
7. RRC District: 3
8. County: Harris
9. Well Number: 1
10. Number of Acres in Lease: 320
11. Distance from Proposed Location to Nearest Property or Lease Line (ft.): 467'

EACH PROPOSED COMPLETION

12. Field Name (Exactly as shown on R. R. C. Proration Schedule including Reservoir if applicable.) If Wildcat, so state below.	13. Completion Depth	14. RRC Lease or ID Number (If applicable)	15. Field Rule Spacing Pattern (Distance to lease line & distance between wells. If no special rules indicate Rule 37.)	16. Field Rule Proration Unit Pattern. (Acres. If no special rules, indicate Statewide Rule 38)	17. Number of Acres in Drilling Unit for this Well	18. Is this acreage presently assigned to another well in same field? (Yes or No, If yes, explain in remarks.)	19. Distance from proposed location to nearest drilling completed or applied for well in same reservoir on same lease (ft.)	20. Is this a Regular Location? (Yes or No)	21. Oil, Gas, or other Type Well (Specify)	22. Number of Wells or Permitted locations on this Lease in same Reservoir for which this Permit is Requested. OIL	GAS
Wildcat ABOVE 8500'	8500'	---	Rule 37	Rule 38	320	No	--	Yes	Oil or Gas		---

RECEIVED OCT 25 1974

NOTICE

NO ALLOWABLE WILL BE ASSIGNED to any well which does not have sufficient surface casing to protect all fresh water sands. Where Commission rules do not specify surface casing requirements, it will be necessary to contact Texas Water Development Board, Austin, Texas, to ascertain the depth to which fresh water sands must be protected.

CERTIFICATE

I declare under penalties prescribed in Article 6036c, R. C. S., that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

REMARKS: 13,160' FEL & 4820' FNL of survey

Signature

Assistant Vice President

Title

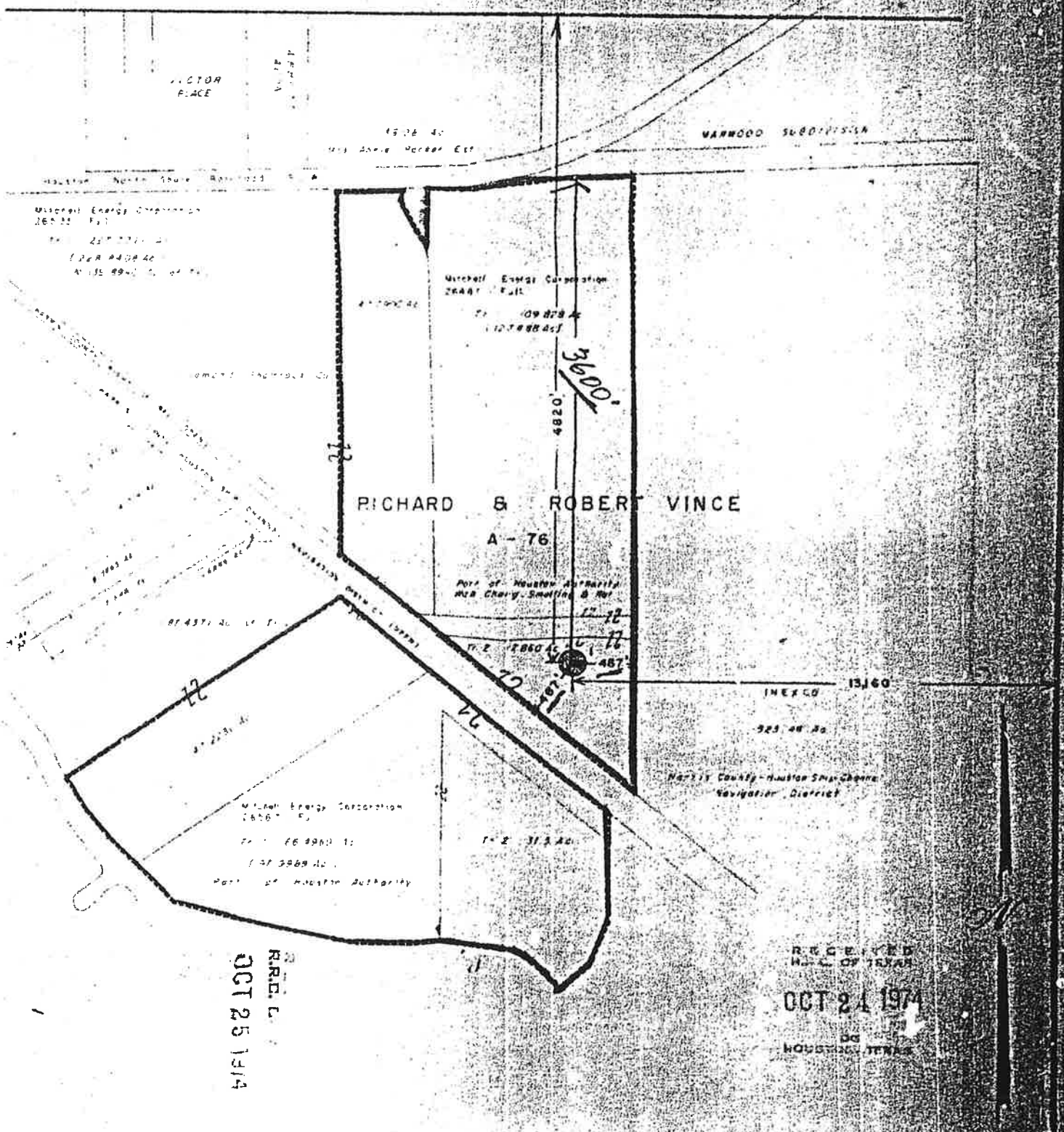
October 23, 1974

Date

Telephone: Area Code 713 224-4522

3300' W-NW of Groves Bayou Fld.

— OVER —



MITCHELL ENERGY CORPORATION
HOUSTON

Proposed Location
#1 Houston Port Authority
Wildcat - West Renee Area
Harris County, Texas

DATE 10-10-74 | SCALE 1"=1000'

201-30404

Plugging Record

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

Form W-3
Rev. 9/1/67

3

FILE IN DUPLICATE WITH DISTRICT OFFICE OF DISTRICT IN WHICH WELL IS LOCATED WITHIN THIRTY DAYS AFTER PLUGGING

1. RRC District: 3
4. RRC Lease or Id. Number: None
5. Well Number: 1
10. County: Harris
11. Date Drilling Permit Issued: 10-25-74
12. Date Drilling Commenced: 2-28-75
13. Date Drilling Completed: 3-18-75
14. Date Well Plugged: 3-18-75

2. FIELD NAME (as per RRC Records): WILDCAT (Greens Bayou)
3. LEASE NAME: HOUSTON PORT AUTHORITY
6. OPERATOR: MITCHELL ENERGY CORPORATION
7. ADDRESS: 3900 ONE SHELL PLAZA, HOUSTON, TEXAS 77002
8. SURFACE LOCATION: 467 FEET FROM East LINE, AND 467 FEET FROM Southwest LINE
9. SECTION, BLOCK, AND SURVEY: Richard and Robert Vince Survey, A-76
15. Type of Well (Oil, Gas, Dry)*: Dry
16. Type of Completion (Single, Dual, Etc.): None
17. Total Depth: 8200'
18. FORM W-1 (Intention to Drill) Filed in Name of: Mitchell Energy Corporation
19. Manner of Placement

	SACKS	TOP	BOTTOM	TYPE
PLUG #1	35	3428	3550	Cement
PLUG #2	10	0	20	Cement
PLUG #3				
PLUG #4				

20. Was Well filled with Mud-Laden Fluid, according to the regulations of the Railroad Commission: YES [X] NO [ ]
21. How was Mud applied? Circulated
22. Mud Weight: 10.9 LBS/GAL
23. Depth of Deepest Fresh Water: 2650 FEET
24. Have all Abandoned Wells on this Lease been Plugged according to RRC Rules? YES [X] NO [ ]
25. If NO, Explain:
26. Name and Address of Party Plugging Well: Mitchell Energy Corp., 3900 One Shell Plaza, Houston, Texas 77002
27. Casing and Tubing Record after Plugging

SIZE	PUT IN WELL FEET	PUT IN WELL INCHES	LEFT IN WELL FEET	LEFT IN WELL INCHES
8-5/8	3500		3500	

28. Names and Addresses of Surface Owner of Well Site and Operators of Offset Producing Leases
No offset producing leases
Port of Houston Authority, 211 Vinsonia, Houston, Texas

RECEIVED MAR 27 1975 HOUSTON, TEXAS

29. Was Notice given before Plugging to each of the above and RRC District Office? YES [X] NO [ ]

CERTIFICATE:

I declare under penalties prescribed in Article 6036c, R. C. S., that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

Marian Tebbe — REPRESENTATIVE OF COMPANY
Petroleum Engineer — TITLE
3-25-75 — DATE

Signature: REPRESENTATIVE OF RAILROAD COMMISSION

*All Dry Holes, Fill in Reverse Side.

20130404

Form W-15
(Rev. 8-27-69)

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

CEMENTING REPORT

(To be filed with each Form G-1, W-2, W-3, or, if tubingless completions, W-4)

*1. Field Name (as per RRC Records or Wildcat) WILDCAT	*2. RRC District 3
*3. Operator Mitchell Energy Corporation	*4. County Harris
*5. Lease Name(s) and RRC Lease Number(s) or I. D. Number(s) Houston Port Authority	*6. Well Number #1
*7. Location (Section, Block, and Survey) RICHARD AND ROBERT VINCE SURVEY, A-76	

CASING CEMENTING DATA:	SURFACE CASING	INTER-MEDIATE CASING	PRODUCTION CASING Single String	PRODUCTION CASING Multiple Parallel Strings	MULTI-STAGE CEMENTING PROCESS Tool	MULTI-STAGE CEMENTING PROCESS Shoe
8. Cementing Date						
*9. (a) Size of Drill Bit (inches)						
(b) Estimated % Wash or Hole Enlargement Used in Calculations.						
*10. Size of Casing (inches O.D.)						
*11. Top of Liner (if liner used) (ft.)						
*12. Setting Depth of Casing (ft.)						
13. Type API Class Cement & Amount of Additives Used: (a) In First (Lead) or Only Slurry (If additional space is needed, use "REMARKS" on reverse side.)						
(b) In Second Slurry						
(c) In Third Slurry						
14. Sacks of Cement Used: (a) In First (Lead) or Only Slurry						
(b) In Second Slurry						
(c) In Third Slurry						
(d) Total Sacks of Cement Used						
15. Slurry Volume per Sack of Cement (cu.ft./sack): (a) In First (Lead) or Only Slurry						
(b) In Second Slurry						
(c) In Third Slurry						
16. Volume of Slurry Pumped: (cu.ft.) (Item 14 x Item 15) (a) In First (Lead) or Only Slurry						
(b) In Second Slurry						
(c) In Third Slurry						
(d) Total Slurry Volume Pumped (cu.ft.)						
17. Calculated Annular Height of Cement Slurry behind Pipe (ft.)						
18. Was cement circulated to ground surface (or bottom of cellar) outside casing? (Yes or No)						

CEMENTING TO PLUG AND ABANDON DATA:	PLUG NO. 1	PLUG NO. 2	PLUG NO. 3	PLUG NO. 4	PLUG NO. 5	PLUG NO. 6
19. Cementing Date	3-18-75	3-18-75				
*20. Size of Hole or Pipe in which Plug Placed (inches)	7 7/8	8 5/8				
*21. Depth to Bottom of Tubing or Drill Pipe (ft.)	3550	20				
22. Sacks of Cement Used (each plug)	35	10				
23. Slurry Volume Pumped (cu. ft.)	41.3	8.1				
24. Calculated Top of Plug (ft.)	3428	0				
*25. Measured Top of Plug (if tagged) (ft.)						

(CEMENTING COMPANY AND OPERATOR MUST COMPLY WITH THE INSTRUCTIONS ON REVERSE SIDE HEREOF.)

— OVER —

* Designates items to be completed by Operator. Items not so designated shall be completed by Cementing Company.

201-30404

26. Remarks:

*27. Remarks:

CEMENTING COMPANY

I declare under penalties prescribed in Article 6036c, R. C. S., that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete to the best of my knowledge. This certification covers cementing data only.

H. W. Webb
Signature of Cementer or Authorized Representative

H.W. Webb--Service Supervisor
Name of Person and Title (type or print)

The Western Company
Cementing Company

Box 841
Street Address or P.O. Box

Liberty, Texas 77575
City, State Zip Code

Telephone 713 336-7218
Area Code

Marhh 19, 1975
Date

***OPERATOR**

I declare under penalties prescribed in Article 6036c, R. C. S., that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct, and complete to the best of my knowledge. This certification covers all well data and information presented herein.

Marion Tebbs
*Signature of Operator or Authorized Representative

Marion Tebbs, Petroleum Engineer
*Name of Person and Title (type or print)

Mitchell Energy Corporation
*Operator

3900 One Shell Plaza
*Street Address or P.O. Box

Houston, Texas 77002
*City, State Zip Code

*Telephone 713 224-4522
Area Code

March 25, 1975
*Date

– INSTRUCTIONS –

1. A. The completed original and one copy of this form shall be filed by the operator in the RRC District Office with the required two copies of Form G-1, Gas Well Back Pressure Test, Completion or Recompletion Report and Log; Form W-2, Oil Well Potential Test, Completion, or Recompletion Report and Log; Form W-3, Plugging Record; or if tubingless completions, Form W-4, Application for Multiple Completion.
   B. At least an original and one copy of this form shall be filed for each cementing company used on a well.
   C. The cementing of different casing strings on a well by one cementing company may be consolidated on one form (to be filed in duplicate).
2. Cementing Company and Operator shall comply with the applicable portions of Statewide Rules 8, 13, and 14. For offshore operations, Cementing Company and Operator shall comply with Statewide Rule 13(E).
3. If setting FULL AMOUNT OF SURFACE CASING:
   A. Depth to protect fresh water determined by:
      (1) Field Rule
      (2) Texas Water Development Board, if no Field Rule
   B. Set surface casing below depth to be protected and cement from casing shoe to ground surface.
4. IF SETTING ANYTHING OTHER THAN THE FULL AMOUNT OF SURFACE CASING, PERMISSION SHALL BE OBTAINED FROM THE RAILROAD COMMISSION.
5. If setting NO SURFACE CASING (See Item 4 above.):
   A. If no multi-stage tool is used, the next deeper casing string shall be cemented from the casing shoe to the surface.
   B. If using the multi-stage tool on the next deeper string, cement from the depth that protects fresh water sands to the surface.
6. If setting SHORT SURFACE CASING (See Item 4 above.):
   A. Cement short surface casing from the shoe to the surface.
   B. Whether the multi-stage tool is or is not used on the next deeper casing string, cement from the depth that protects fresh water sands to:
      (1) the surface, or
      (2) a point midway between shoe of surface string and the surface. Compliance will be considered if a temperature survey shows that the top of the cement is at least one-third of the distance from the shoe of the surface string to the surface.
7. Setting PRODUCTION STRING of Casing:
   A. Cement to a point at least 600 feet above the casing shoe.
   B. When 3,000 feet or more of pipe is set for the production or protecting string, a minimum of 30 feet of cement shall be left inside the pipe.
8. PLUGGING and ABANDONING:
   A. Cement plugs shall be placed in the well bore as required by Rules and Regulations of the Commission plus any additional plugs as may be specified by the RRC District Director.
   B. The minimum amount of cement normally used in each plug shall be a slurry volume equal to the amount necessary to fill the calculated volume of 100 feet of the hole in which the plug is placed.
   C. A 10 foot cement plug is required to be placed in the top of the well.

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

Form W-15
(Rev. 8-67-60)

CEMENTING REPORT

(To be filed with each Form G-1, W-2, W-3, or, if tubingless completions, W-4)

1. Field Name (as per RRC Records or Wildcat): WILDCAT	*2. RRC District: 3
*3. Operator: Mitchell Energy Corporation	*4. County: Harris
*5. Lease Name(s) and RRC Lease Number(s) or I. D. Number(s): Houston Port Authority	*6. Well Number: #1
*7. Location (Section, Block, and Survey): RICHARD AND ROBERT VINCE SURVEY, A-76	

CASING CEMENTING DATA:	SURFACE CASING	INTER-MEDIATE CASING	PRODUCTION CASING: Single String	PRODUCTION CASING: Multiple Parallel Strings	MULTI-STAGE CEMENTING PROCESS: Tool	MULTI-STAGE CEMENTING PROCESS: Shoe
8. Cementing Date	3-5-75					
*9. (a) Size of Drill Bit (inches)	12 1/4					
(b) Estimated % Wash or Hole Enlargement Used in Calculations.	100%					
*10. Size of Casing (inches O.D.)	8 5/8					
*11. Top of Liner (if liner used) (ft.)						
*12. Setting Depth of Casing (ft.)	3503					
13. Type API Class Cement & Amount of Additives Used: (a) In First (Lead) or Only Slurry (If additional space is needed, use "REMARKS" on reverse side.)	TLW +5% Salt					
(b) In Second Slurry	Class H + 5% Salt					
(c) In Third Slurry	Class H + 2% $CaCl_2$					
14. Sacks of Cement Used: (a) In First (Lead) or Only Slurry	705					
(b) In Second Slurry	350					
(c) In Third Slurry	50					
(d) Total Sacks of Cement Used	1105					
15. Slurry Volume per Sack of Cement (cu.ft./sack): (a) In First (Lead) or Only Slurry	2.49					
(b) In Second Slurry	1.18					
(c) In Third Slurry	1.18					
16. Volume of Slurry Pumped: (cu. ft.) (Item 14 x Item 15) (a) In First (Lead) or Only Slurry	1755.45					
(b) In Second Slurry	413					
(c) In Third Slurry	59					
(d) Total Slurry Volume Pumped (cu.ft.)	2227.45					
17. Calculated Annular Height of Cement Slurry behind Pipe (ft.)	Surface					
18. Was cement circulated to ground surface (or bottom of cellar) outside casing? (Yes or No)	Yes					
CEMENTING TO PLUG AND ABANDON DATA:	**PLUG NO. 1**	**PLUG NO. 2**	**PLUG NO. 3**	**PLUG NO. 4**	**PLUG NO. 5**	**PLUG NO. 6**
19. Cementing Date						
*20. Size of Hole or Pipe in which Plug Placed (inches)						
*21. Depth to Bottom of Tubing or Drill Pipe (ft.)						
22. Sacks of Cement Used (each plug)						
23. Slurry Volume Pumped (cu. ft.)						
24. Calculated Top of Plug (ft.)						
*25. Measured Top of Plug (if tagged) (ft.)						

(CEMENTING COMPANY AND OPERATOR MUST COMPLY WITH THE INSTRUCTIONS ON REVERSE SIDE HEREOF.)

— OVER —

* Designates items to be completed by Operator. Items not so designated shall be completed by Cementing Company.

201-30404

26. Remarks:

*27. Remarks:

CEMENTING COMPANY

I declare under penalties prescribed in Article 6036c, R. C. S., that I am authorized to make this certification; that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete to the best of my knowledge. This certification covers cementing data only.

Claudie Matthews
Signature of Cementer or Authorized Representative

Claudie Matthews--Service Supervisor
Name of Person and Title (type or print)

The Western Company
Cementing Company

Box 841
Street Address or P.O. Box

Liberty, Texas 77575
City, State Zip Code

Telephone 713 336-7218
Area Code

March 7, 1975
Date

*OPERATOR

I declare under penalties prescribed in Article 6036c, R. C. S., that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct, and complete to the best of my knowledge. This certification covers all well data and information presented herein.

Marion Tebbs
*Signature of Operator or Authorized Representative

Marion Tebbs, Petroleum Engineer
*Name of Person and Title (type or print)

Mitchell Energy Corporation
*Operator

3900 One Shell Plaza
*Street Address or P.O. Box

Houston, Texas 77002
*City, State Zip Code

*Telephone 713 224-4522
Area Code

March 25, 1975
*Date

– INSTRUCTIONS –

1. A. The completed original and one copy of this form shall be filed by the operator in the RRC District Office with the required two copies of Form G-1, Gas Well Back Pressure Test, Completion or Recompletion Report and Log; Form W-2, Oil Well Potential Test, Completion, or Recompletion Report and Log; Form W-3, Plugging Record; or if tubingless completions, Form W-4, Application for Multiple Completion.
   B. At least an original and one copy of this form shall be filed for each cementing company used on a well.
   C. The cementing of different casing strings on a well by one cementing company may be consolidated on one form (to be filed in duplicate).
2. Cementing Company and Operator shall comply with the applicable portions of Statewide Rules 8, 13, and 14. For offshore operations, Cementing Company and Operator shall comply with Statewide Rule 13(E).
3. If setting FULL AMOUNT OF SURFACE CASING:
   A. Depth to protect fresh water determined by:
      (1) Field Rule
      (2) Texas Water Development Board, if no Field Rule
   B. Set surface casing below depth to be protected and cement from casing shoe to ground surface.
4. IF SETTING ANYTHING OTHER THAN THE FULL AMOUNT OF SURFACE CASING, PERMISSION SHALL BE OBTAINED FROM THE RAILROAD COMMISSION.
5. If setting NO SURFACE CASING (See Item 4 above.):
   A. If no multi-stage tool is used, the next deeper casing string shall be cemented from the casing shoe to the surface.
   B. If using the multi-stage tool on the next deeper string, cement from the depth that protects fresh water sands to the surface.
6. If setting SHORT SURFACE CASING (See Item 4 above.):
   A. Cement short surface casing from the shoe to the surface.
   B. Whether the multi-stage tool is or is not used on the next deeper casing string, cement from the depth that protects fresh water sands to:
      (1) the surface, or
      (2) a point midway between shoe of surface string and the surface. Compliance will be considered if a temperature survey shows that the top of the cement is at least one-third of the distance from the shoe of the surface string to the surface.
7. Setting PRODUCTION STRING of Casing:
   A. Cement to a point at least 600 feet above the casing shoe.
   B. When 3,000 feet or more of pipe is set for the production or protecting string, a minimum of 30 feet of cement shall be left inside the pipe.
8. PLUGGING and ABANDONING:
   A. Cement plugs shall be placed in the well bore as required by Rules and Regulations of the Commission plus any additional plugs as may be specified by the RRC District Director.
   B. The minimum amount of cement normally used in each plug shall be a slurry volume equal to the amount necessary to fill the calculated volume of 100 feet of the hole in which the plug is placed.
   C. A 10 foot cement plug is required to be placed in the top of the well.

MAP ID# 7

FORM 925145

Dresser Atlas

Induction Electrolog®

61968 D

FILE NO.

PETROLEUM INFORMATION CORP.
HO #2 GIC = WIND TUNNEL
PROPERTY OF

COMPANY MITCHELL ENERGY CORPORATION

WELL HOUSTON PORT AUTHORITY #1

FIELD GREENS BAYOU

COUNTY HARRIS STATE TEXAS

LOCATION: 4820' FWL & 13,160' FNL OF RICHARD & ROBERT VINCE SURVEY A-76.

SEC TWP RGE

Other Services: C-D/L SWC DIPLOG

Permanent Datum GROUND LEVEL Elev. 22.12'

Log Measured from KELLY BUSHING 17.0 Ft. Above Permanent Datum

Drilling Measured from KELLY BUSHING

Elevations: KB 39.12 DF 38.12 GL 22.12

Date	3-17-75			
Run No.	1			
Depth—Driller	8200			
Depth—Logger	8201			
Bottom Logged Interval	8196			
Top Logged Interval	3500			
Casing—Driller	8-5/8@ 3500	@	@	@
Casing—Logger	3500			
Bit Size	7-7/8			
Type Fluid in Hole	LIG EMUL.			
	@	@	@	@
Density and Viscosity	10.9 56			
pH and Fluid Loss	9.5 3.6cc	cc	cc	cc
Source of Sample	FLOWLINE			
Rm @ Meas. Temp.	1.17@ 78°F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.	0.90@ 78°F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.	1.3 @ 78°F	@ °F	@ °F	@ °F
Source of Rmf and Rmc	CALC CALC			
Rm @ BHT	0.57@ 160°F	@ °F	@ °F	@ °F
Time Since Circ.	4 HRS			
Max. Rec. Temp. Deg. F.	160 °F	°F	°F	°F
Equip. No. and Location	6120 BMT			
Recorded By	POLAK			
Witnessed By	HUGHES-KIATTA			

THIS HEADING AND LOG CONFORMS TO API RECOMMENDED STANDARD PRACTICE RP 31

FOLD HERE

REMARKS

Equipment Used

Series No.	
Run No.	
S.O.	
Tool No.	30555
Panel No.	856-24674

Scale Changes

Scale Down Hole | Scale Up Hole | Depth | Type Log

Changes in Mud Type or Additional Samples

Date | Sample No.

MAP ID NO. 8

INEXCO OIL CO.
H.S.C. NAVIGATION DIST. 1

03
API # 42 201 30183

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

FORM W-1
(Rev. 12-16-69)

10

SPS APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

Check one: ☐ DRILL ☒ DEEPEN ☐ PLUG BACK ☐ OTHER (Specify)

1. Operator: Inexco Oil Company
2. Address (Including City and Zip Code): 1301 Americana Building, Houston, Texas 77002
3. Is Form 7 in Exact Operator Name Filed? YES ☒ NO ☐
4. Lease Name: HCHSC Navigation Dist.
5. Location (Sec., Blk., Survey): 6400' FNL & 10,490' FEL of Richard & Robert Vince Survey
6. This well is to be located 2 miles SW Direction from Channelview, Texas Nearest Post Office or Town.
7. RRC District: 3
8. County: Harris.
9. Well Number: 1
10. Number of Acres in Lease: 523.45
11. Distance from Proposed Location to Nearest Property or Lease Line (ft.): 2250'

EACH PROPOSED COMPLETION

12. FIELD NAME (Exactly as shown on R. R. C. Proration Schedule including Reservoir if applicable.) If Wildcat, so state below.	13. Completion Depth	14. RRC Lease or ID Number (If applicable)	15. Field Rule Spacing Pattern (Distance to lease line & distance between wells. If no special rules indicate Rule 37.)	16. Field Rule Proration Unit Pattern. (Acres. If no special rules, indicate Statewide Rule 38)	17. Number of Acres in Drilling Unit for this Well	18. Is this acreage presently assigned to another well in same field? (Yes or No, if yes, explain in remarks.)	19. Distance from proposed location to nearest drilling completed or applied for well in same reservoir on same lease (ft.)	20. Is this a Regular Location? (Yes or No)	21. Oil, Gas, or other Type Well (Specify)	22. Number of Wells or Permitted Locations on this Lease in same Reservoir for which this Permit is Requested. OIL	GAS
Wildcat	9000'	-	Rule 37	Rule 38	40	No	0	Yes	-	0	0

RECEIVED R.R.C. OF TEXAS JAN 21 1972 O.G.

NOTICE
NO ALLOWABLE WILL BE ASSIGNED to any well which does not have sufficient surface casing to protect all fresh water sands. Where Commission rules do not specify surface casing requirements, it will be necessary to contact Texas Water Development Board, Austin, Texas, to ascertain the depth to which fresh water sands must be protected.

REMARKS:

CERTIFICATE
I declare under penalties prescribed in Article 6036c, R. C. S., that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

Alvin C. Simmons
Signature: Alvin C. Simmons
Title: D. P. & E. Manager
Date: January 20, 1972
Telephone: Area Code 713 . 224-8085

1½ Mi W-NW of Renee Field

-OVER-

0 0 0 0 5 6 0 0 3 5 1

0 0 0 0 7 6 0 0 3 3 2

H.C. HIROMS
A-33
(Open)

P. J. DUNCAN
A-232
(Open)

INEXCO

INEXCO
523 ± Ac. Lse.
(Partial Plat)

6400'

RICHARD & ROBERT VINCE
A-76

(Open)

1453'

Proposed Loc.

1158'

660

2250'

10,490'

40 Ac.

STATE OF TEXAS
LARRY D. STROUP
1633
REGISTERED PUBLIC SURVEYOR
STATE OF TEXAS
1972

I hereby certify this plat to be correct to the best of my knowledge.

LAUGHLIN-SIMMONS & CO. of TEXAS, Inc.
Oil Well Elevations & Locations

TEXAS HARRIS R. & R. VINCE A-76
state county survey

INEXCO OIL CO #1 HCHSC Navigation Dist.
operator well number lease

scale: 1" = 1000'

Form G-1
Rev. 7-5-66

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

GREENS BAYOU (FRIO-VKSBG D) 00340683

GAS WELL BACK PRESSURE TEST
COMPLETION OR RECOMPLETION REPORT AND LOG

7. RRC District: 3
8. RRC Identification Number: 92-52201
9. Well Number: 1
10. County: Harris
11. Purpose of Test: Initial Potential [X] Retest [ ] Reclass [ ]

1. FIELD NAME (as per RRC Records or Wildcat): ~~WILDCAT~~
2. LEASE NAME: H.C.&H.S.C. Navigation District
3. OPERATOR: INEXCO OIL COMPANY 424200
4. ADDRESS: 1301 Americana Building, Houston, Texas 77002
5. If Operator has changed within last 60 Days -- Give former Operator: on S/2 Co. Map
6. LOCATION (Section, Block, and Survey): 3 Miles North of Deepwater
6,400' FNL and 10,490' FEL of Richard & Robert Vince Survey A-76
12. Pipe Line Connection: Negotiating
13. If Workover, give former Field (with Reservoir):
14. Completion Date: 2-20-72
15. List of Offset Operators Notified and Date of Notification:
16. Type of Electric or other Log Run: IES, GR-D

#15326

NED 3-27-72

Section I — Separator GAS MEASUREMENT DATA

Date of Test: 2-18,19-72
Gas Measurement Method (Check One): Orifice Meter [X] Positive Choke [ ] Orifice Vent Meter [ ] Pitot Tube [ ] Critical-flow Prover [ ]
Gas produced during test: 431 MCF

Run No.	Line Size	Orifice or Choke Size	24 Hr. Coeff. Orif or Choke	Static P_m or Choke Press	Diff. h_w	Flow Temp. °F	Temp. Factor F_{tf}	Gravity Factor F_g	Compress Factor F_{pv}	Volume MCF/DAY
1	2.900	1.000	6356.75	455	12.0	100	.9636	.9798	1.030	457
2				455	23.5	94	.9688	.9798	1.032	645
3				455	48.0	85	.9768	.9798	1.034	930
4				455	79.0	78	.9831	.9798	1.037	1205

Section II — FIELD DATA AND PRESSURE CALCULATIONS

Gravity (Dry Gas)	Gravity Liquid Hydrocarbon	Gas-Liquid Hydro Ratio	Gravity of Mixture	Avg. Shut-In Temp.	Bottom Hole Temp.
.625	60.8 Deg. API	48,220 CF/Bbl	G_{mix} = .684	--- °F	178 °F @ 7510 (Depth)

$D_{eff}^{8/3}$ = | $\sqrt{T_f}$ = $\sqrt{\ }$ = | $\sqrt{GL}$ = $\sqrt{\ }$ =

$C = \frac{1118 \times (D_{eff})^{8/3}}{\sqrt{T}}$ = | $\frac{\sqrt{GL}}{C}$ = ____ = ____

Run No.	Time of Run Min.	Choke Size	Wellhead Press P_w PSIA	Wellhead Flow Temp. °F	P_w^2 (Thousands)	R	R^2 (Thousands)	P_l	P_w/P_l
Shut-In			2687	74					
1	120		2590	90					
2	300	Adjust.	2533	90					
3	90	Choke	2519	90					
4	240		2489	90					

Run No.	F	K	S = 1/4	E^{ks}	P_f and P_s	P_f^2 and P_s^2	$P_f^2 - P_s^2$
Shut-In					3151	9929	
1	Used BHP Instrument				3143	9878	51
2	8000# Range				3138	9847	82
3	Ser. No. 20324-N				3128	9784	145
4					3116	9709	220

Angle of Slope: θ = 56.0, n = .675
Absolute Open Flow: 15,000 MCF/DAY

OPEN FLOW TEST:
Shut-In Press: New well, s Psig
Time Shut-In: Hrs.
Producing Through
In. H_2O In. Hg Psig

Time	Reading	Time	Reading
15		25	
20		30	

CLEMENTSON ENGINEERING COMPANY
R. C. Clementson
REPRESENTATIVE OF COMPANY MAKING TEST

MAR 22 1972
REPRESENTATIVE OF RAILROAD COMMISSION

CERTIFICATE:
I declare under penalties prescribed in Article 6036c, R.C.S., that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

Delven Mermis, Division Engineer — March 16, 1972
TITLE — DATE

REPRESENTATIVE OF COMPANY

001 3683 Depth - 8143 OW 3-7-2

SECTION III — DATA ON WELL COMPLETION AND LOG (Not Required on Retest)

17. Type of Completion: New Well X | Deepening | Plug Back | Other

18. Date Permit Issued: 1-3-72

19. Notice of Intention to Drill this Well was filed in Name of: INEXCO OIL COMPANY

20. If Special Permit, Give Permit Number: ---

21. Number of Producing Wells on this Lease in This Field (Reservoir) including this Well: 1

22. Total Number of Acres in this Lease: 523.45

23. Date Plug Back, Deepening, Work Over or Drilling Operations: Commenced 1-12-72 | Completed 1-26-72

24. Distance to Nearest Well, Same Lease & Reservoir: ---

25. Location of Well, Relative to Lease Boundaries of Lease on which this Well is Located: 6,400 Feet From North Line And 10,490 Feet From East Line of The Richard & Robert Vince Sur. A-78 Lease

26. Elevation (DF, RKB, RT, GR, ETC): GL 27' KB 44'

27. Was Directional Survey Made: Yes [ ] No X

28. Top of Pay: 7,024'

29. Total Depth: 8,143'

30. P.B. Depth: 8,074

31. Surface Casing Determined By: Recommendation of Texas Water Development Board X | Field Rules | Railroad Commission (Special)

32. Is Well Multiple Completion? Yes [ ] No X

33. If Multiple Completion List All Reservoir Names

34. Intervals Drilled By: Rotary Tools 0-8,143 | Cable Tools

35. Name of Drilling Contractor: BAY CITY DRILLING

36. Is Cementing Affidavit Attached? Yes X No [ ]

37. CASING RECORD (Report All Strings Set In Well)

Casing Size	Weight LB. FT.	Depth Set	Hole Size	Cementing Record	Amount Pulled
9-5/8"	36	1,045	12-¼	380 sx	
7"	23 & 26	7,385	8-3/4	905 sx	

38. LINER RECORD

Size	Top	Bottom	Sacks Cement	Screen
5", 15#, N80	7,124	8,141	100	No

39. TUBING RECORD

Size	Depth Set	Packer Set
2-3/8"	7,895	7,884
		7,088
		6,947

40. Producing Interval (this completion) indicate Depth of Perforations or Open Hole

From	To
7929	7934
7985	7992
8001	8006
7024	7027

41. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

Depth Interval	Amount and Kind of Material Used
NONE	

42. FORMATION RECORD (LIST DEPTHS OF PRINCIPAL GEOLOGICAL MARKERS AND FORMATION TOPS)

Formations	Depth	Formations	Depth
Frio	5,260'		
Vicksburg	7,460'		
Vicksburg "D"	7,930'		

REMARKS

0 0 0 0 5 6 0 0 3 2 8

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

Form W-15
(Rev. 11-1-69)

CEMENTING REPORT

*1. Field Name (as per RRC Records or Wildcat) WILDCAT? Greens Bayou (Frio-Vhdy D)	*2. RRC District 3
*3. Operator INEXCO OIL COMPANY	*4. County HARRIS
*5. Lease Name(s) and RRC Lease Number(s) or I. D. Number(s) HCHSC NAVIGATION DISTRICT	*6. Well Number 1
*7. Location (Section, Block, and Survey) 6,400' FNL and 10,490' FEL of Richard & Robert Vince Survey A-76	

CASING CEMENTING DATA:	SURFACE CASING	INTER-MEDIATE CASING	PRODUCTION CASING Single String	PRODUCTION CASING Multiple Parallel Strings	MULTI-STAGE CEMENTING PROCESS Tool	MULTI-STAGE CEMENTING PROCESS Shoe
8. Cementing Date					1-20-72	1-20-72
*9. (a) Size of Drill Bit (inches)					8-3/4	8-3/4
(b) Estimated % Wash or Hole Enlargement Used in Calculations.					100%	20%
*10. Size of Casing (inches O.D.)					7	7
*11. Top of Liner (if liner used) (ft.)					---	---
*12. Setting Depth of Casing (ft.)					2713	7385
13. Type API Class Cement & Amount of Additives Used: (a) In First (Lead) or Only Slurry (If additional space is needed, use "REMARKS" on reverse side.)					Halliburton Light	Pozmix
(b) In Second Slurry					Common H	Common H
(c) In Third Slurry						
14. Sacks of Cement Used: (a) In First (Lead) or Only Slurry					280 sks.	450 sks.
(b) In Second Slurry					75 sks.	100 sks.
(c) In Third Slurry						
(d) Total Sacks of Cement Used					355 sks.	550 sks.
15. Slurry Volume per Sack of Cement (cu.ft./sack): (a) In First (Lead) or Only Slurry					2.68	1.46
(b) In Second Slurry					1.18	1.20
(c) In Third Slurry						
16. Volume of Slurry Pumped: (cu. ft.) (Item 14 x Item 15) (a) In First (Lead) or Only Slurry					750	657
(b) In Second Slurry					89	120
(c) In Third Slurry						
(d) Total Slurry Volume Pumped (cu.ft.)					839	777
17. Calculated Annular Height of Cement Slurry Behind Pipe (ft.)					5579	5168
18. Was cement circulated to ground surface (or bottom of cellar) outside casing? (Yes or No)					Yes	No

CEMENTING TO PLUG AND ABANDON DATA:	PLUG NO. 1	PLUG NO. 2	PLUG NO. 3	PLUG NO. 4	PLUG NO. 5	PLUG NO. 6
19. Cementing Date						
*20. Size of Hole or Pipe in which Plug Placed (inches)						
*21. Depth to Bottom of Tubing or Drill Pipe (ft.)						
22. Sacks of Cement Used (each plug)						
Slurry Volume Pumped (cu. ft.)						
Calculated Top of Plug (ft.)						
*25. Measured Top of Plug (if tagged) (ft.)						

RECEIVED R.R.C. OF TEXAS MAR 22 1972

RECEIVED R.R.C. OF TEXAS MAR 23 1972

(CEMENTING COMPANY AND OPERATOR MUST COMPLY WITH THE INSTRUCTIONS ON REVERSE SIDE HEREOF.)

-OVER-

* Designates items to be completed by Operator. Items not so designated shall be completed by Cementing Company.

3-10 52201

26. Remarks: DV Tool set at 2731 ft.
Tool: 280 sks. Halliburton Light Cement, 4% gel, 4 lbs. salt per sack. 75 sks. Lone Star Common H Cement, 2% Calcium Chloride. Shoe: 450 sks. Pozmix A, 7.5 Gilsonite per sack, 9.2 salt per sack. 100 sks. Lone Star Common H Cement, 7.70 salt per sack, 1/10% Hr-4

*27. Remarks:

CEMENTING COMPANY

I declare under penalties prescribed in Article 6036c, R.C.S., that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete to the best of my knowledge. This certification covers cementing data only.

Signature of Cementer or Authorized Representative

H. Beeson, Cementer
Name of Person and Title (type or print)

Halliburton Services
Cementing Company

P. O. Box 20025
Street Address or P.O. Box

Houston, Texas 77025
City, State Zip Code

Telephone 713 748-2160
Area Code

January 24, 1972
Date

***OPERATOR**

I declare under penalties prescribed in Article 6036c, R.C.S., that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct, and complete to the best of my knowledge. This certification covers all well data and information presented herein.

*Signature of Operator or Authorized Representative

Delven H. Mermis, Division Engineer
INEXCO OIL COMPANY
*Name of Person and Title (type or print)

1301 Americana Bldg. (INEXCO OIL CO.)
*Operator

Houston, Texas 77002
*Street Address or P.O. Box

Houston, Texas 77002
*City, State Zip Code

*Telephone 713 224-8085
Area Code

March 16, 1972
*Date

INSTRUCTIONS

1. A. This form shall be filed by the operator in the RRC District Office with:
   (1) Each copy of an initial Form G-1 or W-2 if a cementing report is required by Statewide or Special Rules, or if exception is needed to cementing requirements in Statewide or Special Rules;
   (2) Each copy of Form W-3;
   (3) Each copy of Form W-4 if a multiple parallel casing completion.
   B. At least an original and one copy of this form shall be filed for each cementing company used on a well.
   C. The cementing of different casing strings on a well by one cementing company may be consolidated on one form (to be filed in duplicate).
2. Cementing Company and Operator shall comply with the applicable portions of Statewide Rules 8, 13, and 14. For offshore operations, Cementing Company and Operator shall comply with Statewide Rule 13(E).
3. If setting FULL AMOUNT OF SURFACE CASING:
   A. Depth to protect fresh water determined by:
   (1) Field Rule
   (2) Texas Water Development Board, if no Field Rule
   B. Set surface casing below depth to be protected and cement from casing shoe to ground surface.
4. IF SETTING ANYTHING OTHER THAN THE FULL AMOUNT OF SURFACE CASING, PERMISSION SHALL BE OBTAINED FROM THE RAILROAD COMMISSION.
5. If setting NO SURFACE CASING (See Item 4 above.):
   A. If no multi-stage tool is used, the next deeper casing string shall be cemented from the casing shoe to the surface.
   B. If using the multi-stage tool on the next deeper string, cement from the depth that protects fresh water sands to the surface.
6. If setting SHORT SURFACE CASING (See Item 4 above.):
   A. Cement short surface casing from the shoe to the surface.
   B. Whether the multi-stage tool is or is not used on the next deeper casing string, cement from the depth that protects fresh water sands to:
   (1) the surface, or
   (2) a point midway between shoe of surface string and the surface. Compliance will be considered if a temperature survey shows that the top of the cement is at least one-third of the distance from the shoe of the surface string to the surface.
7. Setting PRODUCTION STRING of Casing: (Statewide Rules; Special Rules may vary.)
   A. Cement to a point at least 600 feet above the casing shoe.
   When 3,000 feet or more of pipe is set for the production or protecting string, a minimum of 30 feet of cement shall be left inside the pipe.
8. JGGING and ABANDONING:
   A. Cement plugs shall be placed in the well bore as required by Rules and Regulations of the Commission plus any additional plugs as may be specified by the RRC District Director.
   B. The minimum amount of cement normally used in each plug shall be a slurry volume equal to the amount necessary to fill the calculated volume of 100 feet of the hole in which the plug is placed.
   C. A 10 foot cement plug is required to be placed in the top of the well.

0 0 0 0 3 5 0 0 3 2 9

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

Form W-15
(Rev. 8-27-69)

CEMENTING REPORT

(To be filed with each Form G-1, W-2, W-3, or, if tubingless completions, W-4)

Field Name (as per RRC Records or Wildcat) WILDCAT	*2. RRC District 03
*3. Operator INEXCO OIL COMPANY	*4. County Harris
*5. Lease Name(s) and RRC Lease Number(s) or I. D. Number(s) HCHSC Navigation District	*6. Well Number 1
*7. Location (Section, Block, and Survey) 6 400' FNL and 10 490' FEL of Richard and Robert Vince Survey A-76	

CASING CEMENTING DATA:	SURFACE CASING	INTER-MEDIATE CASING	PRODUCTION CASING Single String	PRODUCTION CASING Multiple Parallel Strings	MULTI-STAGE CEMENTING PROCESS Tool	MULTI-STAGE CEMENTING PROCESS Shoe
8. Cementing Date	1-13-72		1-27-72			
*9. (a) Size of Drill Bit (inches)	12 1/4		6-1/8			
(b) Estimated % Wash or Hole Enlargement Used in Calculations.			80%			
*10. Size of Casing (inches O.D.)	9 5/8		5" 15#			
*11. Top of Liner (if liner used) (ft.)			7124			
*12. Setting Depth of Casing (ft.)	1045		8142			
13. Type API Class Cement & Amount of Additives Used: (a) In First (Lead) or Only Slurry (If additional space is needed, use "REMARKS" on reverse side.)	Atlas E 4% gel		Class H D-19 R1-5			
(b) In Second Slurry	Atlas H 2% cal chl					
(c) In Third Slurry						
14. Sacks of Cement Used: (a) In First (Lead) or Only Slurry	230		102			
(b) In Second Slurry	200					
(c) In Third Slurry						
(d) Total Sacks of Cement Used	430		102			
15. Slurry Volume per Sack of Cement (cu.ft./sack): (a) In First (Lead) or Only Slurry	1.52		1.23			
(b) In Second Slurry	1.17					
(c) In Third Slurry						
16. Volume of Slurry Pumped: (cu. ft.) (Item 14 x Item 15) (a) In First (Lead) or Only Slurry	349.6		125.4			
(b) In Second Slurry	234.0					
(c) In Third Slurry						
(d) Total Slurry Volume Pumped (cu.ft.)	583.6		125.4			
17. Calculated Annular Height of Cement Slurry behind Pipe (ft.)	1867		1831			
18. Was cement circulated to ground surface (or bottom of cellar) outside casing? (Yes or No)	Yes		No			

CEMENTING TO PLUG AND ABANDON DATA:	PLUG NO. 1	PLUG NO. 2	PLUG NO. 3	PLUG NO. 4	PLUG NO. 5	PLUG NO. 6
19. Cementing Date						
*20. Size of Hole or Pipe in which Plug Placed (inches)						
*21. Depth to Bottom of Tubing or Drill Pipe (ft.)						
22. Sacks of Cement Used (each plug)						
23. Slurry Volume Pumped (cu. ft.)						
Calculated Top of Plug (ft.)						
*25. Measured Top of Plug (if tagged) (ft.)						

RECEIVED R.R.C. OF TEXAS MAR 22 1972

RECEIVED R.R.C. OF TEXAS MAR 28 1972 AUSTIN, TEXAS

(CEMENTING COMPANY AND OPERATOR MUST COMPLY WITH THE INSTRUCTIONS ON REVERSE SIDE HEREOF.)

OVER

* Designates items to be completed by Operator. Items not so designated shall be completed by Cementing Company.

B-105220

26. Remarks:

H.C.H.S.C. Navigation
I

Liner 7124-8142
102 sx Class "H" w/0.2% D-19, 0.2% R-5,
8% Salt. 15.8 ppg

*27. Remarks:

Surface casing: 230 sx Lite Wate + 4% gel;
150 sx Class "A" + 2% $CaCl_2$

CEMENTING COMPANY

I declare under penalties prescribed in Article 6036c, R. C. S., that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete to the best of my knowledge. This certification covers cementing data only.

Signature of Cementer or Authorized Representative

Arthur H Zander Jr. SErvice Forman
Name of Person and Title (type or print)

Byron Jackson Inc.
Cementing Company

PO. Box 45376
Street Address or P.O. Box

Houston, Texas 77045
City, State Zip Code

Telephone 713 433 - 2471
Area Code

3-15-72
Date

***OPERATOR**

I declare under penalties prescribed in Article 6036c, R. C. S., that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct, and complete to the best of my knowledge. This certification covers all well data and information presented herein.

*Signature of Operator or Authorized Representative

Delven H. Mermis, Division Engineer
*Name of Person and Title (type or print)

INEXCO OIL COMPANY
*Operator

1301 Americana Bldg
*Street Address or P.O. Box

Houston Texas 77002
*City, State Zip Code

*Telephone 713 224-8085
Area Code

March 20, 1972
*Date

– INSTRUCTIONS –

1. A. The completed original and one copy of this form shall be filed by the operator in the RRC District Office with the required two copies of Form G-1, Gas Well Back Pressure Test, Completion or Recompletion Report and Log; Form W-2, Oil Well Potential Test, Completion, or Recompletion Report and Log; Form W-3, Plugging Record; or if tubingless completions, Form W-4, Application for Multiple Completion.
   B. At least an original and one copy of this form shall be filed for each cementing company used on a well.
   C. The cementing of different casing strings on a well by one cementing company may be consolidated on one form (to be filed in duplicate).
2. Cementing Company and Operator shall comply with the applicable portions of Statewide Rules 8, 13, and 14. For offshore operations, Cementing Company and Operator shall comply with Statewide Rule 13(E).
3. If setting FULL AMOUNT OF SURFACE CASING:
   A. Depth to protect fresh water determined by:
      (1) Field Rule
      (2) Texas Water Development Board, if no Field Rule
   B. Set surface casing below depth to be protected and cement from casing shoe to ground surface.
4. IF SETTING ANYTHING OTHER THAN THE FULL AMOUNT OF SURFACE CASING, PERMISSION SHALL BE OBTAINED FROM THE RAILROAD COMMISSION.
5. If setting NO SURFACE CASING (See Item 4 above.):
   A. If no multi-stage tool is used, the next deeper casing string shall be cemented from the casing shoe to the surface.
   B. If using the multi-stage tool on the next deeper string, cement from the depth that protects fresh water sands to the surface.
6. If setting SHORT SURFACE CASING (See Item 4 above.):
   A. Cement short surface casing from the shoe to the surface.
   B. Whether the multi-stage tool is or is not used on the next deeper casing string, cement from the depth that protects fresh water sands to:
      (1) the surface, or
      (2) a point midway between shoe of surface string and the surface. Compliance will be considered if a temperature survey shows that the top of the cement is at least one-third of the distance from the shoe of the surface string to the surface.
7. Setting PRODUCTION STRING of Casing:
   A. Cement to a point at least 600 feet above the casing shoe.
   B. When 3,000 feet or more of pipe is set for the production or protecting string, a minimum of 30 feet of cement shall be left inside the pipe.

PLUGGING and ABANDONING:

A. Cement plugs shall be placed in the well bore as required by Rules and Regulations of the Commission plus any additional plugs as may be specified by the RRC District Director.

B. The minimum amount of cement normally used in each plug shall be a slurry volume equal to the amount necessary to fill the calculated volume of 100 feet of the hole in which the plug is placed.

C. A 10 feet cement plug is required to be placed in the top of the well.

Plugging Record

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

FORM W-
Rev. 10/7

API NO. (if available) 42-201-30183

FILE IN DUPLICATE WITH DISTRICT OFFICE OF DISTRICT IN WHICH WELL IS LOCATED WITHIN THIRTY DAYS AFTER PLUGGING

1. RRC District: 3
2. FIELD NAME (as per RRC Records): Green's Bayou (Frio-Vksbg. D)
3. Lease Name: H.C. & H.S.C. Navigation District
4. RRC Lease or Id. Number: 052201
5. Well Number: 1
6. OPERATOR: Energy Development Corporation
6a. Original Form W-1 Filed in Name of: Inexco Oil Company
6b. Any Subsequent W-1's Filed in Name of:
7. ADDRESS: 1000 Louisiana, Suite 2900 Houston, Texas 77002
8. Location of Well, Relative to Nearest Lease Boundaries of Lease on which this Well is Located: 6400 Feet From North Line and 10490 Feet From East Line of the Richard & Robert Vince Svy Lease
9a. SECTION, BLOCK, AND SURVEY: Richard & Robert Vince A-76
9b. Distance and Direction From Nearest Town in this County: 2 miles SW of Channelview
10. County: Harris
11. Date Drilling Permit Issued: 1-3-72
12. Permit Number: A-76
13. Date Drilling Commenced: 1-12-72
14. Date Drilling Completed: 1-26-72
15. Date Well Plugged: 2-4-93
16. Type Well (Oil, Gas, Dry): Gas
Total Depth: 8143
17. If Multiple Completion List All Field Names and Oil Lease or Gas ID No.'s

GAS ID or OIL LEASE #	Oil-O Gas-G	WELL #

18. If Gas, Amt. of Cond. on Hand at time of Plugging:

CEMENTING TO PLUG AND ABANDON DATA:

	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
*19. Cementing Date	020293	020293	020493	020493	020493	020493		
20. Size of Hole or Pipe in which Plug Placed (inches)	23/8	23/8, 7	7	7	7	7		
21. Depth to Bottom of Tubing or Drill Pipe (ft.)	7750	7088	3830	2775	1100	53		
*22. Sacks of Cement Used (each plug)	1	50	40	35	25	10		
*23. Slurry Volume Pumped (cu. ft.)	1.18	59	47.2	41.3	29.5	11.8		
*24. Calculated Top of Plug (ft.)	7730	6947	3630	2600	990	3		
25. Measured Top of Plug (if tagged) (ft.)								
26. Slurry Wt. #/Gal.	15.6	15.6	15.6	15.6	15.6	15.6		
27. Type Cement	H	H	H	H	H	H		

28. CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT. #/FT.	PUT IN WELL (ft.)	LEFT IN WELL (ft.)	HOLE SIZE (in.)
95/8	36	1045	1045	12¼
7	23,26	7385	7385	83/4
5½	15	7124-8141	7124-8141	61/8
23/8	4.7	7884	4024	5.7

29. Was any Non-Drillable Material (Other than Casing) Left in This Well? [X] Yes [ ] No

29a. If answer to above is "Yes" state depth to top of "junk" left in hole and briefly describe non-drillable material. (Use Reverse Side of Form if more space is needed.)

1) Top of junk @ 3860'.
2) See attached.

30. LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS

FROM 7024	TO 7027	FROM	TO
FROM 7929	TO 7934	FROM	TO
FROM 7985	TO 7992	FROM	TO
FROM 8001	TO 8006	FROM	TO
FROM	TO	FROM	TO

RECORD CORRECTION MAR 26 1993

I have knowledge that the cementing operations, as reflected by the information found on this form, were performed as indicated by such information.
* Designates items to be completed by Cementing Company. Items not so designated shall be completed by Operator.

Signature of Cementer or Authorized Representative

Culberson Well Service, Inc. 2-9-93
Name of Cementing Company

CERTIFICATE:
I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

John F. Baird
REPRESENTATIVE OF COMPANY

Production Superintendent
TITLE

2-26-93
DATE

Phone 713 750-7557
A/C NUMBER

SIGNATURE: REPRESENTATIVE OF RAILROAD COMMISSION

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Was Well filled with Mud-Laden Fluid, according to the regulations of the Railroad Commission [X] Yes [ ] No	32. How was Mud Applied? Pumped thru tbg	33. Mud Weight 9.8 LBS/GAL

34. Total Depth 8143	Other Fresh Water Zones by T.D.W.R. TOP / BOTTOM	35. Have all Abandoned Wells on this Lease been Plugged according to RRC Rules? [ ] Yes [ ] No
Depth of Deepest Fresh Water 2650		36. If NO, Explain

37. Name and Address of Cementing or Service company who mixed and pumped cement plugs in this well
Culberson Well Service, Inc., P.O. Box 2266, Victoria, Texas 77902

Date RRC District Office notified of plugging 1-29-93

38. Names and Addresses of Surface Owner of Well Site and Operators of Offset Producing Leases

Port of Houston Authority
P. O. Box 2562
Houston, TX 77001

39. Was Notice Given Before Plugging to Each of the Above?
Yes

FILL IN BELOW FOR DRY HOLES ONLY

40. For Dry Holes, this Form must be accompanied by either a Driller's, Electric, Radioactivity or Acoustical/Sonic Log or such Log must be released to a Commercial Log Service.

[ ] Log Attached [ ] Log released to _____ Date _____

Type Logs:

[ ] Driller's [ ] Electric [ ] Radioactivity [ ] Acoustical/Sonic

41. Date FORM P-8 (Special Clearance) Filed?

42. Amount of Oil produced prior to Plugging _____ bbls*

* File FORM P-1 (Oil Production Report) for month this oil was produced

RRC USE ONLY

Nearest Field _____

REMARKS Set 2 3/8" CIBP @ 7750'.
Cut & capped well 3' below ground level.

EDC Energy Development Corporation

ENGINEERING CHART

SHEET NO. OF

FILE

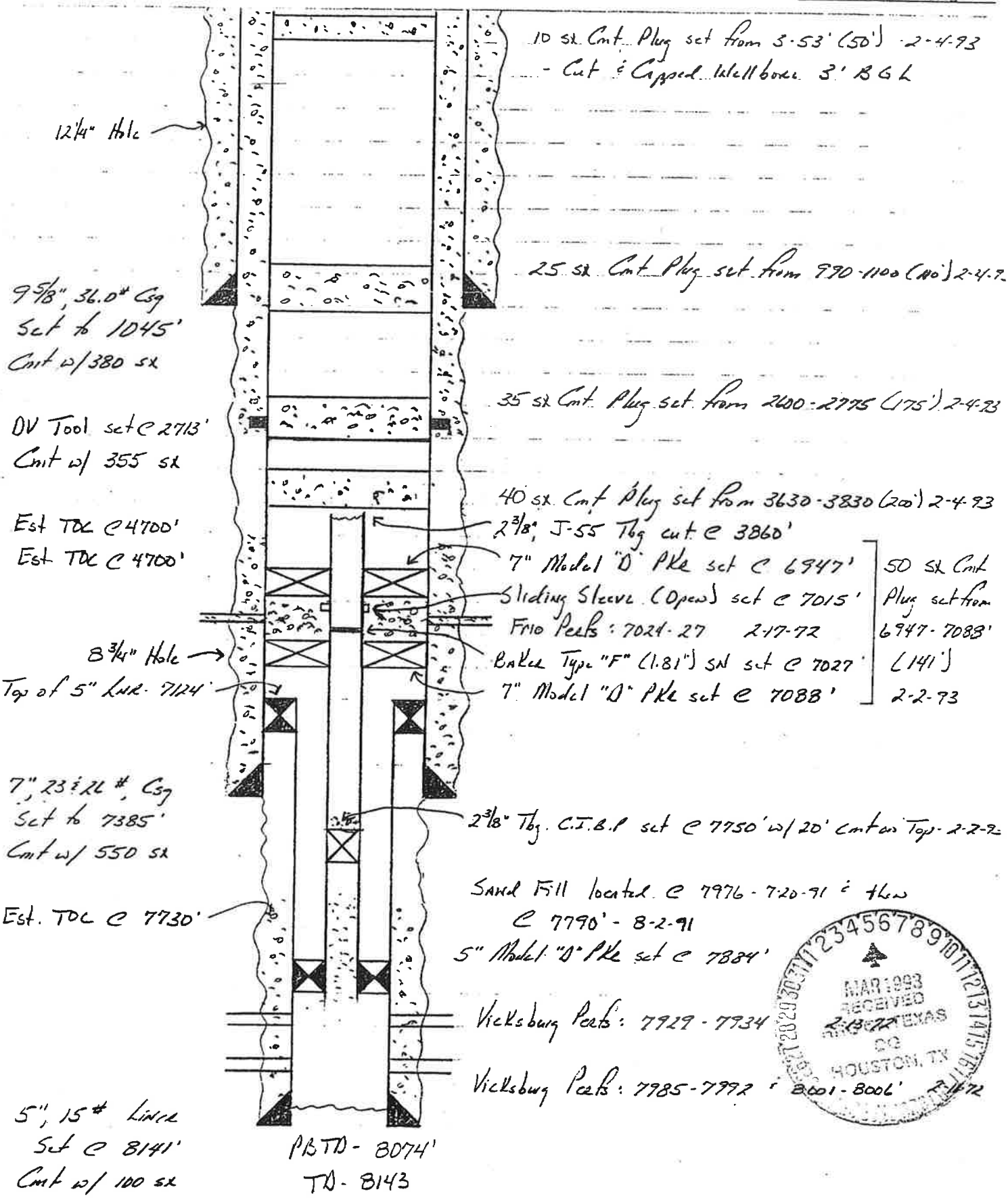
APPN

DATE 2-23-93

BY M. Jenkins

SUBJECT H.C. & H.S.C. Navigation Dist #1

Greens Bayou Field - Harris County, TX



MAR 1993 RECEIVED TEXAS OG HOUSTON, TX

Schlumberger

INDUCTION ELECTRICAL LOG

COMPANY INEXCO OIL COMPANY

G1695 B

WELL H.C. & H.S.C. NAVIGATION DIST. #1

FIELD WILDCAT

COUNTY HARRIS STATE TEXAS

LOCATION 6400'FNL & 10490'FEL OF RICHARD & ROBERT VINCE SUR. A-76

Sec. _____ Twp. _____ Rge. _____

Other Services: FDC-GR, HDT, CST

Permanent Datum: GROUND LEVEL, Elev. 27.0

Log Measured From K. B. 16.5 Ft. Above Perm. Datum

Drilling Measured From K. B.

Elev.: K.B. 43.5, D.F. 42.5, G.L. 27.0

Date	1-19-72	1-25-72		
Run No.	ONE	TWO		
Depth—Driller	7258	8143		
Depth—Logger	7260	8137		
Btm. Log Interval	7259	8136		
Top Log Interval	1045	7376		
Casing—Driller	9-5/8@1045	7" @7385	@	@
Casing—Logger	1045	7376		
Bit Size	8-3/4"	6-1/8"		
Type Fluid in Hole	MAGCOBAR LOW PH	LOW PH		
Dens. / Visc.	9.3 / 35.0	10.8 / 44.0	/	/
pH / Fluid Loss	9.0 / 10.5ml	9.5 / 8.0ml	/ ml	/ m
Source of Sample	CIRC. PIT	CIRC. PIT		
R_m @ Meas. Temp.	0.94 @85 °F	0.85 @75 °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	1.28 @70 °F	0.58 @75 °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	0.75 @85 °F	1.1 @75 °F	@ °F	@ °F
Source: R_{mf} R_{mc}	M / C	M / C		
R_m @ BHT	0.55 @147 °F	0.38 @168 °F	@ °F	@ °F
Time Since Circ.	5 HOURS	5 HOURS		
Max. Rec. Temp.	147 °F	168 °F		°F
Equip. / Location	7038 / DAYTON	7010 / DAYTON	/	/
Recorded By	BAKER	KENDRICK		
Witnessed By	MESSRS. CONRAD, PYLE, SHOCKLEY, KRAUS, KELLY &			

RECEIVED MAR 27 1972 HOUSTON, TEXAS

MAP 28 8
REFERENCE NO. G1695 B
ELSI
Nixon-Ferguson Well Log Service HOUSTON, TEXAS 77002

MAP ID NO. 9

JACK W. FRAZIER
R.E. BROOKS ESTATE 2

Please Refer to File No. [illegible]

Form 1

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

NOTICE OF INTENTION TO DRILL OR DEEPEN

IS THIS AN APPLICATION TO DRILL OR DEEPEN TO DRILL

FILE IN DUPLICATE WITH DEPUTY SUPERVISOR OF DISTRICT IN WHICH WELL IS LOCATED

READ CAREFULLY AND COMPLY FULLY

In order that it may be ascertained whether or not the proposed location covered by this notice conforms to the applicable spacing regulations set down by the Railroad Commission, there are two important footages that must be shown; that is, THE NEAREST DISTANCE OF PROPOSED LOCATION FROM LEASE OR PROPERTY LINE AND DISTANCE OF PROPOSED LOCATION FROM THE NEAREST WELL ON THE SAME LEASE. Do not begin operation on any location before filing Form 1, and do not begin operations on any location not conforming to the spacing rules for such location until you receive written order from the Commission granting permission.

For the purpose of this determination draw on the back side hereof a neat, accurate sketch, made to scale, of this lease, block, or lot locating thereon the proposed site for this location with reference to the two nearest lease lines. Also show the nearest wells on all sides of this location and the distance from the proposed location to those wells. Give names and addresses of adjoining lease or property owners, and designate all property by lease and company name. You may attach a blue print showing this information if you so desire.

DO NOT CONFUSE SURVEY LINES WITH LEASE LINES. IF THE SKETCH OR BLUE PRINT SHOWS ONLY A SECTION, BLOCK OR LOT OUT OF YOUR LEASE, DESIGNATE SAME AS BEING ONLY THAT PART OF THE LEASE.

Where the size of the tract will permit, use scale of one inch equaling 400 feet; if less than 2 acres use scale of one inch equaling 100 feet. DESIGNATE SCALE TO WHICH PLAT OR SKETCH IS DRAWN. ALSO DESIGNATE NORTHERLY DIRECTION ON THE SKETCH OR PLAT.

* * * * *

FILL IN BELOW IN THE SPACES RESERVED FOR THIS PURPOSE THE FOOTAGES ASKED FOR:

Nearest distance from proposed location to property or lease line 450 feet. from Buffalo Bayou

Distance from proposed location to nearest drilling, completed, or applied for well on same lease approx feet. 2250 from dry hole

This notice must be delivered to Deputy Supervisor of your district before drilling, or deepening, five full days prior to spudding in.

Date OCT. 25 19 46

Name of company or operator

Name JACK W. FRAZIER

Address 1311 Esperson Bldg.

City Houston, 2, Texas

Description of farm or lease:

Name (Fee owner) R. E. Brooks Estate

Number of Acres 708.1 Well No. 2

Number of wells on lease 3 dry holes

Survey Richard & Robert Vince Survey

Elevation _____ Feet (Above Sea Level)

Section No. _____ Block No. _____

Located in wildcat Field (If Wildcat state above)

Harris County

approx. 9 Miles [illegible] direction from HOUSTON nearest postoffice or town.

Rotary or Cable Tools rotary

Date work will start drilling immediately

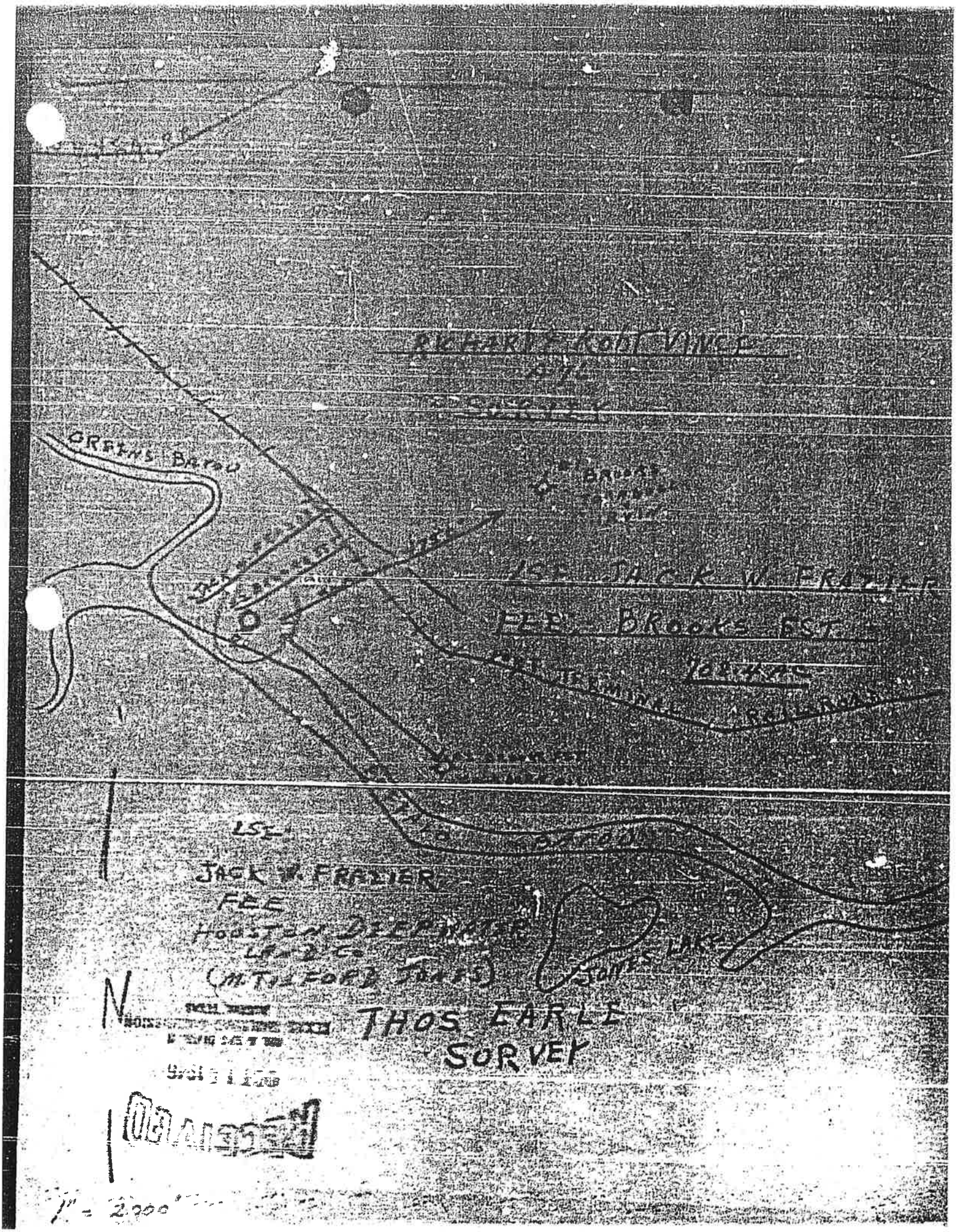
Depth to which you propose to drill 8500 feet.

Date work will start deepening _____

If Lease Purchased with one or more wells drilled From Whom Purchased?

Name _____

Address _____


RICHARD ROBT VINCE
GREENS BAYOU
LSE JACK W. FRAZIER
FEE BROOKS EST.
LSE
JACK W. FRAZIER
FEE
HOUSTON DEEPWATER
LAND CO
(M. TILFORD JONES)
JONES LAKE
THOS EARLE
SURVEY
N
1" = 2000'

JACK W. FRAZIER- R. E. BROOKS ESTATE #2
HARRIS COUNTY, TEXAS

OPERATIONS COMMENCED: 10/5/46
DRILLING COMMENCED: 10/14/46
DRILLING COMPLETED: 11/29/46
SET & CEMENTED 1451 FT 10-3/4" SURFACE
CASING W/750 SACKS CEMENT

SCHLUMBERGERS RUN

0-45	sd & clay
680	sd & clay
1077	sd, sh & shells
1360	sd, sh & shells
1449	sh & shells
1475	shale
1808	sh shells & sd stks
2280	sd & shale
2465	sh & stcky strks
2805	sh & stcky sh stks
2936	sh stks sd
3055	sdy sh
3069	sd
3217	stcky sh & lime
3251	stcky sh & lime
3329	sdy sh & shells
3491	sh, stky stks
3750	sh & sd stks
3995	sh & sd strks hd
4070	sh & hd sd strks
4157	sdy sh & shells, hd sh stks
4200	sdy sh & shells
4295	shale
4458	sdy sh
4493	stcky sh
4644	sdy sh
4675	sdy sh
4726	stcky sh
4757	sh sdy sh strks
4787	sdy sh & hd lime strks
4882	shale
4885	shale
4892	lime
4940	shale
4950	lime
5070	shale
5075	sh & lime
5282	CORING
5271	sd hd strks
5325	sdy sh
5375	sh & lime
5470	sh & sdy sh
5611	shale
5638	hd sh & lime
5669	sdy sh
5730	shale
5770	sh & hd lime strks
5880	sh & lime
5985	shale
6035	sd w/hd strks & sh
6145	hd sh & lime
6195	hd sh & brkn lime strks
6235	sh & sdy lime strks
6290	shale
6404	hd sh & lime
6431	hd sh
6445	shale
6455	hd sh & sdy
6485	sh & sdy lime
6498	sand
6515	sh & lime
6530	sand
6575	sh & sdy sh
6597	shale
6650	sh & lime
6725	sh & sdy sh strks
6800	sh hd strks
6885	sh w/lime strks
6895	hd sd
6961	hd sh & lime
7031	sh & lime
7048	lime
7061	hd sh
7121	hd sh & lime

[illegible]	sh & sd
[illegible]	hd sh & sdy lime strks
[illegible]	hd sh & hd sd lime strks
[illegible]	hd sh
[illegible]	hd sh
[illegible]	sh hd strks
[illegible]	sh strks hd sd
[illegible]	hd sh & hd sd strks
[illegible]	hd sh & lime
[illegible]	hd sh & lime strks
[illegible]	hd sh & lime strks
[illegible]	sh & lime
[illegible]	hd sh
[illegible]	shale
[illegible]	[illegible]
[illegible]	shale
[illegible]	hd sh
[illegible]	hd sh
[illegible]	hd sh
[illegible]	hd sh
[illegible]	hd sh
[illegible]	hd sdy sh
[illegible]	hd sh
[illegible]	hd sh
[illegible]	hd sh
[illegible]	sdy shale
[illegible]	hd shale
[illegible]	TOTAL DEPTH

I, B. DOWE being first duly sworn on oath, state I have knowledge of the facts and matter herein set forth and that same are true and correct.

B. Dowe
B. DOWE.

SUBSCRIBED AND SWORN TO BEFORE ME THIS 21st day of November 1946.

Geraldine Baldwin
Geraldine Baldwin, Notary Public, Harris County, Texas

RECEIVED
AUSTIN
JUL 23 1947
OIL & GAS DIVISION

RECEIVED
NOV 26 1946
RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION
HOUSTON, TEXAS

JACK W. FRAZIER
R. E. BROOKS ESTATE #2 HARRIS COUNTY, TEXAS

CORE RECORD:

#1	5075-5082	shale
	5082½	sand
	5090	shale 15' Rec.
#2	5090-5093	brkn sd, slight odor
	5100	shale 10' Rec.
#3	5100-5106	shale
	5111	sdy shale
	5115	sticky shale, 15' Rec.
#4	5115-5132	sandy shale & sticky shale, 15' Rec
#5	5132-5145	shale & brkn sand strks
	5147	sandy shale 15' Rec.
#6	5147-5162	sandy shale, 12' Rec
#7	5162-5164	shale
	5177	sand & shaley sand, 15' Rec
#8	5177-5178	shale & sand
	5183	sand
	5184	shale 6' Rec
#9	5184-5192	shale 8' Rec
#10	5192-5207	sandy shale 15' Rec
#11	5207-5211	sandy shale
	5214	shale
	5222	sticky shale 15' Rec
#12	5222-5225	sand - odor
	5226	sandy shale
	5230	sand & shaley sand
	5232	sandy shale
	5237	shale w/sand strks 15' Rec
#13	5237-5240	shale
	5245½	sandy shale
	5246	S.W. Sand
#14	5246-5252	S. W. sand
	5271	sand, hard strks 3' Rec
#15	7835-7850	shale 12' Rec
#16	7850-7859	hard shale 6' rec
#17	7859-7869	hard shale 6' Rec
#18	7869-7884	shale 11' Rec
#19	7884-7899	shale 10' Rec
#20	7899-7909	No Rec
#21	7909-7915	shale
	7915	hard sand 8' Rec
#22	7915-7928	shale
#23	7928-7938	hard shale 8' Rec
#24	7934-7948	hard shale 10' Rec
#25	7948-7958	shale 14' Rec
#26	7958-7968	shale 16' Rec
#27	7968-7978	shale 10' Rec
#28	7978-7990	shale 12' Rec
#29	7990-[illegible]	shale 10' Rec
#30	[illegible]-[illegible]	shale 12' Rec
#31	[illegible]-[illegible]	shale w/2" hard sand strks 15' Rec
#32	[illegible]-[illegible]	shale 2' Rec
#33	[illegible]-[illegible]	shale 2' Rec
#34	[illegible]-[illegible]	shale 6' Rec
#35	[illegible]-[illegible]	shale [illegible] Rec
#36	[illegible]-[illegible]	shale 4' Rec
#37	[illegible]-[illegible]	shale
	[illegible]	sandy shale
#38	[illegible]-[illegible]	sandy shale
	[illegible]	shale
	[illegible]	sandy shale
	[illegible]	shale
	[illegible]	sandy shale
	[illegible]	shale 11' Rec
#39	[illegible]-[illegible]	shale w/strks sand 8' Rec
#40	[illegible]-[illegible]	shale w/strks sand 7' Rec
#41	[illegible]-[illegible]	shale & sand strks 10' Rec
#42	[illegible]-[illegible]	2' shale & sand strks, 2' shale, 28 sand & shale strks
#43	[illegible]-[illegible]	2' sandy shale, 4' shale 6'

RECEIVED
JUL 23 1947
AUSTIN
OIL & GAS DIVISION

RECEIVED
1946
RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION
AUSTIN, TEXAS

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

APPLICATION TO PLUG AND WELL RECORD

FILE IN DUPLICATE WITH DEPUTY SUPERVISOR OF DISTRICT IN WHICH WELL IS LOCATED FIVE FULL DAYS PRIOR TO PLUGGING

Name of Company or Operator JACK W. FRAZIER Address 1211 Esperson Bldg Houston 2, Texas

County Harris Survey Richard and Robert Vince Blk. Sec.

Name of Farm or Lease R. E. Brooks Estate No. of Acres 708.4 Well No. 2

Located 9 Miles ~~NE~~ E Direction from Houston, Texas (Nearest P. O. or Town)

Name of Field in which well is located N.C.

Drilling Commenced October 14, 1946 Drilling Completed November 19, 1946

Has this well ever produced oil? no or Gas? no

Character of Well (Oil, Gas or Dry) dry Total Depth 8280

Date you wish to Plug November 20th, 1946

Name of Party Plugging Well Jack W. Frazier Address same as above

Correspondence regarding this well should be sent to: Name same as above

Address

CASING RECORD

SIZE	PUT IN WELL		PULLED OUT		LEFT IN WELL		PACKERS AND SHOES
	Ft.	In.	Ft.	In.	Ft.	In.	
10-3/4"	1451 W/750 Sacks		cement		1451		

IF CASING WAS CEMENTED GIVE NUMBER OF SACKS USED ON DIFFERENT STRINGS

Initial Production of Gas: Volume MCF 24 hrs. Pressure lbs. per square inch

Initial Production of Oil: Barrels

Give notice before Plugging to all available Lease Owners, as required by Rule (10). When Plugging completed, file final Plugging Report, duly signed and sworn to. All necessary forms will be furnished by the Deputy Supervisor of district in which well is located.

NOTE. If no log available, so state and give all information that can be obtained as to total depth, casing record, whether or not cemented, producing formation, water sands, and as near as possible date well was drilled.

General Remarks: Permission to plug obtained by telephone.

OIL AND GAS DIVISION

PLUGGING RECORD

FILE IN DUPLICATE WITH DEPUTY SUPERVISOR OF DISTRICT IN WHICH WELL IS LOCATED

Operator JACK W. FRAZIER Address [illegible] Superson Bldg Houston 2, Texas

Sec. No. _____ Blk No. _____ Survey Richard and Robert Vince County Harris

Well No. 2 Name of Lease R. S. Brooks Estate No. of Acres 708.4

Name of Field in which well is located W.C. Date well was plugged Nov. 20, 1948, 1948

Form 1, "Notice of Intention to Drill," was filed in name of Jack W. Frazier

Character of Well at the time of completion: Oil _____ Mls.; Gas _____ Cu. ft.; Dry dry
(Initial Production) (Initial Production)

Amount well producing when plugged: Oil none Mls.; Gas none Cu. ft.; Water none Mls.

Has this well ever produced oil or gas? no

Total Depth 8330 feet. Top of each producing sand none feet.

Was the well filled with mud-laden fluid, according to regulations of the Railroad Commission? yes

How was mud applied? pumped in

Were plugs used, yes If so, show all shoulders left for casing, depth of each, and size of casing, size and kind of plugs used, and depths placed. Also amount of cement and rock.

Was well shot?

20 sacks of cement out of casing, 20 sacks cement in bottom of casing and 7 sacks in top of casing

Show depth found and thickness of all water, oil and gas formations

no water, oil nor gas.

Have all abandoned wells on this lease been plugged according to Commission rules?

Manner of confining all oil, gas and water to strata: by pumping in heavy mud and setting cement plug as indicated above

The names of adjacent lease, royalty and landowners with their addresses in each instance as follows:

Was notice given before plugging to all available adjacent lease owners as required by Rule 19? yes

I, [illegible], being first duly sworn on oath, state that I have knowledge of the facts and the matter herein set forth and that the same are true and correct.

Name [signature] Title [illegible]

Subscribed and sworn to before me this 21st day of July 1947

[signature]

Geraldine Baldwin

Correspondence regarding this well should be addressed to: Notary Public Harris County, Texas

Name Address

9

SCHLUMBERGER

WELL SURVEYING CORPORATION

Location of Well
708.4 ac lse,
Richard&Robert
Vince Sur,2250'
NW of Cockburn#2
Brooks dry hole
&4750'SW of Turn-
bull&Irwin #1
Brooks dry hole.
6000'NW Frazier's
#1 Houston Dee
wtr Ld Co test.
(Hinahart's)
Elevation: D.F. 13
K.B.
or G.L. 6

COMPANY: JACK W. FRAZIER

WELL: R.E.BROOKS EST #2

RUN NO.: ONE & TWO & THR

FIELD: WILDCAT

LOCATION:

COUNTY: HARRIS

STATE: TEXAS

FILING No. 80-56

COUNTY: HARRIS
FIELD OR LOCATION: WILDCAT
WELL: R.E.BROOKS EST #2
COMPANY: JACK W. FRAZIER

RUN	ONE	THREE			
Date	11-3-46	11-[illegible]-46			
First Reading	7297	[illegible]			
Last Reading	1450	[illegible]			
Footage Measured	5847	290			
Csg Shoe Schlum	1450				
Csg Shoe Driller	1462				
Max. Depth Reached	7297	[illegible]			
Bottom Driller	7300	[illegible]			
Depth Datum	1'abv RT				
Mud Nature	Magcobar	Magcobar			
" Density	11.5#	12.3			
" Viscosity	48"	60"			
" Resistivity	2.4 @ 75 °F	1.9 @ 80 °F	@ °F	@ °F	@ °F
Maximum Temp. °F	140	156			
Bit Size	9 7/8"	9 7[illegible]			
Spacings					
AM	16"	16			
AM'	63"	[illegible]			
OA	24'	4'			
Observers	Cheatham	Kelso			

REMARKS

[illegible]

SELF-POTENTIAL millivolts	DEPTHS	RESISTIVITY -ohms. m²m.

MAP ID NO. 10

BALLARD EXPLORATION CO.
JACINTO PORT 1

▶ Return W-1 with plat, applicable fee, and "W-1 Compli tificate" (W-1c). Make a check or money order pay... to the State Treasurer of Texas.

▶ Address to:
Railroad Commission of Texas
Oil and Gas Division, Drilling Permits
P. O. Box 12967
Austin, Texas 78711-2967

RAILROAD COMMI... OF TEXAS
Oil and Gas Division

Application for Permit to Drill, Deepen, Plug Back, or Re-Enter

▶ File a copy of W-1 and plat in RRC District Office ▶ Read Instructions on Back

...rm W-1
Rev. 9/1/91

EFFECTIVE SEPT. 1, 1991, PERMIT APPLICATION FEE WILL VARY ACCORDING TO THE TOTAL DEPTH SHOWN IN ITEM NO. 9 BELOW.
0-2000' - $100. 2001' - 4000' - $125
4001' - 9000' - $150 9001' or deeper - $200

Purpose of filing (mark appropriate boxes):
☐ Drill ☐ Deepen (below casing) ☐ Deepen (within casing) ☐ Plug Back ☐ Re-Enter
☐ Horizontal ☒ Directional Well ☐ Sidetrack ☒ Amended Permit (enter permit no. at right & explain fully in Remarks)

Enter here, if assigned: ▶ API No. 42-201-32619
▶ Permit No. 505770
▶ Rule 37 Case No. N/A

1. Operator's Name (exactly as shown on Form P-5, Organization Report): Ballard Exploration Company, Inc.
3. RRC Operator No.: 048169
4. RRC District No.: 03
5. County of Well Site: Harris SL+BHL
2. Address (including city and zip code): 1021 Main Street, Suite 2310, Houston, TX 77002-6602
943062
6. Lease Name (32 spaces maximum): Jacintoport
7. RRC Lease/ID No.: N/A
8. Well No.: 1
9. Total Depth: 12,355'
10. Location
• Section _____ Block _____ Survey SL & BHL: Richard & Robert Vince Abstract No. A-76
• This well is to be located 2 miles in a southerly direction from Channelview which is the nearest town in the county of the well site.

11. Distance from proposed location to nearest lease or unit line 496.34 ft.
12. Number of contiguous acres in lease, pooled unit, or unitized tract 40 (OUTLINE ON PLAT.)

Permit Granted 7/27/01 Charlotte Hall

13. FIELD NAME (Exactly as shown on RRC proration schedule). List all established and wildcat zones of anticipated completion. Attach additional Form W-1's as needed to list these zones. One zone per line.	14. Completion depth	15. Spacing pattern (ft.)	16. Density pattern (acres)	17. Number of acres in drilling unit for this well. OUTLINE ON PLAT.	18. Is this acreage assigned to another well on this lease & in this reservoir? If so, explain in Remarks.	19. Distance from proposed location to nearest applied for, permitted, or completed well, this lease & reservoir. (ft.)	20. Oil, gas, or other type well (Specify)	21. No. of applied for, permitted, or completed locations (including this one) on lease in this reservoir. OIL	GAS
Wildcat 6001	Above 12,355'	467/1200	40	40	No	N/A	Oil, Gas	1	1
Yellow Rose (Yegua Y-2)	12,355'	467/1200	40	40	No	N/A	Gas		1
99334100									

22. Perpendicular surface location from two nearest designated lines:
• Lease/Unit 9,980' FNL & 10,226' FEL (Off lease)
• Survey/Section 9,980' FNL & 10,226' FEL

If a directional well, show also projected bottom-hole location:
• Lease/Unit 496.34' FEL & 660' FNL
• Survey/Section 6,220' FEL & 9,083' FNL

23. Is this a pooled unit? Yes ☐ ▶ (Attach Form P-12 and certified plat.) No ☒
24. Is Item 17 less than Item 16 (substandard acreage for any field applied for)? Yes ☑ ▶ (Attach Form W-1A) No ☒
25. Is this wellbore subject to Statewide Rule 36 (hydrogen sulfide area)? Yes ☐ No ☒ If subject to Rule 36, is Form H-9 filed? Yes ☐ No ☐ ▶ If not filed, explain in Remarks.
26. Do you have the right to develop the minerals under any right-of-way that crosses, or is contiguous to, this tract? Yes ☒ No ☐
If not, and if the well requires a Rule 37 or 38 exception, see Instructions for Rule 37.

Remarks
Permit amended to show as-drilled surface and bottom hole locations, and to add field name to Item 13.

I certify that information stated in this application is true and complete, to the best of my knowledge.
J. Bortoni — Signature
J. Bortoni, Drlg/Prod. Ass't. — Name and title of operator's representative
7/26/01 — Date: mo. day yr.
713-651-0181 — Tel.: Area Code Number

#66179 • RRC Use Only • 505770

RECEIVED RRC OF TEXAS JUL 24 2001 OIL & GAS DIVISION AUSTIN, TEXAS

MAPPING 42-201-32619

File name: 010416.DWG
Plot date: 4/20/1 at

SCALE: 1" = 2000'

NOTE:
ALL THE HORIZONTAL CONTROL IS REFERRED TO THE TEXAS PLANE COORDINATE SYSTEM, LAMBERT PROJECTION, SOUTH CENTRAL ZONE, NAD 27 DATUM. ALL BEARINGS, DISTANCES AND ACREAGES ARE GRID. THE THETA CORRECTION AT THE AS DRILLED SURFACE LOCATION OF WELL "BALLARD EXPLORATION COMPANY, INC. JACINTOPORT # 1 WELL" IS + 01°53'00" AND THE SCALE FACTOR IS 0.999888609. LEASE AND TRACT INFORMATION SHOWN HEREON WAS DONE SO BY LIMITED SURVEY DATA AND AVAILABLE DEED RECORD INFORMATION AND DOES NOT REFLECT AN ACTUAL SURVEY. BOTTOM HOLE LOCATION INFORMATION SHOWN HEREON HAS BEEN PROVIDED BY THE CLIENT.
THIS PLAT IS VALID ONLY WITH ORIGINAL SIGNATURE AND SEAL.
● = 5/8" IRON ROD FOUND UNLESS OTHERWISE SPECIFIED.

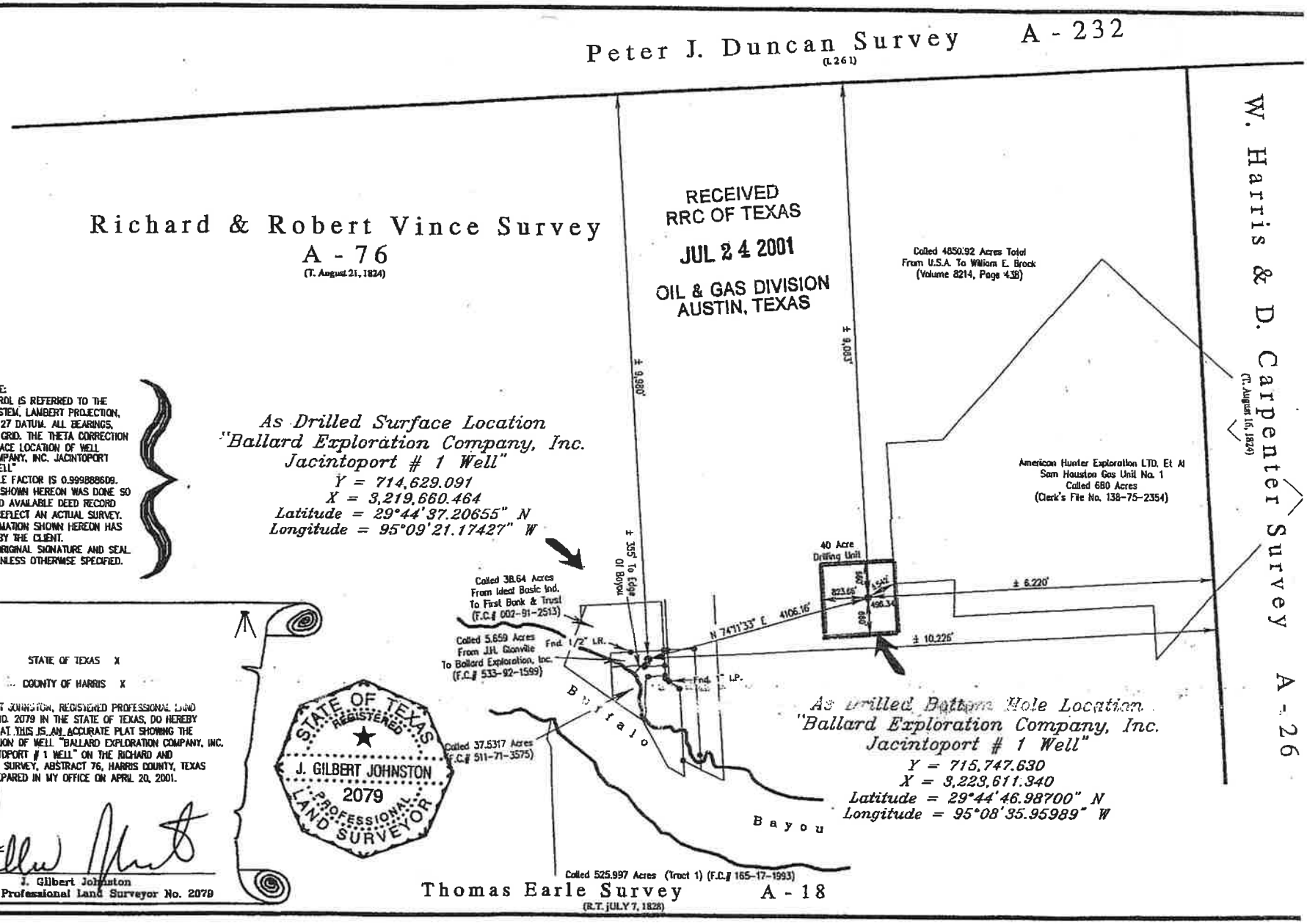
STATE OF TEXAS X

COUNTY OF HARRIS X

I, J. GILBERT JOHNSTON, REGISTERED PROFESSIONAL LAND SURVEYOR NO. 2079 IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THIS IS AN ACCURATE PLAT SHOWING THE AS DRILLED LOCATION OF WELL "BALLARD EXPLORATION COMPANY, INC. JACINTOPORT # 1 WELL" ON THE RICHARD AND ROBERT VINCE SURVEY, ABSTRACT 76, HARRIS COUNTY, TEXAS AS PREPARED IN MY OFFICE ON APRIL 20, 2001.

J. Gilbert Johnston
Registered Professional Land Surveyor No. 2079

STATE OF TEXAS
REGISTERED
J. GILBERT JOHNSTON
2079
PROFESSIONAL LAND SURVEYOR



RAILROAD COMMISSION OF TEXAS
Oil and Gas Division

Type or print only

483-047

Directional

Form G-1
Rev. 4/1/83

API No. 42- 201-32619

Gas Well Back Pressure Test, Completion or Recompletion Report, and Log

7. RRC District No. 3

8. RRC Gas ID No. ~~NA~~ 184018

9. Well No. 1

1. FIELD NAME (as per RRC Records or Wildcat): Yellow Rose (Yegua Y-2)

2. LEASE NAME: Jacintoport

3. OPERATOR'S NAME (Exactly as shown on Form P-5, Organization Report): Ballard Exploration Company, Inc

RRC Operator No. 048168

10. County of well site: Harris

4. ADDRESS: 1021 Main Street, Suite 2310, Houston, Texas 77002-6602

11. Purpose of filing: Initial Potential [X]; Retest [ ]; Reclass [ ]; Well record only (Explain in remarks) [ ]

5. Location (Section, Block, and Survey): Richard & Robert Vince Survey, A-76

5b. Distance and direction to nearest town in this county: 2 Miles South of Channelview

6. If operator has changed within last 60 days, name former operator: N/A

12. If workover or reclass, give former field (with reservoir) & Gas ID or oil lease no.

FIELD & RESERVOIR	GAS ID or OIL LEASE #	Oil-O Gas-G	Well #

13. Pipe Line Connection: Kinder-Morgan Texas Pipeline, Inc.

14. Completion or recompletion date: 4/11/01

15. Any condensate on hand at time of workover or recompletion? [ ] Yes [ ] No

16. Type of Electric or other Log Run: Array Ind/Comp. Neu/ 3 Detector Density

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Section I — GAS MEASUREMENT DATA

Date of Test: 04/12/01

Gas Measurement Method (Check One): Orifice Meter [X] Flange Taps [X] Pipe Taps [ ] Positive Choke [ ] Orifice Vent Meter [ ] Pitot Tube [ ] Critical-Flow Prover [ ]

Gas produced during test: 2500 MCF

Run No.	Line Size	Orif. or Choke Size	24 Hr. Coeff. Orif. or Choke	Static P_m or Choke Press	Diff. h_w	Flow Temp. °F	Temp. Factor F_{tf}	Gravity Factor F_g	Compress Factor F_{pv}	Volume MCF/DAY
1	3.826	1.750	19870.48	1005	65.00	76	.9850	.9918	1.075	5332
2	3.826	1.750	19870.48	875	59.00	76	.9850	.9918	1.065	4697
3	3.826	1.750	19870.48	825	52.00	78	.9831	.9918	1.060	4254
4	3.826	1.750	19870.48	825	28.00	94	.9688	.9918	1.053	3056

Section II — FIELD DATA AND PRESSURE CALCULATIONS

Gravity (Dry Gas)	Gravity Liquid Hydrocarbon	Gas-Liquid Hydro Ratio	Gravity of Mixture	Avg. Shut-in Temp.	Bottom Hole Temp.
.610	44.9 Deg. API	56790 CF/Bbl	G_{mix} = .662	164 °F	254 °F @ 10607 TVD (Depth)

$D_{eff}^{8/3} = 10.806$

$\sqrt{T_f} = \sqrt{635} = 25.20$

$\sqrt{GL} = \sqrt{7753.35} = 88.05$

$C = \frac{1118 \times (D_{eff})^{8/3}}{\sqrt{T}} = 1118 \times 10.806 / 25.20 = 479.41$

$\frac{\sqrt{GL}}{C} = 88.05 / 479.41 = .1837$

Run No.	Time of Run Min.	Choke Size	Wellhead Press. PSIA P_w	Wellhead Flow Temp. F°	P_w^2 (Thousands)	R	R^2 (Thousands)	P_f	P_{cw}/P_f
Shut-in	2 Hrs		7647	74					
1	540	12/64	7090	95	50268	979.5	959.4	7157	.9906
2	60	11/64	7189	95	51682	862.8	744.4	7241	.9928
3	60	10/64	7259	95	52693	781.5	610.7	7301	.9942
4	60	9/64	7390	95	54612	561.4	315.2	7411	.9972

Run No.	F	K	$S = \frac{1}{z}$	E^{ks}	P_f and P_s	P_f^2 and P_s^2 (thousands)	$P_f^2 - P_s^2$ (thousands)
Shut-in		.2110	.7784	1.1785	9012	81216	
1	.9953	.2063	.8124	1.1825	8463	71622	9594
2	.9964	.2066	.8066	1.1813	8554	73171	8045
3	.9971	.2067	.8026	1.1805	8619	74287	6929
4	.9986	.2070	.7953	1.1790	8738	76353	4863

Angle of Slope: θ 55.50 ; n .6879

Absolute Open Flow: 23294 MCF/DAY

WELL TESTER'S CERTIFICATION: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I conducted or supervised this test and that data and facts shown in Sections I and II above are true, correct, and complete, to the best of my knowledge. Bottomhole temperature and the diameter and length of flow string were furnished by the operator of the well.

Garron Farrar — Signature Well Tester

FESCO Ltd. — Name of Company

Hope M. Chapa — RRC Representative

OPERATOR'S CERTIFICATION: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that I Prepared or supervised and directed this report, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

Signature: Operator's representative — Drlg/Prod. Assistant (Title) — 7/31/01 (Date) — 713-651-0181 (A/C Number)

MAPPING

CLERK RECEIPTS SEP 19 2001 AUSTIN, TEXAS

COPY 8/20/01

SECTION III — DATA ON WELL COMPLETION AND LOG (Not Required on Retest)

RRC 17 2001

17. Type of Completion: New Well [X] Deepening [ ] Plug Back [ ] Other [ ]

18. Permit to Drill, Plug Back or Deepen — DATE 2/23/01 — PERMIT NO. 505770

Rule 37 Exception — CASE NO. — N/A

Water Injection Permit — PERMIT NO. — N/A

Salt Water Disposal Permit — PERMIT NO.

Other — PERMIT NO.

19. Notice of Intention to Drill this well was filed in Name of

allard Exploration Company, Inc.

20. Number of producing wells on this lease in this field (reservoir) including this well: 1

21. Total number of acres in this lease: 40

22. Date Plug Back, Deepening, WorkOver or Drilling Operations: Commenced 2/25/01 — Completed 3/20/01

23. Distance to nearest well, Same Lease & Reservoir: N/A

24. Location of well, relative to nearest lease boundaries of lease on which this well is located: 9980 Feet From north Line and 10,226 Feet from east Line of the Richard & Robert Vince Svy, A-76 (Off-lse) SL *

25. Elevation (DF, RKB, RT, GR, ETC.): 15.4'

26. Was directional survey made other than inclination (Form W—12)? [X] Yes [ ] No

27. Top of Pay: 10,590' TVD 11,692' MD

28. Total Depth: 11,155.34' TVD 12,355' MD

29. P. B. Depth: 11,116' TVD 12,309' MD

30. Surface Casing Determined by: Field Rules [ ] Recommendation of T.D.W.R. [X] Dt. of Letter 2/22/01; Railroad Commission (Special) [X] Dt. of Letter 2/27/01

31. Is well multiple completion? [ ] Yes [X] No

32. If multiple completion, list all reservoir names (completions in this well) and Oil Lease or Gas ID No.

FIELD & RESERVOIR	GAS ID or OIL LEASE #	Oil—O Gas—G	WELL #

33. Intervals Drilled by: Rotary Tools X; Cable Tools

34. Name of Drilling Contractor: Grey Wolf Drilling Company

35. Is Cementing Affidavit Attached? [X] Yes [ ] No

36. CASING RECORD (Report All Strings Set in Well)

CASING SIZE	WT #/FT.	DEPTH SET	MULTISTAGE TOOL DEPTH	TYPE & AMOUNT CEMENT (sacks)	HOLE SIZE	TOP OF CEMENT	SLURRY VOL. cu. ft.
13-3/8"	61#	3,453'		See	17-1/2"	Surface	4,403.52
[illegible]-5/8"	53.5#	9,111'		attached	12-1/4"	6,611'	1,057
[illegible]/"	29#	8,805'	(Tieback)	W-15's	9-5/8"	7,346'	339

37. LINER RECORD

Size	TOP	Bottom	Sacks Cement	Screen
5-1/2"	8,805'	12,355'	440	N/A

38. TUBING RECORD

Size	Depth Set	Packer Set
2 7/8" 6.5#		11547' (MD)
		10468' (TVD)

39. Producing Interval (this completion) indicate depth of perforation or open hole

From	11692	To	11732' (MD)
From	10590	To	10624' (TVD)
From		To	
From		To	

40. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

Depth Interval	Amount and Kind of Material Used

41. FORMATION RECORD (LIST DEPTHS OF PRINCIPAL GEOLOGICAL MARKERS AND FORMATION TOPS)

Formations	Depth	Formations	Depth
Top Frio	5,270'		
Top Vicksburg	7,980'		
[illegible]egua	10,900'		

REMARKS * As-drilled BHL: 496.34' FEL & 660' FNL of the lease.

This test was conducted at the [illegible] test of the operator for the express purpose of sat[illegible] RRC requirements. Its suitability for any other [illegible]ose is not certified by FESCO Inc. For deta[illegible] contact FESCO Inc.

Cementer: Fill in shaded areas.
Operator: Fill in other items.

RAILROAD COMMISSION OF TEXAS
Oil and Gas Division

Form W-15
Cementing Report
Rev. 4/1/83
483-046

1. Operator's Name (As shown of Form P-5, Organization Report)	2. RRC Operator No.	3. RRC District No.	4. County of Well Site
Allard Exploration Company, Inc.	048169	03	Harris

5. Field Name (Wildcat or exactly as shown on RRC records)	6. API No.	7. Drilling Permit No.
Yellow Rose (Yegua Y-2)	42-201-32619	505770

8. Lease Name	9. Rule 37 Case No.	10. Oil Lease/Gas ID No.	11. Well No.
Jacintoport	N/A	N/A	#1

CASING CEMENT DATA:	SURFACE	INTER-MEDIATE CASING	PRODUCTION CASING		MULTI-STAGE CEMENTING PROCESS	
			Single String	Multiple Parallel Strings	Tool	Shoe
12. Cementing Date	2-28-01				#6552	
13. • Drilled hole size	17-1/2"					
• Est. % wash or hole enlargement	15%		T.R.R.C. LETTER DATED		2-23-01	
14. Size of casing (In. O.D.)	13-3/8"		Depth 2700' + 1500'			ft.
15. Top of liner (ft.)	N/A		[illegible] Date		3-27-01	
16. Setting Depth	3,453'		Surface Casing 3500' Cement back to 2800'			ft.
17. Number of centralizers used	20		D.V. @			
18. Hrs. Waiting on cement before drill out	32					
1st slurry — 19. API cement used: No. of sacks	1596					
1st slurry — Class	35:65 POZ:A					
1st slurry — Additives	8% GEL + 5% SALT + .35% R-3					
2nd slurry — No. of sacks	834					
2nd slurry — Class	H					
2nd slurry — Additives						
3rd slurry — No. of sacks	100					
3rd slurry — Class	A					
3rd slurry — Additives	2% CACL2					
1st — 20. Slurry pumped: Volume (cu.ft.)	3389.48					
1st — Height (ft.)	4893.9					
2nd — Volume (cu.ft.)	884.04					
2nd — Height (ft.)	1213.6					
3rd — Volume (cu.ft.)	120					
3rd — Height (ft.)	172.8					
Total — Volume (cu.ft.)	4403.52					
Total — Height (ft.)	6280.3					
21. Was cement circulated to ground surface (or bottom of cellar) outside casing	YES ✓					

22. Remarks

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RRC OF TEXAS
OIL DIVISION
HOUSTON, TX

070

CEMENTING TO PLUG AND ABANDON	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
23. Cementing Date								
24. Size of hole or pipe plugged (in.)								
25. Depth to bottom of tubing or drill pipe (ft.)								
26. Sacks of cement used (each plug)								
27. Slurry volume pumped (cu. ft.)								
28. Calculated top of plug (ft.)								
29. Measured top of plug, if tagged (ft.)								
30. Slurry wt. (lbs/gal)								
31. Type of cement								

CEMENTERS CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed me by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers cementing data only.

Jeffrey S. Koehn Service Supervisor — Name and title of cementer's representative

BJ SERVICES COMPANY — Cementing Company

Jeffrey S Koehn — Signature

P.O. BOX 10048 — Address

LIBERTY — City,

TX — State,

77575 — Zip Code

(936) 336-7218 — Tel.: Area Code Number

2-28-01 — Date: mo day yr.

OPERATOR'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers all well data.

Jane Bortoni — Typed or printed name of operator's representative

Drlg/Prod. Assistant — Title

Jane Bortoni — Signature

1021 Main St., Ste. 2310, Houston, TX 77002 — Address, City, State, Zip Code

713-651-0181 — Tel.: Area Code Number

7/31/01 — Date: mo day yr.

Instructions to Form W-15, Cementing Report

IMPORTANT: Operators and cementing companies must comply with the requirements of the Commission's Statewide Rules 8 (Water Protection), 13 (Casing Cementing, Drilling and Completion), and 14 (Well Plugging). For offshore operations, see the requirements of Rule 13 (c).

A. What to file. An operator should file an original and one copy of the completed Form W-15 for each cementing company used on a well. The cementing of different casing strings on a well by one cementing company may be reported on one form. Form W-15 should be filed with the following:

- An initial oil or gas completion report, Form W-2 or G-1, as required by Statewide or special field rules;
- Form W-4, Application for Multiple Completion, if the well is a multiple parallel casing completion; and
- Form W-3, Plugging Record, unless the W-3 is signed by the cementing company representative. When reporting dry holes, operators must complete Form W-15, in addition to W-3, to show any casing cemented in the hole.

B. Where to file. The appropriate Commission District Office for the county in which the well is located.

C. Surface casing. An operator must set and cement sufficient surface casing to protect all usable-quality water strata, as defined by The Texas Department of Water Resources, Austin. Before drilling a well in any field or area in which no field rules are in effect or in which surface casing requirements are not specified in the applicable rules, an operator must obtain a letter from the Department of Water Resources stating the protecting depth. Surface casing should not be set deeper that 200 feet below the specified depth without prior approval from the Commission.

D. Centralizers. Surface casing must be centralized at the shoe, above and below a stage collar or diverting tool, if run, and through usable-quality water zones. In nondeviated holes, a centralizer must be place every fourth joint from the cement shoe to the ground surface or to the bottom of the cellar. All centralizers must meet API specifications.

F. Intermediate and production casing. For specific technical requirements, operators should consult Statewide Rule 13 (b) (3) and (14).

G. Pl[illegible]g and abandoning. Cement plugs must be placed in the wellbore as required by Statewide Rule 14. The District Director may require additional cement plugs. For onsh[illegible] inland wells, a 10-foot plug must be placed in the top of the well, and the casing must be cut off three feet below the ground surface. All cement plugs, except the top plug, must have sufficient slurry volume to fill 100 feet of hole, plus ten percent for each 1,000 feet of depth from the ground surface to the bottom of the plug.

To plug and abandon a well, operators must use only cementers approved by the Director of Field Operations. Cementing companies, service companies, or operators can qualify as approved cementers by demonstrating that they are able to mix and pump cement in compliance with Commission rules and regulations.

Cementer: Fill in shades areas.
Operator: Fill in other items.

RAILROAD COMMISSION OF TEXAS
Oil and Gas Division

Form W-15
Cementing Report
Rev. 4/1/83
483-046

1. Operator's Name (As shown of Form P-5, Organization Report)	2. RRC Operator No.	3. RRC District No.	4. County of Well Site
Ballard Exploration Company, Inc.	048169	03	Harris

5. Field Name (Wildcat or exactly as shown on RRC records)	6. API No.	7. Drilling Permit No.
Yellow Rose (Yegua Y-2)	42-20132619	505770

8. Lease Name	9. Rule 37 Case No.	10. Oil Lease/Gas ID No.	11. Well No.
JACINTOPORT	N/A	N/A	1

CASING CEMENT DATA:	SURFACE	INTER-MEDIATE CASING	PRODUCTION CASING		MULTI-STAGE CEMENTING PROCESS	
			Single String	Multiple Parallel Strings	Tool	Shoe
12. Cementing Date		3/12/01				
13. • Drilled hole size		12-1/4"				
• Est. % wash or hole enlargement		15%				
14. Size of casing (in. O.D.)		9-5/8"				
15. Top of liner (ft.)		8,805'				
16. Setting Depth		9,111'				
17. Number of centralizers used		20				
18. Hrs. Waiting on cement before drill out		21				
1st Slurry — 19. API cement used: No. of sacks		100				
1st Slurry — Class		35%POZ-65% CLASS H				
1st Slurry — Additives		6%GEL+.1%ASA-301+.3%R-3+.005 G.P.S. FP-6L				
2nd Slurry — No. of sacks		800				
2nd Slurry — Class		H				
2nd Slurry — Additives		.1%R-3+.005 G.P.S. FP-6L				
3rd Slurry — No. of sacks						
3rd Slurry — Class						
3rd Slurry — Additives						
1st — 20. Slurry pumped: Volume (cu.ft.)		185				
1st — Height (ft.)		590				
2nd — Volume (cu.ft.)		872				
2nd — Height (ft.)		2666				
3rd — Volume (cu.ft.)						
3rd — Height (ft.)						
Total — Volume (cu.ft.)		1057				
Total — Height (ft.)		3256				
21. Cement circulated to ground surface (bottom of cellar) outside casing		NO				

22. Remarks

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1070

CEMENTING TO PLUG AND ABANDON	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
23. Cementing Date								
24. Size of hole or pipe plugged (in.)								
25. Depth to bottom of tubing or drill pipe (ft.)								
26. Sacks of cement used (each plug)								
27. Slurry volume pumped (cu. ft.)								
28. Calculated top of plug (ft.)								
29. Measured top of plug, if tagged (ft.)								
30. Slurry wt. (lbs/gal)								
31. Type of cement								

CEMENTERS CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed me by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers cementing data only.

JARRELL L. HOUSLEY—SERVICE SUP.	BJ SERVICES COMPANY	Jarrell L. Housley
Name and title of cementer's representative	Cementing Company	Signature

P.O. BOX 10048	LIBERTY	TX	77575	(936) 336-7218	3/12/01
Address	City,	State,	Zip Code	Tel.: Area Code Number	Date: mo day yr.

OPERATOR'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct,, and complete, to the best of my knowledge. This certification covers all well data.

Jane Bortoni	Drlg/Prod. Assistant	Jane Bortoni
Typed or printed name of operator's representative	Title	Signature

1021 Main St., Ste. 2310, Houston, TX 77002	713-651-0181	7/31/01
Address City, State, Zip Code	Tel.: Area Code Number	Date: mo day yr.

Instructions to Form W-15, Cementing Report

IMPORTANT: Operators and cementing companies must comply with the requirements of the Commission's Statewide Rules 8 (Water Protection), 13 (Casing Cementing, Drilling and Completion), and 14 (Well Plugging). For offshore operations, see the requirements of Rule 13 (c).

A. What to file. An operator should file an original and one copy of the completed Form W-15 for each cementing company used on a well. The cementing of different casing strings on a well by one cementing company may be reported on one form. Form W-15 should be filed with the following:

- An initial oil or gas completion report, Form W-2 or G-1, as required by Statewide or special field rules;
- Form W-4, Application for Multiple Completion, if the well is a multiple parallel casing completion; and
- Form W-3, Plugging Record, unless the W-3 is signed by the cementing company representative. When reporting dry holes, operators must complete Form W-15, in addition to W-3, to show any casing cemented in the hole.

B. Where to file. The appropriate Commission District Office for the county in which the well is located.

C. Surface casing. An operator must set and cement sufficient surface casing to protect all usable-quality water strata, as defined by The Texas Department of Water Resources, Austin. Before drilling a well in any field or area in which no field rules are in effect or in which surface casing requirements are not specified in the applicable rules, an operator must obtain a letter from the Department of Water Resources stating the protecting depth. Surface casing should not be set deeper that 200 feet below the specified depth without prior approval from the Commission.

D. Centralizers. Surface casing must be centralized at the shoe, above and below a stage collar or diverting tool, if run, and through usable-quality water zones. In no[illegible]ed holes, a centralizer must be place every fourth joint from the cement shoe to the ground surface or to the bottom of the cellar. All centralizers must meet AP[illegible]fications.

F. Intermediate and production casing. For specific technical requirements, operators should consult Statewide Rule 13 (b) (3) and (14).

G. Plugging and abandoning. Cement plugs must be placed in the wellbore as required by Statewide Rule 14. The District Director may require additional cement plugs. For onshore or inland wells, a 10-foot plug must be placed in the top of the well, and the casing must be cut off three feet below the ground surface. All cement plugs, except the top plug, must have sufficient slurry volume to fill 100 feet of hole, plus ten percent for each 1,000 feet of depth from the ground surface to the bottom of the plug.

[illegible] plugging and abandoning wells [illegible] District Director [illegible] cementing companies and [illegible] companies, or operators

Cementer: Fill in shades areas.
Operator: Fill in other items.

RAILROAD COMMISSION OF TEXAS
Oil and Gas Division

Form W-15
Cementing Report
Rev. 4/1/83
483-046

1. Operator's Name (As shown of Form P-5, Organization Report): allard Exploration Company, Inc.	2. RRC Operator No.: 048169	3. RRC District No.: 03	4. County of Well Site: Harris
5. Field Name (Wildcat or exactly as shown on RRC records): Yellow Rose (Yegua Y-2)		6. API No.: 42-201-32619	7. Drilling Permit No.: 505770
8. Lease Name: Jacintoport	9. Rule 37 Case No.: N/A	10. Oil Lease/Gas ID No.: N/A	11. Well No.: #1

CASING CEMENT DATA:	SURFACE	INTER-MEDIATE CASING	PRODUCTION CASING: Tie Back	PRODUCTION CASING: Multiple Parallel Strings	MULTI-STAGE CEMENTING PROCESS: Tool	MULTI-STAGE CEMENTING PROCESS: Shoe
12. Cementing Date			03/30/01			
13. • Drilled hole size			Inside 9-5/8"	(17-1/2" & 12-1/4")		
• Est. % wash or hole enlargement			15%			
14. Size of casing (in. O.D.)			7"			
15. Top of liner (ft.)			N/A			
16. Setting Depth			8,805'			
17. Number of centralizers used			6			
18. Hrs. Waiting on cement before drill out			–			
1st Slurry — 19. API cement used: No. of sacks			300			
Class			H			
Additives	18% hemitite+.08%asa-301+.1%cd32+.1%r3					
2nd Slurry — No. of sacks						
Class						
Additives						
3rd Slurry — No. of sacks						
Class						
Additives						
1st — 20. Slurry pumped: Volume (cu.ft.)			339cf			
Height (ft.)			1459			
2nd — Volume (cu.ft.)						
Height (ft.)						
3rd — Volume (cu.ft.)						
Height (ft.)						
Total — Volume (cu.ft.)			339			
Height (ft.)			1459			
21. Was cement circulated to ground surface (bottom of cellar) outside casing			no			

22. Remarks

AUG 2001
RECEIVED
RRC OF TEXAS
GO DIVISION
HOUSTON, TX

070

CEMENTING TO PLUG AND ABANDON	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
23. Cementing Date								
24. Size of hole or pipe plugged (in.)								
25. Depth to bottom of tubing or drill pipe (ft.)								
26. Sacks of cement used (each plug)								
27. Slurry volume pumped (cu. ft.)								
28. Calculated top of plug (ft.)								
29. Measured top of plug, if tagged (ft.)								
30. Slurry wt. (lbs/gal)								
31. Type of cement								

CEMENTERS CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed me by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers cementing data only.

Jeffrey S. Koehn Service Supervisor — Name and title of cementer's representative

BJ SERVICES COMPANY — Cementing Company

Signature: Jeffrey S. Koehn

P.O. BOX 10048 — Address

LIBERTY — City,

TX — State,

77575 — Zip Code

(936) 336-7218 — Tel.: Area Code Number

03/31/01 — Date: mo day yr.

OPERATOR'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct,, and complete, to the best of my knowledge. This certification covers all well data.

Jane Bortoni — Typed or printed name of operator's representative

Drlg/Prod. Assistant — Title

Signature: Jane Bortoni

1021 Main St., Ste. 2310, Houston, TX 77002 — Address, City, State, Zip Code

713-651-0181 — Tel.: Area Code Number

7/31/01 — Date: mo day yr.

Instructions to Form W-15, Cementing Report

IMPORTANT: Operators and cementing companies must comply with the requirements of the Commission's Statewide Rules 8 (Water Protection), 13 (Casing Cementing, Drilling and Completion), and 14 (Well Plugging). For offshore operations, see the requirements of Rule 13 (c).

A. What to file. An operator should file an original and one copy of the completed Form W-15 for each cementing company used on a well. The cementing of different casing strings on a well by one cementing company may be reported on one form. Form W-15 should be filed with the following:

- An initial oil or gas completion report, Form W-2 or G-1, as required by Statewide or special field rules;
- Form W-4, Application for Multiple Completion, if the well is a multiple parallel casing completion; and
- Form W-3, Plugging Record, unless the W-3 is signed by the cementing company representative. When reporting dry holes, operators must complete Form W-15, in addition to W-3, to show any casing cemented in the hole.

B. Where to file. The appropriate Commission District Office for the county in which the well is located.

C. Surface casing. An operator must set and cement sufficient surface casing to protect all usable-quality water strata, as defined by The Texas Department of Water Resources, Austin. Before drilling a well in any field or area in which no field rules are in effect or in which surface casing requirements are not specified in the applicable rules, an operator must obtain a letter from the Department of Water Resources stating the protecting depth. Surface casing should not be set deeper that 200 feet below the specified depth without prior approval from the Commission.

D. Centralizers. Surface casing must be centralized at the shoe, above and below a stage collar or diverting tool, if run, and through usable-quality water zones. In nondeviated holes, a centralizer must be place every fourth joint from the cement shoe to the ground surface or to the bottom of the cellar. All centralizers must meet API specifications.

F. Intermediate and production casing. For specific technical requirements, operators should consult Statewide Rule 13 (b) (3) and (14).

G. [illegible]g and abandoning. Cement plugs must be placed in the wellbore as required by Statewide Rule 14. The District Director may require additional cement plugs. For [illegible]ons [illegible]r inland wells, a 10-foot plug must be placed in the top of the well, and the casing must be cut off three feet below the ground surface. All cement plugs, except the top plug, must have sufficient slurry volume to fill 100 feet of hole, plus ten percent for each 1,000 feet of depth from the ground surface to the bottom of the plug.

To plug and abandon a well, operators must use only cementers approved by the Director of Field Operations. Cementing companies, service companies, or operators can qualify as approved cementers by demonstrating that they are able to mix and pump cement in compliance with Commission rules and regulations.

Cementer: Fill in shaded areas
Operator: Fill in other items

Form W-15
Cementing Repor
Rev.4/1/83
HAL1199

RAILROAD COMMISSION OF TEXAS

Oil and Gas Division

1. Operator's Name (As Shown on Form P-5, Organization Report)	2. RRC Operator No.	3. RRC District No.	4. County of Well Site
allard Exploration Company, Inc.	048169	03	Harris

Name (Wildcat or Exactly as Shown on RRC Records)	6. API No.	7. Drilling Permit No.
Yellow Rose (Yegua Y-2)	42-201-32619	505770

8. Lease Name	9. Rule 37 Case No.	10. Oil Lease/Gas ID No.	11. Well No.
Jacintoport	N/A	N/A	1

CASING CEMENTING DATA:		SURFACE CASING	INTER-MEDIATE CASING	PRODUCTION CASING (Liner) Single Sring	PRODUCTION CASING (Liner) Multiple Parallel Strings	MULTI-STAGE CEMENTING PROCESS Tool	MULTI-STAGE CEMENTING PROCESS Shoe
12. Cementing Date				3/22/01			
13. *Drilled hole size				8-1/2"			
*Est. % wash or hole enlargement				15%			
14. Size of casing (in. O.D.)				5-1/2"			
15. Top of liner (ft)				8,805'			
16. Setting depth (ft)				12,355'			
17. Number of centralizers used				160			
18. Hrs. waiting on cement before drill-out				26.5			
1st Slurry	19. API cement used: No. of sacks >			440			
	Class >			H			
	Additives >			See Remarks			
2nd Slurry	No. of sacks >						
	Class >						
	Additives >						
3rd Slurry	No. of sacks >						
	Class >						
	Additives >						
1st	20. Slurry pumped: Volume (cu.ft.) >			646.8			
	Height (ft.) >			2823.4			
2nd	Volume (cu.ft.) >						
	Height (ft.) >						
3rd	Volume (cu.ft.) >						
	Height (ft) >						
Total	Volume (cu.ft.) >			646.8			
	Height (ft.) >			2823.4			
21. Was cement circulated to ground surface (or bottom of cellar) outside casing?				NO			

22. Remarks

Ballard Exploration
:into Port #1
.rris County USA
SO# 1206498

Slurry Additives:35% SSA-2, 26pps Hi-Dense, 0.5% Halad-344, 0.5% Halad-413
0.2% CFR-3, 0.5% Super CBL, 0.3% HR-5

AUG 2001
RECEIVED
RRC OF TEXAS
OG DIVISION
HOUSTON, TX

OVER

CEMENTING TO PLUG AND ABANDON	#1	PLUG #2	PLUG #3	PLUG #4	UG #5	PLUG #6	PLUG #7	PLUG #8
23. Cementing date								
24. Size of hole or pipe plugged (in.)								
›th to bottom of tubing or drill pipe (ft.)								
26. Sacks of cement used (each plug)								
27. Slurry volume pumped (cu.ft.)								
28. Calculated top of plug (ft.)								
29. Measured top of plug, if tagged (ft.)								
30. Slurry wt. (lbs/gal)								
31. Type cement								

CEMENTER'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers cementing data only.

Shane Nelson — Service Leader
Name and Title of Cementer's Representative

Halliburton Energy Services
Cementing Company

Signature

P.O. Box 688 — Caldwell — Texas — 77836
Address — City, — State, — Zip Code

409-567-4674
Tel: Area Code — Number

3/23/01
Date: Mo. — Day — Yr.

OPERATOR'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers all well data.

Jane Bortoni
Typed or Printed Name of Operator's Representative

Drlg/Prod. Assistant
Title

Signature

1 Main St., Ste. 2310, Houston, TX 77002
Address — City, — State — Zip Code

713-651-0181
Tel: Area Code — Number

7/31/01
Date: Mo. — Day — Yr.

Instruction to Form W-15, Cementing Report

IMPORTANT: Operators and cementing companies must comply with the requirements of the Commission's Statewide rules 8 (Water Protection), 13 (Casing, Cementing, Drilling, and Completion, and 14 (Well Plugging). For **offshore** operations, see the requirements of Rule 13 (c).

A. What to file. An operator should file an original and one copy of the completed Form W-15 for each cementing company used on a well. The cementing of different casing strings on a well by one cementing company may be reported on one form. Form W-15 should be filed with the following:

* An initial oil or gas completion report, **Form W-2 or G-1**, as required by Statewide or special field rules:
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* Form **W-3**, Plugging Record, unless the W-3 is signed by the cementing company representative. When reporting **dry** holes, operators must complete Form **W-15, in addition to Form W-3, to show any casing cemented in the hole.**

B. Where to file. The appropriate Commission District Office for the county in which the well is located.

C. **Surface casing.** An operator must set and cement sufficient surface casing to protect all usable-quality water strata, as defined by the Texas Department of Water Resources, Austin. Before drilling a well in any field or area in which no field rules are in effect or in which surface casing requirements are not specified in the applicable rules, an operator must obtain a letter from the Department of Water Resources stating the protection depth. Surface casing should not be set deeper than 200 feet below the specified depth without prior approval from the Commission.

D. **Centralizers.** Surface casing must be centralized at the shoe, above and below a stage collar or diverting tool, if run, and through usable-quality water zones. In nondeviated holes, a centralizer must be placed every fourth joint from the cement shoe to the ground surface or to the bottom of the cellar. All centralizers must meet API specifications.

E. **Exceptions and alternative casing programs.** The District Director may grant an exception to the requirements of Statewide Rule 13. In a written application, an operator must state the reason for the requested exception and outline an alternate program for casing and cementing through the protection depth for strata containing usable-quality water. The District Director may approve, modify, or reject a proposed program. **An operator must obtain approval of any exception before beginning casing and cementing operations.**

F. **Intermediate and production casing.** For specific technical requirements, operators should consult Statewide Rule 13 (b) (3) and (4).

G. **Plugging and abandoning.** Cement plugs must be placed in the wellbore as required by Statewide Rule 14. The District Director may reo additional cement plugs. For onshore or inland wells, a 10-foot cement plug must be placed in the top of the well, and the casing must be if three feet below the ground surface. All cement plugs, except the top plug, must have sufficient slurry volume to fill 100 feet of hole, plus ten percent for each 1,000 feet of depth from the ground surface to the bottom of the plug.

To plug and abandon a well, operators must use only cementers approved by the Director of Field Operations. Cementing companies, service companies, or operators can qualify as approved cementers by demonstrating that they are able to mix and pump cement in compliance with Commission rules and regulations.

sperry-sun
DRILLING SERVICES

21 March 2001

Texas Railroad Commission
Cathy Garrison, Oil Gas Division
P.O. Box 12967, Capitol Station
Austin, TX 78711

Final Survey for:

Company:	Ballard Exploration
RRC Operator #:	048169
Well Name:	Jacinto Port #1
Drilling Permit #:	505770
Abstract #:	76
Field/County:	E. Houston/Harris County
API #:	42-201-32619
Sperry-Sun Job #:	HD-MJ-10034

Dear Ms. Garrison:

Enclosed you will find the original survey performed by Halliburton Energy Services, Inc., (AKA Sperry-Sun Drilling Services) operator #347-149, on the above referenced well. In addition to the survey I have included a certified plat on which the bottom hole location is oriented to both the surface location and the nearest lease line (or unit of lines in case of pooling) and a signed letter from the surveyor.

Other information required by your office is as follows:

Name & Title of Surveyor:	Gary McSweeney – Filed Engineer
Drainhole Number:	Original Well
Surveyed Depths:	4,557' to 12,285'
Dates Performed:	March 3, 2001 through March 20, 2001
Type of Survey:	MWD

Should you have any questions or require additional information, please do not hesitate to contact me at (281) 986-4424.

Sincerely,

Sherry Depenbrock
Administrative Specialist
Sperry-Sun Drilling Services

CERTIFIED MAIL

7000 0520 0022 9162 5588

14103 Interdrive West • Houston, Texas 77032
(281) 986-4400 • Fax (281) 986-4498
A Halliburton Company

sperry-sun
DRILLING SERVICES

State of Texas, Harris County

I, Gary McSweeney, certify that I am employed by Halliburton Energy Services, Inc. (AKA Sperry-Sun Drilling Services) and that on the dates of 3/3/01 through 3/20/01 I did conduct or supervise the taking of a DWD Directional survey for the original well from a depth of 4,557' to a depth of 12,285'. This data is true, correct, complete and within the limitations of the tools as set forth by Halliburton Energy Services, Inc. (AKA Sperry-Sun Drilling Services). I am authorized and qualified to make this report and this survey was conducted at the request of Ballard Exploration for the Jacinto Port #1 well, API No. 42-201-32619 in Harris County, Texas. I have reviewed this report and find that it conforms to the principles and procedures as set forth by Halliburton Energy Services, Inc. (AKA Sperry-Sun Drilling Services).

Gary McSweeney
Field Engineer

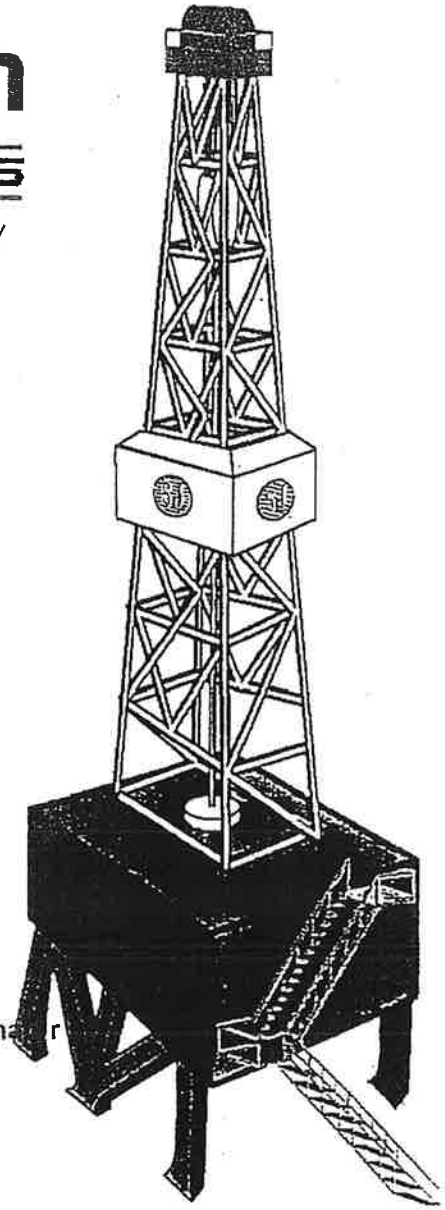
14103 Interdrive West • Houston, Texas 77032
(281) 986-4400 • Fax (281) 986-4498
A Halliburton Company

Ballard Exploration Co. Inc.
Jacintoport #1
Harris County, Texas
SURVEY REPORT

Prepared for: Tyson Dunn
Account Manager: Bob Tillman

March 13, 2001

sperry-sun
DRILLING SERVICES
A Halliburton Company



Sperry Sun Drilling Services
Houston, TX
1-800-332-3992
Bill Marchant – MWD Coordinator

SPERRY-SUN DRILLING SERVICES
DWD DIRECTIONAL SURVEY REPORT
EAST HOUSTON / HARRIS CO. TEXAS
RIG: GREYWOLF 506
API# 42-201-32619

BALLARD EXPLORATION COMPANY, INC.
JACINTOPORT #1

20-MAR-2001
HD-MJ-10034

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	VERTICAL DEPTH	LATITUDE FEET	DEPARTURE FEET	VERTICAL SECTION	DOG LEG
4500.00	0.25	120.00	4496.78	96.93 N	87.60 E	111.52	0.00
4557.00	0.20	146.20	4553.78	96.79 N	87.76 E	111.64	0.20
4652.00	1.90	54.60	4648.76	97.56 N	89.14 E	113.18	2.02
4746.00	4.10	54.80	4742.63	100.40 N	93.16 E	117.84	2.34
4841.00	6.20	58.90	4837.24	105.01 N	100.32 E	126.02	2.24
4935.00	9.00	63.40	4930.40	110.92 N	111.25 E	138.17	3.04
5029.00	11.30	64.30	5022.93	118.21 N	126.12 E	154.50	2.45
5123.00	13.50	67.30	5114.73	126.44 N	144.54 E	174.50	2.44
5216.00	15.70	66.20	5204.72	135.71 N	166.07 E	197.78	2.38
5310.00	18.10	66.60	5294.66	146.64 N	191.12 E	224.89	2.56
5404.00	20.20	68.70	5383.45	158.34 N	219.64 E	255.57	2.35
5498.00	22.00	69.60	5471.14	170.37 N	251.27 E	289.31	1.95
5592.00	24.20	68.50	5557.60	183.57 N	285.70 E	326.07	2.38
5687.00	26.40	69.10	5643.49	198.24 N	323.55 E	366.53	2.33
5781.00	29.30	71.50	5726.59	213.00 N	364.90 E	410.36	3.31
5875.00	32.40	71.30	5807.28	228.37 N	410.57 E	458.53	3.30
5969.00	34.60	70.10	5885.66	245.54 N	459.53 E	510.34	2.44
6062.00	35.00	69.80	5962.03	263.73 N	509.39 E	563.32	0.47
6156.00	34.50	69.60	6039.26	282.32 N	559.64 E	616.78	0.55
6250.00	34.60	70.60	6116.69	300.47 N	609.77 E	669.99	0.61
6345.00	35.00	72.20	6194.70	317.75 N	661.15 E	724.17	1.05
6439.00	34.70	72.60	6271.84	334.00 N	712.35 E	777.87	0.40
6533.00	34.60	72.20	6349.17	350.16 N	763.29 E	831.31	0.26
6625.00	34.80	72.40	6424.80	366.08 N	813.19 E	883.67	0.25
6720.00	34.60	72.00	6502.91	382.61 N	864.68 E	937.74	0.32
6814.00	34.20	72.00	6580.47	399.02 N	915.19 E	990.83	0.43
6908.00	35.00	71.50	6657.84	415.74 N	965.88 E	1044.18	0.90
7000.00	35.50	73.80	6732.98	431.56 N	1016.55 E	1097.26	1.54
7093.00	36.50	74.50	6808.21	446.49 N	1069.14 E	1151.92	1.16
7186.00	36.70	74.90	6882.88	461.12 N	1122.62 E	1207.36	0.33
7279.00	36.20	73.50	6957.68	476.16 N	1175.78 E	1262.60	1.04
7373.00	36.90	73.50	7033.20	492.06 N	1229.46 E	1318.58	0.74
7467.00	36.00	75.20	7108.81	507.13 N	1283.23 E	1374.42	1.44
7560.00	34.00	77.00	7184.99	519.97 N	1335.00 E	1427.70	2.42
7654.00	34.60	77.10	7262.64	531.84 N	1386.62 E	1480.57	0.64

SPERRY-SUN DRILLING SERVICES
DWD DIRECTIONAL SURVEY REPORT
EAST HOUSTON / HARRIS CO. TEXAS
RIG: GREYWOLF 506
API# 42-201-32619

BALLARD EXPLORATION COMPANY, INC.
JACINTOPORT #1

20-MAR-2001
HD-MJ-10034

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	VERTICAL DEPTH	LATITUDE FEET	DEPARTURE FEET	VERTICAL SECTION	DOG LEG
7708.00	34.40	77.10	7307.15	538.66 N	1416.43 E	1511.09	0.37
7800.00	33.90	77.30	7383.28	550.11 N	1466.79 E	1562.63	0.56
7894.00	34.20	77.70	7461.17	561.50 N	1518.18 E	1615.13	0.40
7989.00	34.00	78.00	7539.83	572.71 N	1570.25 E	1668.24	0.28
8083.00	34.50	75.00	7617.54	585.06 N	1621.67 E	1721.06	1.87
8177.00	34.60	74.30	7694.96	599.17 N	1673.08 E	1774.36	0.44
8271.00	35.40	75.20	7771.96	613.35 N	1725.10 E	1828.26	1.01
8366.00	35.00	76.10	7849.59	626.93 N	1778.15 E	1882.98	0.69
8460.00	34.10	76.80	7927.01	639.42 N	1829.97 E	1936.22	1.05
8554.00	33.90	77.10	8004.94	651.29 N	1881.18 E	1988.69	0.28
8646.00	34.10	78.20	8081.21	662.29 N	1931.43 E	2039.99	0.70
8740.00	33.30	79.30	8159.41	672.47 N	1982.58 E	2091.93	1.07
8834.00	32.80	77.50	8238.21	682.77 N	2032.79 E	2143.00	1.17
8927.00	33.00	74.90	8316.29	694.82 N	2081.84 E	2193.45	1.53
9022.00	33.80	73.80	8395.60	708.93 N	2132.19 E	2245.74	1.06
9149.00	33.80	76.10	8501.14	727.28 N	2200.41 E	2316.35	1.01
9212.00	33.70	76.80	8553.53	735.48 N	2234.44 E	2351.31	0.64
9305.00	33.20	77.80	8631.12	746.75 N	2284.44 E	2402.46	0.80
9397.00	34.10	78.60	8707.71	757.17 N	2334.34 E	2453.26	1.09
9489.00	34.80	77.20	8783.57	768.08 N	2385.23 E	2505.15	1.15
9582.00	35.20	74.80	8859.76	780.99 N	2436.97 E	2558.43	1.54
9676.00	35.30	74.90	8936.52	795.17 N	2489.34 E	2612.67	0.12
9770.00	35.10	75.40	9013.33	809.06 N	2541.71 E	2666.83	0.37
9864.00	34.80	76.10	9090.38	822.31 N	2593.90 E	2720.64	0.53
9957.00	36.50	72.70	9165.96	836.92 N	2646.08 E	2774.81	2.81
10053.00	36.40	72.90	9243.18	853.78 N	2700.57 E	2831.84	0.16
10149.00	36.20	73.40	9320.55	870.26 N	2754.96 E	2888.68	0.37
10245.00	35.90	74.40	9398.16	885.92 N	2809.24 E	2945.17	0.69
10341.00	35.60	75.00	9476.07	900.73 N	2863.34 E	3001.24	0.48
10437.00	35.30	75.50	9554.28	914.90 N	2917.18 E	3056.90	0.4[illegible]
10533.00	35.00	75.90	9632.77	928.55 N	2970.74 E	3112.12	0.39
10629.00	34.40	76.90	9711.70	941.41 N	3023.85 E	3166.70	0.86
10725.00	35.80	74.90	9790.24	954.87 N	3077.38 E	3221.85	1.89
10821.00	35.40	75.40	9868.30	969.19 N	3131.39 E	3277.71	0.5[illegible]
10917.00	35.20	76.20	9946.65	982.80 N	3185.17 E	3333.14	0.5[illegible]

SPERRY-SUN DRILLING SERVICES
DWD DIRECTIONAL SURVEY REPORT
EAST HOUSTON / HARRIS CO. TEXAS
RIG: GREYWOLF 506
API# 42-201-32619

BALLARD EXPLORATION COMPANY, INC.
JACINTOPORT #1

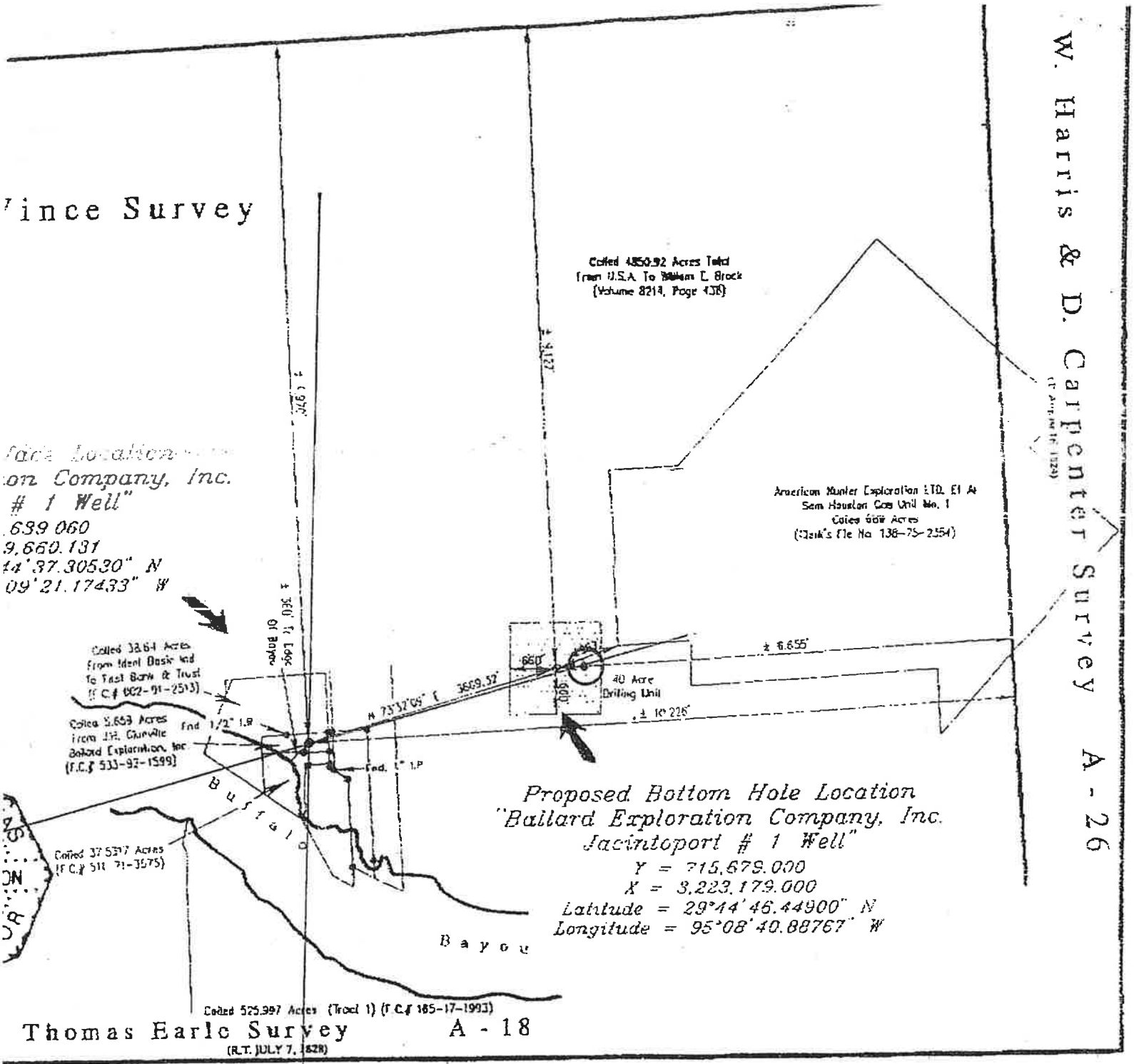
20-MAR-2001
HD-MJ-10034

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	VERTICAL DEPTH	LATITUDE FEET	DEPARTURE FEET	VERTICAL SECTION	DOG LEG
11012.00	34.80	76.50	10024.47	995.66 N	3238.12 E	3387.56	0.46
11108.00	34.50	77.40	10103.44	1007.99 N	3291.29 E	3442.04	0.62
11205.00	34.50	77.80	10183.38	1019.79 N	3344.95 E	3496.84	0.23
11300.00	34.50	78.20	10261.67	1030.97 N	3397.58 E	3550.48	0.24
11396.00	33.60	78.90	10341.21	1041.65 N	3450.26 E	3604.03	1.02
11492.00	33.10	79.30	10421.41	1051.63 N	3502.09 E	3656.55	0.57
11587.00	32.40	80.00	10501.30	1060.86 N	3552.64 E	3707.65	0.84
11681.00	32.20	80.70	10580.76	1069.28 N	3602.16 E	3757.52	0.45
11775.00	32.10	81.00	10660.35	1077.24 N	3651.54 E	3807.13	0.20
11872.00	32.10	81.20	10742.52	1085.21 N	3702.47 E	3858.22	0.11
11967.00	32.20	81.00	10822.95	1093.04 N	3752.41 E	3908.33	0.15
12063.00	31.50	81.90	10904.49	1100.57 N	3802.51 E	3958.50	0.88
12156.00	30.90	83.10	10984.04	1106.86 N	3850.27 E	4006.08	0.93
12252.00	30.50	83.30	11066.59	1112.67 N	3898.94 E	4054.39	0.43
12285.00	30.50	83.60	11095.02	1114.58 N	3915.58 E	4070.89	0.46
12355.00	30.50	83.60	11155.34	1118.54 N	3950.88 E	4105.87	0.00

THE DOGLEG SEVERITY IS IN DEGREES PER 100.00 FEET
THE VERTICAL SECTION WAS COMPUTED ALONG 73.50° (GRID)

BASED UPON MINIMUM CURVATURE TYPE CALCULATIONS. THE BOTTOM HOLE DISPLACEMENT IS 4106.17 FEET, IN THE DIRECTION OF 74.19° (GRID)

SURVEYS CALCULATED USING THE LONG COLLAR METHOD
A TOTAL CORRECTION OF +2.43° HAS BEEN APPLIED CORRECTING FROM MAGNETIC NORTH TO STATE PLANE (TEXAS SOUTH CENTRAL) GRID NORTH
TIE-ON AT 4500' MD PROVIDED BY RUSTY CLARK SURVEY CO. (MULTISHOT GYRO)
THE SURVEY AT 12285' MD WAS PROJECTED TO TD AT 12355' MD
SSDS ENGINEERS: V. WOODS, G. McSWEENEY, D. RACHAL



W. Harris & D. Carpenter Survey A - 26
Vince Survey
Called 4850.92 Acres Total
From U.S.A. To William E. Brock
(Volume 8214, Page 438)
American Hunter Exploration LTD. Et Al
Sam Houston Gas Unit No. 1
Called 668 Acres
(Clerk's File No. 138-75-2354)
Face Location
on Company, Inc.
1 Well"
.639 060
9,660.131
44'37.30530" N
09'21.17433" W
Called 38.64 Acres
From Ident Basic Ind
To First Bank & Trust
(F.C.# 002-91-2513)
Called 5.659 Acres
From J.H. Glanville
Ballard Exploration, Inc.
(F.C.# 533-93-1599)
Fnd 1/2" I.R.
Fnd. 1" I.P.
N 73°32'09" E 3609.32'
660'
40 Acre
Drilling Unit
± 6.655'
± 10.226'
Buffalo
Called 37.5317 Acres
(F.C.# 511-71-3575)
Proposed Bottom Hole Location
"Ballard Exploration Company, Inc.
Jacintoport # 1 Well"
Y = 715,679.000
X = 3,223,179.000
Latitude = 29°44'46.44900" N
Longitude = 95°08'40.88767" W
Bayou
Called 525.997 Acres (Tract 1) (F.C.# 165-17-1993)
Thomas Earle Survey A - 18
(R.T. JULY 7, 1828)

RUSTY CLARK
SURVEY COMPANY, INC.

P.O. Box 100
Breaux Bridge, Louisiana 70517
Phone (337) 237-7593

April 26, 2001

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION
P.O. DRAWER 12967
CAPITOL STATION
AUSTIN, TEXAS 78711

ATTENTION: MR. DAVID TRIANA

REFERENCE: BALLARD EXPLORATION
JACINTOPORT, WELL #1
RRC LEASE/GAS I.D. # NOT ASSIGNED
HOUSTON SHIP CHANNEL
RICHARD & ROBERT VINCE, ABSTRACT #76
HARRIS COUNTY, TEXAS
API #422013261900

DEAR MR. TRIANA:

ENCLOSED, PLEASE FIND THE ORIGINAL AND ONE COPY OF THE SURVEY RUN ON THE ABOVE REFERENCED WELL BY RUSTY CLARK SURVEY COMPANY, INC. (P-5 NO. 157688). OTHER INFORMATION REQUIRED BY YOUR OFFICE IS AS FOLLOWS:

NAME & TITLE OF SURVEYOR	DRAINHOLE NUMBER	SURVEYED DEPTHS	DATES PERFORMED	TYPE OF SURVEY
PHILIP HEBERT SENIOR SURVEYOR	ORIGINAL HOLE	0' – 4,603'	03/04/01	GYROSCOPIC MULTI-SHOT

A CERTIFIED PLAT ON WHICH THE BOTTOM HOLE LOCATION IS ORIENTED BOTH TO THE SURFACE LOCATION AND TO THE LEASE LINES (OR UNIT LINES IN CASE OF POOLING) IS ATTACHED TO THE SURVEY REPORT. IF ANY OTHER INFORMATION IS REQUIRED, PLEASE CONTACT THE UNDERSIGNED AT THE LETTERHEAD ADDRESS AND PHONE NUMBER.

TRAVIS W. BRICE
OFFICE MANAGER

ENCLOSURES
CC: BALLARD EXPLORATION COMPANY

CERTIFIED MAIL

7099 3400 0005 4736 4092

RUSTY CLARK SURVEY COMPANY, INC.

TXL-03010191-GS MARCH 04, 2001

Report of Sub-Surface Directional Survey

BALLARD EXPLORATION COMPANY, INC.

JACINTOPORT, WELL #1

HOUSTON SHIP CHANNEL - HARRIS COUNTY TEXAS

SURVEY FROM SURFACE TO 4,603 FT. M.D.

P.O. BOX 100 BREAUX BRIDGE, LOUISIANA 70517 PHONE (337) 237-7593

RUSTY CLARK SURVEY COMPANY INC.
P.O. BOX 100
BREAUX BRIDGE LA. 70517
(318)-237-7593

BALLARD EXPLORATION
JACINTOPORT WELL #1
HOUSTON SHIP CHANNEL - HARRIS COUNTY TX
RIG: GREYWOLF 506

GYROSCOPIC MULTI-SHOT SURVEY - TXL-03010191-GS - MARCH 04 2001

KELLY BUSHING ELEVATION = 42.9 FEET
MAGNETIC DECLINATION = 2.431^ EAST TO GRID
PLANE OF PROPOSAL DIRECTION IS N 73 29 E

ALL CALCULATIONS MADE BY P5-166 COMPUTER
MINIMUM CURVATURE METHOD
RESULTS IN FEET

We hereby certify that the surveys contained herein, are to the best of our knowledge a true and accurate account of the well.

RUSTY CLARK
SURVEY COMPANY, INC.

Division Survey Supervisor

DATE = 03/04/2001

C:\SURVEY\B\BALLJACI.NO1

MEAS. DEPTH	DRIFT ANGLE DEG	DRIFT DIREC	TRUE VERTICAL DEPTH	SUB SEA TVD	VERTICAL SECTION	TOTAL RECTANGULAR COORDINATES		CLOSURES DISTANCE	CLOSURES ANGLE D M S	DOG LEG SEVERITY DEG/100FT.
0	0.00	N 0.00 E	0.00	-42.90	0.00	0.00 N	0.00 E	0.00	N 0 0 0 E	0.00
100	0.25	S 15.00 W	100.00	57.10	-0.11	0.21 S	0.06 W	0.22	S 15 0 0 W	0.25
200	0.25	S 30.00 W	200.00	157.10	-0.39	0.61 S	0.22 W	0.65	S 19 59 14 W	0.07
300	0.50	N 34.00 E	300.00	257.10	-0.21	0.44 S	0.09 W	0.45	S 11 15 27 W	0.75
400	1.50	N 23.00 E	399.98	357.08	0.96	1.13 N	0.67 E	1.31	N 30 37 27 E	1.01
500	2.25	N 19.00 E	499.93	457.03	2.93	4.19 N	1.82 E	4.57	N 23 27 57 E	0.76
600	2.50	N 17.00 E	599.84	556.94	5.28	8.13 N	3.10 E	8.70	N 20 50 28 E	0.26
700	2.50	N 20.00 E	699.75	656.85	7.78	12.27 N	4.48 E	13.06	N 20 3 34 E	0.13
800	2.25	N 21.00 E	799.66	756.76	10.27	16.15 N	5.93 E	17.20	N 20 9 34 E	0.25
900	1.75	N 22.00 E	899.60	856.70	12.42	19.40 N	7.20 E	20.69	N 20 22 30 E	0.50
1000	1.50	N 18.00 E	999.56	956.66	14.11	22.06 N	8.18 E	23.53	N 20 20 54 E	0.27
1100	1.50	N 21.00 E	1099.52	1056.62	15.65	24.52 N	9.05 E	26.14	N 20 15 48 E	0.08
1200	1.50	N 19.00 E	1199.49	1156.59	17.21	26.98 N	9.95 E	28.76	N 20 14 22 E	0.06
1300	1.50	N 21.00 E	1299.46	1256.56	18.77	29.44 N	10.84 E	31.38	N 20 13 10 E	0.06
1400	1.75	N 22.00 E	1399.42	1356.52	20.52	32.08 N	11.89 E	34.21	N 20 19 43 E	0.25
1500	2.50	N 25.00 E	1499.35	1456.45	22.91	35.47 N	13.38 E	37.91	N 20 39 52 E	0.76
1600	2.75	N 25.00 E	1599.24	1556.34	25.95	39.62 N	15.31 E	42.48	N 21 7 53 E	0.25
1700	2.50	N 28.00 E	1699.14	1656.24	29.07	43.72 N	17.35 E	47.04	N 21 38 47 E	0.28
1800	2.25	N 32.00 E	1799.05	1756.15	32.07	47.31 N	19.42 E	51.14	N 22 18 43 E	0.30
1900	2.75	N 42.00 E	1898.95	1856.05	35.58	50.76 N	22.06 E	55.35	N 23 29 26 E	0.66
2000	3.25	N 50.00 E	1998.82	1955.92	40.23	54.37 N	25.84 E	60.19	N 25 25 13 E	0.65
2100	3.00	N 52.00 E	2098.67	2055.77	45.26	57.80 N	30.07 E	65.15	N 27 29 14 E	0.27
2200	3.00	N 54.00 E	2198.53	2155.63	50.17	60.95 N	34.25 E	69.91	N 29 20 4 E	0.10
2300	3.25	N 58.00 E	2298.38	2255.48	55.36	63.99 N	38.77 E	74.82	N 31 12 45 E	0.33
2400	3.50	N 57.00 E	2398.21	2355.31	61.02	67.15 N	43.74 E	80.14	N 33 4 32 E	0.26
2500	4.00	N 56.00 E	2498.00	2455.10	67.28	70.77 N	49.19 E	86.18	N 34 48 7 E	0.50
2600	4.25	N 58.00 E	2597.74	2554.84	74.17	74.68 N	55.22 E	92.88	N 36 28 50 E	0.29
2700	4.25	N 57.00 E	2697.46	2654.56	81.30	78.66 N	61.47 E	99.83	N 38 0 23 E	0.07
2800	3.75	N 54.00 E	2797.22	2754.32	87.93	82.60 N	67.22 E	106.50	N 39 8 24 E	0.54
2900	3.00	N 53.00 E	2897.04	2854.14	93.47	86.10 N	71.96 E	112.21	N 39 53 18 E	0.75

MEAS. DEPTH	DRIFT ANGLE DEG	DRIFT DIREC	TRUE VERTICAL DEPTH	SUB SEA TVD	VERTICAL SECTION	TOTAL RECTANGULAR COORDINATES		CLOSURES DISTANCE	CLOSURES ANGLE D M S	DOG LEG SEVERITY DEG/100FT.
3000	2.25	N 53.00 E	2996.94	2954.04	97.76	88.86 N	75.62 E	116.68	N 40 23 54 E	0.75
3100	2.00	N 50.00 E	3096.87	3053.97	101.20	91.16 N	78.52 E	120.32	N 40 44 27 E	0.27
3200	1.50	N 62.00 E	3196.82	3153.92	104.08	92.90 N	81.01 E	123.26	N 41 5 32 E	0.62
3300	0.75	N 81.00 E	3296.80	3253.90	106.01	93.61 N	82.82 E	124.99	N 41 29 55 E	0.83
3400	0.25	S 74.00 E	3396.80	3353.90	106.85	93.65 N	83.67 E	125.59	N 41 46 42 E	0.53
3500	0.25	N 84.00 E	3496.80	3453.90	107.24	93.62 N	84.10 E	125.84	N 41 56 5 E	0.10
3600	0.25	S 83.00 E	3596.80	3553.90	107.66	93.61 N	84.53 E	126.13	N 42 4 56 E	0.06
3700	0.25	N 32.00 E	3696.80	3653.90	108.02	93.77 N	84.87 E	126.47	N 42 8 45 E	0.27
3800	0.50	N 42.00 E	3796.79	3753.89	108.56	94.28 N	85.27 E	127.12	N 42 7 41 E	0.26
3900	0.50	N 37.00 E	3896.79	3853.89	109.28	94.95 N	85.83 E	127.99	N 42 6 37 E	0.04
4000	0.50	N 38.00 E	3996.79	3953.89	109.99	95.65 N	86.36 E	128.86	N 42 4 44 E	0.00
4100	0.50	N 40.00 E	4096.78	4053.88	110.71	96.32 N	86.91 E	129.74	N 42 3 30 E	0.00
4200	0.25	N 19.00 E	4196.78	4153.88	111.20	96.86 N	87.26 E	130.37	N 42 0 50 E	0.28
4300	0.25	N 25.00 E	4296.78	4253.88	111.47	97.27 N	87.42 E	130.78	N 41 56 55 E	0.03
4400	0.25	S 14.00 W	4396.78	4353.88	111.50	97.25 N	87.46 E	130.80	N 41 57 56 E	0.50
4500	0.25	S 60.00 E	4496.78	4453.88	111.54	96.93 N	87.60 E	130.65	N 42 6 14 E	0.30
4578	0.25	S 56.00 E	4574.78	4531.88	111.77	96.75 N	87.89 E	130.71	N 42 15 2 E	0.00

PROJECTED SURVEY TO 4603 FEET M.D. ....

4603	0.25	S 56.00 E	4599.78	4556.88	111.84	96.69 N	87.98 E	130.73	N 42 17 53 E	0.00

BOTTOM HOLE CLOSURE 130.73 FEET AT N 42 17 53 E

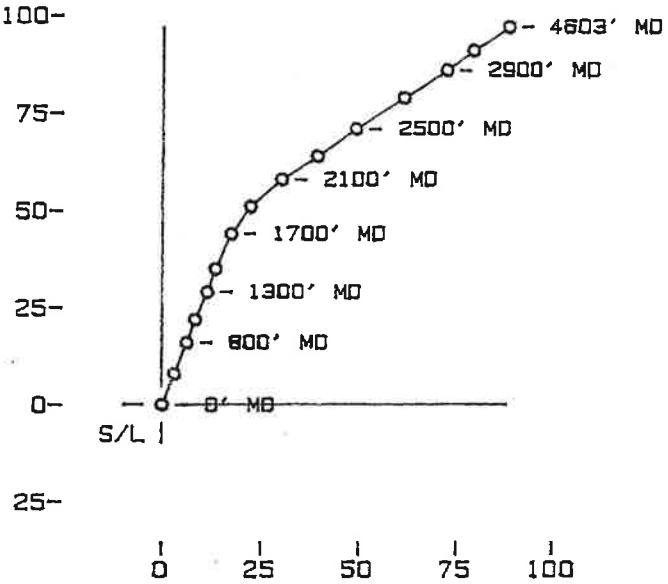
BALLARD EXPLORATION
JACINTOPORT WELL #1
HOUSTON SHIP CHANNEL - HARRIS COUNTY TX

03/04/2001

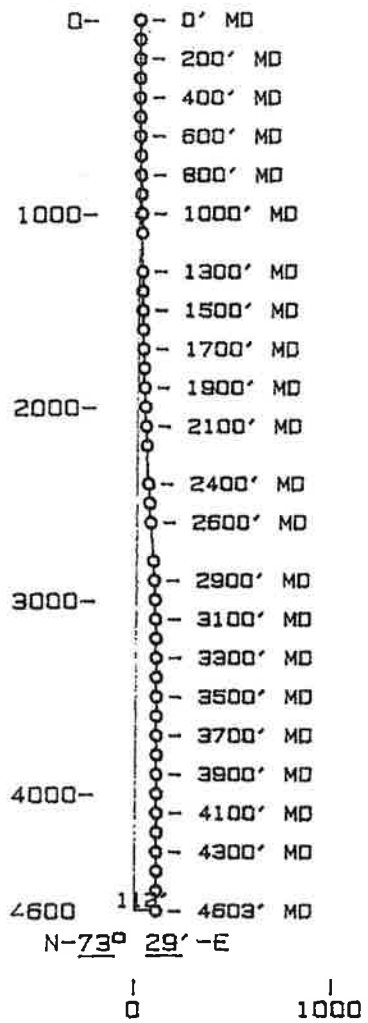
PLANE OF PROPOSAL
N-73° 29'-E

N
2°25'E
GRID

HORIZONTAL PLAN
SCALE 1"=50'



VERTICAL SECTION
SCALE 1"=1000'



B. H. L.
131' N-42° 17' 53"-E
N-96.69' E-87.97'
T. V. D. -4600'
M. D. -4603'

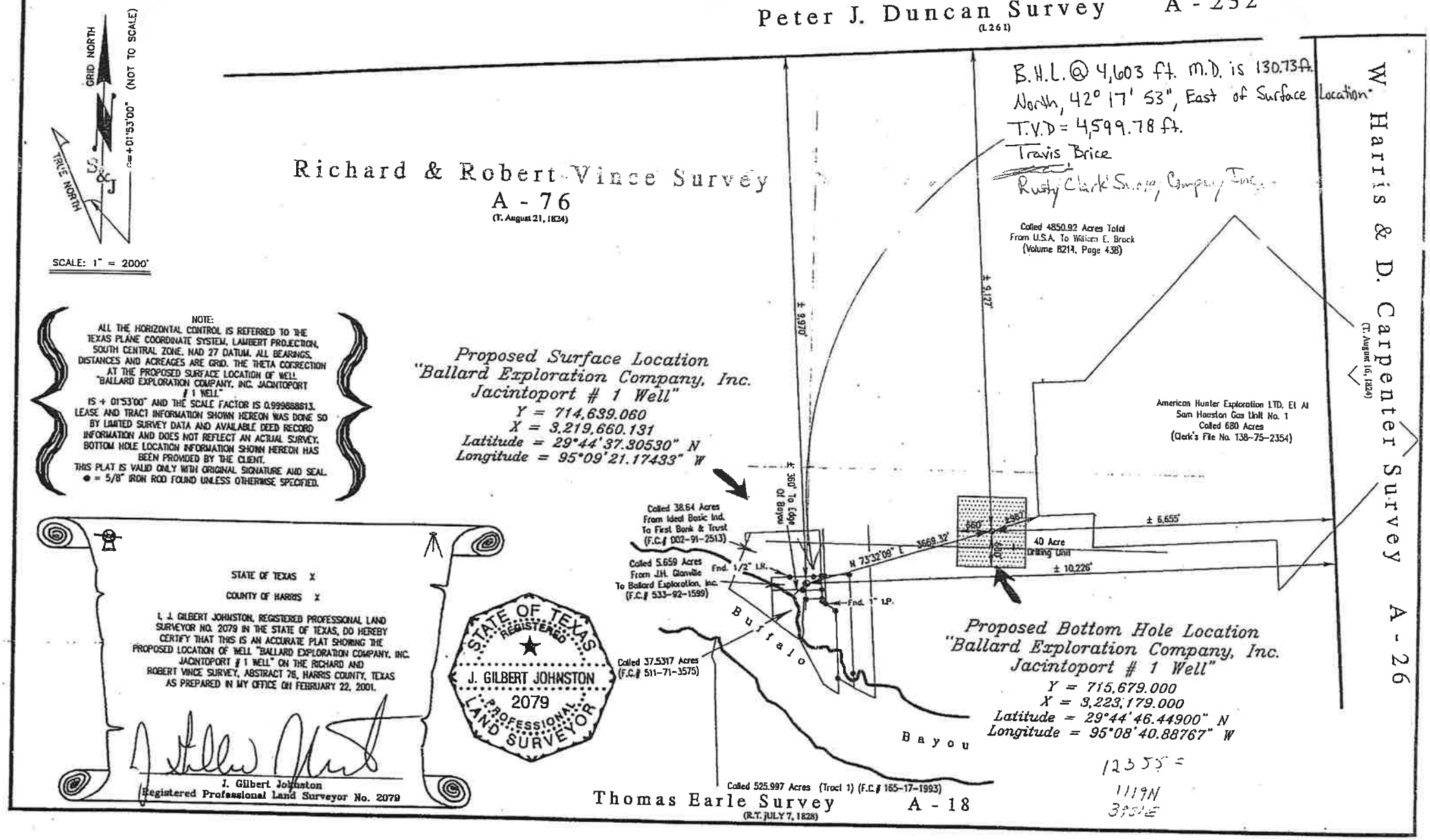
INTERPOLATED DATA FOR EVERY 100.00 FEET OF TRUE VERTICAL DEPTH

SUB SEA DEPTH	MEASURED DEPTH	TRUE VERTICAL DEPTH	VERTICAL SECTION	COORDINATES		CLOSURE DISTANCE	CLOSURE D M S
-42.90	0.00	0.00	0.00	0.00 N	0.00 E	0.00	N 0 0 0 E
57.10	100.00	100.00	-0.11	0.21 S	0.06 W	0.22	S 15 0 0 W
157.10	200.00	200.00	-0.39	0.61 S	0.22 W	0.65	S 19 59 14 W
257.10	300.00	300.00	-0.21	0.44 S	0.09 W	0.45	S 11 15 22 W
357.10	400.02	400.00	0.96	1.13 N	0.67 E	1.31	N 30 37 10 E
457.10	500.07	500.00	2.94	4.19 N	1.82 E	4.57	N 23 27 44 E
557.10	600.16	600.00	5.28	8.14 N	3.10 E	8.71	N 20 50 21 E
657.10	700.25	700.00	7.79	12.28 N	4.48 E	13.07	N 20 3 36 E
757.10	800.34	800.00	10.28	16.16 N	5.93 E	17.21	N 20 9 37 E
857.10	900.40	900.00	12.43	19.41 N	7.21 E	20.70	N 20 22 29 E
957.10	1000.44	1000.00	14.12	22.07 N	8.18 E	23.54	N 20 20 52 E
1057.10	1100.48	1100.00	15.66	24.54 N	9.06 E	26.15	N 20 15 48 E
1157.10	1200.51	1200.00	17.22	27.00 N	9.95 E	28.77	N 20 14 21 E
1257.10	1300.54	1300.00	18.78	29.46 N	10.85 E	31.39	N 20 13 12 E
1357.10	1400.59	1400.00	20.53	32.10 N	11.89 E	34.23	N 20 19 51 E
1457.10	1500.65	1500.00	22.93	35.50 N	13.39 E	37.94	N 20 40 4 E
1557.10	1600.76	1600.00	25.97	39.66 N	15.33 E	42.52	N 21 8 9 E
1657.10	1700.87	1700.00	29.09	43.76 N	17.37 E	47.08	N 21 39 9 E
1757.10	1800.95	1800.00	32.10	47.35 N	19.44 E	51.18	N 22 19 27 E
1857.10	1901.05	1900.00	35.63	50.80 N	22.10 E	55.40	N 23 30 45 E
1957.10	2001.18	2000.00	40.29	54.41 N	25.89 E	60.25	N 25 26 48 E
2057.10	2101.33	2100.00	45.33	57.84 N	30.13 E	65.22	N 27 30 49 E
2157.10	2201.47	2200.00	50.24	60.99 N	34.32 E	69.99	N 29 21 50 E
2257.10	2301.62	2300.00	55.46	64.04 N	38.85 E	74.90	N 31 14 41 E
2357.10	2401.79	2400.00	61.14	67.22 N	43.83 E	80.25	N 33 6 32 E
2457.10	2502.01	2500.00	67.42	70.85 N	49.31 E	86.32	N 34 50 18 E
2557.10	2602.27	2600.00	74.34	74.77 N	55.36 E	93.04	N 36 31 4 E
2657.10	2702.54	2700.00	81.47	78.76 N	61.62 E	100.00	N 38 2 13 E
2757.10	2802.79	2800.00	88.09	82.70 N	67.36 E	106.66	N 39 9 43 E
2857.10	2902.96	2900.00	93.60	86.18 N	72.07 E	112.34	N 39 54 14 E

INTERPOLATED DATA FOR EVERY 100.00 FEET OF TRUE VERTICAL DEPTH

SUB SEA DEPTH	MEASURED DEPTH	TRUE VERTICAL DEPTH	VERTICAL SECTION	COORDINATES		CLOSURE DISTANCE	CLOSURE D M S
2957.10	3003.06	3000.00	97.86	88.93 N	75.71 E	116.79	N 40 24 33 E
3057.10	3103.13	3100.00	101.29	91.21 N	78.60 E	120.41	N 40 45 8 E
3157.10	3203.18	3200.00	104.14	92.92 N	81.07 E	123.31	N 41 6 19 E
3257.10	3303.20	3300.00	106.04	93.61 N	82.84 E	125.01	N 41 30 28 E
3357.10	3403.20	3400.00	106.86	93.65 N	83.69 E	125.60	N 41 47 0 E
3457.10	3503.20	3500.00	107.26	93.62 N	84.11 E	125.85	N 41 56 22 E
3557.10	3603.20	3600.00	107.67	93.62 N	84.54 E	126.14	N 42 5 4 E
3657.10	3703.20	3700.00	108.04	93.79 N	84.88 E	126.49	N 42 8 43 E
3757.10	3803.21	3800.00	108.58	94.30 N	85.29 E	127.15	N 42 7 39 E
3857.10	3903.21	3900.00	109.30	94.98 N	85.84 E	128.02	N 42 6 33 E
3957.10	4003.21	4000.00	110.01	95.67 N	86.38 E	128.89	N 42 4 42 E
4057.10	4103.22	4100.00	110.72	96.34 N	86.92 E	129.76	N 42 3 25 E
4157.10	4203.22	4200.00	111.21	96.88 N	87.26 E	130.39	N 42 0 42 E
4257.10	4303.22	4300.00	111.47	97.27 N	87.42 E	130.78	N 41 56 57 E
4357.10	4403.22	4400.00	111.50	97.24 N	87.47 E	130.79	N 41 58 12 E
4457.10	4503.22	4500.00	111.55	96.93 N	87.61 E	130.65	N 42 6 36 E
	LOWEST SURVEY DATA AVAILABLE						
4556.88	4603.00	4599.78	111.84	96.69 N	87.98 E	130.73	N 42 17 53 E

Plot date: 2/22/1 at 11:12



NOTE:
ALL THE HORIZONTAL CONTROL IS REFERRED TO THE TEXAS PLANE COORDINATE SYSTEM, LAMBERT PROJECTION, SOUTH CENTRAL ZONE, NAD 27 DATUM. ALL BEARINGS, DISTANCES AND ACREAGES ARE GRID. THE THETA CORRECTION AT THE PROPOSED SURFACE LOCATION OF WELL "BALLARD EXPLORATION COMPANY, INC. JACINTOPORT # 1 WELL" IS + 01°53'00" AND THE SCALE FACTOR IS 0.999888613. LEASE AND TRACT INFORMATION SHOWN HEREON WAS DONE SO BY LIMITED SURVEY DATA AND AVAILABLE DEED RECORD INFORMATION AND DOES NOT REFLECT AN ACTUAL SURVEY. BOTTOM HOLE LOCATION INFORMATION SHOWN HEREON HAS BEEN PROVIDED BY THE CLIENT.
THIS PLAT IS VALID ONLY WITH ORIGINAL SIGNATURE AND SEAL.
● = 5/8" IRON ROD FOUND UNLESS OTHERWISE SPECIFIED.

STATE OF TEXAS X

COUNTY OF HARRIS X

I, J. GILBERT JOHNSTON, REGISTERED PROFESSIONAL LAND SURVEYOR NO. 2079 IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THIS IS AN ACCURATE PLAT SHOWING THE PROPOSED LOCATION OF WELL "BALLARD EXPLORATION COMPANY, INC. JACINTOPORT # 1 WELL" ON THE RICHARD AND ROBERT VINCE SURVEY, ABSTRACT 76, HARRIS COUNTY, TEXAS AS PREPARED IN MY OFFICE ON FEBRUARY 22, 2001.

J. Gilbert Johnston
Registered Professional Land Surveyor No. 2079

STATE OF TEXAS
REGISTERED
J. GILBERT JOHNSTON
2079
PROFESSIONAL
LAND SURVEYOR

RUSTY CLARK SURVEY CO., INC.

P.O. BOX 100, BREAUX BRIDGE, LA 70517

(800)-256-5232

3-4-2001

State of Texas

County of Harris

I, Philip Hebert, certify that; I am employed by Rusty Clark Survey Company, Inc.; that I did on the day(s) of 3-3-01 through 3-4-01 conduct or supervise the taking of a Gyroscopic Multi-shot survey from a depth of 0 feet to a depth of 4,603 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Rusty Clark Survey Company, Inc.; that I am authorized and qualified to make this report; that this survey was conducted at the request of Ballard Exploration for the Jacintoport, Well #1 Well API No. 42 201 32619 00 in Harris County, Texas; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by Rusty Clark Survey Company, Inc.

Philip Hebert

Philip Hebert

Survey Technician

e:\wpdata\rrccert

ARTIFICIAL PENETRATION NO. 11 & 11A
BALLARD EXPLORATION COMPANY
HOUSTON SHIP CHANNEL #1

(MAP ID #11 is a sidetrack from MAP ID #11A)

28

▶ Return each W-1 with plat and applicable fee. Make a check or money order payable to the State Treasurer of Texas.

▶ Address to:
Railroad Commission of Texas
Oil and Gas Division, Drilling Permits
P. O. Box 12967
Austin, Texas 78711-2967

RAILROAD COMMISSION OF TEXAS
Oil and Gas Division

Application for Permit to Drill, Deepen, Plug Back, or Re-Enter

▶ File a copy of W-1 and plat in RRC District Office ▶ Read Instructions on Back

Ok rg 1-X

Form W-1
Rev. 3/93

EFFECTIVE SEPT. 1, 1991, PERMIT APPLICATION FEE WILL VARY ACCORDING TO THE TOTAL DEPTH SHOWN IN ITEM NO. 9 BELOW.
0-2000' - $100, 2001' - 4000' - $125
4001' - 9000' - $150 9001' or deeper - $200

Purpose of filing (mark appropriate boxes):
☐ Drill ☐ Deepen (below casing) ☐ Deepen (within casing) ☐ Plug Back ☐ Re-Enter
☐ Horizontal ☒ Directional Well ☒ Sidetrack ☒ Amended Permit (enter permit no. at right & explain fully in Remarks)

Enter here, if assigned: ▶ API No. 42- 201-32613
▶ Permit No. 503752 A
▶ Rule 37 Case No. N/A

1. Operator's Name (exactly as shown on Form P-5, Organization Report): Ballard Exploration Company, Inc.
3. RRC Operator No.: 048169
4. RRC District No.: 03
5. County of Well Site: Harris SL, BHL
2. Address (including city and zip code): 1021 Main Street, Suite 2310, Houston, TX 77002-6602
6. Lease Name (32 spaces maximum): Houston Ship Channel Unit
7. RRC Lease/ID No.: N/A
8. Well No.: 1ST
9. Total Depth: 11,241' TVD

943062

10. Location
- Section _____ Block SL + BHL Survey Richard & Robert Vince Abstract No. A-76
- This well is to be located 2 miles in a southerly direction from Channelview which is the nearest town in the county of the well site.

11. Distance from proposed location to nearest lease or unit line 670.81 ft.
12. Number of contiguous acres in lease, pooled unit, or unitized tract 40 (OUTLINE ON PLAT.)

Permit Granted 3-28-01 Dir

13. FIELD NAME (Exactly as shown on RRC proration schedule). List all established and wildcat zones of anticipated completion. Attach additional Form W-1's as needed to list these zones. One zone per line.	14. Completion depth	15. Spacing pattern (ft.)	16. Density pattern (acres)	17. Number of acres in drilling unit for this well. OUTLINE ON PLAT.	18. Is this acreage assigned to another well on this lease & in this reservoir? If so, explain in Remarks.	19. Distance from proposed location to nearest applied for, permitted, or completed well, this lease & reservoir. (ft.)	20. Oil, gas, or other type well (Specify)	21. No. of applied for, permitted, or completed locations (including this one) on lease in this reservoir. OIL	GAS
Wildcat 6001 TVD	11,241'	467/1200	40	40	No	N/A	Gas		1

RECEIVED
RRC OF TEXAS
MAR 28 2001
OIL & GAS DIVISION
AUSTIN, TEXAS

201-32613

22. Perpendicular surface location from two nearest designated lines:
- Lease/Unit 360' FSWL & 9,980' FNL (off lse)
- Survey/Section 360' FSWL (Bayou) L & 9,980' FNL

If a directional well, show also projected bottom-hole location:
- Lease/Unit 670.81' FEL & 678.04' FNL
- Survey/Section 133' FSWL (Bayou) L & 8,449' FEL

23. Is this a pooled unit? Yes ☒ ▶ (Attach Form P-12 and certified plat.) No ☐
24. Is Item 17 less than Item 16 (substandard acreage for any field applied for)? Yes ☐ ▶ (Attach Form W-1A) No ☒
25. Is this wellbore subject to Statewide Rule 36 (hydrogen sulfide area)? Yes ☐ No ☒ If subject to Rule 36, is Form H-9 filed? Yes ☐ No ☐ ▶ If not filed, explain in Remarks.
26. Do you have the right to develop the minerals under any right-of-way that crosses, or is contiguous to, this tract? Yes ☒ No ☐ If not, and if the well requires a Rule 37 or 38 exception, see Instructions for Rule 37.

Remarks
Amended to show as-drilled surface and bottomhole locations.

P12 Attached

I certify that information stated in this application is true and complete, to the best of my knowledge.

Jane Bortoni — Jane Bortoni, Drlg/Prod. Ass't.
Signature — Name and title of operator's representative

3/27/01 — 713-651-0181
Date: mo. day yr. — Tel.: Area Code Number

• RRC Use Only •

REC#63151 209294 503752

File name: 2012U9E.DW MAJ
Plot date: 3/13/1 at

Peter J. Duncan Survey A - 232
(L 26 I)

W. Harris & D. Carpenter Survey A - 26
(T. August 16, 1824)

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MAR 28 2001
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AUSTIN, TEXAS

Richard & Robert Vince Survey
A - 76
(T. August 21, 1824)

Called 4850.92 Acres Total
From U.S.A. To William E. Brock
(Volume 8214, Page 438)

GRID NORTH
TRUE NORTH
S&J
θ = +01°53'00" (NOT TO SCALE)
SCALE: 1" = 2000'

NOTE:
ALL THE HORIZONTAL CONTROL IS REFERRED TO THE TEXAS PLANE COORDINATE SYSTEM, LAMBERT PROJECTION, SOUTH CENTRAL ZONE, NAD 27 DATUM. ALL BEARINGS, DISTANCES AND ACREAGES ARE GRID. THE THETA CORRECTION AT THE AS DRILLED SURFACE LOCATION OF WELL "BALLARD EXPLORATION COMPANY, INC. HOUSTON SHIP CHANNEL UNIT # 1 WELL, S. T. # 1" IS + 01°53'00" AND THE SCALE FACTOR IS 0.999888610. LEASE AND TRACT INFORMATION SHOWN HEREON WAS DONE SO BY LIMITED SURVEY DATA AND AVAILABLE DEED RECORD INFORMATION AND DOES NOT REFLECT AN ACTUAL SURVEY. BOTTOM HOLE LOCATION INFORMATION SHOWN HEREON HAS BEEN PROVIDED BY THE CLIENT.
THIS PLAT IS VALID ONLY WITH ORIGINAL SIGNATURE AND SEAL.
● = 5/8" IRON ROD FOUND UNLESS OTHERWISE SPECIFIED.

STATE OF TEXAS X

COUNTY OF HARRIS X

I, J. GILBERT JOHNSTON, REGISTERED PROFESSIONAL LAND SURVEYOR NO. 2079 IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THIS IS AN ACCURATE PLAT SHOWING THE AS DRILLED LOCATION OF WELL "BALLARD EXPLORATION COMPANY, INC. HOUSTON SHIP CHANNEL UNIT # 1 WELL, S.T. #1" ON THE RICHARD AND ROBERT VINCE SURVEY, ABSTRACT 76, HARRIS COUNTY, TEXAS AS LOCATED ON THE GROUND BY ME ON FEBRUARY 26, 2001.

J. Gilbert Johnston
Registered Professional Land Surveyor No. 2079

STATE OF TEXAS
REGISTERED
J. GILBERT JOHNSTON
2079
PROFESSIONAL
LAND SURVEYOR

9,980' ±

11,916' ±

360' ± To Edge Of Bayou

Called 38.64 Acres
From Ideal Basic Ind.
To First Bank & Trust
(F.C.# 002-91-2513)

Called 5.659 Acres
From J.H. Glanville
To Ballard Exploration, Inc.
(F.C.# 533-92-1599)

Fnd. 1/2" I.R.

Fnd. 1" I.P.

10,216' ±

8,449' ±

Buffalo Bayou

Called 37.5317 Acres
(F.C.# 511-71-3575)

133' ± To Edge Of Bayou

40 Acre Drilling Unit

670.81
29 Acres

11 Acres

As Drilled Surface Location
"Ballard Exploration Company, Inc. Houston Ship Channel Unit # 1 Well, S.T. #1"
Y = 714,629.795
X = 3,219,670.599
Latitude = 29°44'37.21022" N
Longitude = 95°09'21.05910" W

As Drilled Bottom Hole Location
"Ballard Exploration Company, Inc. Houston Ship Channel Unit # 1 Well, S.T. #1"
Y = 712,794.635
X = 3,221,542.757
Latitude = 29°44'18.44157" N
Longitude = 95°09'00.51727" W

Called 525.997 Acres (Tract 1) (F.C.# 165-17-1993)

Thomas Earle Survey A - 18
(R.T. JULY 7, 1828)

RAILROAD COMMISSION OF TEXAS
Oil and Gas Division

Type or print only
483-047

42917-495

Form G-1
Rev. 4/1/83

API No. 42-201-32613

Gas Well Back Pressure Test, Completion or Recompletion Report, and Log

1. FIELD NAME (as per RRC Records or Wildcat): HOUSTON SHIP CHAN. (YEGOA EY-1)
2. LEASE NAME: Houston Ship Channel Unit
3. OPERATOR'S NAME (Exactly as shown on Form P-5, Organization Report): Ballard Exploration Company, Inc
RRC Operator No.: 048169
4. ADDRESS: 1021 Main Street, Suite 2310, Houston, Texas 77002-6602
5. Location (Section, Block, and Survey): Richard & Robert Vince Svy., A-76
5b. Distance and direction to nearest town in this county: 2 Miles South of Channelview
6. If operator has changed within last 60 days, name former operator: N/A
12. If workover or reclass, give former field (with reservoir) & Gas ID or oil lease no.
FIELD & RESERVOIR | GAS ID or OIL LEASE # | Oil-O Gas-G | WELL #
13. Pipe Line Connection: Kinder-Morgan Texas Pipeline, Inc.
14. Completion or recompletion date: 2/21/01
15. Any condensate on hand at time of workover or recompletion? ☐ Yes ☐ No
16. Type of Electric or other Log Run: AIL/GR/COMP NEU/LITHO-DENS
7. RRC District No.: 3
8. RRC Gas ID No.: N/A
9. Well No.: 1ST
10. County of well site: Harris
11. Purpose of filing
Initial Potential [X]
Retest [ ]
Reclass [ ]
Well record only (Explain in remarks) [ ]

RECEIVED RRC OF TEXAS OG DIVISION HOUSTON, TX MAR 2001

Section I — GAS MEASUREMENT DATA

Date of Test: 02/22/01
Gas Measurement Method (Check One): Orifice Meter [X] Flange Taps [X] Pipe Taps [ ] Positive Choke [ ] Orifice Vent Meter [ ] Pitot Tube [ ] Critical-flow Prover [ ]
Gas produced during test: 756 MCF

Run No.	Line Size	Orif. or Choke Size	24 Hr. Coeff. Orif. or Choke	Static P_m or Choke Press	Diff. h_w	Flow Temp. °F	Temp. Factor F_{tf}	Gravity Factor F_g	Compress Factor F_{pv}	Volume MCF/DAY
1	3.826	1.750	19871.22	625	80.14	91	.9715	.9893	1.040	4444
2	3.826	1.750	19871.22	625	52.97	98	.9654	.9893	1.038	3585
3	3.826	1.750	19871.22	615	39.97	92	.9706	.9893	1.039	3110
4	3.826	1.750	19871.22	605	28.00	96	.9671	.9893	1.038	2568

Section II — FIELD DATA AND PRESSURE CALCULATIONS

Gravity (Dry Gas): .613
Gravity Liquid Hydrocarbon: 42.3 Deg. API
Gas-Liquid Hydro Ratio: 76318 CF/Bbl
Gravity of Mixture: G_{mix} = .652
Avg. Shut-in Temp.: 171 °F
Bottom Hole Temp.: 267 °F @ 12040 (Depth)

$D_{eff}^{8/3}$ = 10.806
$\sqrt{T_f} = \sqrt{636} = 25.22$
$\sqrt{GL} = \sqrt{850.08} = 88.60$
$C = \frac{1118 \times (D_{eff})^{8/3}}{\sqrt{T}} = 1118 \times 10.806 / 25.22 = 479.03$
$\frac{\sqrt{GL}}{C} = 88.60 / 479.03 = .1850$

RECORD CODIFICATION JUL 13 2001

Run No.	Time of Run Min.	Choke Size	Wellhead Press. PSIA P_W	Wellhead Flow Temp. F°	P_w^2 (Thousands)	R	R^2 (Thousands)	P_1	P_w/P_1
Shut-in	3 Hrs	stable	7873	74					
1	120	10/64	7479	85	55935	822.1	675.8	7524	.9940
2	60	9/64	7553	85	57048	663.2	439.8	7582	.9962
3	60	8/64	7579	85	57441	575.4	331.1	7601	.9971
4	60	7/64	7625	85	58141	475.1	225.7	7640	.9980

Run No.	F	K	$S = \frac{1}{z}$	E^{ks}	P_f and P_s	P_f^2 and P_s^2 (thousands)	$P_f^2 - P_s^2$ (thousands)
Shut-in		.2332	.7632	1.1948	9407	88492	
1	.9970	.2307	.7855	1.1987	9019	81342	7150
2	.9981	.2310	.7816	1.1979	9083	82501	5991
3	.9986	.2311	.7803	1.1976	9103	82865	5627
4	.9990	.2312	.7779	1.1970	9145	83631	4861

Angle of Slope: θ 45.00
n 1.0000
Absolute Open Flow: 55006 MCF/DAY

WELL TESTER'S CERTIFICATION: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I conducted or supervised this test and that data and tests shown in Sections I and II above are true, correct, and complete, to the best of my knowledge. Bottomhole temperature and the diameter and length of flow string were furnished by the operator of the well.

Ted Brice — Signature Well Tester
Laura Eve Mach — FESCO Ltd. — Name of Company
RRC Representative

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OPERATOR'S CERTIFICATION: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that I Prepared or supervised and directed this report, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

Signature: Operator's Representative: Jane Bortoni — Drlg/Prod. Ass't. (Title) — 3/28/01 (Date) — 713-651-0181 (A/C Number)

MAPPING

SECTION III — DATA ON WELL COMPLETION AND LOG (Not Required on Retest)

17. Type of Completion: New Well [X] Deepening [ ] Plug Back [ ] Other [ ]

18. Permit to Drill, Plug Back or Deepen — DATE 1/5/01 — PERMIT NO. 503752

Rule 37 Exception — CASE NO. Cancel 3/28/01

Water Injection Permit — PERMIT NO. N/A

Salt Water Disposal Permit — PERMIT NO. N/A

Other — PERMIT NO.

19. Notice of Intention to Drill this well was filed in Name of: Ballard Exploration Company, Inc. .

20. Number of producing wells on this lease in this field (reservoir) including this well: 1-

21. Total number of acres in this lease: 40

22. Date Plug Back, Deepening, WorkOver or Drilling Operations: Commenced 1/6/01; Completed 2/9/01

23. Distance to nearest well, Same Lease & Reservoir: N/A

24. Location of well, relative to nearest lease boundaries of lease on which this well is located: * SL — 360 Feet From SW (edge of bayou) Line and 9,980 Feet from north Line of the Richard & Robert Vince Survey, A-76 (off-lease).

25. Elevation (DF, RKB, RT, GR, ETC.): 15.4'

26. Was directional survey made other than inclination (Form W-12)? [X] Yes [ ] No

27. Top of Pay: 12,017' MD / 11,134' TVD

28. Total Depth: 12,149' MD / 11,241' TVD

29. P. B. Depth: 12,111' MD / 11,209' TVD

30. Surface Casing Determined by: Field Rules [ ]; Recommendation of T.D.W.R. [X] Dt. of Letter 1/5/01; Railroad Commission (Special) [X] Dt. of Letter 1/9/01

31. Is well multiple completion? [ ] Yes [X] No

32. If multiple completion, list all reservoir names (completions in this well) and Oil Lease or Gas ID No.

FIELD & RESERVOIR	GAS ID or OIL LEASE #	Oil—O Gas—G	WELL #

33. Intervals Drilled by: Rotary Tools X; Cable Tools

34. Name of Drilling Contractor: Grey Wolf Drilling Company

35. Is Cementing Affidavit Attached? [X] Yes [ ] No

36. CASING RECORD (Report All Strings Set in Well)

CASING SIZE	WT #/FT.	DEPTH SET	MULTISTAGE TOOL DEPTH	TYPE & AMOUNT CEMENT (sacks)	HOLE SIZE	TOP OF CEMENT	SLURRY VOL. cu. ft.
13-3/8"	61#	3,443'		See	17-1/2"	Surface	4,036.6
9-5/8"	53.5#	8,903'		attached	12-1/4"	5,647'	1,057
				W-15's			

37. LINER RECORD

Size	TOP	Bottom	Sacks Cement	Screen
5-1/2"	8,540'	12,146'	430	N/A

38. TUBING RECORD

Size	Depth Set	Packer Set
2-7/8"	11,943'	11943'

39. Producing Interval (this completion) Indicate depth of perforation or open hole

From	12017'	To	12062' MD
From	11,134'	To	11,170' TVD
From		To	
From		To	

40. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

Depth Interval	Amount and Kind of Material Used

41. FORMATION RECORD (LIST DEPTHS OF PRINCIPAL GEOLOGICAL MARKERS AND FORMATION TOPS)

Formations	Depth	Formations	Depth
Top Frio	5,270'		
Top Vicksburg	8,385'		
Top Yegua	11,050'		

REMARKS: SIDETRACK: A 200-sack cement plug was set in the well from 9,234' to 8,967'; tagged cement at 8,803', drilled cement to 8,967' and kicked off. * AS-DRILLED BOTTOMHOLE LOCATION: 670.81' FEL & 678.04' FNL of lease; 133' FSWL (edge of bayou) & 8,449' FEL of Richard & Robert Vince Survey, A-76.

This test was conducted at th uest of the operator for the express purpose of sa ng RRC requirements. Its suitability for any other bose is not certified by FESCO Inc. For det. contact FESCO Inc.

Cementer: Fill in shaded areas.
Operator: Fill in other items.

RAILROAD COMMISSION OF TEXAS
Oil and Gas Division

Form W-15
Cementing Report
Rev. 4/1/83
483-046

1. Operator's Name (As shown of Form P-5, Organization Report)	2. RRC Operator No.	3. RRC District No.,	4. County of Well Site
Ballard Exploration Company, Inc.	048169	03	Harris

5. Field Name (Wildcat or exactly as shown on RRC records)	6. API No.	7. Drilling Permit No.
Wildcat	42-201-32613	503752

8. Lease Name	9. Rule 37 Case No.	10. Oil Lease/Gas ID No.	11. Well No.
HOUSTON SHIP CHANNEL	N/A	N/A	#1 ST

CASING CEMENT DATA:	SURFACE	INTER-MEDIATE CASING	PRODUCTION CASING		MULTI-STAGE CEMENTING PROCESS	
			Single String	Multiple Parallel Strings	Tool	Shoe
12. Cementing Date		1-23-01				
13. • Drilled hole size		12-1/4"				
• Est. % wash or hole enlargement		15%				
14. Size of casing (in. O.D.)		9-5/8"				
15. Top of liner (ft.)		8,540'				
16. Setting Depth		8,903'				
17. Number of centralizers used		17				
18. Hrs. Waiting on cement before drill out		28				
1st Slurry — 19. API cement used: No. of sacks		100				
1st Slurry — Class		35:65(POZ:H)				
1st Slurry — Additives		6% GEL + .1% ASA-301 + .3% R-3				
2nd Slurry — No. of sacks		800				
2nd Slurry — Class		H				
2nd Slurry — Additives		.1% R-3				
3rd Slurry — No. of sacks						
3rd Slurry — Class						
3rd Slurry — Additives						
1st — 20. Slurry pumped: Volume (cu.ft.)		185				
1st — Height (ft.)		590.7				
2nd — Volume (cu.ft.)		872				
2nd — Height (ft.)		2665.2				
3rd — Volume (cu.ft.)						
3rd — Height (ft.)						
Total — Volume (cu.ft.)		1057				
Total — Height (ft.)		3255.9				
21. Was cement circulated to ground surface (or bottom of cellar) outside casing		NO				

22. Remarks

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OG DIVISION
HOUSTON, TX

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APR 06 2001
O&G
AUSTIN TX

1070

CEMENTING TO PLUG AND ABANDON	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
23. Cementing Date								
Size of hole or pipe plugged (in.)								
25. Depth to bottom of tubing or drill pipe (ft.)								
26. Sacks of cement used (each plug)								
27. Slurry volume pumped (cu. ft.)								
28. Calculated top of plug (ft.)								
29. Measured top of plug, if tagged (ft.)								
30. Slurry wt. (lbs/gal)								
31. Type of cement								

CEMENTERS CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed me by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers cementing data only.

Jeffrey S. Koehn Service Supervisor
Name and title of cementer's representative

BJ SERVICES COMPANY
Cementing Company

Jeffrey Koehn
Signature

P.O. BOX 10048 LIBERTY TX 77575
Address City, State, Zip Code

(936) 336-7218
Tel.: Area Code Number

1-23-01
Date: mo day yr.

OPERATOR'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct,, and complete, to the best of my knowledge. This certification covers all well data.

Jane Bortoni
Typed or printed name of operator's representative

Drilling/Prod. Assistant
Title

Jane Bortoni
Signature

1021 Main St., Ste. 2310, Houston, TX 77002
Address City, State, Zip Code

713-651-0181
Tel.: Area Code Number

3/27/01
Date: mo day yr.

Instructions to Form W-15, Cementing Report

IMPORTANT: Operators and cementing companies must comply with the requirements of the Commission's Statewide Rules 8 (Water Protection), 13 (Casing Cementing, Drilling and Completion), and 14 (Well Plugging). For offshore operations, see the requirements of Rule 13 (c).

A. What to file. An operator should file an original and one copy of the completed Form W-15 for each cementing company used on a well. The cementing of different casing strings on a well by one cementing company may be reported on one form. Form W-15 should be filed with the following:

- An initial oil or gas completion report, Form W-2 or G-1, as required by Statewide or special field rules;
- Form W-4, Application for Multiple Completion, if the well is a multiple parallel casing completion; and
- Form W-3, Plugging Record, unless the W-3 is signed by the cementing company representative. When reporting dry holes, operators must complete Form W-15, in addition to W-3, to show any casing cemented in the hole.

B. Where to file. The appropriate Commission District Office for the county in which the well is located.

C. Surface casing. An operator must set and cement sufficient surface casing to protect all usable-quality water strata, as defined by The Texas Department of Water Resources, Austin. Before drilling a well in any field or area in which no field rules are in effect or in which surface casing requirements are not specified in the applicable rules, an operator must obtain a letter from the Department of Water Resources stating the protecting depth. Surface casing should not be set deeper that 200 feet below the specified depth without prior approval from the Commission.

D. Centralizers. Surface casing must be centralized at the shoe, above and below a stage collar or diverting tool, if run, and through usable-quality water zones. In nondeviated holes, a centralizer must be place every fourth joint from the cement shoe to the ground surface or to the bottom of the cellar. All centralizers must meet API specifications.

F. Intermediate and production casing. For specific technical requirements, operators should consult Statewide Rule 13 (b) (3) and (14).

G. Plugging and abandoning. Cement plugs must be placed in the wellbore as required by Statewide Rule 14. The District Director may require additional cement plugs. For onshore or inland wells, a 10-foot plug must be placed in the top of the well, and the casing must be cut off three feet below the ground surface. All cement plugs, except the top plug, must have sufficient slurry volume to fill 100 feet of hole, plus ten percent for each 1,000 feet of depth from the ground surface to the bottom of the plug.

To plug and abandon a well, operators must use only cementers approved by the Director of Field Operations. Cementing companies, service companies, or operators can qualify as approved cementers by demonstrating that they are able to mix and pump cement in compliance with Commission rules and regulations.

Cementer: Fill in shades areas.
Operator: Fill in other items.

RAILROAD COMMISSION OF TEXAS
Oil and Gas Division

Form W-15
Cementing Report
Rev. 4/1/83
483-046

1. Operator's Name (As shown of Form P-5, Organization Report)	2. RRC Operator No.	3. RRC District No.,	4. County of Well
Ballard Exploration Company, Inc.	048169	03	Harris

5. Field Name (Wildcat or exactly as shown on RRC records)	6. API No.	7. Drilling Permit No.
Wildcat	42- 201-32613	503752

8. Lease Name	9. Rule 37 Case No.	10. Oil Lease/Gas ID No.	11. Well No.
HOUSTON SHIP CHANNEL	N/A	N/A	1 ST

CASING CEMENT DATA:	SURFACE	INTER-MEDIATE CASING	PRODUCTION CASING		MULTI-STAGE CEMENTING PROCESS	
			Single String	Multiple Parallel Strings	Tool	Shoe
12. Cementing Date	01/11/01					
13. • Drilled hole size	17-1/2"					
• Est. % wash or hole enlargement	15%					
14. Size of casing (in. O.D.)	13-3/8"					
15. Top of liner (ft.)	N/A					
16. Setting Depth	3,443'					
17. Number of centralizers used	22					
18. Hrs. Waiting on cement before drill out	30.5					
1st Slurry — 19. API cement used: No. of sacks	1459					
1st Slurry — Class	35%POZ: 65% CLASS A					
1st Slurry — Additives	8% GEL+ 5% SALT+ 0.25% R-3+ 0.005 G.P.S. FP—6L				# 6506	
2nd Slurry — No. of sacks	765					
2nd Slurry — Class	H					
2nd Slurry — Additives	0.005 G.P.S. FP—6L					
3rd Slurry — No. of sacks	100					
3rd Slurry — Class	A					
3rd Slurry — Additives	2% CACL2 + 0.005 G.P.S. FP—6L					
1st — 20. Slurry pumped: Volume (cu.ft.)	3107.7					
1st — Height (ft.)	4474					
2nd — Volume (cu.ft.)	810.9					
2nd — Height (ft.)	1112					
3rd — Volume (cu.ft.)	120					
3rd — Height (ft.)	165					
Total — Volume (cu.ft.)	4038.6					
Total — Height (ft.)	5751					
21. Was cement circulated to ground surface (or bottom of cellar) outside casing	YES					

22. Remarks

T.N.R.C.C. LETTER DATED 1-5-01
Depth 2700' + 1500'
13(d) Exception Dated 1-9-01
Surface Casing 3350' Cement back to 268
D.V. @ ft.

MAR 2001 RECEIVED RRC OF TEXAS OG DIVISION HOUSTON, TX

RECEIVED RRC OF TEXAS APR 06 2001 O&G AUSTIN TX

1070

CEMENTING TO PLUG AND ABANDON	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
23. Cementing Date								
Size of hole or pipe plugged (in.)								
25. Depth to bottom of tubing or drill pipe (ft.)								
26. Sacks of cement used (each plug)								
27. Slurry volume pumped (cu. ft.)								
28. Calculated top of plug (ft.)								
29. Measured top of plug, if tagged (ft.)								
30. Slurry wt. (lbs/gal)								
31. Type of cement								

CEMENTERS CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed me by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers cementing data only.

JARRELL L. HOUSLEY—SERVICE SUP. — Name and title of cementer's representative

BJ SERVICES COMPANY — Cementing Company

Jarrell L. Housley — Signature

P.O. BOX 10048 — Address | LIBERTY — City, | TX — State, | 77575 — Zip Code

(936) 336-7218 — Tel.: Area Code Number

1/11/01 — Date: mo day yr.

OPERATOR'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct,, and complete, to the best of my knowledge. This certification covers all well data.

Jane Bortoni — Typed or printed name of operator's representative

Drilling/Prod. Assistant — Title

Jane Bortoni — Signature

1021 Main St., Suite 2310, Houston, TX 77002 — Address, City, State, Zip Code

713-651-0181 — Tel.: Area Code Number

3/27/01 — Date: mo day yr.

Instructions to Form W-15, Cementing Report

IMPORTANT: Operators and cementing companies must comply with the requirements of the Commission's Statewide Rules 8 (Water Protection), 13 (Casing Cementing, Drilling and Completion), and 14 (Well Plugging). For offshore operations, see the requirements of Rule 13 (c).

A. What to file. An operator should file an original and one copy of the completed Form W-15 for each cementing company used on a well. The cementing of different casing strings on a well by one cementing company may be reported on one form. Form W-15 should be filed with the following:

- An initial oil or gas completion report, Form W-2 or G-1, as required by Statewide or special field rules;
- Form W-4, Application for Multiple Completion, if the well is a multiple parallel casing completion; and
- Form W-3, Plugging Record, unless the W-3 is signed by the cementing company representative. When reporting dry holes, operators must complete Form W-15, in addition to W-3, to show any casing cemented in the hole.

B. Where to file. The appropriate Commission District Office for the county in which the well is located.

C. Surface casing. An operator must set and cement sufficient surface casing to protect all usable-quality water strata, as defined by The Texas Department of Water Resources, Austin. Before drilling a well in any field or area in which no field rules are in effect or in which surface casing requirements are not specified in the applicable rules, an operator must obtain a letter from the Department of Water Resources stating the protecting depth. Surface casing should not be set deeper that 200 feet below the specified depth without prior approval from the Commission.

D. Centralizers. Surface casing must be centralized at the shoe, above and below a stage collar or diverting tool, if run, and through usable-quality water zones. In nondeviated holes, a centralizer must be place every fourth joint from the cement shoe to the ground surface or to the bottom of the cellar. All centralizers must meet API specifications.

Intermediate and production casing. For specific technical requirements, operators should consult Statewide Rule 13 (b) (3) and (14).

G. Plugging and abandoning. Cement plugs must be placed in the wellbore as required by Statewide Rule 14. The District Director may require additional cement plugs. For onshore or inland wells, a 10-foot plug must be placed in the top of the well, and the casing must be cut off three feet below the ground surface. All cement plugs, except the top plug, must have sufficient slurry volume to fill 100 feet of hole, plus ten percent for each 1,000 feet of depth from the ground surface to the bottom of the plug.

To plug and abandon a well, operators must use only cementers approved by the Director of Field Operations. Cementing companies, service companies, or operators can qualify as approved cementers by demonstrating that they are able to mix and pump cement in compliance with Commission rules and regulations.

Cementer: Fill in shaded areas
Operator: Fill in other items

Form W-15
Cementing Report
Rev.4/1/83
HAL1199

RAILROAD COMMISSION OF TEXAS

Oil and Gas Division

1. Operator's Name (As Shown on Form P-5, Organization Report)	2. RRC Operator No.	3. RRC District No.	4. County of Well Site
Ballard Exploration Company, Inc.	048169	03	Harris

5. Field Name (Wildcat or Exactly as Shown on RRC Records)	6. API No.	7. Drilling Permit No.
Wildcat	42-201-32613	503752

8. Lease Name	9. Rule 37 Case No.	10. Oil Lease/Gas ID No.	11. Well No.
Houston Ship Channel Unit	N/A	N/A	1ST

CASING CEMENTING DATA:	SURFACE CASING	INTER-MEDIATE CASING	PRODUCTION CASING		MULTI-STAGE CEMENTING PROCESS	
			Single Sring	Multiple Parallel Strings	Tool	Shoe
12. Cementing Date			2/11/01			
13. *Drilled hole size			8-1/2"			
*Est. % wash or hole enlargement			15%			
14. Size of casing (in. O.D.)			5-1/2"			
15. Top of liner (ft)			8,540'			
16. Setting depth (ft)			12,146'			
17. Number of centralizers used			162			
18. Hrs. waiting on cement before drill-out			28.0			
1st Slurry — 19. API cement used: No. of sacks >			430			
Class >			Premium			
Additives >			See Remaks			
2nd Slurry — No. of sacks >						
Class >						
Additives >						
3rd Slurry — No. of sacks >						
Class >						
Additives >						
1st — 20. Slurry pumped: Volume (cu.ft.) >			632			
Height (ft.) >			2760			
2nd — Volume (cu.ft.) >						
Height (ft.) >						
3rd — Volume (cu.ft.) >						
Height (ft) >						
Total — Volume (cu.ft.) >			632			
Height (ft.) >			2760			
21. Was cement circulated to ground surface (or bottom of cellar) outside casing?			No			

22. Remarks

Company Name: Ballard Exploration
Lease & Well: Houston Ship Channel Unit # 1
County & State: Harris Texas
Sales Order #: 1138704 5 1/2 Production liner

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O&G
AUSTIN TX

MAR 2001
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OG DIVISION
HOUSTON, TX

OVE

CEMENTING TO PLUG AND ABANDON	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
23. Cementing date								
24. Size of hole or pipe plugged (in.)								
25. Depth to bottom of tubing or drill pipe (ft.)								
26. Sacks of cement used (each plug)								
27. Slurry volume pumped (cu.ft.)								
28. Calculated top of plug (ft.)								
29. Measured top of plug, if tagged (ft.)								
30. Slurry wt. (lbs/gal)								
31. Type cement								

CEMENTER'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers cementing data only.

James Kellum S.S — Name and Title of Cementer's Representative

HALLIBURTON ENERGY SERVICES — Cementing Company

Signature

PO.Box 688 — Address

Caldwell — City,

Tx — State,

77836 — Zip Code

979-567-4674 — Tel: Area Code Number

2/12/01 — Date: Mo. Day Yr

OPERATOR'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers all well data.

Jane Bortoni — Typed or Printed Name of Operator's Representative

Drlg/Prod. Ass't. — Title

Jane Bortoni — Signature

1021 Main St., Ste. 2310, Houston, TX 77002 — Address City, State Zip Code

713-651-0181 — Tel: Area Code Number

3/27/01 — Date: Mo. Day Y

Instruction to Form W-15, Cementing Report

IMPORTANT: Operators and cementing companies must comply with the requirements of the Commission's Statewide rules 8 (Water Protection), 13 (Casing, Cementing, Drilling, and Completion, and 14 (Well Plugging). For **offshore** operations, see the requirements of Rule 13 (c).

A. What to file. An operator should file an original and one copy of the completed Form W-15 for each cementing company used on a well. The cementing of different casing strings on a well by one cementing company may be reported on one form. Form W-15 should be filed with the following:

* An initial oil or gas completion report, **Form W-2 or G-1**, as required by Statewide or special field rules:
* Form **W-4**, Application for Multiple Completion, if the well is a multiple parallel casing completion; and
* Form **W-3**, Plugging Record, unless the W-3 is signed by the cementing company representative. When reporting **dry** holes, operators must complete Form **W-15, in addition to Form W-3, to show any casing cemented in the hole.**

B. Where to file. The appropriate Commission District Office for the county in which the well is located.

C. **Surface casing.** An operator must set and cement sufficient surface casing to protect all usable-quality water strata, as defined by the Texas Department of Water Resources, Austin. Before drilling a well in any field or area in which no field rules are in effect or in which surface casing requirements are not specified in the applicable rules, an operator must obtain a letter from the Department of Water Resources stating the protection depth Surface casing should not be set deeper than 200 feet below the specified depth without prior approval from the Commission.

D. **Centralizers.** Surface casing must be centralized at the shoe, above and below a stage collar or diverting tool, if run, and through usable-quality water zones. In nondeviated holes, a centralizer must be placed every fourth joint from the cement shoe to the ground surface or to the bottom of the cellar All centralizers must meet API specifications.

E. **Exceptions and alternative casing programs.** The District Director may grant an exception to the requirements of Statewide Rule 13. In a written application, an operator must state the reason for the requested exception and outline an alternate program for casing and cementing through the protection depth for strata containing usable-quality water. The District Director may approve, modify, or reject a proposed program. **An operator must obtain approval of any exception before beginning casing and cementing operations.**

F. **Intermediate and production casing.** For specific technical requirements, operators should consult Statewide Rule 13 (b) (3) and (4).

G. **Plugging and abandoning.** Cement plugs must be placed in the wellbore as required by Statewide Rule 14. The District Director may require additional cement plugs. For onshore or inland wells, a 10-foot cement plug must be placed in the top of the well, and the casing must be cut off three feet below the ground surface. All cement plugs, except the top plug, must have sufficient slurry volume to fill 100 feet of hole, plus ten percent for each 1,000 feet of depth from the ground surface to the bottom of the plug.

To plug and abandon a well, operators must use only cementers approved by the Director of Field Operations. Cementing companies, service companies, or operators can qualify as approved cementers by demonstrating that they are able to mix and pump cement in compliance with Commission rules and regulations.

RECOMPLETION IN DIRECTIONAL WELL; DIRECTIONAL SURVEY PREVIOUSLY FILE

RAILROAD COMMISSION OF TEXAS
Oil and Gas Division

Form G-1
Rev. 4/1/83

Type or print only CA-30

483-047

API No. 42- 201-32613

Gas Well Back Pressure Test, Completion or Recompletion Report, and Log

RECEIVED RRC OF TEXAS JAN 28 2003 OG DIVISION HOUSTON, TX

7. RRC District No. 3

8. RRC Gas ID No. ~~NA~~ 19-3

1. FIELD NAME (as per RRC Records or Wildcat): Yellow Rose (Yegua Y-2)

2. LEASE NAME: Houston Ship Channel Unit

9. Well No. 1ST

3. OPERATOR'S NAME (Exactly as shown on Form P-5, Organization Report): Ballard Exploration Company, Inc

RRC Operator No. 048169

10. County of well site: Harris

4. ADDRESS: 1021 Main Street, Suite 2310, Houston, Texas 77002-6602

Purpose of filing: Initial Potential [X]; Retest [ ]; Reclass [ ]; Well record only (Explain in remarks) [ ]

5. Location (Section, Block, and Survey): Richard & Robert Vince Survey, A-76

5b. Distance and direction to nearest town in this county: 2 Miles South of Channelview

6. If operator has changed within last 60 days, name former operator: N/A

12. If workover or reclass, give former field (with reservoir) & Gas ID or oil lease no.

FIELD & RESERVOIR	GAS ID or OIL LEASE #	Oil-O Gas-G	WELL #
Houston Ship Chan (Yegua EY-1)	182012	G	1ST

13. Pipe Line Connection: Kinder-Morgan Texas Pipeline, L.P.

14. Completion or recompletion date: ~~11/20/02~~ 10-24-02

15. Any condensate on hand at time of workover or recompletion? [X] Yes [ ] No

16. Type of Electric or other Log Run: AIL/GR/COMP NEU/LITHO-DENS

Section I — GAS MEASUREMENT DATA

Date of Test: 11/20/02

Gas Measurement Method (Check One): Orifice Meter [X] ▶ Flange Taps [X] Pipe Taps [ ]; Positive Choke [ ]; Orifice Vent Meter [ ]; Pitot Tube [ ]; Critical-flow Prover [ ]

Gas produced during test: 10611 MCF

Run No.	Line Size	Orif. or Choke Size	24 Hr. Coeff. Orif. or Choke	Static P_m or Choke Press	Diff. h_w	Flow Temp. °F	Temp. Factor F_{tf}	Gravity Factor F_g	Compress Factor F_{pv}	Volume MCF/DAY
1	3.068	1.625	17526.18	615	64.40	76	.9850	.9845	1.046	3537
2										
3										
4										

Section II — FIELD DATA AND PRESSURE CALCULATIONS

Gravity (Dry Gas)	Gravity Liquid Hydrocarbon	Gas-Liquid Hydro Ratio	Gravity of Mixture	Avg. Shut-in Temp.	Bottom Hole Temp.
.619	45.8 Deg. API	64309 CF/Bbl	G_{mix} = .664	162 °F	250 °F @ 11879 (Depth)

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$D_{eff}^{8/3} = 10.806$ | $\sqrt{T_f} = \sqrt{635} = 25.20$ | $\sqrt{GL} = \sqrt{7887.66} = 88.81$

$C = \frac{1118 \times (D_{eff})^{8/3}}{\sqrt{T}} = 1118 \times 10.806 / 25.20 = 479.41$ | $\frac{\sqrt{GL}}{C} = 88.81 / 479.41 = .1853$

Run No.	Time of Run Min.	Choke Size	Wellhead Press. PSIA P_w	Wellhead Flow Temp. F°	P_w^2 (Thousands)	R	R^2 (Thousands)	P_f	P_w/P_f
Shut-in	24 Hrs.		7688	74					
1	4320	Adj.	7428	100	55175	655.4	429.5	7457	.9961
2									
3									
4									

Run No.	F	K	$S = \frac{1}{z}$	E^{ks}	P_f and P_s	P_f^2 and P_s^2 (thousands)	$P_f^2 - P_s^2$ (thousands)
Shut-in		.2206	.7735	1.1861	9119	83156	
1	.9981	.2157	.7908	1.1860	8844	78216	4940
2							
3							
4							

Angle of Slope: θ 45.00 ; n 1.0000

Absolute Open Flow: 59540 MCF/DAY

WELL TESTER'S CERTIFICATION: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I conducted or supervised this test and that data and facts shown in Sections I and II above are true, correct, and complete, to the best of my knowledge. Bottomhole temperature and the diameter and length of flow string were furnished by the operator of the well.

James Jordan — Signature Well Tester
Hope M. Chapa
FESCO Ltd. — Name of Company
RRC Representative

OPERATOR'S CERTIFICATION: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that I Prepared or supervised and directed this report, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

Signature: Operator's representative — Drlg/Prod. Assistant (Title) — 1/21/03 (Date) — 713-651-0181 (A/C Number)

SECTION III — DATA ON WELL COMPLETION AND LOG (Not Required on Retest)

17. Type of Completion: New Well ☐ Deepening ☐ Plug Back ☒ Other ☐

18. Permit to Drill, Plug Back or Deepen — DATE: 9/10/02 — PERMIT NO.: 523576

Rule 37 Exception — CASE NO.

Water Injection Permit — PERMIT NO.

Salt Water Disposal Permit — PERMIT NO.

Other — PERMIT NO.

19. Notice of Intention to Drill this well was filed in Name of: Ballard Exploration Company, Inc.

20. Number of producing wells on this lease in this field (reservoir) including this well: 1

21. Total number of acres in this lease: 40

22. Date Plug Back, Deepening, Workover or Drilling Operations: Commenced 10/1/02 — Completed 10/24/02

23. Distance to nearest well, Same Lease & Reservoir: N/A SW

24. Location of well, relative to nearest lease boundaries of lease on which this well is located: 360 Feet From SEL (edge of bayou) Line and 9,980 Feet from Lease (off lease); north Line of the Richard & Robert Vince Survey, A-76; SL

25. Elevation (DF, RKB, RT, GR, ETC.): 15.4

26. Was directional survey made other than inclination (Form W-12)? ☒ Yes ☐ No

27. Top of Pay: 11,862' MD / 11,010' TVD

28. Total Depth: 12,149' MD / 11,241' TVD

29. P.B. Depth: 11,910' MD / 11,048' TVD

30. Surface Casing Determined by: Field Rules ☐; Recommendation of T.D.W.R. ☒ Dt. of Letter 1/5/01; Railroad Commission (Special) ☒ Dt. of Letter 1/9/01

31. Is well multiple completion? ☐ Yes ☒ No

32. If multiple completion, list all reservoir names (completions in this well) and Oil Lease or Gas ID No.

FIELD & RESERVOIR	GAS ID or OIL LEASE #	Oil–O Gas–G	WELL #

33. Intervals Drilled by: Rotary Tools X; Cable Tools

34. Name of Drilling Contractor: (Workover Rig) Key Energy Svcs.

35. Is Cementing Affidavit Attached? ☒ Yes ☐ No

36. CASING RECORD (Report All Strings Set in Well)

CASING SIZE	WT #/FT.	DEPTH SET	MULTISTAGE TOOL DEPTH	TYPE & AMOUNT CEMENT (sacks)	HOLE SIZE	TOP OF CEMENT	SLURRY VOL. cu. ft.
13-3/8"	61#	3,443'		See	17-1/2"	Surface	4,036.6
9-5/8"	53.5#	8,903'		attached	12-1/4"	5,647'	1,057
				W-15's			

37. LINER RECORD

Size	TOP	Bottom	Sacks Cement	Screen
5-1/2"	8,540'	12,146'	430	N/A

38. TUBING RECORD

Size	Depth Set	Packer Set
2-7/8"	11,731' MD	11,731' MD

39. Producing Interval (this completion) Indicate depth of perforation or open hole

From	To
11010'	11037' (TVD)
11862'	11896' (MD)

40. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

Depth Interval	Amount and Kind of Material Used
11,912' MD	Set CIBP (previous perfs @12,017-62' MD)
11,910' MD	Set CIBP
11,700-729' MD	Squeezed with 250 sx cmt (hole in casing between 11,700-729')

41. FORMATION RECORD (LIST DEPTHS OF PRINCIPAL GEOLOGICAL MARKERS AND FORMATION TOPS)

Formations	Depth	Formations	Depth
Top Frio	5,270'		
Top Vicksburg	8,385'		
Top Yegua	11,050'		

RKS

I.D.# 182012 to remain on schedule as permanent piling.

This test was conducted at the request of the operator for the express purpose of satisfying RRC requirements. Its suitability for any other purpose [illegible] not certified by FESCO Ltd. For details cont[illegible] FESCO Ltd.

Cementer: Fill in shades areas.
Operator: Fill in other items.

RAILROAD COMMISSION OF TEXAS
Oil and Gas Division

Form W-15
Cementing Report
Rev. 4/1/83
483-046

1. Operator's Name (As shown of Form P-5, Organization Report) Ballard Exploration Company, Inc.	2. RRC Operator No. 048169	3. RRC District No., 03	4. County of Well Site Harris
5. Field Name (Wildcat or exactly as shown on RRC records) Wildcat		6. API No. 42- 201-32613	7. Drilling Permit No. 503752
8. Lease Name HOUSTON SHIP CHANNEL	9. Rule 37 Case No. N/A	10. Oil Lease/Gas ID No. N/A	11. Well No. 1 ST

CASING CEMENT DATA:	SURFACE	INTER-MEDIATE CASING	PRODUCTION CASING		MULTI-STAGE CEMENTING PROCESS	
			Single String	Multiple Parallel Strings	Tool	Shoe
12. Cementing Date	01/11/01					
13. • Drilled hole size	17-1/2"					
• Est. % wash or hole enlargement	15%					
14. Size of casing (in. O.D.)	13-3/8"					
15. Top of liner (ft.)	N/A					
16. Setting Depth	3,443'					
17. Number of centralizers used	22					
18. Hrs. Waiting on cement before drill out	30.5					
1st Slurry — 19. API cement used: No. of sacks	1459					
Class	35%POZ: 65% CLASS A					
Additives	8% GEL+ 5% SALT+ 0.25% R-3+ 0.005 G.P.S. FP—6L					
2nd Slurry — No. of sacks	765					
Class	H					
Additives	0.005 G.P.S. FP—6L					
3rd Slurry — No. of sacks	100					
Class	A					
Additives	2% CACL2 + 0.005 G.P.S. FP—6L					
1st — 20. Slurry pumped: Volume (cu.ft.)	3107.7					
Height (ft.)	4474					
2nd — Volume (cu.ft.)	810.9					
Height (ft.)	1112					
3rd — Volume (cu.ft.)	120					
Height (ft.)	165					
Total — Volume (cu.ft.)	4038.6					
Height (ft.)	5751					
21. Was cement circulated to ground surface (or bottom of cellar) outside casing	YES					

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OG DIVISION
HOUSTON, TX

22. Remarks

1070

CEMENTING TO PLUG AND ABANDON	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
23. Cementing Date								
24. Size of hole or pipe plugged (in.)								
25. Depth to bottom of tubing or drill pipe (ft.)								
26. Sacks of cement used (each plug)								
27. Slurry volume pumped (cu. ft.)								
28. Calculated top of plug (ft.)								
29. Measured top of plug, if tagged (ft.)								
30. Slurry wt. (lbs/gal)								
31. Type of cement								

CEMENTERS CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed me by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers cementing data only.

JARRELL L. HOUSLEY---SERVICE SUP.
Name and title of cementer's representative

BJ SERVICES COMPANY
Cementing Company

Jarrell L. Housley
Signature

P.O. BOX 10048 LIBERTY TX 77575
Address City, State, Zip Code

(936) 336-7218
Tel.: Area Code Number

1/11/01
Date: mo day yr.

OPERATOR'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct,, and complete, to the best of my knowledge. This certification covers all well data.

Jane Bortoni
Typed or printed name of operator's representative

Drilling/Prod. Assistant
Title

Jane Bortoni
Signature

1021 Main St., Suite 2310, Houston, TX 77002
Address City, State, Zip Code

713-651-0181
Tel.: Area Code Number

3/27/01
Date: mo day yr.

Instructions to Form W-15, Cementing Report

IMPORTANT: Operators and cementing companies must comply with the requirements of the Commission's Statewide Rules 8 (Water Protection), 13 (Casing Cementing, Drilling and Completion), and 14 (Well Plugging). For offshore operations, see the requirements of Rule 13 (c).

A. What to file. An operator should file an original and one copy of the completed Form W-15 for each cementing company used on a well. The cementing of different casing strings on a well by one cementing company may be reported on one form. Form W-15 should be filed with the following:

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B. Where to file. The appropriate Commission District Office for the county in which the well is located.

C. Surface casing. An operator must set and cement sufficient surface casing to protect all usable-quality water strata, as defined by The Texas Department of Water Resources, Austin. Before drilling a well in any field or area in which no field rules are in effect or in which surface casing requirements are not specified in the applicable rules, an operator must obtain a letter from the Department of Water Resources stating the protecting depth. Surface casing should not be set deeper that 200 feet below the specified depth without prior approval from the Commission.

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F. Intermediate and production casing. For specific technical requirements, operators should consult Statewide Rule 13 (b) (3) and (14).

G. Plugging and abandoning. Cement plugs must be placed in the wellbore as required by Statewide Rule 14. The District Director may require additional cement plugs. For onshore or inland wells, a 10-foot plug must be placed in the top of the well, and the casing must be cut off three feet below the ground surface. All cement plugs, except the top plug, must have sufficient slurry volume to fill 100 feet of hole, plus ten percent for each 1,000 feet of depth from the ground surface to the bottom of the plug.

To plug and abandon a well, operators must use only cementers approved by the Director of Field Operations. Cementing companies, service companies, or operators can qualify as approved cementers by demonstrating that they are able to mix and pump cement in compliance with Commission rules and regulations.

Operator: Fill in other items.

RAILROAD COMMISSION OF TEXAS
Oil and Gas Division

Form W-15
Cementing Report
Rev 4/1/63
483-046

1. Operator's Name (As shown of Form P-5, Organization Report)	2. RRC Operator No.	3. RRC District No.	4. County of Well Site
Ballard Exploration Company, Inc.	048169	03	Harris

5. Field Name (Wildcat or exactly as shown on RRC records)	6. API No.	7. Drilling Permit No.
Wildcat	42-201-32613	503752

8. Lease Name	9. Rule 37 Case No.	10. Oil Lease/Gas ID No.	11. Well No.
HOUSTON SHIP CHANNEL	N/A	N/A	#1 ST

CASING CEMENT DATA:	SURFACE	INTER-MEDIATE CASING	PRODUCTION CASING		MULTI-STAGE CEMENTING PROCESS	
			Single String	Multiple Parallel Strings	Tool	Shoe
12. Cementing Date		1-23-01				
13. • Drilled hole size		12-1/4"				
• Est. % wash or hole enlargement		15%				
14. Size of casing (in. O.D.)		9-5/8"				
15. Top of liner (ft.)		8,540'				
16. Setting Depth		8,903'				
17. Number of centralizers used		17				
18. Hrs. Waiting on cement before drill out		28				
1st Slurry — 19. API cement used: No. of sacks		100				
1st Slurry — Class		35:65(POZ:H)				
1st Slurry — Additives		6% GEL + .1% ASA-301 + .3% R-3				
2nd Slurry — No. of sacks		800				
2nd Slurry — Class		H				
2nd Slurry — Additives		.1% R-3				
3rd Slurry — No. of sacks						
3rd Slurry — Class						
3rd Slurry — Additives						
20. Slurry pumped: 1st — Volume (cu.ft.)		185				
1st — Height (ft.)		590.7				
2nd — Volume (cu.ft.)		872				
2nd — Height (ft.)		2665.2				
3rd — Volume (cu.ft.)						
3rd — Height (ft.)						
Total — Volume (cu.ft.)		1057				
Total — Height (ft.)		3255.9				
21. Was cement circulated to ground surface (or bottom of cellar) outside casing		NO				

22. Remarks

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RRC OF TEXAS
JAN 28 2003
OG DIVISION
HOUSTON, TX

970

CEMENTING TO PLUG AND ABANDON	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
23. Cementing Date								
24. Size of hole or pipe plugged (in.)								
25. Depth to bottom of tubing or drill pipe (ft.)								
26. Sacks of cement used (each plug)								
27. Slurry volume pumped (cu. ft.)								
28. Calculated top of plug (ft.)								
29. Measured top of plug, if tagged (ft.)								
30. Slurry wt. (lbs/gal)								
31. Type of cement								

CEMENTERS CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed me by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers cementing data only.

Jeffrey S. Koehn Service Supervisor
Name and title of cementer's representative

BJ SERVICES COMPANY
Cementing Company

Jeffrey Koehn
Signature

P.O. BOX 10048 LIBERTY TX 77575
Address City, State, Zip Code

(936) 336-7218
Tel.: Area Code Number

1-23-01
Date: mo day yr.

OPERATOR'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct,, and complete, to the best of my knowledge. This certification covers all well data.

Jane Bortoni
Typed or printed name of operator's representative

Drilling/Prod. Assistant
Title

Jane Bortoni
Signature

1021 Main St., Ste. 2310, Houston, TX 77002
Address City, State, Zip Code

713-651-0181
Tel.: Area Code Number

3/27/01
Date: mo day yr.

Instructions to Form W-15, Cementing Report

IMPORTANT: Operators and cementing companies must comply with the requirements of the Commission's Statewide Rules 8 (Water Protection), 13 (Casing Cementing, Drilling and Completion), and 14 (Well Plugging). For offshore operations, see the requirements of Rule 13 (c).

A. What to file. An operator should file an original and one copy of the completed Form W-15 for each cementing company used on a well. The cementing of different casing strings on a well by one cementing company may be reported on one form. Form W-15 should be filed with the following:

- An initial oil or gas completion report, Form W-2 or G-1, as required by Statewide or special field rules;
- Form W-4, Application for Multiple Completion, if the well is a multiple parallel casing completion; and
- Form W-3, Plugging Record, unless the W-3 is signed by the cementing company representative. When reporting dry holes, operators must complete Form W-15, in addition to W-3, to show any casing cemented in the hole.

B. Where to file. The appropriate Commission District Office for the county in which the well is located.

C. Surface casing. An operator must set and cement sufficient surface casing to protect all usable-quality water strata, as defined by The Texas Department of Water Resources, Austin. Before drilling a well in any field or area in which no field rules are in effect or in which surface casing requirements are not specified in the applicable rules, an operator must obtain a letter from the Department of Water Resources stating the protecting depth. Surface casing should not be set deeper that 200 feet below the specified depth without prior approval from the Commission.

D. Centralizers. Surface casing must be centralized at the shoe, above and below a stage collar or diverting tool, if run, and through usable-quality water zones. In nondeviated holes, a centralizer must be place every fourth joint from the cement shoe to the ground surface or to the bottom of the cellar. All centralizers must meet API specifications.

F. Intermediate and production casing. For specific technical requirements, operators should consult Statewide Rule 13 (b) (3) and (14).

G. Plugging and abandoning. Cement plugs must be placed in the wellbore as required by Statewide Rule 14. The District Director may require additional cement plugs. For onshore or inland wells, a 10-foot plug must be placed in the top of the well, and the casing must be cut off three feet below the ground surface. All cement plugs, except the top plug, must have sufficient slurry volume to fill 100 feet of hole, plus ten percent for each 1,000 feet of depth from the ground surface to the bottom of the plug.

To plug and abandon a well, operators must use only cementers approved by the Director of Field Operations. Cementing companies, service companies, or operators can qualify as approved cementers by demonstrating that they are able to mix and pump cement in compliance with Commission rules and regulations.

Cementer: Fill in shaded areas
Operator: Fill in other items

Form W-15
Cementing Report
Rev.4/1/83
HAL1198

RAILROAD COMMISSION OF TEXAS

Oil and Gas Division

1. Operator's Name (As Shown on Form P-5, Organization Report)	2. RRC Operator No.	3. RRC District No.	4. County of Well Site
Ballard Exploration Company, Inc.	048169	03	Harris

5. Field Name (Wildcat or Exactly as Shown on RRC Records)	6. API No.	7. Drilling Permit No.
Wildcat	42-201-32613	503752

8. Lease Name	9. Rule 37 Case No.	10. Oil Lease/Gas ID No.	11. Well No.
Houston Ship Channel Unit	N/A	N/A	1ST

CASING CEMENTING DATA:		SURFACE CASING	INTER-MEDIATE CASING	PRODUCTION CASING		MULTI-STAGE CEMENTING PROCESS	
				Single String	Multiple Parallel Strings	Tool	Shoe
12. Cementing Date				2/11/01			
13. *Drilled hole size				8-1/2"			
*Est. % wash or hole enlargement				15%			
14. Size of casing (in. O.D.)				5-1/2"			
15. Top of liner (ft)				8,540'			
16. Setting depth (ft)				12,146'			
17. Number of centralizers used				162			
18. Hrs. waiting on cement before drill-out				28.0			
1st Slurry	19. API cement used: No. of sacks >			430			
	Class >			Premium			
	Additives >			See Remaks			
2nd Slurry	No. of sacks >						
	Class >						
	Additives >						
3rd Slurry	No. of sacks >						
	Class >						
	Additives >						
1st	20. Slurry pumped: Volume (cu.ft.) >			632			
	Height (ft.) >			2760			
2nd	Volume (cu.ft.) >						
	Height (ft.) >						
3rd	Volume (cu.ft.) >						
	Height (ft) >						
Total	Volume (cu.ft.) >			632			
	Height (ft.) >			2760			
21. Was cement circulated to ground surface (or bottom of cellar) outside casing?				No			

RECEIVED
RRC OF TEXAS
JAN 28 2003
OG DIVISION
HOUSTON, TX

22. Remarks

Company Name: Ballard Exploration
Lease & Well: Houston Ship Channel Unit # 1
County & State: Harris Texas
Sales Order #: 1138704 5 1/2 Production liner

OVER ▶

CEMENTING TO PLUG AND ABANDON	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
23. Cementing date								
24. Size of hole or pipe plugged (in.)								
25. Depth to bottom of tubing or drill pipe (ft.)								
26. Sacks of cement used (each plug)								
27. Slurry volume pumped (cu.ft.)								
28. Calculated top of plug (ft.)								
29. Measured top of plug, if tagged (ft.)								
30. Slurry wt. (lbs/gal)								
31. Type cement								

CEMENTER'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers cementing data only.

James Kellum S.S — Name and Title of Cementer's Representative

HALLIBURTON ENERGY SERVICES — Cementing Company

Signature: James E. Kellum

PO.Box 688 — Address

Caldwell — City,

Tx — State,

77836 — Zip Code

979-567-4674 — Tel: Area Code Number

2/12/01 — Date: Mo. Day Yr.

OPERATOR'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers all well data.

Jane Bortoni — Typed or Printed Name of Operator's Representative

Drlg/Prod. Ass't. — Title

Signature: Jane Bortoni

1021 Main St., Ste. 2310, Houston, TX 77002 — Address, City, State, Zip Code

713-651-0181 — Tel: Area Code Number

3/27/01 — Date: Mo. Day Y

Instruction to Form W-15, Cementing Report

IMPORTANT: Operators and cementing companies must comply with the requirements of the Commission's Statewide rules 8 (Water Protection), 13 (Casing, Cementing, Drilling, and Completion, and 14 (Well Plugging). For offshore operations, see the requirements of Rule 13 (c).

A. What to file. An operator should file an original and one copy of the completed Form W-15 for each cementing company used on a well. The cementing of different casing strings on a well by one cementing company may be reported on one form. Form W-15 should be filed with the following:

* An initial oil or gas completion report, **Form W-2 or G-1**, as required by Statewide or special field rules:
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* Form **W-3**, Plugging Record, unless the W-3 is signed by the cementing company representative. When reporting dry holes, operators must complete Form **W-15, in addition to Form W-3, to show any casing cemented in the hole.**

B. Where to file. The appropriate Commission District Office for the county in which the well is located.

C. **Surface casing.** An operator must set and cement sufficient surface casing to protect all usable-quality water strata, as defined by the Texas Department of Water Resources, Austin. Before drilling a well in any field or area in which no field rules are in effect or in which surface casing requirements are not specified in the applicable rules, an operator must obtain a letter from the Department of Water Resources stating the protection depth Surface casing should not be set deeper than 200 feet below the specified depth without prior approval from the Commission.

D. **Centralizers.** Surface casing must be centralized at the shoe, above and below a stage collar or diverting tool, if run, and through usable-quality water zones. In nondeviated holes, a centralizer must be placed every fourth joint from the cement shoe to the ground surface or to the bottom of the cellar. All centralizers must meet API specifications.

E. **Exceptions and alternative casing programs.** The District Director may grant an exception to the requirements of Statewide Rule 13. In a written application, an operator must state the reason for the requested exception and outline an alternate program for casing and cementing through the protection depth for strata containing usable-quality water. The District Director may approve, modify, or reject a proposed program. **An operator must obtain approval of any exception before beginning casing and cementing operations.**

F. **Intermediate and production casing.** For specific technical requirements, operators should consult Statewide Rule 13 (b) (3) and (4).

G. **Plugging and abandoning.** Cement plugs must be placed in the wellbore as required by Statewide Rule 14. The District Director may require additional cement plugs. For onshore or inland wells, a 10-foot cement plug must be placed in the top of the well, and the casing must be cut off three feet below the ground surface. All cement plugs, except the top plug, must have sufficient slurry volume to fill 100 feet of hole, plus ten percent for each 1,000 feet of depth from the ground surface to the bottom of the plug.

To plug and abandon a well, operators must use only cementers approved by the Director of Field Operations. Cementing companies, service companies, or operators can qualify as approved cementers by demonstrating that they are able to mix and pump cement in compliance with Commission rules and regulations.

Sperry-Sun
DRILLING SERVICES

12 February 2001

Texas Railroad Commission
Cathy Garrison, Oil Gas Division
P.O. Box 12967, Capitol Station
Austin, TX 78711

Final Survey for:

Company:	Ballard Exploration
RRC Operator #:	048169
Well Name:	Houston Ship Channel #1
	Original Well & ST - 01
Drilling Permit #:	503752
Abstract #:	76
Field/County:	East Houston/Harris County
API #:	42-201-32613
Sperry-Sun Job #:	HD-MJ-10002

Dear Ms. Garrison:

Enclosed you will find the original survey performed by Halliburton Energy Services, Inc., (AKA Sperry-Sun Drilling Services) operator #347-149, on the above referenced well. In addition to the survey I have included a certified plat on which the bottom hole location is oriented to both the surface location and the nearest lease line (or unit of lines in case of pooling) and a signed letter from the surveyor.

Other information required by your office is as follows:

Name & Title of Surveyor:	David Rachal – Field Engineer
Drainhole Number:	Houston Ship Channel #1 – Original Well
Surveyed Depths:	5360' to 12071'
Dates Performed:	01/14/01 through 01/31/01
Type of Survey:	DWD

Name & Title of Surveyor:	David Rachal – Field Engineer
Drainhole Number:	Houston Ship Channel #1 – Sidetrack 01
Surveyed Depths:	8962' to 12055'
Dates Performed:	02/04/01 through 02/10/01
Type of Survey:	DWD

Should you have any questions or require additional information, please do not hesitate to contact me at (281) 986-4424.

Sincerely,

Sherry Depenbrock
Administrative Specialist
Sperry-Sun Drilling Services

CERTIFIED MAIL

7000 0520 0022 9162 5458

14103 Interdrive West • Houston, Texas 77032
(281) 986-4400 • Fax (281) 986-4498
A Halliburton Company

sperry-sun
DRILLING SERVICES

Sperry-Sun Drilling Services

State of Texas

State of Texas, Harris County

I, David Rachal, certify that I am employed by Halliburton Energy Services, Inc. (AKA Sperry-Sun Drilling Services) and that on the dates of 01/14/01 through 02/10/01 I did conduct or supervise the taking of a DWD Directional survey for the original well from a depth of 5360' to a depth of 12071' and on the Sidetrack 01 well from a depth of 8962' to a depth of 12055'. This data is true, correct, complete and within the limitations of the tools as set forth by Halliburton Energy Services, Inc. (AKA Sperry-Sun Drilling Services). I am authorized and qualified to make this report and this survey was conducted at the request of Ballard Exploration for the Houston Ship Channel #1 (original well & ST – 01), API No. 42-201-32613 in Harris County, Texas. I have reviewed this report and find that it conforms to the principles and procedures as set forth by Halliburton Energy Services, Inc. (AKA Sperry-Sun Drilling Services).

David Rachal
Field Engineer

14103 Interdrive West • Houston, Texas 77032
(281) 986-4400 • Fax (281) 986-4498
A Halliburton Company

SPERRY-SUN DRILLING SERVICES
DGWD DIRECTIONAL SERVICES
API #42-201-32613

BALLARD EXPLORATION 02-0[illegible]-01
HOUSTON SHIP CHANNEL UNIT #1 ST01 HD-MJ-10002ST01

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	VERTICAL DEPTH	LATITUDE FEET	DEPARTURE FEET	VERTICAL SECTION	DOG LEG
8933.00	29.10	S 5.80 E	8539.42	1491.36 S	345.68 E	266.63	0.00
8962.00	28.30	S 7.40 E	8564.86	1505.19 S	347.28 E	267.50	3.82
9056.00	25.80	S 12.50 E	8648.58	1547.27 S	354.58 E	272.56	3.63
9151.00	25.40	S 18.80 E	8734.27	1586.75 S	365.62 E	281.52	2.89
9245.00	25.50	S 23.60 E	8819.16	1624.38 S	380.22 E	294.11	2.20
9339.00	25.10	S 30.90 E	8904.16	1660.04 S	398.56 E	310.56	3.34
9433.00	26.30	S 38.30 E	8988.88	1693.50 S	421.72 E	331.90	3.64
9525.00	26.30	S 40.60 E	9071.36	1724.97 S	447.61 E	356.12	1.11
9618.00	25.90	S 46.80 E	9154.89	1754.52 S	475.83 E	382.74	2.96
9712.00	26.60	S 53.30 E	9239.22	1781.16 S	507.68 E	413.13	3.15
9807.00	27.50	S 60.50 E	9323.85	1804.68 S	543.83 E	448.00	3.57
9901.00	28.40	S 66.50 E	9406.90	1824.28 S	583.23 E	486.30	3.14
9993.00	27.80	S 72.80 E	9488.07	1839.35 S	623.79 E	526.03	3.29
10087.00	29.10	S 77.90 E	9570.73	1850.63 S	667.09 E	568.68	2.93
10181.00	30.90	S 81.80 E	9652.14	1858.86 S	713.34 E	614.41	2.82
10277.00	32.20	S 84.70 E	9733.95	1864.74 S	763.21 E	663.92	[illegible]
10370.00	34.00	S 86.30 E	9811.86	1868.71 S	813.84 E	714.27	[illegible]
10465.00	34.40	N 87.50 E	9890.46	1869.25 S	867.17 E	767.48	3.69
10559.00	34.60	N 86.50 E	9967.93	1866.47 S	920.34 E	820.74	0.64
10653.00	34.40	N 87.00 E	10045.39	1863.45 S	973.50 E	873.96	0.37
10747.00	37.00	N 87.40 E	10121.72	1860.77 S	1028.28 E	928.80	2.78
10841.00	37.30	N 88.40 E	10196.65	1858.70 S	1085.01 E	985.57	0.72
10935.00	37.00	N 89.10 E	10271.57	1857.46 S	1141.76 E	1042.33	0.55
11030.00	37.20	N 89.60 E	10347.34	1856.81 S	1199.06 E	1099.57	0.38
11124.00	37.40	N 86.70 E	10422.12	1854.97 S	1255.98 E	1156.52	1.88
11216.00	37.20	N 86.50 E	10495.31	1851.66 S	1311.63 E	1212.26	0.25
11308.00	36.80	N 86.70 E	10568.78	1848.38 S	1366.90 E	1267.61	0.45
11401.00	36.70	N 86.80 E	10643.30	1845.22 S	1422.45 E	1323.26	0.13
11495.00	36.30	N 87.20 E	10718.86	1842.29 S	1478.29 E	1379.17	0.50
11588.00	37.90	N 88.10 E	10793.03	1840.00 S	1534.34 E	1435.27	1.82
11681.00	37.80	N 88.90 E	10866.47	1838.51 S	1591.38 E	1492.31	0.54
11776.00	37.40	N 88.90 E	10941.73	1837.39 S	1649.34 E	1550.25	0.42
11869.00	37.00	N 90.00 E	11015.81	1836.85 S	1705.56 E	1606.40	0.83
11962.00	36.60	N 89.30 E	11090.28	1836.51 S	1761.27 E	1662.07	0.62
12055.00	36.30	N 89.30 E	11165.09	1835.84 S	1816.52 E	1717.28	0.32
12149.00	36.30	N 89.30 E	11240.85	1835.16 S	1872.16 E	1772.88	0.00

SPERRY-SUN DRILLING SERVICES
DGWD DIRECTIONAL SERVICES
API #42-201-32613

BALLARD EXPLORATION
HOUSTON SHIP CHANNEL UNIT #1 ST01

02-09-01
HD-MJ-10002ST01

THE DOGLEG SEVERITY IS IN DEGREES PER 100.00 FEET
THE VERTICAL SECTION WAS COMPUTED ALONG N 86.98 E (GRID)

BASED UPON MINIMUM CURVATURE TYPE CALCULATIONS. THE BOTTOM HOLE DISPLACEMENT IS 2621.60 FEET, IN THE DIRECTION OF S 45.57 E (GRID)

SURVEYS CALCULATED USING THE LONG COLLAR METHOD.
SURVEYS CORRECTED 2.45 DEGREES EAST TO GRID.
TIE-ON SURVEY AT 8933' MD. PROVIDED BY SPERRY-SUN DRILLING SERVICES.
SURVEYS FROM 8962' MD. TO 12055' MD. IS PROVIDED BY SPERRY-SUN DGWD.
SURVEY AT 12055' MD. IS PROJECTED TO TD AT 12149' MD.
SPERRY-SUN ENGINEERS: GREG BEAZLEY, DAVID RACHAL

File name: [illegible]209 DWG DWG MAJ
Plot date: 01/04/01 at 11:12

Peter J. Duncan Survey A - 252
(1261)

W. Harris & D. Carpenter Survey A - 26
(T. August 16, 1824)

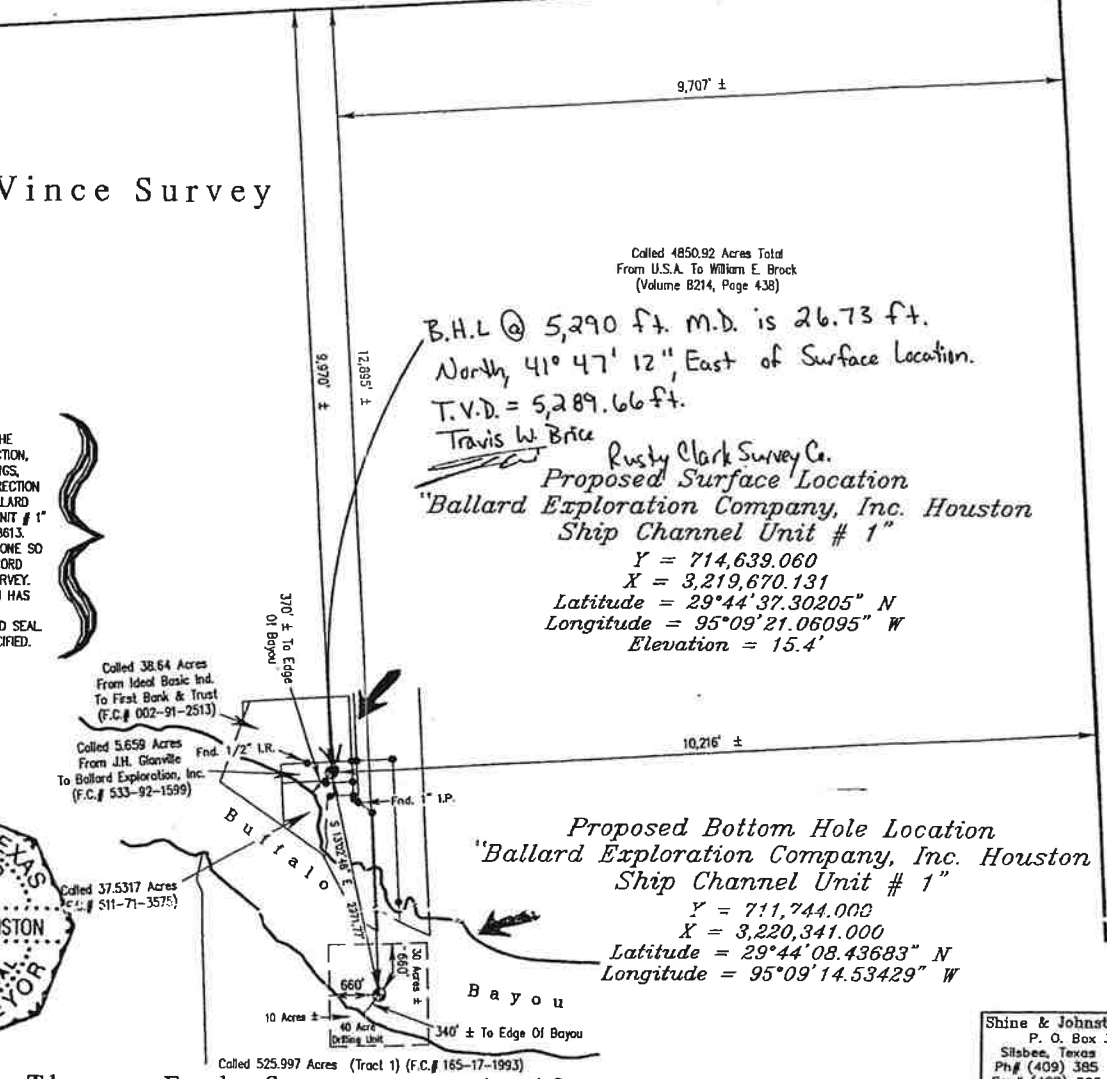
Richard & Robert Vince Survey
A - 76
(T. August 21, 1824)

Thomas Earle Survey A - 18
(R.T. JULY 7, 1828)

GRID NORTH
TRUE NORTH
S&J
θ = +02°53'00" (NOT TO SCALE)

SCALE: 1" = 2000'

NOTE:
ALL THE HORIZONTAL CONTROL IS REFERRED TO THE TEXAS PLANE COORDINATE SYSTEM, LAMBERT PROJECTION, SOUTH CENTRAL ZONE, NAD 27 DATUM. ALL BEARINGS, DISTANCES AND ACREAGES ARE GRID. THE THETA CORRECTION AT THE PROPOSED SURFACE LOCATION OF WELL "BALLARD EXPLORATION COMPANY, INC. HOUSTON SHIP CHANNEL UNIT # 1" IS + 02°53'00" AND THE SCALE FACTOR IS 0.999888613. LEASE AND TRACT INFORMATION SHOWN HEREON WAS DONE SO BY LIMITED SURVEY DATA AND AVAILABLE DEED RECORD INFORMATION AND DOES NOT REFLECT AN ACTUAL SURVEY. BOTTOM HOLE LOCATION INFORMATION SHOWN HEREON HAS BEEN PROVIDED BY THE CLIENT.
THIS PLAT IS VALID ONLY WITH ORIGINAL SIGNATURE AND SEAL.
● = 5/8" IRON ROD FOUND UNLESS OTHERWISE SPECIFIED.



STATE OF TEXAS X

COUNTY OF HARRIS X

I, J. GILBERT JOHNSTON, REGISTERED PROFESSIONAL LAND SURVEYOR NO. 2079 IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THIS IS AN ACCURATE PLAT SHOWING THE PROPOSED LOCATION OF WELL "BALLARD EXPLORATION COMPANY, INC. HOUSTON SHIP CHANNEL UNIT # 1" ON THE RICHARD AND ROBERT VINCE SURVEY, ABSTRACT 76, HARRIS COUNTY, TEXAS AS STAKED ON THE GROUND BY ME ON DECEMBER 20, 2000.

J. Gilbert Johnston
Registered Professional Land Surveyor No. 2079

STATE OF TEXAS
REGISTERED
J. GILBERT JOHNSTON
2079
PROFESSIONAL
LAND SURVEYOR

Shine & Johnston, Inc.
P. O. Box 391
Silsbee, Texas 77656
Ph# (409) 385 - 5266
Fax# (409) 385 - 0936

sperry-sun
DRILLING SERVICES

12 February 2001

Texas Railroad Commission
Cathy Garrison, Oil Gas Division
P.O. Box 12967, Capitol Station
Austin, TX 78711

Final Survey for:

Company:	Ballard Exploration
RRC Operator #:	048169
Well Name:	Houston Ship Channel #1
	Original Well & ST - 01
Drilling Permit #:	503752
Abstract #:	76
Field/County:	East Houston/Harris County
API #:	42-201-32613
Sperry-Sun Job #:	HD-MJ-10002

Dear Ms. Garrison:

Enclosed you will find the original survey performed by Halliburton Energy Services, Inc., (AKA Sperry-Sun Drilling Services) operator #347-149, on the above referenced well. In addition to the survey I have included a certified plat on which the bottom hole location is oriented to both the surface location and the nearest lease line (or unit of lines in case of pooling) and a signed letter from the surveyor.

Other information required by your office is as follows:

Name & Title of Surveyor:	David Rachal – Field Engineer
Drainhole Number:	Houston Ship Channel #1 – Original Well
Surveyed Depths:	5360' to 12071'
Dates Performed:	01/14/01 through 01/31/01
Type of Survey:	DWD

Name & Title of Surveyor:	David Rachal – Field Engineer
Drainhole Number:	Houston Ship Channel #1 – Sidetrack 01
Surveyed Depths:	8962' to 12055'
Dates Performed:	02/04/01 through 02/10/01
Type of Survey:	DWD

Should you have any questions or require additional information, please do not hesitate to contact me at (281) 986-4424.

Sincerely,

Sherry Depenbrock
Administrative Specialist
Sperry-Sun Drilling Services

14103 Interdrive West • Houston, Texas 77032
(281) 986-4400 • Fax (281) 986-4498
A Halliburton Company

sperry-sun
DRILLING SERVICES

Sperry-Sun Drilling Services

State of Texas

State of Texas, Harris County

I, David Rachal, certify that I am employed by Halliburton Energy Services, Inc. (AKA Sperry-Sun Drilling Services) and that on the dates of 01/14/01 through 02/10/01 I did conduct or supervise the taking of a DWD Directional survey for the original well from a depth of 5360' to a depth of 12071' and on the Sidetrack 01 well from a depth of 8962' to a depth of 12055'. This data is true, correct, complete and within the limitations of the tools as set forth by Halliburton Energy Services, Inc. (AKA Sperry-Sun Drilling Services). I am authorized and qualified to make this report and this survey was conducted at the request of Ballard Exploration for the Houston Ship Channel #1 (original well & ST – 01), API No. 42-201-32613 in Harris County, Texas. I have reviewed this report and find that it conforms to the principles and procedures as set forth by Halliburton Energy Services, Inc. (AKA Sperry-Sun Drilling Services).

David Rachal
Field Engineer

14103 Interdrive West • Houston, Texas 77032
(281) 986-4400 • Fax (281) 986-4498
A Halliburton Company

SPERRY-SUN DRILLING SERVICES
DGWD DIRECTIONAL SERVICES
API #42-201-32613

BALLARD EXPLORATION COMPANY INC.
HOUSTON SHIP CHANNEL UNIT #1

31-JAN-01
HD-MJ-10002

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	VERTICAL DEPTH	LATITUDE FEET	DEPARTURE FEET	VERTICAL SECTION	DOG LEG
5267.00	0.25	N 63.00 W	5266.66	19.89 N	17.90 E	-15.34	0.00
5360.00	1.30	S 56.00 E	5359.65	19.39 N	18.59 E	-14.69	1.66
5454.00	3.50	S 26.00 E	5453.57	16.22 N	20.74 E	-11.12	2.62
5548.00	6.10	S 17.20 E	5547.23	8.87 N	23.47 E	-3.34	2.87
5641.00	8.90	S 13.80 E	5639.43	2.84 S	26.65 E	8.79	3.05
5735.00	11.60	S 9.30 E	5731.92	19.24 S	29.91 E	25.49	2.99
5828.00	14.00	S 10.50 E	5822.60	39.53 S	33.47 E	46.06	2.60
5923.00	16.40	S 9.40 E	5914.27	64.06 S	37.76 E	70.93	2.54
6017.00	18.50	S 11.80 E	6003.94	91.75 S	42.98 E	99.09	2.36
6112.00	20.70	S 15.00 E	6093.44	122.73 S	50.40 E	130.94	2.58
6205.00	23.60	S 15.50 E	6179.56	156.55 S	59.64 E	165.97	3.12
6299.00	26.00	S 15.70 E	6264.89	194.52 S	70.24 E	205.36	2.55
6393.00	28.90	S 15.80 E	6348.30	236.22 S	82.00 E	248.64	3.09
6487.00	30.40	S 14.40 E	6429.99	281.12 S	94.10 E	295.11	1.76
6581.00	30.80	S 13.70 E	6510.90	327.54 S	105.72 E	342.95	0.57
6674.00	30.50	S 14.00 E	6590.90	373.57 S	117.07 E	390.35	0.36
6770.00	31.40	S 14.10 E	6673.23	421.46 S	129.05 E	439.72	0.94
6861.00	32.40	S 14.00 E	6750.49	468.11 S	140.73 E	487.80	1.10
6957.00	33.30	S 13.30 E	6831.14	518.72 S	153.01 E	539.87	1.02
7048.00	32.90	S 12.80 E	6907.37	567.13 S	164.23 E	589.56	0.53
7143.00	32.40	S 13.20 E	6987.36	617.07 S	175.76 E	640.82	0.57
7238.00	30.80	S 12.00 E	7068.27	665.64 S	186.63 E	690.59	1.81
7332.00	28.90	S 14.40 E	7149.80	711.19 S	197.29 E	737.37	2.39
7427.00	28.40	S 14.40 E	7233.17	755.30 S	208.61 E	782.90	0.53
7520.00	28.80	S 13.30 E	7314.82	798.53 S	219.27 E	827.41	0.71
7615.00	28.40	S 11.70 E	7398.23	842.92 S	229.11 E	872.88	0.91
7708.00	28.80	S 10.80 E	7479.88	886.58 S	237.80 E	917.38	0.63
7802.00	29.70	S 11.70 E	7561.90	931.63 S	246.76 E	963.28	1.07
7896.00	30.40	S 12.20 E	7643.26	977.68 S	256.51 E	1010.35	0.79
7991.00	31.00	S 10.20 E	7724.95	1025.25 S	265.92 E	1058.82	1.25
8083.00	31.00	S 9.00 E	7803.81	1071.97 S	273.82 E	1106.11	0.67
8178.00	29.90	S 9.30 E	7885.70	1119.50 S	281.48 E	1154.14	1.17
8273.00	30.10	S 12.80 E	7967.98	1166.10 S	290.58 E	1201.60	1.85
8366.00	30.00	S 13.50 E	8048.48	1211.45 S	301.18 E	1248.17	0.39
8459.00	30.30	S 11.80 E	8128.90	1257.02 S	311.40 E	1294.87	0.97
8552.00	30.20	S 10.40 E	8209.24	1302.99 S	320.42 E	1341.69	0.77
8645.00	30.50	S 8.30 E	8289.50	1349.35 S	328.05 E	1388.58	1.19
8933.00	29.10	S 5.80 E	8539.42	1491.36 S	345.68 E	1530.90	0.65
9028.00	29.60	S 7.10 E	8622.22	1537.63 S	350.91 E	1577.15	0.85
9122.00	29.80	S 7.40 E	8703.88	1583.83 S	356.79 E	1623.49	0.27

SPERRY-SUN DRILLING SERVICES
DGWD DIRECTIONAL SERVICES
API #42-201-32613

BALLARD EXPLORATION COMPANY INC.
HOUSTON SHIP CHANNEL UNIT #1

31-JAN-01
HD-MJ-10002

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	VERTICAL DEPTH	LATITUDE FEET	DEPARTURE FEET	VERTICAL SECTION	DOG LEG
9217.00	29.90	S 10.70 E	8786.28	1630.51 S	364.23 E	1670.64	1.73
9311.00	30.30	S 14.20 E	8867.61	1676.52 S	374.40 E	1717.76	1.91
9406.00	29.30	S 17.70 E	8950.05	1721.90 S	387.34 E	1764.90	2.11
9502.00	29.00	S 17.70 E	9033.89	1766.45 S	401.56 E	1811.50	0.31
9595.00	28.60	S 17.70 E	9115.39	1809.13 S	415.18 E	1856.16	0.43
9689.00	29.80	S 18.20 E	9197.44	1852.76 S	429.32 E	1901.85	1.30
9784.00	29.70	S 17.80 E	9279.92	1897.59 S	443.89 E	1948.81	0.23
9879.00	29.50	S 16.80 E	9362.52	1942.39 S	457.84 E	1995.61	0.56
9972.00	30.90	S 18.00 E	9442.90	1987.02 S	471.84 E	2042.25	1.64
10066.00	30.70	S 17.30 E	9523.64	2032.89 S	486.43 E	2090.22	0.44
10162.00	30.40	S 16.30 E	9606.32	2079.60 S	500.54 E	2138.91	0.61
10258.00	30.30	S 15.30 E	9689.16	2126.27 S	513.75 E	2187.36	0.54
10353.00	29.90	S 14.50 E	9771.35	2172.31 S	526.00 E	2234.98	0.60
10449.00	30.20	S 15.90 E	9854.45	2218.70 S	538.61 E	2283.02	0.79
10545.00	29.90	S 15.20 E	9937.54	2265.01 S	551.49 E	2331.04	0.48
10641.00	29.70	S 14.50 E	10020.85	2311.13 S	563.72 E	2378.73	[illegible]
10737.00	30.50	S 15.90 E	10103.91	2357.58 S	576.35 E	2426.83	[illegible]
10833.00	30.70	S 15.00 E	10186.54	2404.68 S	589.37 E	2475.66	0.52
10928.00	30.30	S 14.10 E	10268.39	2451.35 S	601.48 E	2523.86	0.64
11022.00	30.10	S 12.90 E	10349.63	2497.33 S	612.52 E	2571.14	0.68
11118.00	30.30	S 13.00 E	10432.60	2544.39 S	623.34 E	2619.43	0.21
11214.00	30.10	S 12.10 E	10515.58	2591.52 S	633.84 E	2667.71	0.52
11310.00	29.90	S 11.10 E	10598.71	2638.54 S	643.49 E	2715.70	0.56
11404.00	29.80	S 10.10 E	10680.24	2684.53 S	652.10 E	2762.44	0.54
11500.00	29.50	S 9.40 E	10763.67	2731.33 S	660.14 E	2809.85	0.48
11595.00	31.10	S 9.60 E	10845.69	2778.60 S	668.05 E	2857.69	1.69
11691.00	31.30	S 9.00 E	10927.81	2827.68 S	676.09 E	2907.31	0.39
11788.00	31.50	S 7.70 E	11010.61	2877.68 S	683.43 E	2957.68	0.73
11884.00	31.60	S 6.60 E	11092.42	2927.52 S	689.68 E	3007.64	0.61
11979.00	31.50	S 6.20 E	11173.37	2976.92 S	695.22 E	3057.01	0.24
12071.00	32.00	S 5.70 E	11251.61	3025.07 S	700.24 E	3105.05	0.61
12119.00	32.00	S 5.70 E	11292.31	3050.38 S	702.76 E	3130.28	0.00

SPERRY-SUN DRILLING SERVICES
DGWD DIRECTIONAL SERVICES
API #42-201-32613

BALLARD EXPLORATION COMPANY INC.
HOUSTON SHIP CHANNEL UNIT #1

31-JAN-01
HD-MJ-10002

THE DOGLEG SEVERITY IS IN DEGREES PER 100.00 FEET
THE VERTICAL SECTION WAS COMPUTED ALONG S 13.05 E (GRID)

BASED UPON MINIMUM CURVATURE TYPE CALCULATIONS. THE BOTTOM HOLE DISPLACEMENT IS 3130.28 FEET, IN THE DIRECTION OF S 12.97 E (GRID)

SURVEYS CALCULATED USING THE LONG COLLAR METHOD.
SURVEYS CORRECTED 2.45 DEGREES EAST TO GRID.
TIE-ON SURVEY AT 5267' MD. PROVIDED BY RUSTY CLARK GYRO SURVEY.
SURVEYS FROM 5360' MD. TO 12071' MD. IS PROVIDED BY SPERRY-SUN DGWD.
SURVEY AT 12071' MD. IS PROJECTED TO TD AT 12119' MD.
SPERRY-SUN ENGINEERS: GREG BEAZLEY, DAVID RACHEL.

RUSTY CLARK
SURVEY COMPANY, INC.

P.O. Box 100
Breaux Bridge, Louisiana 70517
Phone (337) 237-7593

February 28, 2001

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION
P.O. DRAWER 12967
CAPITOL STATION
AUSTIN, TEXAS 78711

ATTENTION: MR. DAVID TRIANA

REFERENCE: BALLARD EXPLORATION
HOUSTON SHIP CHANNEL, WELL #1
RRC LEASE/GAS I.D. # NOT ASSIGNED
HARRIS COUNTY TEXAS
RICHARD & ROBERT VINCE, ABSTRACT #76
HARRIS COUNTY, TEXAS
API #422013261300

DEAR MR. TRIANA:

ENCLOSED, PLEASE FIND THE ORIGINAL AND ONE COPY OF THE SURVEY RUN ON THE ABOVE REFERENCED WELL BY RUSTY CLARK SURVEY COMPANY, INC. (P-5 NO. 157688). OTHER INFORMATION REQUIRED BY YOUR OFFICE IS AS FOLLOWS:

NAME & TITLE OF SURVEYOR	DRAINHOLE NUMBER	SURVEYED DEPTHS	DATES PERFORMED	TYPE OF SURVEY
RALPH ANGELLE SENIOR SURVEYOR	ORIGINAL HOLE	0' – 5,290'	01/14/01	GYROSCOPIC MULTI-SHOT

A CERTIFIED PLAT ON WHICH THE BOTTOM HOLE LOCATION IS ORIENTED BOTH TO THE SURFACE LOCATION AND TO THE LEASE LINES (OR UNIT LINES IN CASE OF POOLING) IS ATTACHED TO THE SURVEY REPORT. IF ANY OTHER INFORMATION IS REQUIRED, PLEASE CONTACT THE UNDERSIGNED AT THE LETTERHEAD ADDRESS AND PHONE NUMBER.

TRAVIS W. BRICE
OFFICE MANAGER

ENCLOSURES
CC: BALLARD EXPLORATION COMPANY

RUSTY CLARK SURVEY COMPANY, INC.

TXL-01010039-GS

JANUARY 14, 2001

RECEIVED
MAR 2 2001
OIL & GAS
AUSTIN, TEXAS

Report of Sub-Surface Directional Survey

BALLARD EXPLORATION COMPANY, INC.

HOUSTON SHIP CHANNEL, WELL #1

HARRIS COUNTY TEXAS

SURVEY FROM SURFACE TO 5,290 FT. M.D.

P.O. BOX 100 BREAUX BRIDGE, LOUISIANA 70517 PHONE (337) 237-7593

RUSTY CLARK SURVEY COMPANY INC.
P.O. BOX 100
BREAUX BRIDGE LA. 70517
(318)-237-7593

BALLARD EXPLORATION COMPANY INC.
HOUSTON SHIP CHANNEL WELL #1
HARRIS COUNTY TEXAS
RIG: GREY WOLF 506

GYROSCOPIC MULTI-SHOT SURVEY - TXL-01010039-GS - JANUARY 14 2001

KELLY BUSHING ELEVATION = 26 FEET
MAGNETIC DECLINATION = 2.447^ EAST TO GRID
PLANE OF PROPOSAL DIRECTION IS S 13 3 E

ALL CALCULATIONS MADE BY P5-166 COMPUTER
MINIMUM CURVATURE METHOD
RESULTS IN FEET

We hereby certify that the surveys contained herein, are to the best of our knowledge a true and accurate account of the well.

RUSTY CLARK
SURVEY COMPANY, INC.

Division Survey Supervisor

DATE = 01/14/2001

C:\SURVEY\B\BALLHOUS.NO1

MEAS. DEPTH	DRIFT ANGLE DEG	DRIFT DIREC	TRUE VERTICAL DEPTH	SUB SEA TVD	VERTICAL SECTION	TOTAL RECTANGULAR COORDINATES		CLOSURES DISTANCE	CLOSURES ANGLE D M S	DOG LEG SEVERITY DEG/100FT.
0	0.00	N 0.00 E	0.00	-26.00	0.00	0.00 N	0.00 E	0.00	N 0 0 0 E	0.00
100	0.25	N 53.00 E	100.00	74.00	-0.09	0.13 N	0.17 E	0.22	N 53 0 0 E	0.25
200	0.25	S 67.00 E	200.00	174.00	-0.05	0.18 N	0.55 E	0.58	N 72 6 24 E	0.25
300	0.25	N 23.00 E	300.00	274.00	-0.10	0.29 N	0.84 E	0.89	N 70 40 35 E	0.35
400	0.25	S 47.00 E	400.00	374.00	-0.09	0.34 N	1.08 E	1.13	N 72 17 19 E	0.41
500	0.25	S 33.00 W	500.00	474.00	0.24	0.01 N	1.12 E	1.12	N 89 19 31 E	0.32
600	0.50	N 37.00 E	600.00	574.00	0.11	0.18 N	1.26 E	1.28	N 81 57 26 E	0.75
700	0.50	S 57.00 E	699.99	673.99	0.15	0.29 N	1.89 E	1.92	N 81 18 18 E	0.68
800	0.50	N 43.00 E	799.99	773.99	0.22	0.37 N	2.56 E	2.58	N 81 44 37 E	0.64
900	0.25	N 63.00 W	899.99	873.99	-0.17	0.79 N	2.66 E	2.77	N 73 28 30 E	0.62
1000	0.25	S 65.00 W	999.99	973.99	-0.26	0.80 N	2.27 E	2.40	N 70 39 32 E	0.22
1100	0.25	S 53.00 W	1099.99	1073.99	-0.13	0.57 N	1.90 E	1.98	N 73 11 48 E	0.05
1200	0.50	N 22.00 E	1199.99	1173.99	-0.40	0.85 N	1.89 E	2.07	N 65 50 8 E	0.73
1300	0.25	S 52.00 W	1299.99	1273.99	-0.66	1.12 N	1.88 E	2.18	N 59 15 35 E	0.73
1400	0.25	S 68.00 E	1399.98	1373.98	-0.45	0.90 N	1.91 E	2.11	N 64 44 7 E	0.43
1500	0.25	N 57.00 E	1499.98	1473.98	-0.40	0.94 N	2.29 E	2.48	N 67 45 54 E	0.23
1600	0.25	N 79.00 W	1599.98	1573.98	-0.56	1.10 N	2.26 E	2.51	N 64 6 27 E	0.46
1700	0.25	N 44.00 W	1699.98	1673.98	-0.83	1.30 N	1.90 E	2.30	N 55 38 3 E	0.15
1800	0.25	N 27.00 W	1799.98	1773.98	-1.23	1.65 N	1.64 E	2.33	N 44 57 11 E	0.07
1900	0.50	N 45.00 W	1899.98	1873.98	-1.82	2.15 N	1.24 E	2.48	N 29 54 46 E	0.27
2000	0.50	N 42.00 W	1999.98	1973.98	-2.57	2.78 N	0.64 E	2.85	N 12 53 5 E	0.03
2100	0.25	N 75.00 W	2099.97	2073.97	-3.05	3.16 N	0.13 E	3.17	N 2 25 27 E	0.32
2200	0.50	N 67.00 W	2199.97	2173.97	-3.41	3.39 N	0.48 W	3.42	N 8 1 53 W	0.25
2300	0.75	N 76.00 W	2299.97	2273.97	-3.97	3.72 N	1.52 W	4.02	N 22 9 46 W	0.27
2400	0.75	N 89.00 W	2399.96	2373.96	-4.42	3.89 N	2.80 W	4.80	N 35 47 41 W	0.17
2500	0.75	N 75.00 W	2499.95	2473.95	-4.89	4.07 N	4.09 W	5.77	N 45 8 49 W	0.18
2600	0.75	N 1.00 W	2599.94	2573.94	-5.84	4.89 N	4.73 W	6.81	N 44 3 9 W	0.90
2700	0.50	N 16.00 W	2699.94	2673.94	-6.91	5.97 N	4.87 W	7.70	N 39 11 44 W	0.30
2800	0.25	S 29.00 W	2799.93	2773.93	-7.19	6.20 N	5.09 W	8.02	N 39 24 53 W	0.70
2900	0.25	S 31.00 E	2899.93	2873.93	-6.82	5.82 N	5.09 W	7.73	N 41 9 21 W	0.25

MEAS. DEPTH	DRIFT ANGLE DEG	DRIFT DIREC	TRUE VERTICAL DEPTH	SUB SEA TVD	VERTICAL SECTION	TOTAL RECTANGULAR COORDINATES		CLOSURES DISTANCE	ANGLE D M S	DOG LEG SEVERITY DEG/100FT.
3000	0.50	S 66.00 E	2999.93	2973.93	-6.35	5.45 N	4.57 W	7.12	N 39 59 24 W	0.33
3100	1.00	N 79.00 E	3099.92	3073.92	-6.05	5.44 N	3.32 W	6.38	N 31 22 42 W	0.66
3200	1.00	N 69.00 E	3199.91	3173.91	-6.14	5.92 N	1.65 W	6.15	N 15 33 14 W	0.17
3300	1.25	N 68.00 E	3299.89	3273.89	-6.43	6.64 N	0.18 E	6.65	N 1 31 51 E	0.25
3400	1.75	N 65.00 E	3399.85	3373.85	-6.92	7.70 N	2.57 E	8.12	N 18 28 52 E	0.51
3500	1.75	N 63.00 E	3499.81	3473.81	-7.60	9.04 N	5.32 E	10.48	N 30 28 26 E	0.06
3600	1.50	N 59.00 E	3599.77	3573.77	-8.37	10.40 N	7.80 E	13.00	N 36 51 33 E	0.27
3700	1.00	N 81.00 E	3699.74	3673.74	-8.72	11.21 N	9.78 E	14.88	N 41 6 7 E	0.68
3800	1.00	N 52.00 E	3799.73	3773.73	-9.02	11.89 N	11.33 E	16.42	N 43 37 52 E	0.50
3900	1.25	N 38.00 E	3899.71	3873.71	-10.08	13.28 N	12.69 E	18.37	N 43 41 36 E	0.37
4000	0.75	N 63.00 E	3999.69	3973.69	-10.92	14.44 N	13.95 E	20.08	N 44 0 7 E	0.65
4100	0.75	N 43.00 E	4099.69	4073.69	-11.44	15.22 N	14.98 E	21.35	N 44 32 35 E	0.26
4200	0.50	N 58.00 E	4199.68	4173.68	-11.95	15.93 N	15.79 E	22.43	N 44 45 27 E	0.30
4300	0.50	N 38.00 E	4299.68	4273.68	-12.37	16.50 N	16.43 E	23.29	N 44 52 37 E	0.17
4400	0.50	N 36.00 E	4399.67	4373.67	-12.93	17.20 N	16.96 E	24.15	N 44 35 36 E	0.00
4500	0.25	N 6.00 E	4499.67	4473.67	-13.42	17.77 N	17.24 E	24.75	N 44 7 39 E	0.31
4600	0.50	N 63.00 E	4599.67	4573.67	-13.73	18.18 N	17.65 E	25.34	N 44 8 31 E	0.42
4700	0.50	N 58.00 E	4699.66	4673.66	-13.98	18.61 N	18.41 E	26.18	N 44 40 46 E	0.04
4800	0.25	N 47.00 W	4799.66	4773.66	-14.30	18.99 N	18.62 E	26.60	N 44 25 35 E	0.61
4900	0.25	S 79.00 W	4899.66	4873.66	-14.49	19.10 N	18.24 E	26.41	N 43 41 5 E	0.23
5000	0.25	N 16.00 W	4999.66	4973.66	-14.71	19.27 N	17.97 E	26.35	N 43 0 3 E	0.34
5100	0.00	N 0.00 E	5099.66	5073.66	-14.93	19.48 N	17.91 E	26.46	N 42 35 45 E	0.25
5200	0.25	N 20.00 E	5199.66	5173.66	-15.12	19.68 N	17.98 E	26.66	N 42 24 56 E	0.25
5267	0.25	N 63.00 W	5266.66	5240.66	-15.33	19.89 N	17.90 E	26.76	N 42 0 40 E	0.49

PROJECTED SURVEY AT 5290 FT. M.D.

5290	0.25	N 63.00 W	5289.66	5263.66	-15.40	19.93 N	17.81 E	26.73	N 41 47 12 E	0.00

BOTTOM HOLE CLOSURE 26.73 FEET AT N 41 47 12 E

BALLARD EXPLORATION COMPANY INC.
HOUSTON SHIP CHANNEL WELL #1
HARRIS COUNTY TEXAS

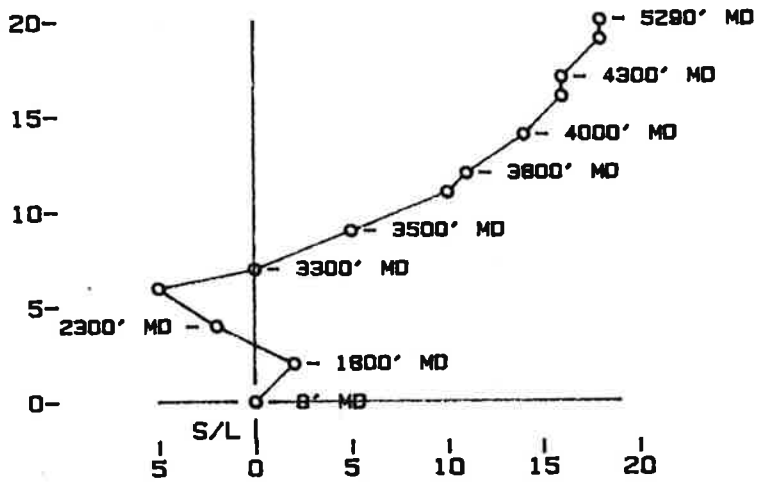
01/14/2001

HORIZONTAL PLAN
SCALE 1"=10'

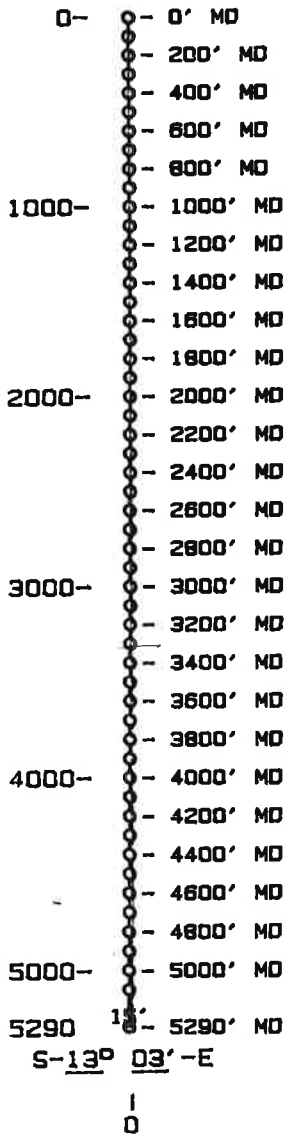
PLANE OF PROPOSAL
S-13° 03'-E

N

2°26'E
GRID



VERTICAL SECTION
SCALE 1"=1000'



B. H. L.
27' N-41° 47' 12"-E
N-19.93' E-17.81'
T. V. D. -5290'
M. D. -5290'

INTERPOLATED DATA FOR EVERY 100.00 FEET OF TRUE VERTICAL DEPTH

SUB SEA DEPTH	MEASURED DEPTH	TRUE VERTICAL DEPTH	VERTICAL SECTION	COORDINATES		CLOSURE DISTANCE	CLOSURE D M S
-26.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	N 0 0 0 E
74.00	100.00	100.00	-0.09	0.13 N	0.17 E	0.22	N 53 0 1 E
174.00	200.00	200.00	-0.05	0.18 N	0.55 E	0.58	N 72 6 24 E
274.00	300.00	300.00	-0.10	0.29 N	0.84 E	0.89	N 70 40 35 E
374.00	400.00	400.00	-0.09	0.34 N	1.08 E	1.13	N 72 17 21 E
474.00	500.00	500.00	0.24	0.01 N	1.12 E	1.12	N 89 19 30 E
574.00	600.00	600.00	0.11	0.18 N	1.26 E	1.28	N 81 57 26 E
674.00	700.01	700.00	0.15	0.29 N	1.89 E	1.92	N 81 18 18 E
774.00	800.01	800.00	0.22	0.37 N	2.56 E	2.58	N 81 44 34 E
874.00	900.01	900.00	-0.17	0.79 N	2.66 E	2.77	N 73 28 29 E
974.00	1000.01	1000.00	-0.26	0.80 N	2.27 E	2.40	N 70 39 33 E
1074.00	1100.01	1100.00	-0.13	0.57 N	1.90 E	1.98	N 73 11 45 E
1174.00	1200.01	1200.00	-0.40	0.85 N	1.89 E	2.07	N 65 50 4 E
1274.00	1300.01	1300.00	-0.66	1.12 N	1.88 E	2.18	N 59 15 38 E
1374.00	1400.02	1400.00	-0.45	0.90 N	1.91 E	2.11	N 64 44 9 E
1474.00	1500.02	1500.00	-0.40	0.94 N	2.29 E	2.48	N 67 45 52 E
1574.00	1600.02	1600.00	-0.56	1.10 N	2.26 E	2.51	N 64 6 23 E
1674.00	1700.02	1700.00	-0.83	1.30 N	1.90 E	2.30	N 55 37 56 E
1774.00	1800.02	1800.00	-1.23	1.65 N	1.64 E	2.33	N 44 57 0 E
1874.00	1900.02	1900.00	-1.82	2.15 N	1.24 E	2.48	N 29 54 31 E
1974.00	2000.02	2000.00	-2.57	2.78 N	0.64 E	2.86	N 12 52 55 E
2074.00	2100.03	2100.00	-3.05	3.16 N	0.13 E	3.17	N 2 25 16 E
2174.00	2200.03	2200.00	-3.41	3.39 N	0.48 W	3.42	N 8 2 10 W
2274.00	2300.04	2300.00	-3.97	3.72 N	1.52 W	4.02	N 22 10 6 W
2374.00	2400.04	2400.00	-4.42	3.89 N	2.81 W	4.80	N 35 47 58 W
2474.00	2500.05	2500.00	-4.89	4.07 N	4.09 W	5.77	N 45 8 47 W
2574.00	2600.06	2600.00	-5.84	4.89 N	4.73 W	6.81	N 44 2 58 W
2674.00	2700.06	2700.00	-6.91	5.97 N	4.87 W	7.70	N 39 11 44 W
2774.00	2800.07	2800.00	-7.19	6.20 N	5.09 W	8.02	N 39 24 57 W
2874.00	2900.07	2900.00	-6.82	5.82 N	5.09 W	7.73	N 41 9 18 W

INTERPOLATED DATA FOR EVERY 100.00 FEET OF TRUE VERTICAL DEPTH

SUB SEA DEPTH	MEASURED DEPTH	TRUE VERTICAL DEPTH	VERTICAL SECTION	COORDINATES		CLOSURE DISTANCE	CLOSURE D M S
2974.00	3000.07	3000.00	-6.35	5.45 N	4.57 W	7.12	N 39 59 5 W
3074.00	3100.08	3100.00	-6.05	5.44 N	3.32 W	6.38	N 31 22 0 W
3174.00	3200.09	3200.00	-6.14	5.92 N	1.65 W	6.15	N 15 32 14 W
3274.00	3300.11	3300.00	-6.43	6.64 N	0.18 E	6.65	N 1 33 13 E
3374.00	3400.15	3400.00	-6.92	7.70 N	2.58 E	8.12	N 18 30 13 E
3474.00	3500.19	3500.00	-7.60	9.04 N	5.32 E	10.49	N 30 29 21 E
3574.00	3600.23	3600.00	-8.37	10.41 N	7.80 E	13.01	N 36 52 14 E
3674.00	3700.26	3700.00	-8.72	11.22 N	9.79 E	14.89	N 41 6 33 E
3774.00	3800.27	3800.00	-9.03	11.89 N	11.34 E	16.43	N 43 37 52 E
3874.00	3900.29	3900.00	-10.08	13.29 N	12.70 E	18.38	N 43 41 40 E
3974.00	4000.31	4000.00	-10.92	14.44 N	13.95 E	20.08	N 44 0 14 E
4074.00	4100.31	4100.00	-11.44	15.22 N	14.98 E	21.35	N 44 32 38 E
4174.00	4200.32	4200.00	-11.95	15.93 N	15.79 E	22.43	N 44 45 28 E
4274.00	4300.32	4300.00	-12.37	16.50 N	16.43 E	23.29	N 44 52 34 E
4374.00	4400.33	4400.00	-12.93	17.20 N	16.96 E	24.15	N 44 35 31 E
4474.00	4500.33	4500.00	-13.42	17.77 N	17.24 E	24.76	N 44 7 39 E
4574.00	4600.33	4600.00	-13.73	18.19 N	17.65 E	25.34	N 44 8 38 E
4674.00	4700.34	4700.00	-13.98	18.61 N	18.41 E	26.18	N 44 40 43 E
4774.00	4800.34	4800.00	-14.30	18.99 N	18.62 E	26.59	N 44 25 26 E
4874.00	4900.34	4900.00	-14.49	19.10 N	18.24 E	26.41	N 43 40 56 E
4974.00	5000.34	5000.00	-14.72	19.27 N	17.97 E	26.35	N 43 0 58 E
5074.00	5100.34	5100.00	-14.93	19.48 N	17.91 E	26.46	N 42 35 43 E
5174.00	5200.34	5200.00	-15.12	19.68 N	17.98 E	26.66	N 42 24 49 E
	LOWEST SURVEY DATA AVAILABLE						
5263.66	5290.00	5289.66	-15.40	19.93 N	17.81 E	26.73	N 41 47 12 E

RUSTY CLARK SURVEY CO., INC.

P.O. BOX 100, BREAUX BRIDGE, LA 70517

(800)-256-5232

1-14-01

State of Texas

County of Harris

I, Ralph Angelle, certify that; I am employed by Rusty Clark Survey Company, Inc.; that I did on the day(s) of 1-14-01 through 1-14-01 conduct or supervise the taking of a Gyroscopic Multi-Shot survey from a depth of 0 feet to a depth of 5,290 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Rusty Clark Survey Company, Inc.; that I am authorized and qualified to make this report; that this survey was conducted at the request of Ballard Exploration for the Houston Ship Channel, Well #1 Well API No. 42 201 32613 00 in Harris County, Texas; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by Rusty Clark Survey Company, Inc.

Ralph Angelle

Ralph Angelle

Survey Technician

e:\wpdata\rrccert

File name: 201209.DWG.DWG MAJ
Plot date: 01/04/01 at 11:12

Peter J. Duncan Survey A .32
(1761)

Richard & Robert Vince Survey
A - 76
(T. August 21, 1824)

9,707' ±

Called 4850.52 Acres Sold
From U.S.A. To William E. Brock
(Volume 8214, Page 438)

12,991' ±

GRID NORTH
TRUE NORTH
S&J
+0253'00" (NOT TO SCALE)

SCALE: 1" = 2000'

NOTE:
ALL THE HORIZONTAL CONTROL IS REFERRED TO THE TEXAS PLANE COORDINATE SYSTEM, LAMBERT PROJECTION, SOUTH CENTRAL ZONE, NAD 27 DATUM. ALL BEARINGS, DISTANCES AND ACREAGES ARE GRID. THE THETA CORRECTION AT THE PROPOSED SURFACE LOCATION OF WELL "BALLARD EXPLORATION COMPANY, INC. HOUSTON SHIP CHANNEL UNIT # 1" IS + 0253'00" AND THE SCALE FACTOR IS 0.9999887813. LEASE AND TRACT INFORMATION SHOWN HEREON WAS DONE SO BY LIMITED SURVEY DATA AND AVAILABLE DEED RECORD INFORMATION AND DOES NOT REFLECT AN ACTUAL SURVEY. BOTTOM HOLE LOCATION INFORMATION SHOWN HEREON HAS BEEN PROVIDED BY THE CLIENT.
THIS PLAT IS VALID ONLY WITH ORIGINAL SIGNATURE AND SEAL.
⊕ = 5/8" IRON ROD FOUND UNLESS OTHERWISE SPECIFIED.

Proposed Surface Location
"Ballard Exploration Company, Inc. Houston Ship Channel Unit # 1"
Y = 714,639.060
X = 3,219,670.131
Latitude = 29°44'37.30205" N
Longitude = 95°09'21.06095" W
Elevation = 15.4'

370' ± To Edge Of Bayou

Called 38.64 Acres
From Ideal Basic Inc
To First Bank & Trust
(F.C.# 002-91-2513)

Called 5.658 Acres
From J.H. Gianello
To Ballard Exploration, Inc.
(F.C.# 533-92-1584)

Fnd. 1/2" I.R.

10,276' ±

Fnd. 1" I.P.

Buffalo

Called 37.5397 Acres
(F.C.# 51-71-3575)

Proposed Bottom Hole Location
"Ballard Exploration Company, Inc. Houston Ship Channel Unit # 1"
Y = 711,744.000
X = 3,220,941.000
Latitude = 29°44'08.43683" N
Longitude = 95°09'14.53429" W

Bayou

16 Acres ±
10 Acre Lake
340' ± To Edge Of Bayou

Called 525.907 Acres (Tract 1) (F.C.# 145-07-1983)

Thomas Earle Survey
(R.T. Jan. 7, 1839)
A - 18

STATE OF TEXAS ✕
COUNTY OF HARRIS ✕

I, J. GILBERT JOHNSTON, REGISTERED PROFESSIONAL LAND SURVEYOR NO. 2079 IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THIS IS AN ACCURATE PLAT SHOWING THE PROPOSED LOCATION OF WELL "BALLARD EXPLORATION COMPANY, INC. HOUSTON SHIP CHANNEL UNIT # 1" ON THE ROYARD AND ROBERT VINCE SURVEY, ABSTRACT 76, HARRIS COUNTY, TEXAS AS STAKED ON THE GROUND BY ME ON DECEMBER 20, 2000.

J. Gilbert Johnston
Registered Professional Land Surveyor No. 2079

STATE OF TEXAS
REGISTERED
J. GILBERT JOHNSTON
2079
PROFESSIONAL
LAND SURVEYOR

Stone & Johnston
P. O. Box [illegible]
Shaboo, Texas [illegible]
Ph# (409) 385-[illegible]
Fax# (409) 385-[illegible]

Original Well

SPERRY-SUN JOB NO. HDM4 10002
DATE SURVEYED 1-4-01 - 1-31-01
SURVEYED FROM S3100' TO 12071'
TIE-ON COORDINATES FROM S8104'
BHL AT 12071' FT. (MD) - 3150.28" FT.
AT 12.97 SE
FROM SURFACE LOCATION
BHL 0000' ± TO SE LEASE LINE

File name: 201209 DWG.DWG HAJ
Plot date: 01/04/01 at 11:12

Peter J. Duncan Survey A - 232
(1761)

Richard & Robert Vince Survey
A - 76
(T. August 21, 1824)

GRID NORTH
TRUE NORTH
S&J
+0253'00" (NOT TO SCALE)
SCALE: 1" = 2000'

NOTE:
ALL THE HORIZONTAL CONTROL IS REFERRED TO THE TEXAS PLANE COORDINATE SYSTEM, LAMBERT PROJECTION, SOUTH CENTRAL ZONE, NAD 27 DATUM. ALL BEARINGS, DISTANCES AND ACREAGES ARE GRID. THE THETA CORRECTION AT THE PROPOSED SURFACE LOCATION OF WELL "BALLARD EXPLORATION COMPANY, INC. HOUSTON SHIP CHANNEL UNIT # 1" IS + 0253'00" AND THE SCALE FACTOR IS 0.9996880613. LEASE AND TRACT INFORMATION SHOWN HEREON WAS DONE SO BY UNITED SURVEY DATA AND AVAILABLE DEED RECORD INFORMATION AND DOES NOT REFLECT AN ACTUAL SURVEY. BOTTOM HOLE LOCATION INFORMATION SHOWN HEREON HAS BEEN PROVIDED BY THE CLIENT.
THIS PLAT IS VALID ONLY WITH ORIGINAL SIGNATURE AND SEAL.
● = 5/8" IRON ROD FOUND UNLESS OTHERWISE SPECIFIED.

STATE OF TEXAS X
COUNTY OF HARRIS X

I, J. GILBERT JOHNSTON, REGISTERED PROFESSIONAL LAND SURVEYOR NO. 2079 IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THIS IS AN ACCURATE PLAT SHOWING THE PROPOSED LOCATION OF WELL "BALLARD EXPLORATION COMPANY, INC. HOUSTON SHIP CHANNEL UNIT # 1" ON THE RICHARD AND ROBERT VINCE SURVEY, ABSTRACT 76, HARRIS COUNTY, TEXAS AS STAKED ON THE GROUND BY ME ON DECEMBER 20, 2000.

J. Gilbert Johnston
Registered Professional Land Surveyor No. 2079

STATE OF TEXAS REGISTERED J. GILBERT JOHNSTON 2079 PROFESSIONAL LAND SURVEYOR

9,707' ±
12,891' ±
Called 48.50.62 Acres Sold From U.S.A. To William E. Brod (Volume 8214, Page 428)

Proposed Surface Location
"Ballard Exploration Company, Inc. Houston Ship Channel Unit # 1"
Y = 714,639.060
X = 3,219,670.131
Latitude = 29°44'37.30205" N
Longitude = 95°09'21.06095" W
Elevation = 15.4'

Called 34.64 Acres From Ideal Basic Ind. To First Bank & Trust (F.C.# 002-91-2513)
Called 5.659 Acres From J.M. Shanville To Ballard Exploration, Inc. (F.C.# 533-92-1594)
Found 1/2" I.R.
Found 1" I.P.
10,276' ±
01 Degree 30' ± to Edge
Called 31.5317 Acres (F.C.# 51-71-3575)
Buffalo Bayou
Proposed Bottom Hole Location
"Ballard Exploration Company, Inc. Houston Ship Channel Unit # 1"
Y = 711,744.000
X = 3,220,341.000
Latitude = 29°44'08.43683" N
Longitude = 95°09'14.53429" W
16 Acres ±
10 Acres
340' ± To Edge Of Bayou
Called 525.997 Acres (Tract 1) (F.C.# 145-77-1983)

Thomas Earle Survey
(R.T. JULY 7, 1838)
A - 18

Stokes & Johnson
P. O. Box
Sheldon, Texas
Phone (409) 385
Fax (409) 385

Side track-01

SPERRY-SUN JOB NO. HDMA 10002
DATE SURVEYED 2-4-01 - 2-10-01
SURVEYED FROM 2962' TO 12055'
TIE-ON COORDINATES FROM 2933'
BHL AT 12055 FT. (MD) - 2062.00 FT.
AT 45.57 SE
FROM SURFACE LOCATION
BHL 4500 = TO SE LEASE LINE

COMPANY: Ballard Exploration Company, Inc.

WELL: Houston Ship Channel Unit No. 1

FIELD: Houston Ship Channel Prospect

COUNTY: Harris STATE: Texas

COUNTY: Harris
Field: Houston Ship Channel Prospect
Location: LL: 9970' FNL & 10216' FEL (Off Lease)
Well: Houston Ship Channel Unit No.
Company: Ballard Exploration Company, Inc.

Schlumberger

PLATFORM EXPRESS/ARRAY INDUCTION/DENSITY/NEUTRON BOREHOLE COMPENSATED SONIC FINAL COMPOSITE

LOCATION

LL: 9970' FNL & 10216' FEL (Off Lease) #1
SL: 9970' FNL & 10216' LEL
Richard & Robert Vince A-76 D-03

Elev.: K.B. 42 ft
G.L. 15.4 ft
D.F. 41 ft

Permanent Datum: Ground Level Elev.: 15.4 ft
Log Measured From: Kelly Bushing 26.6 ft above Perm. Datum
Drilling Measured From: Kelly Bushing

API Serial No.	SECTION	TOWNSHIP	RANGE
42-201-32613			

	RUN 6	RUN 7	RU
Map ID 11A			

	RUN 3	RUN 4	RU
Logging Date	9-JAN-2001	20-JAN-2001	31-JAN-2001
Run Number	One	Two	Three
Depth Driller	3443 ft	8715 ft	12119 ft
Schlumberger Depth	3442 ft	8716 ft	12117 ft
Bottom Log Interval	3443 ft	8716 ft	12119 ft
Top Log Interval	85 ft	3446 ft	8903 ft
Casing Driller Size @ Depth	20.000 in @ 85 ft	13.375 in @ 3443 ft	9.625 in @ 8903 ft
Casing Schlumberger	85 ft	3446 ft	8903 ft
Bit Size	17.500 in	12.250 in	8.500 in
Type Fluid in Hole	Fresh Mud	Water Based Mud	Water Based Mud
MUD Density / Viscosity	9.3 lbm/gal / 34 s	12.5 lbm/gal / 43 s	17.1 lbm/gal / 35 s
MUD Fluid Loss / PH	9.8 cm3 / 9	5.2 cm3 / 9.1	3 cm3 / 9.9
Source Of Sample	Circulation Tank	Circulation Tank	Flowline
RM @ Measured Temperature	1.800 ohm.m @ 55 degF	2.600 ohm.m @ 120 degF	4.800 ohm.m @ 100 degF
RMF @ Measured Temperature	1.350 ohm.m @ 55 degF	2.210 ohm.m @ 120 degF	4.080 ohm.m @ 100 degF
RMC @ Measured Temperature	2.700 ohm.m @ 55 degF	3.640 ohm.m @ 120 degF	6.720 ohm.m @ 100 degF
Source RMF / RMC	Calculated / Calculated	Calculated / Calculated	Calculated / Calculated
RM @ MRT / RMF @ MRT	0.886 @ 112 / 0.702 @ 112	1.930 @ 164 / 1.641 @ 164	2.139 @ 235 / 1.802 @ 235
Maximum Recorded Temperatures	112 degF	164 degF 164	235 degF
Circulation Stopped / Time	9-JAN-2001 / 17:00	20-JAN-2001 / 3:00	31-JAN-2001 / 11:00
Logger On Bottom / Time	10-JAN-2001	20-JAN-2001 / 11:30	31-JAN-2001 / 22:30
Unit Number / Location	2021 / Liberty, Tex	3069 / Liberty, Tx	2139 / Liberty, Tx
Recorded By	M. Ramos	Robert Walton	Jason Glasscock \ Jacinto Delgado
Witnessed By	Pat Andrews, P. Martin	Tyson Dunn, & Larry Williams	Tyson Dunn, & Larry Williams

RECEIVED
RRC OF TEXAS
AUG 22 2005
INFORMATION SERVICES
AUSTIN TX

AUG 2005
LOG RECORDS

10

201 32613 ID: 182012

NFN1

COMPANY: Ballard Exploration Company, I

WELL: Houston Ship Channel Unit No.

FIELD: Houston Ship Channel Prospect

COUNTY: Harris STATE: Texas

COUNTY: Harris
Field: Houston Ship Channel Prospect
Location: LL: 9970' FNL & 10216' FEL (Off
Well: Houston Ship Channel Unit No.
Company: Ballard Exploration Company, In

Schlumberger

PLATFORM EXPRESS/ARRAY INDUCTION/DENSITY/NEUTRON BOREHOLE COMPENSATED SONIC FINAL COMPOSITE

LOCATION
LL: 9970' FNL & 10216' FEL (Off Lease)
SL: 9970' FNL & 10216' LEL
Richard & Robert Vince A-76

#1
D-03

Elev.: K.B. 42 ft
G.L. 15.4 ft
D.F. 41 ft

Permanent Datum: Ground Level — Elev.: 15.4 ft
Log Measured From: Kelly Bushing — 26.6 ft above Perm. Datum
Drilling Measured From: Kelly Bushing

API Serial No. 42-201-32613	SECTION	TOWNSHIP	RANGE

	RUN 6	RUN 7	RU
Map ID 11A			

	RUN 1		RUN 2		RUN 3		RUN 4		RU
Logging Date	9-JAN-2001		20-JAN-2001		31-JAN-2001				
Run Number	One		Two		Three				
Depth Driller	3443 ft		8715 ft		12119 ft				
Schlumberger Depth	3442 ft		8716 ft		12117 ft				
Bottom Log Interval	3443 ft		8716 ft		12119 ft				
Top Log Interval	85 ft		3446 ft		8909 ft				
Casing Driller Size @ Depth	20.000 in @ 85 ft		13.375 in @ 3443 ft		9.625 in @ 8903 ft				
Casing Schlumberger	85 ft		3446 ft		8909 ft				
Bit Size	17.500 in		12.250 in		8.500 in				
Type Fluid In Hole	Fresh Mud		Water Based Mud		Water Based Mud				
MUD Density	9.3 lbm/gal	Viscosity 34 s	12.5 lbm/gal	43 s	17.1 lbm/gal	35 s			
MUD Fluid Loss	9.8 cm3	PH 9	5.2 cm3	9.1	3 cm3	9.9			
Source Of Sample	Circulation Tank		Circulation Tank		Flowline				
RM @ Measured Temperature	1.800 ohm.m	@ 55 degF	2.600 ohm.m @ 120 degF		4.800 ohm.m @ 100 degF				
RMF @ Measured Temperature	1.350 ohm.m	@ degF	2.210 ohm.m @ 120 degF		4.080 ohm.m @ 100 degF				
RMC @ Measured Temperature	2.700 ohm.m	@ degF	3.640 ohm.m @ 120 degF		6.720 ohm.m @ 100 degF				
Source RMF / RMC	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated			
RM @ MRT / RMF @ MRT	0.936 @ 112	0.702 @ 112	1.930 @ 164	1.641 @ 164	2.126 @ 235	1.802 @ 235			
Maximum Recorded Temperatures	112 degF		164 degF	164	235 degF				
Circulation Stopped / Time	9-JAN-2001	17:00	20-JAN-2001	3:00	31-JAN-2001	11:00			
Logger On Bottom / Time	10-JAN-2001	[illegible]	20-JAN-2001	11:30	31-JAN-2001	22:30			
Unit Number / Location	2021	Liberty, Tex	3069	Liberty, Tx	2139	Liberty, Tx			
Recorded By	M. Ramos		Robert Walton		Jason Glasscock \ Jacinto Delgado				
Witnessed By	Pat Andrews, P. Martin		Tyson Dunn, & Larry Williams		Tyson Dunn, & Larry Williams				

RECEIVED
RRC OF TEXAS
AUG 22 2005
INFORMATION SERVICES
AUSTIN TX

AUG 2005
LOG RECEIVED
RECORDS

10

201 32613 ID: 182012

MFN1

MAP ID NO. 12

COCKBURN OIL CO.
R.E. BROOKS ESTATE 1

[illegible]

FORM 1

RAILROAD COMMISSION OF TEXAS—OIL AND GAS DIVISION

Austin, Texas

IMPORTANT NOTICE: This is the first record the RAILROAD COMMISSION has of any well. It is made the basis of all subsequent correspondence. Hence it Must be correct.

NOTICE OF INTENTION TO DRILL OR DEEPEN
(USE FORM 2-A FOR NOTICE OF INTENTION TO PLUG)

(To comply with Rules of the Railroad Commission of Texas governing Oil and Gas Conservation in Texas.)

READ CAREFULLY AND COMPLY FULLY

In order that it may be ascertained whether or not the proposed location covered by this notice conforms to the applicable spacing regulations set down by the Railroad Commission, there are two important footages that must be shown; that is, **THE NEAREST DISTANCE OF PROPOSED LOCATION FROM LEASE OR PROPERTY LINE AND DISTANCE OF PROPOSED LOCATION FROM THE NEAREST WELL ON THE SAME LEASE.** Do not begin operation on any location before filing Form 1, and do not begin operations on any location not conforming to the spacing rules for such location until you receive written order from the Commission granting permission.

For the purpose of this determination draw on the back side hereof a neat, accurate sketch, made to scale, of this lease, block, or lot locating thereon the proposed site for this location with reference to the two nearest lease lines. Also show the nearest wells on all sides of this location and the distances from the proposed location to those wells. Give names and addresses of adjoining lease or property owners, and designate all property by lease and company name. You may attach a blue print showing this information if you so desire.

DO NOT CONFUSE SURVEY LINES WITH LEASE LINES. IF THE SKETCH OR BLUE PRINT SHOWS ONLY A SECTION, BLOCK, OR LOT OUT OF YOUR LEASE, DESIGNATE SAME AS BEING ONLY THAT PART OF THE LEASE.

Where the size of the tract will permit, use scale of one inch equalling 400 feet; if less than 2 acres use scale of one inch equalling 100 feet. **DESIGNATE SCALE TO WHICH PLAT OR SKETCH IS DRAWN. ALSO DESIGNATE NORTHERLY DIRECTION ON THE SKETCH OR PLAT.**

* * * * *

FILL IN BELOW IN THE SPACES RESERVED FOR THIS PURPOSE THE FOOTAGES ASKED FOR:

Nearest distance from proposed location to property or lease line [illegible] feet.

Distance from proposed location to nearest drilling, completed, or applied for well on same lease 4500 feet.

* * * * *

DRAW SKETCH ABOVE REFERRED TO ON REVERSE SIDE HEREOF OR ATTACH TO THIS NOTICE A BLUE PRINT SHOWING THIS INFORMATION.

This notice must be delivered to Deputy Supervisor of your district before drilling, or deepening. He will forward to the Railroad Commission, Austin, Texas.

Date July 26, 1935

Name of company or operator

Name Cockburn Oil Corp

Address 2001 Esperson Bldg

City Houston, Texas

Description of farm or lease:

Name (Fee owner) Estate R. E. Brooks

Number of Acres — Well No. 2

Survey Richard & Robert Vince

Section No. — Block No. —

Located in Wildcat Field

Harris County

15 Miles SE direction from

Houston nearest postoffice or town.

Rotary or Cable Tools Rotary

Date work will start drilling Aug-3-1935

Depth to which you propose to drill 6500 feet.

Date work will start deepening —

If Lease Purchased with one or more wells drilled From Whom Purchased?

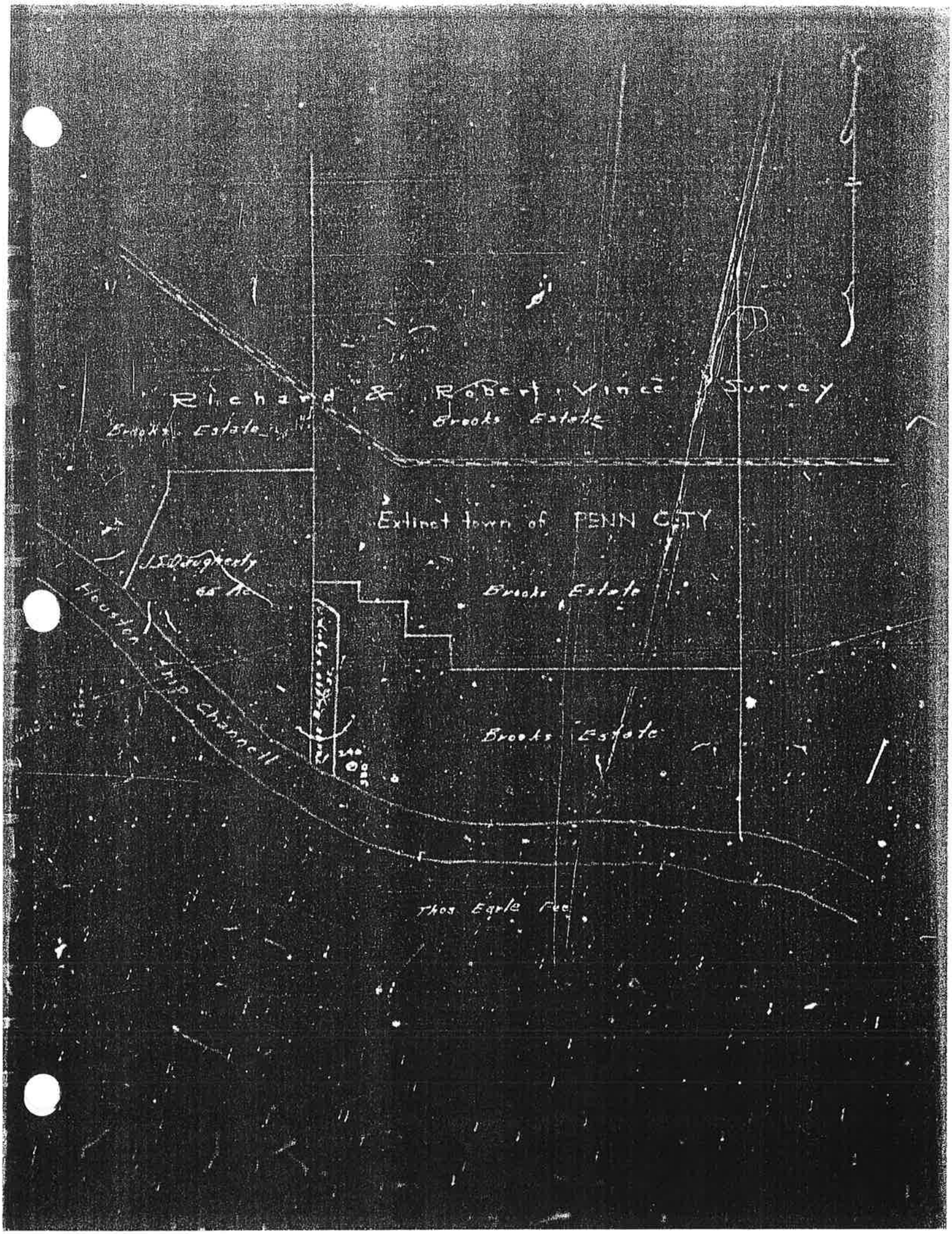
Name Wildcat

Address

RECEIVED AUS[illegible] AUG 2 [illegible] Oil

Deliver to Deputy Supervisor in charge of district in which well is located.

"**Rule 37. Spacing Rule**—(Applies to all fields in the State except where special field rules govern)—No well for oil or gas shall hereafter be drilled nearer than 300 feet to any other completed or drilling well on the same or adjoining tract or farm; and no well shall be drilled nearer than 150 feet to any property line, lease line, or sub-division line; provided that the Commission in order to prevent waste or to prevent the confiscation of property will grant exceptions to permit drilling within shorter distance than above prescribed whenever the Commission shall determine that such exceptions are necessary either to prevent waste or to prevent the confiscation of property. When an exception to such rule is desired, application therefor shall be filed with the Commission fully stating the facts, which application shall be accompanied by a plat drawn to the scale of one inch equalling 400 feet, accurately showing to scale the property on which permit is sought, to drill a well under an exception to this rule, and accurately showing to scale all other completed, drilling and permitted wells on said property; and accurately showing to scale all adjacent surrounding properties and wells. Such application shall be verified by some person acquainted with the facts, stating that all facts therein stated are within the knowledge of the affiant true, and that the accompanying plat is accurately drawn to scale and correctly reflects all pertinent and required data. Such exception shall be granted only after at least ten days notice to all adjacent lessees affected thereby has been given, and after public hearing at which all interested parties may appear and be heard, and after the Commission has determined that an exception to such rule is necessary either to prevent waste or to protect the property belonging to applicant from confiscation. All pending applications shall be amended to conform to this rule before being acted upon. Upon [illegible] application and showing the Commission may grant exceptions to the [illegible]


Richard & Robert Vince Survey
Brooks Estate
Brooks Estate
Extinct town of PENN CITY
J.S. Dougherty
Brooks Estate
Houston Ship Channel
Brooks Estate
Thos Earle Fee

WELL RECORD

FILE WITH DEPUTY SUPERVISOR OF DISTRICT IN WHICH WELL IS LOCATED

Operator Cockburn Oil Corp. Address Houston, Texas 2001 Esperson Bldg.

County Harris Survey R & R Vince, Block No. Sec. No.

Lessor R.E. Brooks Estate Well No. 2 Elevation 32 (Above Sea Level)

Drilling Commenced 8/5/1935, 193 Drilling completed 8/22/1935, 193

Correspondence regarding this well should be sent to: Name Address

SIZE	PUT IN WELL		PULLED OUT		LEFT IN WELL		PACKERS AND SHOES
	Ft.	In.	Ft.	In.	Ft.	In.	
10"	842'						

Initial Production of Gas—Volume X Pressure X

Initial Production of Oil: Barrels X

Remarks: Dry and abandoned

DESCRIPTION OF PROPERTY:

NORTH

WEST

EAST

GENERAL REMARKS

Brooks [illegible], Richard & Robert
Vinse Survey, Tract [illegible], Harris Co.
Set [illegible] of 13" casing, 100' [illegible].
Incore Cement on Bottom 8-[illegible]-1936.

Commenced Drilling [illegible]-8-1936
Completed Drilling [illegible]-22-1936.

0	45	Surface sand
45	125	sand
125	280	surface clay
280	360	sand and blders.
360	[illegible]	shale
400	[illegible]	sand
420	440	sand & blders.
440	470	shale
470	505	sand & blders.
505	560	sand
560	611	sandy shale
611	695	shale & blders.
695	765	hard sand
765	830	sand shale blders.
830	850	shale & lime
		set 848'-10" case.
		using 100 sx. I.C.
850	1110	shale and lime
1110	1165	sand
1165	1310	shale and lime
1310	1330	sand
1330	1362	shale & lime
1362	1390	shale and lime
1390	1410	sand & blders.
1410	[illegible]	hard sandy lime
[illegible]	1578	stky. shale & lime
[illegible]	1641	stky shale
1641	1671	sand lime
1671	1700	gumbo
1700	1740	shale & lime
1740	1761	hard sand
1761	1807	shale
1807	1833	shale and lime
1833	1863	shale & lime
1863	1900	sand & blders.
1900	2075	sh. hd sty lm stks
2075	2108	stky shale
2108	2170	sh. hd lm stky
2170	2242	shale and lime
2242	2272	shale
2272	2305	sand
2305	2332	shale lime
2332	2380	shale lime
2380	2505	stky shale
2505	2549	shale and lime
2549	2610	shale and lime
2610	2700	stky shale
2700	2750	shale, hard lm stk
2750	2774	shale and lime
2774	2935	shale lime
2935	2986	stky shale
2986	3064	shale and lime
3064	3106	shale and lime
3106	3108	sand
3108	3132	hard lime
3132	3261	shale and lime
3261	3285	shale and lime
3285	3291	hard lime & shale
[illegible]	3355	" " "
3355	3407	lime
3407	3430	lime
3430	3469	shale hd sty lm.
3469	3471	sandy shale
3471	3475	shale
3475	3531	shells, sh & lm.
3531	3593	shale & lime
3593	3726	shale and lime
3726	3829	shale and lime
3829	3831	sandy shale
3831	3916	shale and lime
3916	4033	shale and lime
4033	4040	lime rock
4040	4048	hard lime and shale
4048	4061	hard lime
4061	4135	shale shells
4135	4145	shale lime
4145	4153	hard lime
4153	4229	shale and hard lime
4229	4251	hard lime
4251	4264	shale
4264	4289	hard sandy lime
4289	4299	sandy lime
4299	4323	hard shale and shells
4323	4360	shale and shells
4360	4368	shale
4368	4379	shale
4379	4396	shale hard
4396	4403	shale and shells
4403	4465	sandy shale (cored #3)
4465	4735	Sand (Cored #3)
4735	4755	shale
4755	4765	sand
4765	4781	sand-sand shale
4781	4787	stky shale
4787	4795	sand shale
4795	4825	sandy shale (Cored #4)
4825	[illegible]	hard shale
[illegible]	[illegible]	shale
[illegible]	[illegible]	shale (cored #5)
[illegible]	[illegible]	shale
[illegible]	[illegible]	hard shale
[illegible]	4951	shale and shells
4951	4993	blue shale & shells
[illegible]	5077	shale
5077	5097	broken lime
5097	5101	blue shale
5101	5108	sandy shale (core #6)
5108	5143	shale and shells
5143	5193	blue hard shale
5193	5213	blue stky shale
5213	5245	blue hard shale
5245	5261	shale (cored #7)
[illegible]	[illegible]	5261-5318 (Cored #8)
5318	5250	shale
5250	5251	hard shale shells cored #9
5251	5254	" " "
5254	5275	shale
5275	5304	hard shale and shells
5304	5301	hard shale
5301	5315	shale and shells
5315	5320	sandy sh & shells (cored #10)
5320	5335	hard shale
5335	5346	stky shale
5346	5365	shale and shells
5365	5375	sandy shale
		Cored 5370-75 sand & shale #11
5375	5416	shale
5416	5421	sandy shale (core #12)
5421	5426	sandy shale
5426	5435	sandy shale
5435	5451	shale
5451	5471	shale

5470	5472	sand
5472	5492	hard shale
5492	5494	sandy shale
5494	5498	(cored #14 no recovery)
5498	5500	(cored #15 water)
5500	5532	water sand
5532	5541	hard shale
5541	5543	sand
5543	5548	(cored #15 sandy shale)
5548	5607	shale
5607	5612	(cored #17 sand and shale water)
5612	5674	shale
5674	5679	(cored #18 sandy shale)
5680	5690	Salt WATER SAND
5690	5743	shale. Run Schlumberger test here.

T.D.

Run Deflection test at 1365 Main Straight
" " " " 1333 " "
" " " " 2538 " "
" " " " 3100 " "
" " " " 3711 " "
" " " " 4672 " "

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PI/Dwights PLUS Online Scout Ticket

Date: 10/23/2002
Time: 7:31 AM

12

1 BROOKS E R

State:	TEXAS
County:	HARRIS
Operator:	COCKBURN OIL CORP
API:	42201061100000 IC:
Initial Class:	WP
Target Objective:	

12

```
        Final Well Class:   WP
                  Status:   D&A
                   Field:   CLINTON
                  Permit:            on AUG 15, 1935
       First Report Date:   AUG 15, 1935
            Projected TD:        Formation:
          Hole Direction:   VERTICAL

 Location
            NS EW Footage:
       Dist, Abs, Survey:   RR DISTRICT 03   76            R&R VINCE
    Blk, Lge, Lot, Labor:
     Township, Dir, Sect:
          Surface remark:
                Lat/Long:   29.7383500/ -95.1526000  TB
                    PBHL:
       Dist, Abs, Survey:   RR DISTRICT 03
    Blk, Lge, Lot, Labor:
     Township, Dir, Sect:
                            From Surface:            TVD:
             PBHL Remark:
                    ABHL:
       Dist, Abs, Survey:   RR DISTRICT 03
    Blk, Lge, Lot, Labor:
     Township, Dir, Sect:
                    ABHL:   From Surface:             TVD:
             ABHL Remark:
      Location Narrative:   Type            Remark
                            LOCATION        330 N OF N BANK SHIP CHANNEL & 330 E OF E
                                            TEXAS BRIDGE & EQUIPMENT CO 10 ACRE TRACT
                                            BAYOU/

 Dates and Depths
                    Spud:   MAR 04, 1935     Spud Date Code:
                      TD:     5745 on
                     LTD:
          PlugBack Depth:
               Completed:   AUG 26, 1935
          Formation @ TD:   000UNKWN  Name: UNKNOWN
          Ref. Elevation:       21 DF
           KB. Elevation:
        Ground Elevation:       13 GR
             Contractor:
        Rig Release Date:            Rig #

 Core Id: 001
              Formation:
               Interval:     5484 -5532        Rec:
              Core Type:                  Show Type: WET
            Description:   SD WTR
 Core Id: 002
              Formation:
               Interval:     5680 -5690        Rec:
              Core Type:                  Show Type: WET
            Description:   SD WTR

Casing, Liner, Tubing
                  Casing    10 3/4 IN @    852 w/      sx

Drilling Journal
                    Obs. #     Interval     Type                    Form
              Show    1      5484  - 5532   WET                       -
              Show    2      5680  - 5690   WET                       -

Formations and Logs
```

12

Log # 1 EL @ -
Logging Co. 153789

Top Formation	Measured Depth	Top TVD	Base Depth	Base TVD	Source	Lith-ology	Age code
DISCORBIS	4680				SPL		653
HET /HETEROSTEGINA/	5050				SPL		653
MARGINULINA /SH/	5256				SPL		653
MARGINULINA /SH/	5312				SPL		653
FRIO	5492				SPL		653

Operator Address
Street or PO Box:

City:
State, Zip:
Country:
Phone: Fax:
E-Mail:
Agent Name: Agent Code:
Agent Remark:

MAP ID# 12

R 29 D 4A

SCHLUMBERGER ELECTRICAL LOGS

FIELD :

WELL :

COMPANY :

Company: COCKBURN OIL CORP.

Field-Well: SHIP CHANNEL. R.R.VINCENT SURVEY. BROOKS ESTATE #1

EST #2 - WELL #1 BROOKS

PROBLEM : Study of Formations

RESULTS : See log below

First Reading		: 5740 ft.	Started run	: 11	a m.
Last Reading		: 850 ft.	Finished run	: 4:30	p m.
Footage Measured		: 4890 ft.	Time well occupied by outfit	:	$4\frac{1}{2}$ hrs.
Casing Shoe Depth:	DRILLER	: 852 ft.	Time waiting at well	:	0 hrs.
	SCHLUMBERGER	: ft.	Total time incurred by run	:	$5\frac{1}{2}$ hrs.
Bottom Depth	DRILLER	: 5745 ft.	Mileage incurred by run	:	30 Mi.

Mud Characteristics

Nature: Natural Viscosity: Medium

Density: 9.9 Resistivity: 3.41

Diameters of hole: from ____ to 5101' : 9-7/8"; from 5101' to 5745' : 6-1/4"

REMARKS

42201061100000

General Information

1 BROOKS E R

Data Source:	PI	**Country:**	UNITED STATES
API/UWI:	42201061100000	**IC:**	
State/Prov:	TEXAS	**County:**	HARRIS
Field:	CLINTON	**Operator:**	COCKBURN OIL CORP
Current Status:		**Current Operator:**	COCKBURN OIL CORP
Reg. Well Status/Date:			
Initial Class:	NEW POOL WILDCAT (WP)	**Final Well Class:**	NEW POOL WILDCAT-DRY (INCLUDING TEMPORARILY ABANDONED WELL) (WP)
Final Status:	DRY & ABANDONED	**Target Objective:**	
Permit:	on Feb 22, 1935	**Hole Direction:**	VERTICAL
First Report Date:	Aug 15, 1935	**Abandonment Date:**	
Projected TD:		**Projected Formation:**	
Basin:	GULF COAST BASIN	**Formation at TD:**	UNKNOWN
		PRODFit Form at TD:	
Play Name:	MISC GULF COAST BASIN	**Play Type:**	CONVENTIONAL ONSHORE (CONV ONSHR)

Location

Footage NS EW Origin:	11899 FN 9397 FE TX SUR/POR/GRANT			**Data Source:**	PI
Dist, Abs, Survey:	RR DISTRICT 03 76	VINCE RICHARD & ROBERT			
Blk, Lge, Lot, Labor:					
Township, Section:					
Lat/Long:	+29.7384328 -95.1537446	**Lat/Long Source:**	IH	**Datum:**	NAD27

Location Narrative

Data Source	Type	Remark
PI	LOCATION	330 N OF N BANK SHIP CHANNEL & 330 E OF EL OF TEXAS BRIDGE & EQUIPMENT CO 10 ACRE TRACT /GREEN BAYOU/

Dates and Depths

Data Source:	PI		
Spud:	Mar 04, 1935	**Spud Date Code:**	
TD:	5,745 FT	**TD Date:**	
TVD:		**PlugBack Depth:**	
Formation Code TD:	000UNKWN	**Formation Name TD:**	UNKNOWN
PRODFit Form Code TD:		**PRODFit Form Name TD:**	
Ref. Elevation:	21 FT DF	**KB. Elevation:**	
Ground Elevation:	13 FT GR	**LTD:**	
Contractor:			
Completed:	Aug 26, 1935	**Final Drilling:**	
Rig Release Date:		**Rig #:**	
Tool:			

Cores

CORE ID: 001

Formation:		**Data Source:**	PI
PRODFit Top Form:		**PRODFit Base Form:**	
Interval:	5484-5532	**Rec:**	
Core Type:		**Show Type:**	WET

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Description: SD WTR

CORE ID: 002

Formation:

Data Source: PI

PRODFit Top Form:

PRODFit Base Form:

Interval: 5680-5690

Rec:

Core Type:

Show Type: WET

Description: SD WTR

Casing, Liner, Tubing

Casing	Data Source	Size	Base Depth	Cement	PRODFit Top Formation Code	PRODFit Base Formation Code
CASING	PI	10 3/4 IN	852 FT			

Drilling Journal

Show

Obs	Data Source	Top Depth	Base Depth	Type	Top Form	Base Form	Sample
1	PI	5,484	5,532	WET			
2	PI	5,680	5,690	WET			

Formations

Form Code	Top Source	Interpreter	Form Name	Top Depth	Top TVD	Base Depth	Base TVD	Desc	Lithology	Age Code
653DCRB	PI		DISCORBIS	4,680				SPL		653
653HRSG	PI		HETEROSTEGINA	5,050				SPL		653
653MRGLS	PI		MARGINULINA /SH/	5,256				SPL		653
653MRGLS	PI		MARGINULINA /SH/	5,312				SPL		653
653FRIO	PI		FRIO	5,492				SPL		653

Logs

Log	Data Source	Type	Top Depth	Base Depth	Logging Co.	BHT	since circ.
1	PI	EL			153789		

Dwights Energydata Narrative

Accumulated through 1997

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MAP ID NO. 13

ETHYL CORP.
ETHYL FEE 1

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

API Well No. 42 [redacted]

[redacted]

[redacted] FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

SPS

Check one: [X] DRILL [ ] DEEPEN [ ] PLUG BACK [ ] OTHER (Specify)

1. Operator: Ethyl Corporation
2. Address (Including City and Zip Code): 451 Florida St. Baton Rouge, Louisiana 70801
3. Is Form 7 in Exact Operator Name Filed? YES [X] NO [ ]
4. Lease Name: Ethyl "Fee"
5. Location (Sec., Blk., Survey): Thomas Earle Survey A-18
6. This well is to be located 1-1/2 miles North Direction from Pasadena Nearest Post Office or Town.
7. RRC District: 03
8. County: Harris
9. Well Number: 1
10. Number of Acres in Lease: 396.25
11. Distance from Proposed Location to Nearest Property or Lease Line (ft.): 1,150'

EACH PROPOSED COMPLETION

12. FIELD NAME (Exactly as shown on R. R. C. Proration Schedule including Reservoir if applicable.) If Wildcat, so state below.	13. Completion Depth	14. RRC Lease or ID Number (If applicable)	15. Field Rule Spacing Pattern (Distance to lease line & distance between wells. If no special rules indicate Rule 37.)	16. Field Rule Proration Unit Pattern. (Acres. If no special rules, indicate Statewide Rule 38)	17. Number of Acres in Drilling Unit for this Well	18. Is this acreage presently assigned to another well in same field? (Yes or No. If yes, explain in remarks.)	19. Distance from proposed location to nearest drilling completed or applied for well in same reservoir on same lease (ft.)	20. Is this a Regular Location? (Yes or No)	21. Oil, Gas, or other Type Well (Specify)	22. Number of Wells or Permitted locations on this Lease in same Reservoir for which this Permit is Requested. OIL	GAS
Wildcat	8,500		Rule 37	Rule 38	40	No	-	Yes	Gas	0	0

RECEIVED R.R.C. OF TEXAS [redacted] AUSTIN, TEXAS

FEB 18 1972

30795

201

NOTICE

NO ALLOWABLE WILL BE ASSIGNED to any well which does not have sufficient surface casing to protect all fresh water sands. Where Commission rules do not specify surface casing requirements, it will be necessary to contact Texas Water Development Board, Austin, Texas, to ascertain the depth to which fresh water sands must be protected.

REMARKS: 1,500' East of West Line and 11,600' North of South Line of Survey

CERTIFICATE

I declare under penalties prescribed in Article 6036c, R. C. S., that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

Signature: Consultant

Title: February 15, 1972

Date: 713 228-4484

Telephone: Area Code

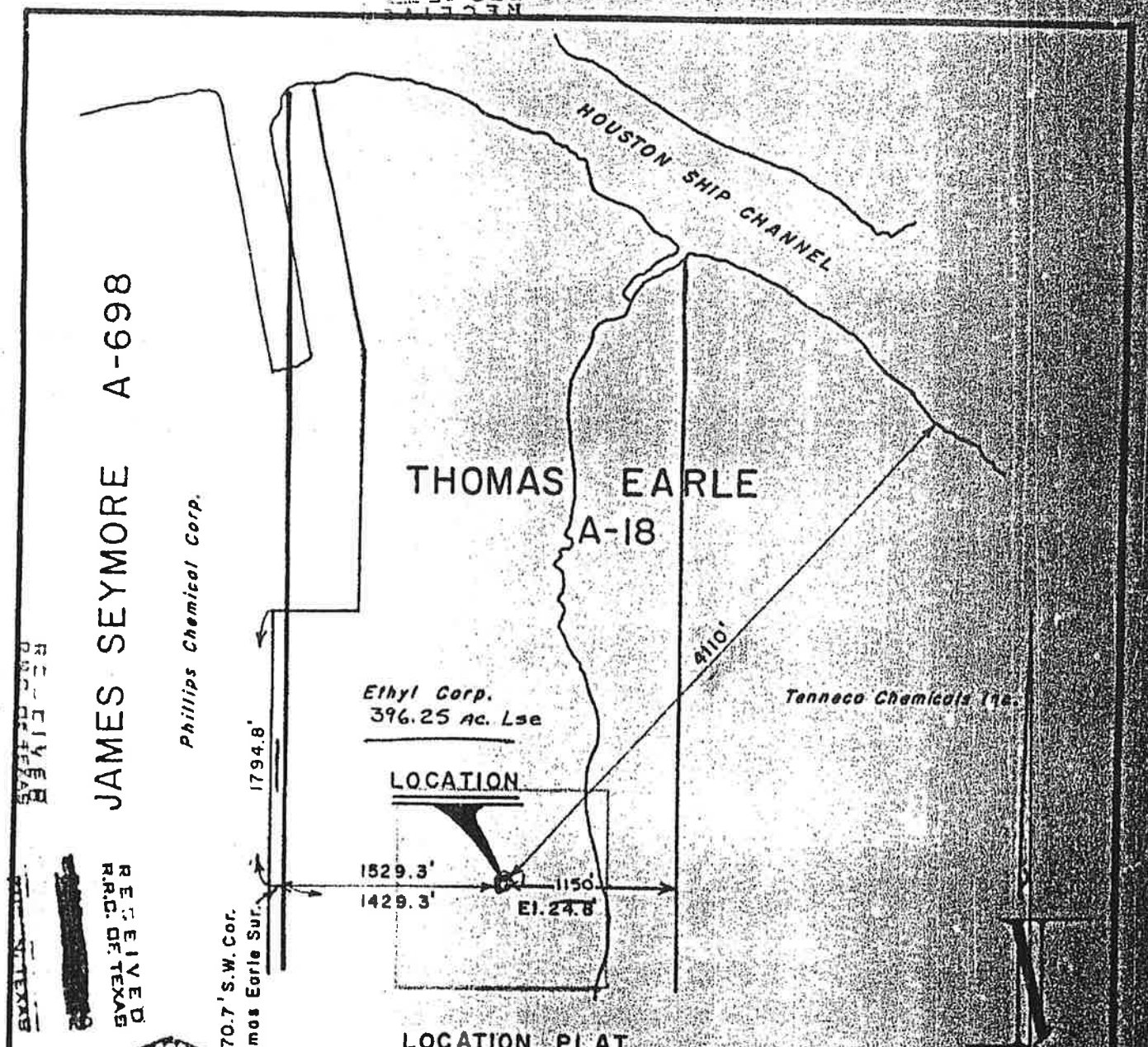
RECEIVED R.R.C. OF TEXAS FEB 28 1972 AUSTIN, TEXAS

2½ Miles W-S.W. of Renee Field

-OVER-

13

RECEIVED
R.R.C. OF TEXAS
FEB 18 1972
O.G.
HOUSTON, TEXAS



RECEIVED
R.R.C. OF TEXAS

RECEIVED
R.R.C. OF TEXAS

FEB
HOUSTON, TEXAS

STATE OF TEXAS
CHARLES M. AMOS, JR.
590
REGISTERED
SURVEYOR

LOCATION PLAT

ETHYL CORPORATION
FEE NO. 1

THOMAS EARLE, SUR. A - 18
HARRIS CO., TEX.
Scale 1" = 1000' February 16, 1972

SURVEY BY:
Gaylord Stickle Co. & Associates, Inc.
503 First City National Bank Bldg.
Houston, Texas 77002
Ph. 223-8123

I, Charles M. Amos, Jr., a Registered Public Surveyor, do hereby certify that the Well Location as shown hereon is true & correct.

Charles M. Amos Jr.
REGISTERED PUBLIC SURVEYOR NO. 590

201-30195

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PI/Dwights PLUS Online Scout Ticket

Date: 10/23/2002
Time: 7:33 AM

13

1 ETHYL FEE

State:	TEXAS
County:	HARRIS
Operator:	ETHYL CORPORATION
API:	42201301950000 IC:
Initial Class:	WF
Target Objective:	
Final Well Class:	WF
Status:	D&A-G
Field:	WILDCAT
Permit:	on FEB 13, 1972
First Report Date:	APR 15, 1972
Projected TD:	8500 Formation:
Hole Direction:	VERTICAL

Location

NS EW Footage:	12200 FS 1429 FW
Dist, Abs, Survey:	RR DISTRICT 03 18 THOMAS EARLE
Blk, Lge, Lot, Labor:	
Township, Dir, Sect:	
Surface remark:	
Lat/Long:	29.7319600/ -95.1691300 TB
PBHL:	
Dist, Abs, Survey:	RR DISTRICT 03
Blk, Lge, Lot, Labor:	
Township, Dir, Sect:	
	From Surface: TVD:
PBHL Remark:	
ABHL:	
Dist, Abs, Survey:	RR DISTRICT 03
Blk, Lge, Lot, Labor:	
Township, Dir, Sect:	
ABHL:	From Surface: TVD:
ABHL Remark:	

Dates and Depths

Spud:	FEB 23, 1972 Spud Date Code:
TD:	8509 on
LTD:	

```
          PlugBack Depth:
               Completed:   MAR 21, 1972
          Formation @ TD:   653VKBG   Name: VICKSBURG
          Ref. Elevation:       54 DF
           KB. Elevation:
      Ground Elevation:         25 GR
             Contractor:    BAY CITY DRILLING COMPANY INCORPORATED
      Rig Release Date:             Rig #

PD #001
          Top Formation:    VICKSBURG
         Base Formation:    VICKSBURG
                    Oil:                                Condst:
                    Gas:                UG               Water: 18    BBL
               Interval:     8230 - 8235                Method: FLOWING
      Duration of Test:          Hours                   Choke:
                    Oil:    Gravity:                       GOR:
           Prod Method:     PERF
                  Water:
                           Type:   SWTR    Salinity:          Temp:
          Perforations:    653VKBG        VICKSBURG
         Perf Interval:      8230 - 8235  Shots/Ft:
  Remarks on PT Test 001   INJECTED NITROGEN INTO HOLE, KO & FLWD GAS & SWTR

Casing, Liner, Tubing
                  Casing        16 IN @     80 w/      sx
                  Casing     9 5/8 IN @   3000 w/      sx
                  Casing     5 1/2 IN @   8429 w/      sx

Drilling Journal
            Lease Acres:    396

Formations and Logs
                  Log # 1  ILSF @     0 - 8509
                  Log # 2  DN   @     0 - 8509
                  Log # 3  NE   @     0 - 8509

Operator Address
        Street or PO Box:


                    City:
              State, Zip:
                 Country:
                   Phone:                          Fax:
                  E-Mail:
              Agent Name:                   Agent Code:
             Agent Remark:
```

Schlumberger

ISF/SONIC

Synergetic Combination Tool

COUNTY HARRIS
FIELD or LOCATION WILDCAT
WELL ETHYL FEE # 1
COMPANY ETHYL CORP.

COMPANY ETHYL CORP.

WELL ETHYL FEE # 1

FIELD WILDCAT

COUNTY HARRIS STATE TEXAS

LOCATION APPROX. 11,400' FNSL, 1150' FEWL OF THOS. EARLE, A-18, HARRIS CO., TEXAS.

Other Services: FDC-CNL/GR

Permanent Datum: GROUND LEVEL, Elev. 38.00
Log Measured From K.B. 16.5 Ft. Above Perm. Datum
Drilling Measured From K.B.

Elev.: K.B. 54.50
D.F. --
G.L. 38.00

Date	3-5-72			
Run No.	ONE			
Depth—Driller	8509			
Depth—Logger	8507			
Btm. Log Interval	8500			
Top Log Interval	3210			
Casing—Driller	10-3/4@3210	@	@	@
Casing—Logger	3210			
Bit Size	9-7/8			
Type Fluid in Hole	LO PH			
Dens. / Visc.	12.9 / 42			
pH / Fluid Loss	9.0 / 4.4 ml	ml	ml	ml
Source of Sample	PIT			
R_m @ Meas. Temp.	1.20 @ 50 °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	0.91 @ 50 °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	1.75 @ 50 °F	@ °F	@ °F	@ °F
Source: R_{mf} / R_{mc}	M. / C.			
R_m @ BHT	0.34 @ 182 °F	@ °F	@ °F	@ °F
Time Since Circ.	4 HOURS			
Max. Rec. Temp.	182°F	°F	°F	°F
Equip. / Location	7028 / VICT.			
Recorded By	BRADFORD			
Witnessed By	MESSRS. FUNK, GRAY, APPLEGATE			

The well name, location and borehole reference data were furnished by the customer.

HOLD HERE

Date

6WQ-S
OCT 2 2000

HARRIS	TEXAS GULF COAST	WILDCAT	WF

Well: ETHYL CORP. Result: D&A
Loc'n: 1 Ethyl "Fee" (API 42-201-30195)

(S/3S-39E-2) 1½ mi N Pasadena, 39c-ac lse, Thomas Earle Sur, A-18, 1150' FEL lse, 4110' SW (@RA) of Houston Ship Channel; 1429' FWL & sec: 12,200' FSL Sur, approx 2-1/3 mi SW Renee Fld.

Spud: 2-23-72 Comp: 3-21-72 Elev: 25' Grd TD: 8509' C: Bay City Drlg. Co.
Casing: 16" @ 80'; 9 5/8" @ 3000'; 5½" @ 8479'.
Comp Info: drld to 8509', ran ISF, FD & GRN; took SDWL Cores (no details on rec); Perf 8230-35' (Vicks), Injected Nitrogen into hole, KO & flwd gas & SW, ARO 1" BSWPH; TD 8509' (Vicks), D&A 3-21-72.

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42201301950000

General Information

1 ETHYL FEE

Data Source:	PI	**Country:**	UNITED STATES
API/UWI:	42201301950000	**IC:**	
State/Prov:	TEXAS	**County:**	HARRIS
Field:	WILDCAT	**Operator:**	ETHYL CORP
Current Status:		**Current Operator:**	ETHYL CORP
Reg. Well Status/Date:			
Initial Class:	NEW FIELD WILDCAT (WF)	**Final Well Class:**	NEW FIELD WILDCAT-DRY (INCLUDING TEMPORARILY ABANDONED WELL) (WF)
Final Status:	D&A-G	**Target Objective:**	
Permit:	on Feb 13, 1972	**Hole Direction:**	VERTICAL
First Report Date:	Apr 15, 1972	**Abandonment Date:**	
Projected TD:	8,500 FT	**Projected Formation:**	
Basin:	GULF COAST BASIN	**Formation at TD:**	VICKSBURG
		PRODFit Form at TD:	
Play Name:	MISC GULF COAST BASIN	**Play Type:**	CONVENTIONAL ONSHORE (CONV ONSHR)

Location

Footage NS EW Origin:	12200 FS 1429 FW TX SUR/POR/GRANT			**Data Source:**	PI
Dist, Abs, Survey:	RR DISTRICT 03 18	EARLE THOMAS			
Blk, Lge, Lot, Labor:					
Township, Section:					
Lat/Long:	+29.7333921 -95.1672740	**Lat/Long Source:**	IH	**Datum:**	NAD27

Location Narrative

Data Source	Type	Remark
PI	DST_TOWN	3.7 MI S CLOVERLEAF, TX
PI	DST_FIELD	1.0 MI W HOUSTON SHIP CHAN FLD(YEGUA)

Dates and Depths

Data Source:	PI		
Spud:	Feb 23, 1972	**Spud Date Code:**	
TD:	8,509 FT	**TD Date:**	
TVD:		**PlugBack Depth:**	
Formation Code TD:	653VKBG	**Formation Name TD:**	VICKSBURG
PRODFit Form Code TD:		**PRODFit Form Name TD:**	
Ref. Elevation:	54 FT DF	**KB. Elevation:**	
Ground Elevation:	25 FT GR	**LTD:**	
Contractor:	BAY CITY DRILLING CO INC		
Completed:	Mar 21, 1972	**Final Drilling:**	
Rig Release Date:		**Rig #:**	
Tool:	ROTARY		

Production Tests

PT: 001

Data Source:	PI		
Top Formation Name:	VICKSBURG	**Top Formation Code:**	653VKBG
PRODFit Top Formation Name:		**PRODFit Top Formation Code:**	

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Base Formation Name:	VICKSBURG	**Base Formation Code:**	653VKBG
PRODFit Base Formation Name:		**PRODFit Base Formation Code:**	
Oil:		**Condensate:**	
Gas:	UG	**Water:**	18 BBL
Interval:	8,230 - 8,235	**Method:**	FLOWING
Duration of Test:	Hours	**Choke:**	
Oil Gravity:		**GOR:**	
Cond Gravity:		**Cond Ratio:**	
Prod Method:	PERF	**Main Fluid Code:**	

Remarks on PT Test: Data Source: PI INJECTED NITROGEN INTO HOLE, KO & FLWD GAS & SWTR

Water Analysis

Test	Data Source	Fluid Type	Salinity	Salinity Type	Company Code	PRODFit Top Form Code	PRODFit Top Form Name	PRODFit Base Form Code	PRODFit Base Form Name
001	PI	SWTR			034633				

Perforations

Test	Data Source	Interval	Count	Type	Status	Shots/ Ft	Prod Method	Top Form Code	Top Form Name
001	PI	8230 - 8235					PERF	653VKBG	VICKSBURG

Casing, Liner, Tubing

Casing	Data Source	Size	Base Depth		Cement	PRODFit Top Formation Code	PRODFit Base Formation Code
CASING	PI	16 IN	80	FT			
CASING	PI	5 1/2 IN	8,429	FT			
CASING	PI	9 5/8 IN	3,000	FT			

Drilling Journal

Lease Acres

Lease Acres: 396 ACRE

Logs

Log	Data Source	Type	Top Depth	Base Depth	Logging Co.	BHT	since circ.
1	PI	ILSF	0	8,509			
2	PI	DN	0	8,509			
3	PI	NE	0	8,509			

Dwights Energydata Narrative

Accumulated through 1997

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MAP ID NO. 14

BUNTE PROD. & J.W. FRAZIER
HOUSTON DEEPWATER LAND CO. 1

NOTICE OF INTENTION TO DRILL OR DEEPEN
(USE FORM 2-A FOR NOTICE OF INTENTION TO PLUG)

(To comply with Rules of the Railroad Commission of Texas governing Oil and Gas Conservation in Texas.)

READ CAREFULLY AND COMPLY FULLY

In order that it may be ascertained whether or not the proposed location covered by this notice conforms to the applicable spacing regulations set down by the Railroad Commission, there are two important footages that must be shown: that is, THE NEAREST DISTANCE OF PROPOSED LOCATION FROM LEASE OR PROPERTY LINE AND DISTANCE OF PROPOSED LOCATION FROM THE NEAREST WELL ON THE SAME LEASE. Do not begin operation on any location before filing Form 1, and do not begin operations on any location not conforming to the spacing rules for such location until you receive written order from the Commission granting permission.

For the purpose of this determination draw on the back side hereof a neat, accurate sketch, made to scale, of this lease, block, or lot locating thereon the proposed site for this location with reference to the two nearest lease lines. Also show the nearest wells on all sides of this location and the distance from the proposed location to these wells. Give names and addresses of adjoining lease or property owners, and designate all property by lease and company name. You may attach a blue print showing this information if you so desire.

DO NOT CONFUSE SURVEY LINES WITH LEASE LINES. IF THE SKETCH OR BLUE PRINT SHOWS ONLY A SECTION, BLOCK OR LOT OUT OF YOUR LEASE, DESIGNATE SAME AS BEING ONLY THAT PART OF THE LEASE.

Where the size of the tract will permit, use scale of one inch equaling 400 feet; if less than 2 acres use scale of one inch equaling 100 feet. DESIGNATE SCALE TO WHICH PLAT OR SKETCH IS DRAWN. ALSO DESIGNATE NORTHERLY DIRECTION ON THE SKETCH OR PLAT.

* * * * *

FILL IN BELOW IN THE SPACES RESERVED FOR THIS PURPOSE THE FOOTAGES ASKED FOR:

Nearest distance from proposed location to property or lease line 469' feet.

Distance from proposed location to nearest drilling, completed, or applied for well on same lease [illegible] feet.

* * * * *

DRAW SKETCH ABOVE REFERRED TO ON REVERSE SIDE HEREOF OR ATTACH TO THIS NOTICE A BLUE PRINT SHOWING THIS INFORMATION.

This notice must be delivered to Deputy Supervisor of your district before drilling, or deepening. He will forward to the Railroad Commission, Austin, Texas.

Date May 13, 1938

Name of company or operator

Name [illegible] PRODUCTION CO & JACK W. FRAZIER

Address 1515 Esperson Bldg.

City HOUSTON, TEXAS

Description of farm or lease:

Name (Fee owner) Houston Deepwater Land Company

Number of Acres 80 Well No. 1

Survey Thos. Earle

Section No. _____ Block No. _____

Located in _____ Field

Harris County

3 Miles NE direction from

Pasadena, Texas nearest postoffice or town.

Rotary or Cable Tools rotary

Date work will start drilling immediately

Depth to which you propose to drill 5500 feet.

Date work will start deepening _____

If Lease Purchased with one or more wells drilled From Whom Purchased

Name _____

Address _____

RECEIVED
HOUSTON
MAY 14 1938
OIL & GAS DIVISION

Deliver to Deputy Supervisor in charge of district in which well is located

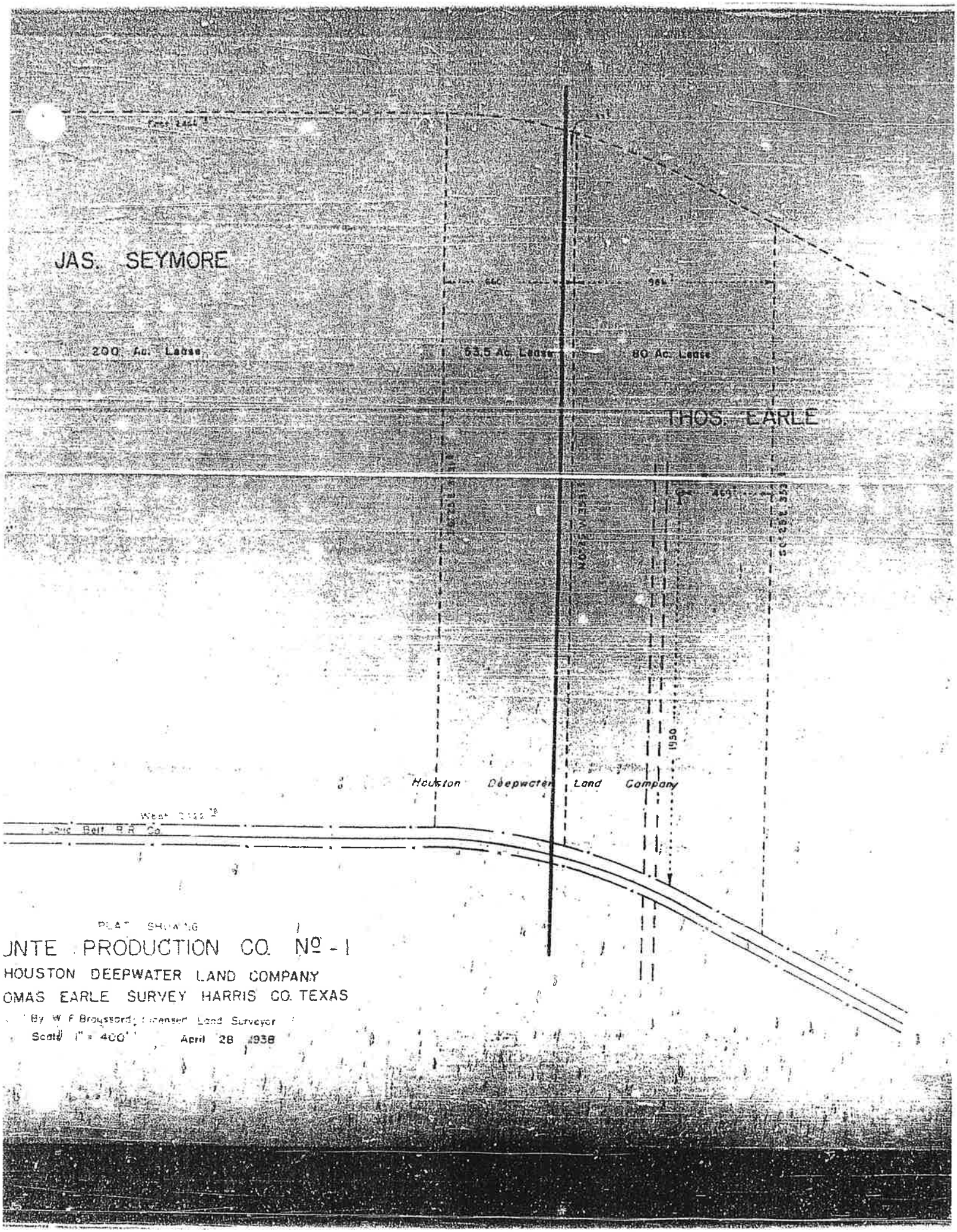
Rule 37. Spacing Rule—(Applies to all fields in the State except where special field rules govern)—No well for oil or gas shall hereafter be drilled nearer than 300 feet to any other completed or drilling well on the same or adjoining tract or farm; and no well shall be drilled nearer than 150 feet to any property line, lease line, or subdivision line; provided that the Commission in order to prevent waste or to prevent the confiscation of property will grant exceptions to permit drilling within shorter distance than above prescribed whenever the Commission shall determine that such exceptions are necessary either to prevent waste or to prevent the confiscation of property. When an exception to such rule is desired, application therefor shall be filed with the Commission fully stating the facts, which application shall be accompanied by a plat drawn to the scale of one inch equaling 400 feet, accurately showing to scale the property on which permit is sought, to drill a well under an exception to this rule, and accurately showing to scale all other completed, drilling and permitted wells on said property; and accurately showing to scale all adjacent surrounding properties and wells. Such application shall be verified by some person acquainted with the facts, stating that all facts therein stated are within the knowledge of the affiant true, and that the accompanying plat is accurately drawn to scale and correctly reflects all pertinent and required data. Such exception shall be granted only after at least ten days notice to all adjacent lessees affected thereby has been given, and after public hearing at which all interested parties may appear and be heard, and after the Commission has determined that an exception to such rule is necessary either to prevent waste or to protect property belonging to applicant from confiscation. All pending applications shall be amended to conform to this rule before being acted upon. Upon similar application and showing the Commission may grant exceptions to the application of this rule in fields where the production is obtained from a formation which is known to be segmented by piercement of intrusive salt plugs.

"In the interest of protecting life and property and for other and just reasonable causes the Commission reserves the right in particular fields to enter special orders increasing the minimum distances provided by this rule.

"No well drilled in violation of this rule without special permit obtained in the manner prescribed in said rule and no well drilled under such a special permit, which does not conform to the terms of such special permit in all respects shall be permitted to produce either oil or gas and any such well so drilled in violation of said rule or in violation of a permit granted under an exception to such rule shall be plugged."

NOTICE: Before sending in this form be sure that you have given all information requested. Much unnecessary correspondence will thus be avoided.

RECEIVED
AUSTIN
MAY 16 1938


JAS. SEYMORE
200 Ac. Lease
63.5 Ac. Lease
80 Ac. Lease
THOS. EARLE
1950
Houston Deepwater Land Company
Belt R.R. Co
PLAT SHOWING
JNTE PRODUCTION CO. Nº - 1
HOUSTON DEEPWATER LAND COMPANY
OMAS EARLE SURVEY HARRIS CO. TEXAS
By W. F. Broussard, Licensed Land Surveyor
Scale 1" = 400'
April 28 1938

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

APPLICATION TO PLUG

and

WELL RECORD

17200

FILE WITH DEPUTY OF DISTRICT IN WHICH WELL IS LOCATED, THREE FULL DAYS PRIOR TO PLUGGING

(IF FILED WITH COMMISSION FIVE FULL DAYS)

Name of Company or Operator JACK H. FRAZIER & WHITE OIL & GAS COMPANY Address 1515 Esperson Bldg.

County Harris Survey Thos. Earle Blk. Sec.

Name of Farm or Lease HOUSTON DEEPWATER LAND CO. No. of Acres 80 Well No. 1

Located 3 Miles NE Direction from Pasadena (Nearest P. O. or Town)

Drilling Commenced 5/22/38, 19__, Drilling Completed 6/7/38, 19__,

Character of Well (Oil, Gas or Dry) DRY Total Depth 8901

Date you wish to Plug About 20th June, 1938

Name of Party Plugging Well Jack H. Frazier Address 1515 Esperson Bldg.

Correspondence regarding this well should be sent to: Name Jack H. Frazier 1515 Esperson Bldg.

Address

CASING RECORD

Put in Well			Pulled Out		Left in Well		Packer or Shoe
	Ft.	In.	Ft.	In.	Ft.	In.	
Size							
10 3/4"	852'						

IF CASING WAS CEMENTED GIVE NUMBER OF SACKS USED ON DIFFERENT STRINGS

Initial Production of Gas: Volume Pressure

Initial Production of Oil: Barrels

Give notice before Plugging to all available Lease Owners, as required by Subdivision (C) Rule (10). When Plugging completed, file final Plugging Report, duly signed and sworn to. All necessary forms will be furnished by Commission or Deputy Supervisors.

NOTE: If no log available, so state and give all information that can be obtained as to total depth, casing record, whether or not cemented, producing formation, water sands, and as near as possible date well was drilled.

General Remarks: WELL DRY AND ABANDONED, NO SHOW OIL OR GAS

RECEIVED HOUSTON JUN 17 1938 OIL & GAS DIVISION

RECEIVED AUSTIN JUN 18 1938 OIL & GAS DIVISION

JACK W. FRAZIER & DUNTE PRODUCTION COMPANY - HOUSTON DEEPWATER LAND COMPANY NO. 1
THOS. EARLE SURVEY, HARRIS COUNTY, TEXAS, ABOUT 3 MILES NORTHEAST OF PASADENA, TEXAS
DRILLING COMMENCED 5-22-38 TOTAL DEPTH 6901 feet
DRILLING COMPLETED 6-7-38 DRY AND ABANDONED

0-50 surface clay
143 sand and gravel
200 sand & gravel
320 shale & shells
375 sand
450 shale
570 sand
750 shale & shells
775 sand
800 shale
852 shale, strks hard shale
10 3/4" surface casing set 852'
980 shale & sand
1050 shale & shells
1045 sand
1070 stky shale
1350 shale & sand
1435 shale
1565 shale & sand
1640 stky shale
1700 sand
[illegible] shale
1747 sand
1750 hard packed sand
2168 shale & shells
2280 stky shale & lime shells
2335 sdy shale & sand
2450 shale, stky strks
2557 sand
2600 stky shale & lime shells
2649 hard sand
2800 stky shale & shells
2840 shale & lime shells
2865 shale & strks sand
2930 shale & shells
3253 shale & lime shells w/strks sd
3388 " " " " " "
Ran Schlumberger 3253'
3410 shale & lime shells

Cored:
3410-3418 shale strks lime, Core 1
3418-3433 shale & strks sand, Core 2
3433-3448 shale, Core 3
3448-3463 shale, w/last 3' hard sdy sh, Core 4
3463-3479 shale, w/1st 4' sand Core 5
3479-3494 shale & strks sand, Core 6
3494-[illegible] shale, bottom 1' sand Core 7
[illegible] bottom 3' sand, [illegible] shale, Core 8
[illegible] shale, Core 9
[illegible] shale, Core 10
Survey [illegible] off
Drilled:
3[illegible]9 shale & strks [illegible] lime
3[illegible]80 shale & lime
3775 shale & stky lime
3834 shale & shells, strks sand
[illegible] shale
[illegible] hard shale & lime strks
4398 shale & strks hard lime

Core: 4398-4411 shale, Core No. 11
4411 - 4426 green shale, sandy streaks Core 11-A
4426 - 4441 green shale, sdy strks, Core 12
4441 - 4456 light green shale & thin brown strks, Core 13
4456 - 4471 green shale, Core 14
4471 - 4487 green shale, Core 15
4487 - 4502 green shale, Core 16
4502 - 4518 green shale & thin strks sand, Core [illegible]
4518 - 4533 green shale, thin strks brown shale Core 18
4533 - 4549 green & brown shale, Core 19
4549 - 4564 brown & grey shale, bottom 3' sand w/saltwater, Core 20
4564 - 4580 3' shale, 5' sand Core 21
4580 - 4595 5' sand, 5' green shale, Core 22
4595 - 4610 green & brown shale, Core 23
4610 - 4625 green & brown shale, Core 24
4625 - 4641 sandy shale & sand, Core 25
4641 - 4656 sandy shale, Core 26
4656 - 4671 brown & green shale, Core 27
[illegible]
4885 shale & thin strks sand
4888 hard lime
4895 shale
4950 shale
5068 hard shale & lime
5100 hard shale & lime
5150 shale
5265 hard shale
5207 hard lime
5251 shale & strks lime
5315 shale
5317 hard lime
5360 shale
5362 lime
5370 hard shale & broken lime
5386 shale
5388 lime
5400 shale
Make Eastman Survey 5440'. 1 3/4" off
5450 shale
Cored:

5450-5464 3' shale 1' sd, 10' shale, [illegible]
5464-5476 6' shale, 3' sd. 1' salty sh and 1' sand, Core 29

5476-5495 1' sand 15' shale, Core 30
[illegible] 4' shale, 2' sd, 9' sdy shale Core [illegible]

[illegible] 7' sdy shale, Core 32
[illegible] sdy shale, Core 33
5540-5555 soft sand, saltwater taste Core [illegible]
5555-5570 soft sand, saltwater taste Core [illegible]
5570-5585 5' soft SW sd, 1' hd sand 9' soft SW sand, Core 36
5585-[illegible] 3' soft SW sand, 2' hd sd, 2' soft [illegible] sand 1' hard sand, 2' soft sd & [illegible] 5' hard blue shale, Core 37
[illegible] 13' blue & brown shale, 3' soft sdy [illegible] shale, SW taste Core 38
5616-5631 soft SW sand w/strks sandy shale Core [illegible]

OIL & GAS DIVISION
OIL & GAS DIVISION

DRILLER'S LOG CONTINUED

5631-5647 1' hard black shale 1' sand, 12' sdy shale, 2' stky shale, Core 40
5647-5662 10' sandy shale 5' shale & lime, Core 41
Started washing and Reaming 5600'
Drilling:
5664-5816 shale, strks hard sand & lime
5895 shale & lime strks, hard sand
5897 hard sand
5955 hard shale & strks hard sand
6047 shale & strks sand
6139 shale & lime strks, sand
6180 hard shale & lime
6220 sand
6250 shale & strks sand
6291 shale & shells
6307 shale, strks hard sand & lime shells
6403 shale, strks hard sand & lime shells
6482 sand thin strks shale
6501 hard shale
6544 hard shale, strks lime
6603 hard shale & lime strks
6658 sand & sandy shale
6668 hard shale
6695 sand & shale
6736 sand & shale
6761 hard sdy shale
6780 sand & shale
6800 shale

Cored
6800-6810 no recovery, Core 42
6810-6823 sand SW Core 43
6823-6841 soft shaley sand & soft salty sand Core 44
6841-6856 1' soft sand, 2' saltwater shale, 1' sdy shale, Core 45
6856-6871 soft white sand, salty core 46
6871-6886 soft water sand, no salty taste Core 47
6886-6901 2' soft sand, 6' soft blue shale, 3' stky shale
Ran schlumber ger to 6901'
Total Depth 6901
Dry and abandoned

I, Jack W. Frazier, being first duly sworn on oath state that I have knowledge of the facts and matter herein set forth and that the same are true and correct.

Jack W. Frazier
Jack W. Frazier

Subscribed and sworn before me this 7th day of June 1956.

Bernie Glass
Notary Public, Harris County, Texas

RECEIVED
JUN 8 1956
RECEIVED
JUN 8 1956

512 457-0038

20021031144001[1]

==========

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PI/Dwights PLUS Online Scout Ticket

Date: 10/31/2002
Time: 2:40 PM

1 JONES T — Houston Deepwater Land Co.

State:	TEXAS
County:	HARRIS
Operator:	FRAZIER JACK W
API:	42201077610000 IC:
Initial Class:	WF
Target Objective:	
Final Well Class:	WF
Status:	D&A
Field:	WILDCAT
Permit:	on JUN 15, 1938
First Report Date:	JUN 15, 1938
Projected TD:	Formation:
Hole Direction:	VERTICAL

Location

NS EW Footage:	11500 FS 500 FW
Dist, Abs, Survey:	RR DISTRICT 03 18 T EARL JR
Blk, Lge, Lot, Labor:	
Township, Dir, Sect:	
Surface remark:	
Lat/Long:	29.7321000/ -95.1716700 TB
PBHL:	
Dist, Abs, Survey:	RR DISTRICT 03
Blk, Lge, Lot, Labor:	
Township, Dir, Sect:	
	From Surface: TVD:
PBHL Remark:	
ABHL:	
Dist, Abs, Survey:	RR DISTRICT 03
Blk, Lge, Lot, Labor:	
Township, Dir, Sect:	
ABHL:	From Surface: TVD:
ABHL Remark:	

Dates and Depths

Received Time Nov. 1. 2:27PM

20021031144001[1]

Spud: MAY 22, 1938 Spud Date Code:
TD: 6904 on
LTD:
PlugBack Depth:
Completed: JUN 06, 1938
Formation @ TD: 000UNKWN Name: UNKNOWN
Ref. Elevation: 43 DF
KB. Elevation:
Ground Elevation: 33 GR
Contractor:
Rig Release Date: Rig #

Casing, Liner, Tubing

Casing 10 3/4 IN @ 850 w/ sx

Drilling Journal

Form	Obs. #	Interval	Type
Sample Show	1	5470 - 5470	WET

Operator Address

Street or PO Box:

City:
State, Zip: ,
Country:
Phone: Fax:
E-Mail:
Agent Name: Agent Code:
Agent Remark:

Received Time Nov. 1. 2:27PM

MAP ID# 14

[illegible]

Location of Well		
Between Shell & Bluestair Refg. on south side of Ship Channel.	COMPANY: JACK FRAZIER WELL: [illegible] JUNE #1 RUN NO.: Composite of runs 1 & 2. FIELD: Deepwater (EC). SURVEY: COUNTY: Harris STATE: Texas FILING No. [illegible]	COUNTY: [illegible] FIELD OR SURVEY: Deepwater (EC). WELL: June #1 COMPANY: Jack Frazier

Elevation:

First Reading		[illegible] ft.
Last Reading		[illegible] ft.
Footage Measured		[illegible] ft.
Casing Shoe Depth	DRILLER	[illegible] ft.
	[illegible]	[illegible] ft.
Bottom Depth	DRILLER	[illegible] ft.
Max. depth reached		[illegible] ft.

DIAMETER OF HOLE	MUD CHARACTERISTICS
from Csg. to 6000 : [illegible] 7/8"	Nature: Fa Sweet
from 6000 to [illegible] : [illegible] 3/4"	Weight: [illegible] 9.8
from to :	Viscosity: [illegible] 28
Bottom Temperature: °F	Resistivity: [illegible] @ [illegible] °F 3.4 @ 80°F

REMARKS

Run 1 made May 27, [illegible]
Run 2 made June 7, [illegible].

DATE June 7, [illegible] OBSERVER [illegible]

SELF-POTENTIAL [illegible] | RESISTIVITY [illegible]

42201077610000

General Information

1 JONES T

Data Source:	PI	**Country:**	UNITED STATES
API/UWI:	42201077610000	**IC:**	
State/Prov:	TEXAS	**County:**	HARRIS
Field:	WILDCAT	**Operator:**	FRAZIER JACK W
Current Status:		**Current Operator:**	FRAZIER JACK W
Reg. Well Status/Date:			
Initial Class:	NEW FIELD WILDCAT (WF)	**Final Well Class:**	NEW FIELD WILDCAT-DRY (INCLUDING TEMPORARILY ABANDONED WELL) (WF)
Final Status:	DRY & ABANDONED	**Target Objective:**	
Permit:	on May 12, 1938	**Hole Direction:**	VERTICAL
First Report Date:	Jun 15, 1938	**Abandonment Date:**	
Projected TD:		**Projected Formation:**	
Basin:	GULF COAST BASIN	**Formation at TD:**	UNKNOWN
		PRODFit Form at TD:	
Play Name:	MISC GULF COAST BASIN	**Play Type:**	CONVENTIONAL ONSHORE (CONV ONSHR)

Location

Footage NS EW Origin:	11500 FS 500 FW TX SUR/POR/GRANT			**Data Source:**	PI
Dist, Abs, Survey:	RR DISTRICT 03 18	EARLE THOMAS			
Blk, Lge, Lot, Labor:					
Township, Section:					
Lat/Long:	+29.8227785 -95.2160082	**Lat/Long Source:**	IH	**Datum:**	NAD27

Dates and Depths

Data Source:	PI		
Spud:	May 22, 1938	**Spud Date Code:**	
TD:	6,904 FT	**TD Date:**	
TVD:		**PlugBack Depth:**	
Formation Code TD:	000UNKWN	**Formation Name TD:**	UNKNOWN
PRODFit Form Code TD:		**PRODFit Form Name TD:**	
Ref. Elevation:	43 FT DF	**KB. Elevation:**	
Ground Elevation:	33 FT GR	**LTD:**	
Contractor:			
Completed:	Jun 06, 1938	**Final Drilling:**	
Rig Release Date:		**Rig #:**	
Tool:			

Casing, Liner, Tubing

Casing	Data Source	Size	Base Depth	Cement	PRODFit Top Formation Code	PRODFit Base Formation Code
CASING	PI	10 3/4 IN	850 FT			

Drilling Journal

Show

Obs	Data Source	Top Depth	Base Depth	Type	Top Form	Base Form	Sample
1	PI	5,470	5,470	WET			

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Dwights Energydata Narrative

Accumulated through 1997

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MAP ID NO. 15

TRADERS OIL CO.
HOUSTON DEEPWATER LAND CO. 1

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

NOTICE OF INTENTION TO DRILL OR DEEPEN

IS THIS AN APPLICATION TO DRILL OR DEEPEN? DRILL ?

FILE IN DUPLICATE WITH DEPUTY SUPERVISOR OF DISTRICT IN WHICH WELL IS LOCATED

READ CAREFULLY AND COMPLY FULLY

In order that it may be ascertained whether or not the proposed location covered by this notice conforms to the applicable spacing regulations set down by the Railroad Commission, there are two important footages that must be shown; that is, THE NEAREST DISTANCE OF PROPOSED LOCATION FROM LEASE OR PROPERTY LINE AND DISTANCE OF PROPOSED LOCATION FROM THE NEAREST WELL ON THE SAME LEASE. Do not begin operation on any location before filing Form 1, and do not begin operations on any location not conforming to the spacing rules for such location until you receive written order from the Commission granting permission.

For the purpose of this determination draw on the back side hereof a neat, accurate sketch, made to scale, of this lease, block, or lot locating thereon the proposed site for this location with reference to the two nearest lease lines. Also show the nearest wells on all sides of this location and the distance from the proposed location to those wells. Give names and addresses of adjoining lease or property owners, and designate all property by lease and company name. You may attach a blue print showing this information if you so desire.

DO NOT CONFUSE SURVEY LINES WITH LEASE LINES. IF THE SKETCH OR BLUE PRINT SHOWS ONLY A SECTION, BLOCK OR LOT OUT OF YOUR LEASE, DESIGNATE SAME AS BEING ONLY THAT PART OF THE LEASE.

Where the size of the tract will permit, use scale of one inch equaling 400 feet; if less than 2 acres use scale of one inch equaling 100 feet. DESIGNATE SCALE TO WHICH PLAT OR SKETCH IS DRAWN. ALSO DESIGNATE NORTHERLY DIRECTION ON THE SKETCH OR PLAT.

. . . . . .

FILL IN BELOW IN THE SPACES RESERVED FOR THIS PURPOSE THE FOOTAGES ASKED FOR:

Nearest distance from proposed location to property or lease line 2254.3 feet South of the North line of the lease.

Distance from proposed location to nearest drilling completed or applied for well on same lease -.- feet

This notice must be delivered to Deputy Supervisor of your district before drilling, or deepening, five full days prior to spudding in.

Date July 30, 1945

Name of company or operator

Name Traders Oil Company of Houston

Address 2111 Esperson Building

City Houston 2, Texas.

Description of farm or lease:

Name (Fee owner) Deepwater Land Company

Number of Acres 1900 Well No. 1

Number of wells on lease None

Survey James Raymour

Elevation 50 (Approx.) Feet (Above Sea Level)

Section No. _____ Block No. _____

Located in Wildcat Field (If Wildcat state above)

Harris County

Two (2) Miles East direction from

Pasadena nearest postoffice or town.

Rotary or Cable Tools Rotary

Date work will start drilling Immediately

Depth to which you propose to drill 6500 feet.

Date work will start deepening ----

If Lease Purchased with one or more wells drilled From Whom Purchased?

Name _____

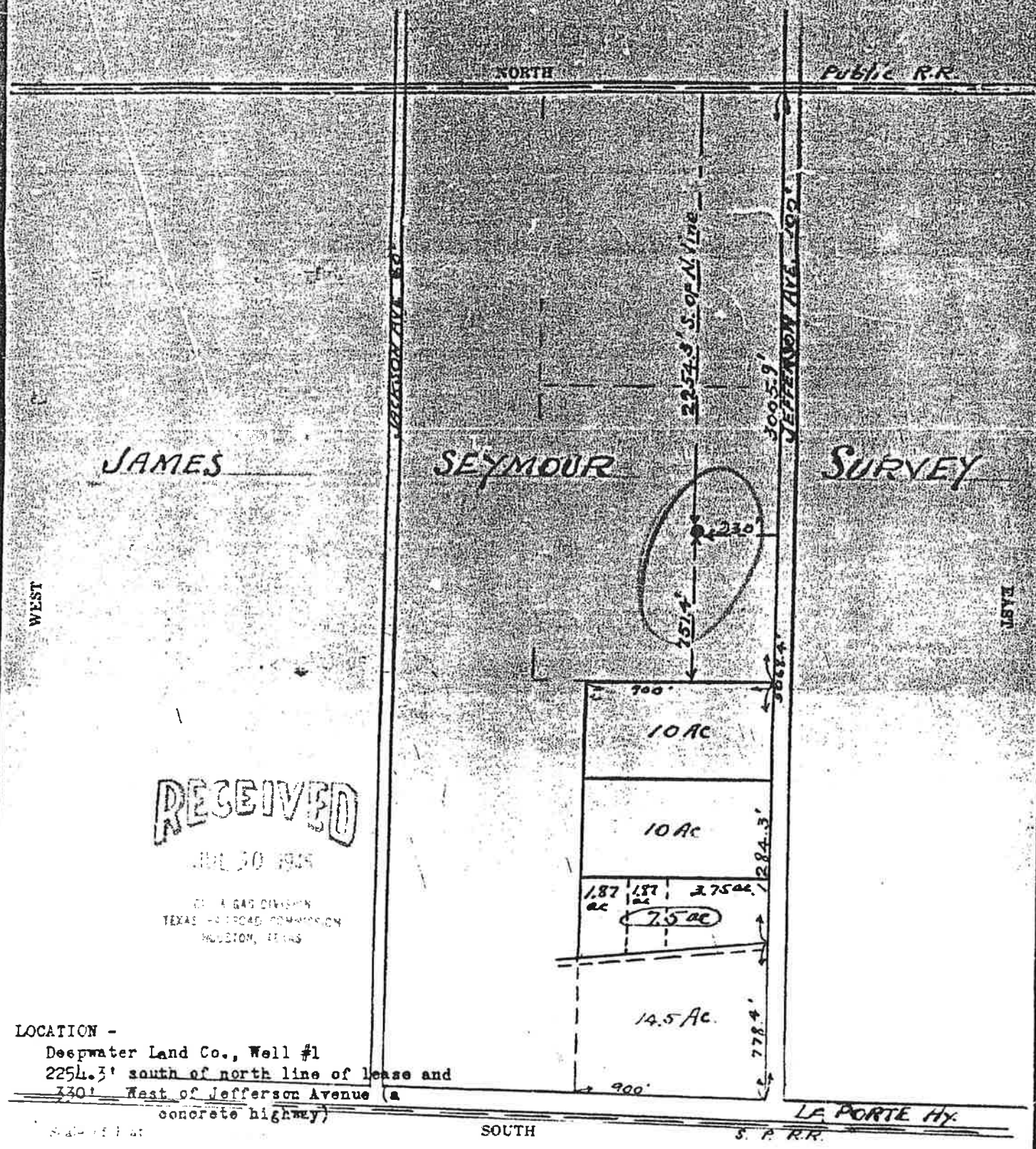
Address _____

15

RECEIVED
JUL 30 1945
Railroad Commission of Texas
OIL & GAS DIVISION
AUSTIN, TEXAS

DRAW SKETCH IN SPACE BELOW OR FILE CERTIFIED LEASE PLAT

(Be sure that all required locations, footage, distances, and scales are given)



RECEIVED
JUL 30 1965
OIL & GAS DIVISION
TEXAS RAILROAD COMMISSION
HOUSTON, TEXAS

LOCATION -
Deepwater Land Co., Well #1
2254.3' south of north line of lease and
330' West of Jefferson Avenue (a
concrete highway)

Scale of Plat

I, JOHN A. DEERING, being first duly sworn on oath, state that I have knowledge of the facts set forth above and that the same are true and correct.

Name John A. Deering, Title PRESIDENT

Subscribed and sworn to before me this 30th day of July, 1965

Dera L. Stanford
DERA L. STANFORD

Correspondence regarding this well should be addressed to:

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

27667

APPLICATION TO PLUG AND WELL RECORD

FILE IN DUPLICATE WITH DEPUTY SUPERVISOR OF DISTRICT IN WHICH WELL IS LOCATED FIVE FULL DAYS PRIOR TO PLUGGING

Name of Company or Operator Traders Oil Company of Houston Address 821 N. Esperson Bldg.

County Harris Survey James Seymour Blk. -.- Sec. -.-

Name of Lease Deepwater Land Company No. of Acres 1900 Well No. 1

Located 2 Miles East Direction from Pasadena, Texas (Nearest P. O. or Town)

Name of Field in which well is located Wildcat

Form 1, "Notice of Intention to Drill," was filed in name of Traders Oil Company of Houston

Drilling Commenced 8-9, 19 45, Drilling Completed 9-18-, 1945

Has this well ever produced oil? No or Gas? no

Character of Well (Oil, Gas or Dry) Dry Total Depth 7338'

Date you wish to Plug August 2, 19 46

Name of Party Plugging Well Anderson & Campbell Address Box 1803, Rt. 17, Houston

Correspondence regarding this well should be sent to: Name Traders Oil Company of Houston

Address 821 N. Esperson Bldg., Houston 2, Texas.

CASING RECORD

SIZE	PUT IN WELL		PULLED OUT		LEFT IN WELL		PACKERS AND SHOES
	Ft.	In.	Ft.	In.	Ft.	In.	
10 3/4	820	(cemented with 300 sacks Lone Star cement)					

IF CASING WAS CEMENTED GIVE NUMBER OF SACKS USED ON DIFFERENT STRINGS

Initial Production of Gas: Volume -.- MCF 24 hrs. Pressure -.- lbs. per square inch

Initial Production of Oil: Barrels -.-

Give notice before Plugging to all available Lease Owners, as required by Rule (10). When Plugging completed, file final Plugging Report, duly signed and sworn to. All necessary forms will be furnished by the Deputy Supervisor of district in which well is located.

NOTE: If no log available, so state and give all information that can be obtained as to total depth, casing record, whether or not cemented, producing formation, water sands, and as near as possible date well was drilled.

General Remarks:

RECEIVED
JAN 1 0 1947
TEXAS RAILROAD COMMISSION
OIL & GAS DIVISION
AUSTIN, TEXAS

RECEIVED
JUL 2 1946
RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION
HOUSTON, TEXAS

Method of shutting off water cement plug and heavy mud Is water completely shut off? yes

Amount of water with oil ---- per cent

I, John A. Deering being first duly sworn on oath state that I have knowledge of the facts and matter herein set forth and that the same are true and correct.

President of Company

Subscribed and sworn to before me this 23rd day of July, 1946

Lera L. Stanford
Notary Public

OWNER: Traders Oil Company
LEASE: Desputar-Land Company
COUNTY: Harris
STATE: Texas
SURVEY: James Seymour

WELL No. 1 (wildcat)
COMMENCED RIGGING UP: 8-1-45
COMMENCED DRILLING: 8-9-1945
COMPLETED DRILLING: 9-13-45

LOCATION: 2254'.3 South of North line of lease and 330' West of Jefferson Avenue (a concrete highway)

CASING SET:
820 ft. 10 3/4" casing, cemented with 300 sacks Lone Star cement

SCREEN SET: none

PERFORATED:

0	128	Surface clay and sand
128	192	Sand
192	324	Surface clay and sand
324	486	sand st. clay
486	500	sand st. clay
500	700	sand, shale shells
700	815	sand st. shale
815	880	shale
880	905	Shale st.
905	965	sand
965	1059	sandy shale
1059	1110	Shale st. sand
1110	1171	sand, shells, boulders
1171	1229	sand - shale
1229	1340	shale
1340	1410	sand, shels shale
1410	1450	sand, shelley shale
1450	1495	sand and bldrs.
1495	1545	shale and shells
1545	1609	sand and gravel
1609	1651	sticky shale
1651	1720	sand and stks shale
1720	1983	sand shells and st sticking shale
1983	2151	hard sandy shale and shells
2151	2160	hard sandy shale and shell
2160	2209	shale and shells
2209	2351	sandy shale and shells (stky strks)
251	2386	sticky shale
2386	2452	sandy shale st. streaks
2452	2616	sandy shale st. streaks
2616	2666	soft shale hard
2666	2675	soft shale and sand
2675	2720	shale, shell and lime
2720	2815	sand and bldrs
2815	2866	hd shale and shells
2866	2675	soft shale and sand
2675	2720	shale shells and lime
2720	2815	sand and bldrs
2815	2866	hard shale and shells
2866	2982	hard shale and lime st. streaks
2982	3003	hard shale and lime st. streaks
3003	3070	broken shale and lime
3070	3160	broekn shele and lime
3160	3181	stick shale
3181	3202	sticky shale
3202	3225	sand
3225	3282	shale lime st. hard sand
3282	3327	hard sandy shale
3327	3352	hard sandy shell
3352	3377	broken shale and sand lime shells
3377	3411	shale st. streaks

3411	3425	Shale sticky strks.
3426	3429	Hard shale and lime
3429	3565	Hard shale and lime
3565	3630	Hard shale and lime streaks
3630	3739	Hard shale and lime
3739	3753	Hard shale and lime
3753	3767	Hard lime
3767	3849	shale and lime
3849	3901	Hard shale lime
3901	3980	Sandy shale
3980	3990	Lime
3990	4012	Sand and shale
4012	4038	Hard lime
4038	4062	Shale
4062	4086	Sand, hard shale and lime
4086	4157	Hard shale and lime
4157	4213	Hard shale and lime
4213	4231	Hard shale and lime
4231	4276	Hard shale and lime
4276	4325	Hard shale - lime
4325	4383	Hard shale - lime
4383	4429	Hard shale with sand streaks
4429	4471	Hard shale and shells
4471	4564	Hard shale and lime w/strks sandy shale
4564	4588	Hards shale
4588	4593	sand
4593	4656	sand and shale
4656	4716	Hard shale
4716	4816	hard shale
4816	4826	hard shale
4826	4830	shaley sand
4830	4877	sticky shale
4877	4892	Hard shale
4892	4914	Hard shale lime
4914	4928	Sandy shale
4928	4937	Hard shale
4937	4940	Hard shale
4940	4956	Hard sandy shale - shells
4956	4966	Hard
4966	5038	Sandy shale - lime shells
5038	5154	Hard sandy shale
5154	5174	Shale and lime
5174	5180	Hard sandy lime
5180	5240	Sandy shale and lime
5240	5275	Hard shale
5275	5301	Hard shale - lime
5301	5373	Hard shale
5373	5398	hard shale and lime
5398	5414	hard lime
5414	5490	Hard shale and lime
5490	5495	Broken sandy shale
5495	5496	Hard lime
5496	5497-6"	Hard sandy lime
5497-6"	5498-6"	Hard sandy lime
5498-6"	5499-8	Hard sandy lime
5499-6"	5508	Sandy shale
5508	5520	Shale and st. hard lime
5520	5526	Hard shale lime st.
5526	5540	Hard sandy shale
5565	5565	Hard shale lime shells sand st.
5565	5569	Had shale lime
5569	5573	Hard sand
5573	5591	sand
5591	5599	sand
5599	5607	sand
5607	5614	sand
5614	5628	hard shale - lime shells, sand st.
5628	5642	hard shale and lime
5642	5679	hard shale and lime with sticky strks

5670	5675	Sandy shale
5675	5682	Blue sandy shale
5682	5699	hard shale and lime
5699	5703	Sdy shale
5703	5757	Sand
5757	5782	Hard shale and lime
5782	5786	Sand
5786	5790	sand
5790	5812	sandy shale - lime
5812	5816	sdy shale and lime
5816	5845	firm sand (sdy. hard)
5845	5868	sticky shale and lime
5868	5908	sand
5908	5942	hard sand shale and lime
5942	5952	Sandy shale
5952	5958	Stiely. shale and lime
5958	5964	Hard lime
5964	5999	broken shale , sand and lime
5999	6035	hard sdy shale and lime
6035	6092	Shale st. hard sand
6092	6110	Sandy shale
6110	6126	sand
6126	6146	Sandy shale
6146	6160	Hard sand shale and lime
6160	6208	shale, hard st., and st of lime
6208	6218	Shale, w/ stk lime and sand
6218	6230	hard lime
6230	6247	Shale and lime
6247	6253	Sand
6253	6260	Sand
6260	6261	sand
6261	6265	green sandy shale
6265	6271	green sandy shale
6271	6285	sandy shale
6285	6288	sandy shale
6288	6299	hard lime
6299	6302	Hd sandy shale
6302	6342	shaley sand & lime
6342	6376	sand and shale streaks
6376	6381	sticky shale and lime
6381	6423	hard shale and calcite
6423	6454	hard shale - st lime
6454	6461	Hd. shale w/ strks lime
6461	6465	hard lime
6465	6487	Stiely shale and lime
6487	6546	Stiely shale and lime
6546	6550	Stiely shale
6550	6560	Sdy shale
6560	6566	Sand
6566	6581	Sand cored
6581	6582	Stiely shale
6582	6586	Hard sandy shale
6586	6594	sandy shale
6594	6602	sandy shale
6602	6609	Hard sandy shale
6609	6613	Hd sdy shale
6613	6615	stky shale
6615	6633	
6633	6643	Sand
6643	6682	Hard sand
6682	6686	Hd sand
6686	6696	stky shale
6696	6712	hd shale and lime w/stky stks
6712	6722	shale and lime
6722	6742	shale and lime
6742	6788	shale and lime
6788	6842	hard shale and sand, lime strks
6842	6848	sand
6848	6868	sandy shale
6868	6875	calcite
6875	6909	hard shale lime

6509	6930	Hard shale and lime
6930	6939	Shaley sand
6939	6975	Sdy shale
6975	6998	shaley sand
6998	7046	sandy shale
7046	7054	Hard, shale and lime
7054	7093	Sandy shale
7093	7105	hard shale and lime
7105	7124	hard shale and lime
7124	7135	sand
7135	7168	sandy shale
7168	7183	hard shale
7183	7192	sandy shale
7192	7214	sandy shale
7214	7219	Sand
7219	7226	shale (stky)
7226	7257	Sandy shale
7257	7281	Hard shale and lime
7281	7301	sandy shale
7301	7311	hard shale
7311	7338	sandy shale

T. D. 7338

OIL AND GAS DIVISION

PLUGGING RECORD

FILE IN DUPLICATE WITH DEPUTY SUPERVISOR OF DISTRICT IN WHICH WELL IS LOCATED

Company Traders Oil Company of Houston Address 821 Esperson Bldg.

Sec. No. -.- Blk. No. -.- Survey Jas. Seymour County Harris

Well No. 1 Name of Lease Deepwater Land Co. No. of Acres 1,900

Name of Field in which well is located Hildebrandt Date well was plugged November, 1946

Character of Well at the time of completion: Oil 0 bbls. (Initial Production) Gas 0 Cu. ft. (Initial Production) Dry Yes

Amount well producing when plugged: Oil -.- bbls; Gas -.- Cu. ft.; Water - bbls.

Total Depth 7,330 feet. Top of each producing sand -.- feet.

Was the well filled with mud-laden fluid, according to regulations of the Railroad Commission? Yes

How was mud applied? Pump pressure

Were plugs used? yes If so, show all shoulders left for casing, depth of each, and size of casing, size and kind of plugs used, and depths placed. Also amount of cement and rock. 839' - 10" casing, cement plug.

Was well shot? no

Show depth found and thickness of all water, oil and gas formations Fresh water strata to approx. 1800'

Manner of confining all oil, gas and water to strata: Heavy drill mud - plug at bottom casing

The names of adjacent lease, royalty and landowners with their addresses in each instance as follows:

None

Was notice given before plugging to all available adjacent lease owners as required by Rule 10? None

I, J. D. Lamblin, being first duly sworn on oath, state that I have knowledge of the facts and matter herein set forth and that the same are true and correct.

Name J. D. Lamblin Title Superintendent

Subscribed and sworn to before me this 8th day of January, 19[illegible]

Dera L. Stanford

Notary Public Harris County, Texas.

Correspondence regarding this well should be addressed to:

Name Traders Oil Company of Houston Address 821 Esperson Bldg., Houston 2

ET229-749—10M

MAP ID# 15

SCHLUMBERGER

Location of Well		
	COMPANY: TRADERS OIL COMPANY	COUNTY:
	WELL: [illegible] LAND CO. #1	FIELD OR SURVEY:
	RUN NO.: COMPOSITE 1A2	WELL:
	FIELD: WILDCAT	COMPANY:
	SURVEY:	
	COUNTY: HARRIS	
	STATE: TEXAS	
Elevation: D.F. 45' or G.L.	FILING No.	

First Reading		7343	ft.
Last Reading		6649	ft.
Footage Measured			ft.
Casing Shoe Depth:	SCHLUMBERGER	839	ft.
	DRILLER	823	ft.
Max. depth reached		7343	ft.
Bottom Depth:	DRILLER	7343	ft.

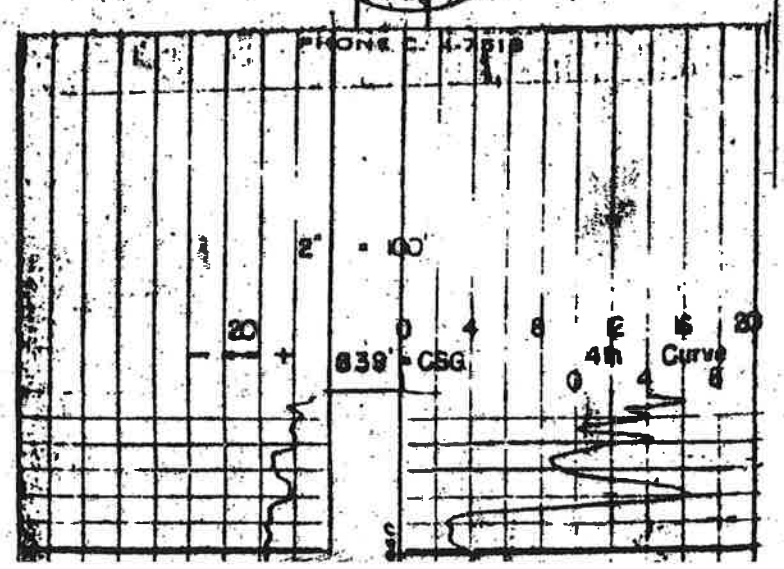
Depth Datum: DEPTH FROM DRIVE BUSHING 13.40' ABOVE BRADENHEAD

DIAMETER OF HOLE	MUD DATA	SPACINGS
from CSG to TD 9-7/8	Nature: NATURAL	AM 16"
from to	Weight: 9.9# 9.9#	AM 63"
from to	Viscosity 40"	OA 24"
Bottom Temperature °F.	Resistivity: 2.5 @ 85 °F.	

REMARKS

DATE SEPT. 7, 1949 OBSERVERS HUNTON & KELSO

SELF-POTENTIAL millivolts RESISTIVITY ohms. m²/m.



ARTIFICIAL PENETRATION NO. 30
MERISOL, USA
DISPOSAL WELL WDW-147

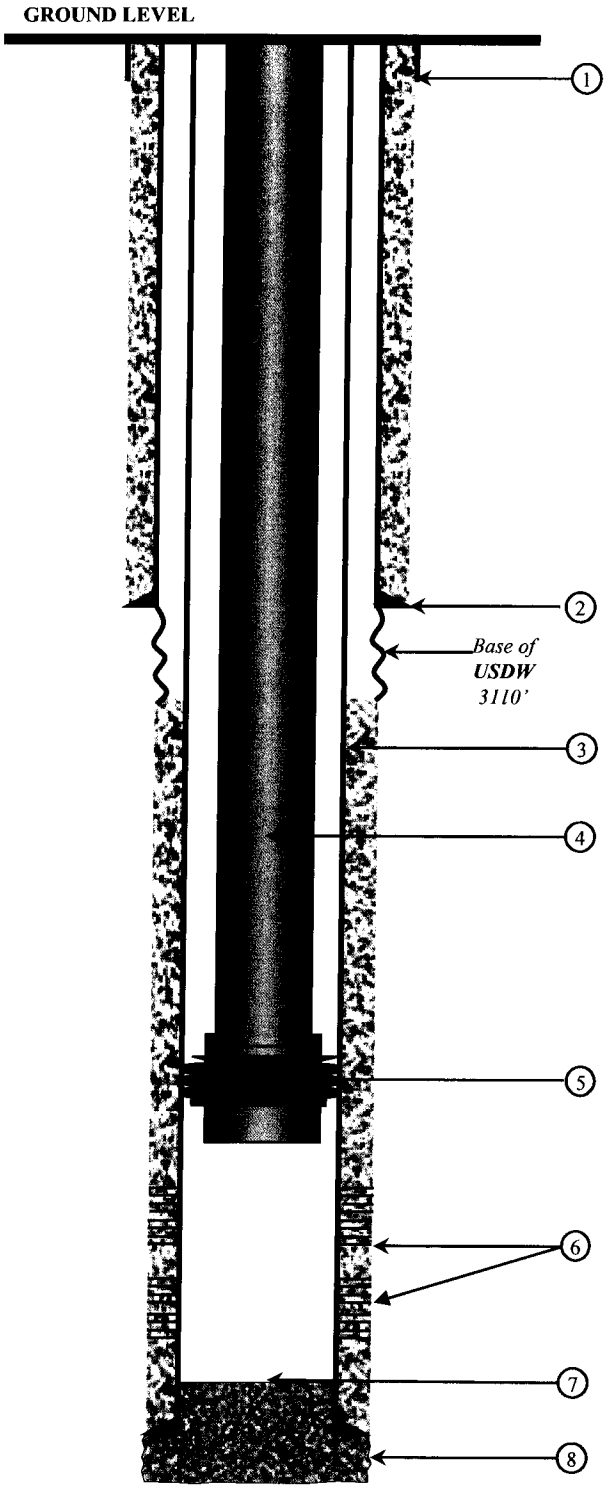
MERISOL
Greens Bayou, Texas
Plant Well No. 1 (WDW-147)
Well Schematic
Status: Active

All depths reference RKB

KB = 41' above sea level datum

Ground = 25' above sea level datum

KB to Ground = 16'



COMPLETION DETAIL

1. Conductor Pipe: 20", ½" wall. Driven from surface to 83'.
2. Surface Casing: 10-3/4", 40.5-ppf, K-55, ST&C. Set from surface to 2728' in a 15" hole. Cemented to surface with 1100 sxs Lite-Wate lead and followed with 600 sxs Class H tail.
3. Protection Casing: 7", 23.0-ppf, K-55, ST&C, from surface to 5400', and 7", 26-ppf, K-55, ST&C, from 5400' to 7290', set in a 9-7/8" hole. Cemented with 520 sxs Lite-Wate lead and followed with 300 sxs Class H tail. Top of Cement at 3,308 feet.
4. Injection Tubing: 4-1/2", 11.6-ppf, K-55, from surface to 6491'. Cross Over, 4-1/2" 8rd, box by 3-1/2", EUE, 8rd pin to Baker Model F, 4" O.D. seal Assembly and Locator. Minimum ID through seal assembly is 2.985".
5. Injection Packer: 6481', Baker Model F.
6. Perforated Completion: perforated with 4 shots per foot from:
   - 6620' to 6680'
   - 6700' to 6780'
7. Fill tagged: 6738' (RTS: 8/20/05)
8. Drilled to a total depth of 7336'.
7. Base of USDW: 3110'.
8. Current Completion 6620' to 6780' (perforated)
9. Regulatory Intervals:
   - Confining Zone: 4760' to 5135' (Anahuac Fm.)
   - Injection Zone: 5135' to 7410' (Frio & Vicksburg Fms.)
   - Injection Interval: 6564' to 6816' (Frio E&F Sand)
   - Injection Interval: 6826' to 6980' (Frio A&B Sand)
   - Injection Interval: 7097' to 7286' (Frio C Sand)

   Depths referenced to ISF/Sonic Log dated 08/27/78.

FIGURE VI-1
Wellbore Diagram Plant Well No. 1 (WDW-147)

Sandia Technologies, LLC
6731 Theall Road Houston, TX 77066 USA
Tel: (832) 286-0471 Fax: (832) 286-0477

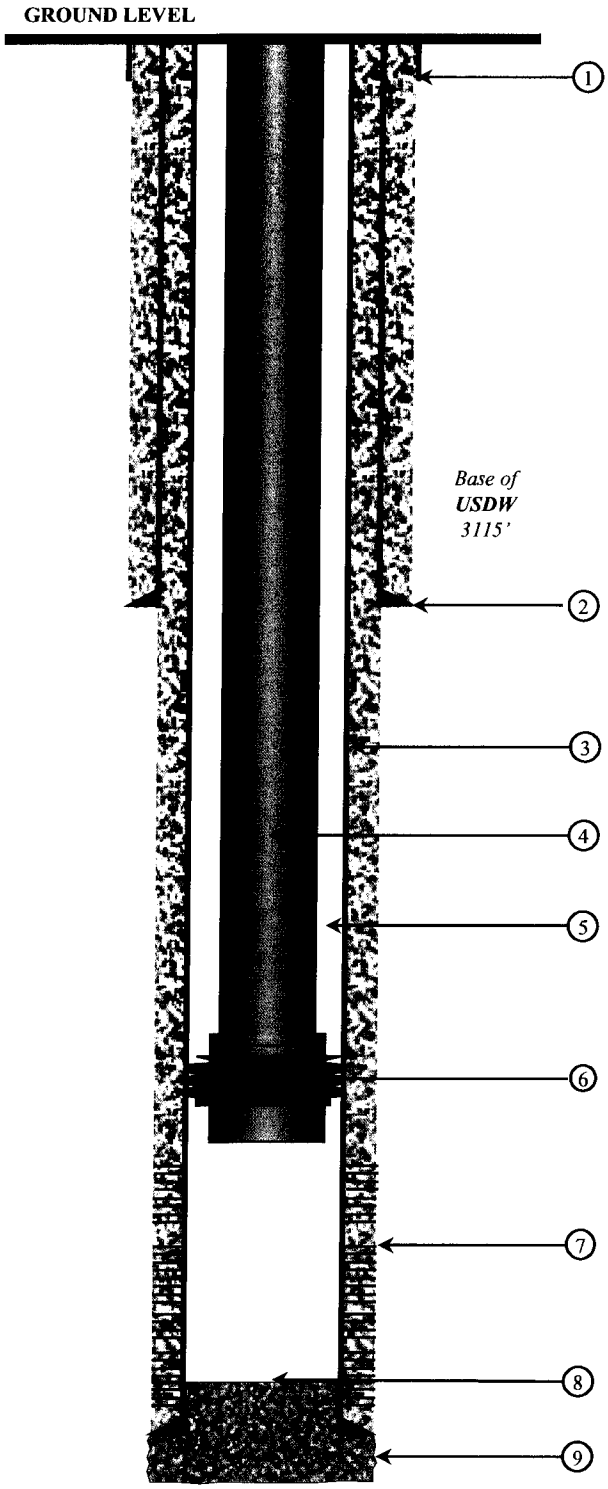
Drawn by: EAM	Date: 10/02/2000	*Drawing not to scale*

Modified by djc on 06/30/2006

ARTIFICIAL PENETRATION NO. 31
MERISOL, USA
DISPOSAL WELL WDW-319

MERISOL
Greens Bayou, Texas
Plant Well No. 2 (WDW-319)
Well Schematic
Status: Active

All depths reference RKB
KB = 47' above sea level datum
Ground = 27.5' above sea level datum
KB to Ground = 19.5'



COMPLETION DETAIL

1. Conductor Pipe: 20", ½" wall. Set from surface to 98.5'.
2. Surface Casing: 13-3/8", 61.0-ppf, J-55, ST&C. Set from surface to 3300' in 17-1/2" hole. Cemented to surface.
3. Protection Casing: 9-5/8", 47.0-ppf, N-80, LT&C. Set from surface to 7352', set in a 12-1/4" hole. Weatherford Cement Stage Tool at 3659'. Weatherford External Casing Patch w/Seal Top at 3660' and bottom of Overshot at 3664'.
4. Injection Tubing: 7", 26.0-ppf, P-110, LT&C. Baker KC-22 Anchor with A-Ryte Packing, Size 190-73. Minimum ID through anchor is 6.00". Set from surface to 6497'.
5. Annulus Fluid: Filled with 10-ppg NaCl brine with 20 gallons per 100 bbls of ClB corrosion inhibitor.
6. Injection Packer: 6498' to 6507', Baker Model FA; Size 192FA73X6.059 with Aflas elastomers, minimum ID of 4.778".
7. Perforated Completion: perforated with 5 shots per foot from:
   - 6850' to 6865'
   - 6888' to 6903'
   - 6920' to 6935'
   - 6954' to 6974'
   - 7114' to 7144'
   - 7216' to 7236'
   - 7240' to 7260'
8. Fill tagged at 7,210', RTS 8/19/05
9. Drilled to a total depth of 7408'
10. Base of USDW: 3115'.

Note: During remedial cleanout 3/5/02, unable to run 4-1/2" bit past 6507'; Max OD tool run thorough assembly was 3.668".

- Regulatory Intervals:
  - Confining Zone: 4,758' to 5,134' (Anahuac Fm.)
  - Injection Zone: 5,134' to 7,410' (Frio Fm.)
  - Injection Interval: 6,580' to 6,795' (Frio E&F Sand)
  - Injection Interval: 6,800' to 6,984' (Frio A&B Sand
  - Injection Interval: 7,100' to 7,290' (Frio C Sand)

  Depths referenced to WDW-319, Protection Hole open hole Induction Log dated 8/31/2000

Surface hole High Definition Induction Log run from 100' to 3,300' on 8/12/2000
Protection hole High Definition Induction Log run from 3,300' to 7,406' on 8/31/2000
Spliced-composite open hole log included in Appendix 2-6, Volume 2A

Sandia Technologies, LLC
6731 Theall Road Houston, TX 77066 USA
Tel: (832) 286-0471 Fax: (832) 286-0477

Drawn by: EAM	Date: 02/12/2003	*Drawing not to scale*
Revision No. 5 – May 2006		

FIGURE 1-5
Wellbore Diagram Plant Well No. 2 (WDW-319)

ARTIFICIAL PENETRATION NO. 33
BALLARD EXPLORATION
HOUSTON SHIP CHANNEL #2

Type or print only

483-047

RAILROAD COMMISSION OF TEXAS
Oil and Gas Division

Form G-1
Rev. 4/1/83

API No. 42- 201-32773

7. RRC District No. 3

8. RRC Gas ID No. 234163

Gas Well Back Pressure Test, Completion or Recompletion Report and Log

1. FIELD NAME (as per RRC Records or Wildcat): Yellow Rose (Yegua Y-2)

2. LEASE NAME: Houston Ship Channel Unit -A-

9. Well No. 2

3. OPERATOR'S NAME (Exactly as shown on Form P-5, Organization Report): Ballard Exploration Company, Inc.

RRC Operator No. 048169

10. County of well site: Harris

4. ADDRESS: 1021 Main Street, Suite 2310, Houston, Texas 77002-6602

11. Purpose of filing: Initial Potential [X]; Retest [ ]; Reclass [ ]; Well record only (Explain in remarks) [ ]

5. Location (Section, Block, and Survey): Richard & Robert Vince Survey, A-76

5b. Distance and direction to nearest town in this county: 2 Miles SE from Channelview

6. If operator has changed within last 60 days, name former operator: N/A

12. If workover or reclass, give former field (with reservoir) & Gas ID or oil lease no.: FIELD & RESERVOIR; GAS ID or OIL LEASE No.; Oil - O Gas - G; WELL #

13. Pipe Line Connection: Kinder Morgan Texas Pipeline, LP

14. Completion or recompletion date: 3/3/07

15. Any condensate on hand at time of workover or recompletion? [ ] Yes [ ] No

16. Type of Electric or other Log Run: AIL/LSS/BHC SONIC

Section I — GAS MEASUREMENT DATA

Date of Test: 03/04 - 03/05/07

Gas Measurement Method (Check One): Orifice Meter [X]; Flange Taps [X] / Pipe Taps [ ]; Positive Choke [ ]; Orifice Vent Meter [ ]; Pitot Tube [ ]; Critical-flow Prover [ ]

Gas produced during test: 17859 MCF

Run No.	Line Size	Orif or Choke Size	24 Hr. Coeff. Orif or Choke	Static P_m or Choke Press	Diff. h_w	Flow Temp. °F	Temp. Factor F_{tf}	Gravity Factor F_g	Compress Factor F_{pv}	Gas Rate MCF / DAY
1	3.068	1.875	24211.62	627	95.15	80	0.9813	0.9806	1.0464	5953
2										
3										
4										

Section II — FIELD DATA AND PRESSURE CALCULATIONS

Gravity (Dry Gas): 0.6240

Gravity Liquid Hydrocarbon: 41.40 Deg. API

Gas-Liquid Hydrocarbon Ratio: 67,648 CF/Bbl

Gravity of Mixture G_{mix} = 0.6684

Avg. Shut-in Temp. 169 °F

Bottom Hole Temp. 265 °F @ 11948 ft (Depth)

$(D_{eff})^{8/3}$ = 10.802

$\sqrt{T_f} = \sqrt{632} = 25.14$

$\sqrt{GL} = \sqrt{7986.043} = 89.365$

$C = \frac{1118 \times (D_{eff})^{8/3}}{\sqrt{T}} = 1118 \times 10.802 / 25.14 = 480.383$

$\frac{\sqrt{GL}}{C} = 89.365 / 480.383 = .01860 \times 0.4768$ *

*Friction factor overcorrects. Avg correction = 47.68%.

Run No.	Time of Run Minutes	Choke Size	Wellhead Press. PSIA P_w	Wellhead Flow Temp. °F	P_w^2 (Thousands)	R	R^2 (Thousands)	P_w	P_w / P_1
Shut-in	2.0 hrs	SI	6657	74	44315.6	0.0	0.0000	6657	1.0000
1	4320	11/64	6615	80	43758.2	527.9	278.7213	6616	0.9968
2									
3									
4									

Run No.	F	K	$S = \frac{1}{z}$	e^{ks}	P_f and P_s	P_f^2 and P_s^2 (Thousands)	$P_f^2 - P_s^2$ (Thousands)
Shut-in	1.0000	0.2380	0.8356	1.2201	8122	65967	
1	0.9984	0.2365	0.8374	1.2190	8089	65432	535
2							
3							
4							

Angle of Slope: θ 45.00°; n 1.0000

Absolute Open Flow: 734,069 MCF / DAY

WELL TESTER'S CERTIFICATION: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I conducted or supervised this test and that data and facts shown in Sections I and II above are true, correct, and complete, to the best of my knowledge. Bottomhole temperature and the diameter and length of flow string were furnished by the operator of the well.

Signature: Well Tester: Janus Jordan / Hope M. Chapa — FESCO, Ltd. (Name of Company) — RRC Representative

OPERATOR'S CERTIFICATION: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that I prepared or supervised and directed this report, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

Signature: Operator's representative: Irene Bertoni — Engrg. Asst. — Date: 9/7/07 — Tel: 713-651-0181 A/C Number 713-356-0142 X41

MAPPING [redacted]

RECEIVED CENTRAL RECORDS APR 15 2008 AUSTIN, TEXAS

RECEIVED RRC OF TEXAS JAN 02 2008 O&G AUSTIN TX

BHL of Sfc. 3/24/08

Section III — DATA ON WELL COMPLETION AND LOG (Not Required on Retest)

VALID PERMIT MAR 26 2008

17. Type of Completion: New Well [X] Deepening [ ] Plug Back [ ] Other [ ]

18. Permit to Drill, Plug Back or Deepen — DATE: 11/27/06 — PERMIT NO.: 629374

Rule 37 Exception — CASE NO.: N/A

Water Injection Permit — PERMIT NO.:

Salt Water Disposal Permit — PERMIT NO.:

Other — PERMIT NO.:

19. Notice of Intention to Drill this well was filed in the Name of: Ballard Exploration Company, Inc.

20. Number of producing wells on this lease in this field (reservoir) including this well: 1

21. Total number of acres in this lease: 40

22. Date Plug Back, Deepening, WorkOver or Drilling Operations: Commenced 11/27/06 — Completed 12/27/06

23. Distance to nearest well, Same Lease & Reservoir: N/A

24. Location of well, relative to nearest lease boundaries of lease on which this well is located: 343 Feet From southwest Line and 9,979 Feet From SL north Line of the (Off lease) Lease

25. Elevation (DF, RKB, RT, GR, ETC.): 15' GR

26. Was directional survey made other than inclination (Form W-12)? [X] Yes [ ] No

27. Top of Pay: TVD 11,071.19' MD 11,943'

28. Total Depth: 11,312.72' 12,250'

29. P.B. Depth: 11,265.60' 12,155'

30. Surface Casing Determined by: Field Rules [ ] Recommendation of T.D.W.R. [X] Dt. of Letter 11/22/06 Railroad Commission (Special) [X] Dt. of Letter 11/28/06

31. Is well multiple completion? [ ] Yes [X] No

32. If multiple completion, list all reservoir names (completions in this well) and Oil Lease or Gas ID No.

FIELD & RESERVOIR	GAS ID or OIL LEASE #	Oil-O Gas-G	Well #

33. Intervals Drilled by: Rotary Tools X — Cable Tools

34. Name of Drilling Contractor: Grey Wolf Drilling Company

35. Is Cementing Affidavit Attached? [X] Yes [ ] No

36. CASING RECORD (Report All Strings Set in Well)

CASING SIZE	WT #/FT.	DEPTH SET	MULTISTAGE TOOL DEPTH	TYPE & AMOUNT CEMENT (sacks)	HOLE SIZE	TOP OF CEMENT	SLURRY VOL. cu. ft.
13-3/8"	68#	3,430'		See	17-1/2"	Surface	4,350
9-5/8"	53.5#	8,992'		attached	12-1/4"	±6,492'	890
				W-15's			

37. LINER RECORD

Size	TOP	Bottom	Sacks Cement	Screen
5-1/2"	8,771'	12,250'	325	N/A

38. TUBING RECORD

Size	Depth Set	Packer Set
2.875"	11,800'	11,800'

39. Producing Interval (this completion) Indicate depth of perforation or open hole

From	To
11943 ft	11953 ft (MD)
11,071.19'	11,080.36' (TVD)

40. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

Depth Interval	Amount and Kind of Material Used
3,550'	Kick off directional hole
8,771'	Squeeze top of 5-1/2" liner with 250 sacks Class H cement

41. FORMATION RECORD (LIST DEPTHS OF PRINCIPAL GEOLOGICAL MARKERS AND FORMATION TOPS)

Formations	Depth	Formations	Depth
Top Frio	5,270'		
Top Vicksburg	8,385'		
Top Yegua	11,050'		

REMARKS: As-drilled location plat attached. Permitted as Houston Ship Channel.

NOTE: FESCO, Ltd. conducted this test as requested by the operator for the express purpose of satisfying RRC requirements. FESCO, Ltd. does not certify its suitability for any other purpose. If clarification is required, contact FESCO, Ltd.

11:24:53 Wed Apr 15, 2009

```
DISTRICT> 03      GAS WELL DATA INQUIRY - PAGE 1      SCHEDULE  > 04 / 09
FIELD   > YELLOW ROSE (YEGUA Y-2)          # 99334 100 TYPE FIELD> CAPACITY
OPERATOR> BALLARD EXPLORATION COMPANY,INC. # 048169   DRILL PMT > 629374
LEASE   > HOUSTON SHIP CHANNEL UNIT -A-               API #     > 201 32773
COUNTY  > HARRIS          RRCID 234163 WELL #    2    ALLOW EFF > 04/01/2009
TYPE WELL> PRODUCING                                  TOP ALLOW >     203670
OFFSHORE>    BAYS/EST    STATE                        CYCL ALLOW>    203670X
OP LACK>
OTHER  >
SCHED REM > PLEASE SEE REMARKS.
                                                        CAPABILITY>      6789
"@" AMOUNT> 999999999   DATE> MM/YYYY   HIGH DLY AVG> 999999999   DATE> MM/YYYY
SPEC ALLOW >             CODE>
G-10 TEST  >  12/28/2008 TYPE >  S LAST UTIL>          G-1 TEST >    03/05/2007
DELIV      >      6789   DELIV LTR EFFEC>              G-1 POTE   >  NOT REQ.
DELIV CODE >             CAL DEL POTE   >              TEMPERATURE>        265
WH PRESS CD>             SIWH>   6150   BHP CD>               BHP >
GAS GRAV   >   .624      COND GRAV  >  41.4            GOR        >     67
ACRES-FT   >             ACRES      >                  G1 TEST GAS>      17859
SUPP ISSUED>  03/24/2009   SUPP REMARKS  >
PERMANENT GAS WELL
GO TO RRCID <         > ENTER=PG2 PF1=HELP          PF3=DRL PMT PF4=RESTART
PF5=NEXT WELL PF6=FLD PF7=PROR SCH PF8=P4 PF9=LDGR PF10=G-10 PF11=RMKS PF12=G-1
```

Cementer: Fill in shaded areas.
Operator: Fill in other items.

RAILROAD COMMISSION OF TEXAS
Oil and Gas Division

Form W-15
Cementing Report
Rev 4/1/83
483-045

1. Operator's Name (As shown of Form P-5, Organization Report)	2. RRC Operator No.	3. RRC District No.,	4. County of Well Site
BALLARD EXPLORATION COMPANY, INC.	048169	03	HARRIS

5. Field Name (Wildcat or exactly as shown on RRC records)	6. API No.	7. Drilling Permit No.
W/C; HOUSTON SHIP CHAN. (YEGUA EY-1)	42-201-32773	629374

8. Lease Name	9. Rule 37 Case No.	10. Oil Lease/Gas ID No.	11. Well No.
HOUSTON SHIP CHANNEL UNIT	N/A		2

CASING CEMENT DATA:	SURFACE	INTER-MEDIATE CASING	PRODUCTION CASING		MULTI-STAGE CEMENTING PROCESS	
			Single String	Multiple Parallel Strings	Tool	Shoe
12. Cementing Date	11-30-06					
13. • Drilled hole size	17-1/2"					
• Est. % wash or hole enlargement	15%					
14. Size of casing (in. O.D.)	13-3/8"					
15. Top of liner (ft.)	N/A					
16. Setting Depth	3,430'					
17. Number of centralizers used	23					
18. Hrs. Waiting on cement before drill out	35					
1st Slurry — 19. API cement used: No of sacks ▶	1503					
1st Slurry — Class ▶	A					
1st Slurry — Additives ▶	(POZ:A:GEL) + 3% SALT + .25 % R-3					
2nd Slurry — No. of sacks ▶	832					
2nd Slurry — Class ▶	H					
2nd Slurry — Additives ▶	NEAT					
3rd Slurry — No. of sacks ▶	100					
3rd Slurry — Class ▶	H					
3rd Slurry — Additives ▶	NEAT					
1st — 20. Slurry pumped: Volume (cu.ft.) ▶	3351					
1st — Height (ft.) ▶	4824					
2nd — Volume (cu.ft.) ▶	873					
2nd — Height (ft.) ▶	1196					
3rd — Volume (cu.ft.) ▶	126					
3rd — Height (ft.) ▶	100					
Total — Volume (cu.ft.) ▶	4350					
Total — Height (ft.) ▶	6120					
21. Was cement circulated to ground surface (or bottom of cellar) outside casing	YES					

T.N.R.C.C. LETTER DATED 11/20/06
Depth 2700 ft.
13(A) Exception Dated 11/28/06
Surface Casing 3450 ft.
D.V. @ ft.

22. Remarks

1070

CEMENTING TO PLUG AND ABANDON	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
23. Cementing date								
24. Size of hole or pipe plugged (in.)								
25. Depth to bottom of tubing or drill pipe (ft.)								
26. Sacks of cement used (each plug)								
27. Slurry volume pumped (cu. ft.)								
28. Calculated top of plug (ft.)								
29. Measured top of plug, if tagged (ft.)								
30. Slurry wt. (lbs/gal)								
31. Type of cement								

CEMENTERS CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed me by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers cementing data only.

WILLIAM DENARD- SERVICE SUPERVISOR — Name and title of cementer's representative

BJ SERVICES COMPANY — Cementing Company

Wm Denard — Signature

P.O. BOX 10048 LIBERTY TX 77575 — Address, City, State, Zip Code

(936) 336-7218 — Tel.: Area Code Number

11-30-06 — Date: mo day yr.

OPERATOR'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct,, and complete, to the best of my knowledge. This certification covers all well data.

Jane Bortoni — Typed or printed name of operator's representative

Engrg. Asst. — Title

Jane Bortoni — Signature

1021 Main Street, Suite 2310, Houston, TX 77002 — Address, City, State, Zip Code

713-651-0181 — Tel.: Area Code Number

1/19/07 — Date: mo day yr.

Instructions to Form W-15, Cementing Report

IMPORTANT: Operators and cementing companies must comply with the requirements of the Commission's Statewide Rules 8 (Water Protection), 13 (Casing Cementing, Drilling and Completion), and 14 (Well Plugging). For offshore operations, see the requirements of Rule 13 (c).

A. What to file. An operator should file an original and one copy of the completed Form W-15 for each cementing company used on a well. The cementing of different casing strings on a well by one cementing company may be reported on one form. Form W-15 should be filed with the following:

- An initial oil or gas completion report, Form W-2 or G-1, as required by Statewide or special field rules;
- Form W-4, Application for Multiple Completion, if the well is a multiple parallel casing completion; and
- Form W-3, Plugging Record, unless the W-3 is signed by the cementing company representative. When reporting dry holes, operators must complete Form W-15, in addition to W-3, to show any casing cemented in the hole.

B. Where to file. The appropriate Commission District Office for the county in which the well is located.

C. Surface casing. An operator must set and cement sufficient surface casing to protect all usable-quality water strata, as defined by The Texas Department of Water Resources, Austin. Before drilling a well in any field or area in which no field rules are in effect or in which surface casing requirements are not specified in the applicable rules, an operator must obtain a letter from the Department of Water Resources stating the protecting depth. Surface casing should not be set deeper that 200 feet below the specified depth without prior approval from the Commission.

D. Centralizers. Surface casing must be centralized at the shoe, above and below a stage collar or diverting tool, if run, and through usable-quality water zones. In nondeviated holes, a centralizer must be place every fourth joint from the cement shoe to the ground surface or to the bottom of the cellar. All centralizers must meet API specifications.

F. Intermediate and production casing. For specific technical requirements, operators should consult Statewide Rule 13 (b) (3) and (14).

G. Plugging and abandoning. Cement plugs must be placed in the wellbore as required by Statewide Rule 14. The District Director may require additional cement plugs. For onshore or inland wells, a 10-foot plug must be placed in the top of the well, and the casing must be cut off three feet below the ground surface. All cement plugs, except the top plug, must have sufficient slurry volume to fill 100 feet of hole, plus ten percent for each 1,000 feet of depth from the ground surface to the bottom of the plug.

To plug and abandon a well, operators must use only cementers approved by the Director of Field Operations. Cementing companies, service companies, or operators can qualify as approved cementers by demonstrating that they are able to mix and pump cement in compliance with Commission rules and regulations.

Cementer: Fill in shaded areas.
Operator: Fill in other items.

RAILROAD COMMISSION OF TEXAS
Oil and Gas Division

Form W-15
Cementing Report
Rev 4/1/83
483-045

1. Operator's Name (As shown of Form P-5, Organization Report)	2. RRC Operator No.	3. RRC District No.,	4. County of Well Site
Ballard Exploration Company, Inc.	048169	03	Harris

5. Field Name (Wildcat or exactly as shown on RRC records)	6. API No.	7. Drilling Permit No.
Wildcat/Houston Ship Chan. (Yegua EY-1)	42-201-32773	629374

8. Lease Name	9. Rule 37 Case No.	10. Oil Lease/Gas ID No.	11. Well No.
Houston Ship Channel Unit	N/A	N/A	2

CASING CEMENT DATA:	SURFACE	INTER-MEDIATE CASING	PRODUCTION CASING		MULTI-STAGE CEMENTING PROCESS	
			Single String	Multiple Parallel Strings	Tool	Shoe
12. Cementing Date		12-18-06				
13. • Drilled hole size		12-1/4"				
• Est. % wash or hole enlargement		15%				
14. Size of casing (in. O.D.)		9-5/8"				
15. Top of liner (ft.)		8,771' (5-1/2")				
16. Setting Depth		8,992'				
17. Number of centralizers used		15				
18. Hrs. Waiting on cement before drill out		22.5				
1st Slurry — 19. API cement used: No. of sacks ▶		200				
1st Slurry — Class ▶		H				
1st Slurry — Additives ▶	(50:50:2) (Poz:H:Gel) + .15% ASA-301 + .2% R-3					
2nd Slurry — No. of sacks ▶		600				
2nd Slurry — Class ▶		H				
2nd Slurry — Additives ▶	+ .15% ASA-301 + .2% R-3					
3rd Slurry — No of sacks ▶						
3rd Slurry — Class ▶						
3rd Slurry — Additives ▶						
1st — 20. Slurry pumped: Volume (cu.ft.) ▶		260				
1st — Height (ft.) ▶		871				
2nd — Volume (cu.ft.) ▶		630				
2nd — Height (ft.) ▶		2120				
3rd — Volume (cu.ft.) ▶						
3rd — Height (ft.) ▶						
Total — Volume (cu.ft.) ▶		890				
Total — Height (ft.) ▶		2991				
21. Was cement circulated to ground surface (or bottom of cellar) outside casing		No				

22. Remarks

1070

CEMENTING TO PLUG AND ABANDON	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
23. Cementing date								
24. Size of hole or pipe plugged (in.)								
25. Depth to bottom of tubing or drill pipe (ft.)								
26. Sacks of cement used (each plug)								
27. Slurry volume pumped (cu. ft.)								
28. Calculated top of plug (ft.)								
29. Measured top of plug, if tagged (ft.)								
30. Slurry wt. (lbs/gal)								
31. Type of cement								

CEMENTERS CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed me by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers cementing data only.

Bryan Tindall – Service Supervisor
Name and title of cementer's representative

BJ SERVICES COMPANY
Cementing Company

Signature

P.O. BOX 10048 LIBERTY TX 77575
Address City, State, Zip Code

(936) 336-7218
Tel.: Area Code Number

12-18-06
Date: mo day yr.

OPERATOR'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct,, and complete, to the best of my knowledge. This certification covers all well data.

Jane Bortoni
Typed or printed name of operator's representative

Engrg. Asst.
Title

Signature

1021 Main Street, Suiet 2310, Houston, TX 77002
Address City, State, Zip Code

713-651-0181
Tel.: Area Code Number

1/19/07
Date: mo day yr.

Instructions to Form W-15, Cementing Report

IMPORTANT: Operators and cementing companies must comply with the requirements of the Commission's Statewide Rules 8 (Water Protection), 13 (Casing Cementing, Drilling and Completion), and 14 (Well Plugging). For offshore operations, see the requirements of Rule 13 (c).

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B. Where to file. The appropriate Commission District Office for the county in which the well is located.

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F. Intermediate and production casing. For specific technical requirements, operators should consult Statewide Rule 13 (b) (3) and (14).

G. Plugging and abandoning. Cement plugs must be placed in the wellbore as required by Statewide Rule 14. The District Director may require additional cement plugs. For onshore or inland wells, a 10-foot plug must be placed in the top of the well, and the casing must be cut off three feet below the ground surface. All cement plugs, except the top plug, must have sufficient slurry volume to fill 100 feet of hole, plus ten percent for each 1,000 feet of depth from the ground surface to the bottom of the plug.

To plug and abandon a well, operators must use only cementers approved by the Director of Field Operations. Cementing companies, service companies, or operators can qualify as approved cementers by demonstrating that they are able to mix and pump cement in compliance with Commission rules and regulations.

Cementer: Fill in shaded areas
Operator: Fill in other items.

RAILROAD COMMISSION OF TEXAS
Oil and Gas Division

Form W-15
Cementing Report
Rev 4/1/83
483-045

1. Operator's Name (As shown of Form P-5, Organization Report)	2. RRC Operator No.	3. RRC District No.,	4. County of Well Site
Ballard Exploration Company, Inc.	048169	03	HARRIS

5. Field Name (Wildcat or exactly as shown on RRC records)	6. API No.	7. Drilling Permit No.
W/C; Houston Ship Chan. (Yegua EY-1)	42-201-32773	629374

8. Lease Name	9. Rule 37 Case No.	10. Oil Lease/Gas ID No.	11. Well No.
HOUSTON SHIP CHANNEL UNIT	N/A	N/A	2

CASING CEMENT DATA:	SURFACE	INTER-MEDIATE CASING	PRODUCTION CASING		MULTI-STAGE CEMENTING PROCESS	
			PROD LINER	Multiple Parallel Strings	Tool	Shoe
12. Cementing Date			12-29-06			
13. • Drilled hole size			8-1/2"			
• Est. % wash or hole enlargement			15%			
14. Size of casing (in. O.D.)			5-1/2"			
15. Top of liner (ft.)			8,771'			
16. Setting Depth			12,250'			
17. Number of centralizers used			46			
18. Hrs. Waiting on cement before drill out			27.5			
1st Slurry — 19. API cement used: No. of sacks			325			
1st Slurry — Class			H			
1st Slurry — Additives			REMARKS			
2nd Slurry — No. of sacks			250			
2nd Slurry — Class			H			
2nd Slurry — Additives			REMARKS			
3rd Slurry — No. of sacks			NONE			
3rd Slurry — Class						
3rd Slurry — Additives						
1st — 20. Slurry pumped: Volume (cu.ft.)			491			
1st — Height (ft.)			2143			
2nd — Volume (cu.ft.)			305			
2nd — Height (ft.)			2151			
3rd — Volume (cu.ft.)						
3rd — Height (ft.)						
Total — Volume (cu.ft.)			796			
Total — Height (ft.)			4294			
21. Was cement circulated to ground surface (or bottom of cellar) outside casing			N0			

22. Remarks :LINER TACK CEMENT ADDTIVES :100 MESH :HEMATITE:BA-61:FL-62:CD-32:ASA-301:SM:R-3

TACK SQUEEZE SLURRY ADDTIVES 100 MESH:CD-32:R-3

Squeezed top of 5-1/2" production liner with 250 sacks Class H cement.

RECEIVED
C&C DIVISION
HOUSTON TX

1070

CEMENTING TO PLUG AND ABANDON	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
23. Cementing date								
24. Size of hole or pipe plugged (in.)								
25. Depth to bottom of tubing or drill pipe (ft.)								
26. Sacks of cement used (each plug)								
27. Slurry volume pumped (cu. ft.								
28. Calculated top of plug (ft.)								
29. Measured top of plug, if tagged (ft.)								
30. Slurry wt. (lbs/gal)								
31. Type of cement								

CEMENTERS CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed me by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers cementing data only.

DENNIS DUDERSTADT S.S.
Name and title of cementer's representative

BJ SERVICES COMPANY
Cementing Company

Signature

P.O. BOX 10048 LIBERTY TX 77575
Address City, State, Zip Code

(936) 336-7218
Tel.: Area Code Number

12-29-06
Date: mo day yr.

OPERATOR'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct,, and complete, to the best of my knowledge. This certification covers all well data.

Jane Bortoni
Typed or printed name of operator's representative

Engrg. Asst.
Title

Signature

1021 Main Street, Suite 2310, Houston, TX 77002
Address City, State, Zip Code

713-651-0181
Tel.: Area Code Number

1/19/07
Date: mo day yr.

Instructions to Form W-15, Cementing Report

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B. Where to file. The appropriate Commission District Office for the county in which the well is located.

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F. Intermediate and production casing. For specific technical requirements, operators should consult Statewide Rule 13 (b) (3) and (14).

G. Plugging and abandoning Cement plugs must be placed in the wellbore as required by Statewide Rule 14. The District Director may require additional cement plugs. For onshore or inland wells, a 10-foot plug must be placed in the top of the well, and the casing must be cut off three feet below the ground surface. All cement plugs, except the top plug, must have sufficient slurry volume to fill 100 feet of hole, plus ten percent for each 1,000 feet of depth from the ground surface to the bottom of the plug.

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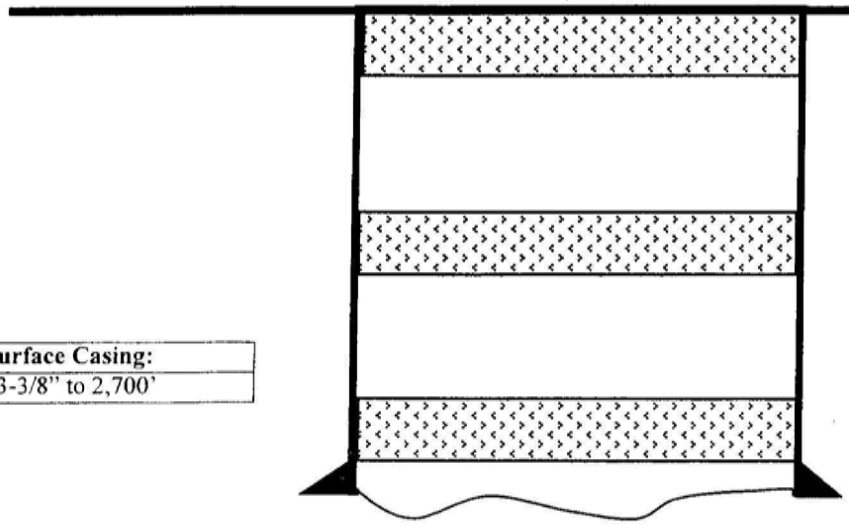
ARTIFICIAL PENETRATION NO. 34
ARMCO STEEL CORP.
ARMCO FEE #1
DISPOSAL WELL WDW-90

ARTIFICIAL PENETRATION SCHEMATIC

Map ID Number:	34	Status:	Plugged & Abandoned
Operator:	ARMCO Steel Corp.	Date Drilled:	9/20/71
Lease/Well Number:	ARMCO Fee # 1	Date Plugged:	3/8/84
Distance from Well 1:	4,500 Feet	Railroad Commission Forms:	W-1, TDWR Plug Form
Well Depth:	2,700'		

WELL DIAGRAM

Ground Level



Cement Plugs:
0 – 50', w/40 sx
1,600 – 1,700' w/ 76 sx
2,520 – 2,620', w/76 sx

Surface Casing:
13-3/8" to 2,700'

Production Casing:
N/A

USDW - NDE

Perforations :
N/A

Injection Zone Top - NDE

Tubing :
N/A

HARRIS DIST. 3 RAILROAD COMMISSION OF TEXAS FORM W-1
API No. 42 201 30183 OIL AND GAS DIVISION

SPS

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

12

X DRILL DEEPEN PLUG BACK OTHER (Specify)

RRC District: 13

Operator: Amoco Steel Corporation
Address (Including City and Zip Code): P. O. Box 1367, Houston, Texas 77001

Lease Name: Amoco Fee
Location (Sec., Blk., Survey): Harris & Wilson A-31
This well is in Lease: 1/2 miles Southeast
Direction from: Galena Park
Nearest Prod. Or Injector Town:

County: Harris
Well Number: Disposal Well No.1
Number of Acres in Lease: 505.419
Distance from Proposed Location to Nearest Property or Lease Line (ft.): 700

Is Form 1-A Exact Operator Name Filed? YES X NO

EACH PROPOSED COMPLETION

9	11	12	13	14	15	16	17	18	19	20	21	22	
FIELD NAME Exactly as shown on R. R. C. Proration Schedule including Reservoir if applicable. If Wildcat, or more than	Completion Depth	RRC Lease or ID Number if applicable	Field Rule Spacing Between Wells (Distance to nearest lease line & distance between wells. If no spacing rule indicate Rule 37)	Field Rule Proration Unit Size (Acres, Rule 38)	Number of Acres in Drilling Unit (for this Well)	Date completion on this Well (mo.)	Is this an non-single proximity gas well assigned to nonsingle well on same lease? (Yes or No)	Distance from proposed location to nearest well completed or applied for in same reservoir on same lease (ft.)	Is this a Regular Location? (Yes or No)	Oil, Gas or other Type Well (Specify)	Number of Wells or Permitted locations on this Lease in same Reservoir for which this Permit is Requested: OIL	GAS
W. C.	7000		Rule 37		40	No	None		Yes	Disposal Well		

RECEIVED
RRC OF TEXAS
APR 20 1981
HOUSTON, TEXAS

OCT 2 2000
GWO-S

NOTICE

A CERTIFIABLE PLAT BELOW SHOWING THE LOCATION OF THE WELL AND ALL PROPERTY LINES, LEASE LINES, PIPELINES, ROADS, RIVERS, LAKES, AND OTHER PERTINENT DETAILS MUST BE ATTACHED TO THIS APPLICATION.

REMARKS: 1400 FEL & 1500 FNL of survey

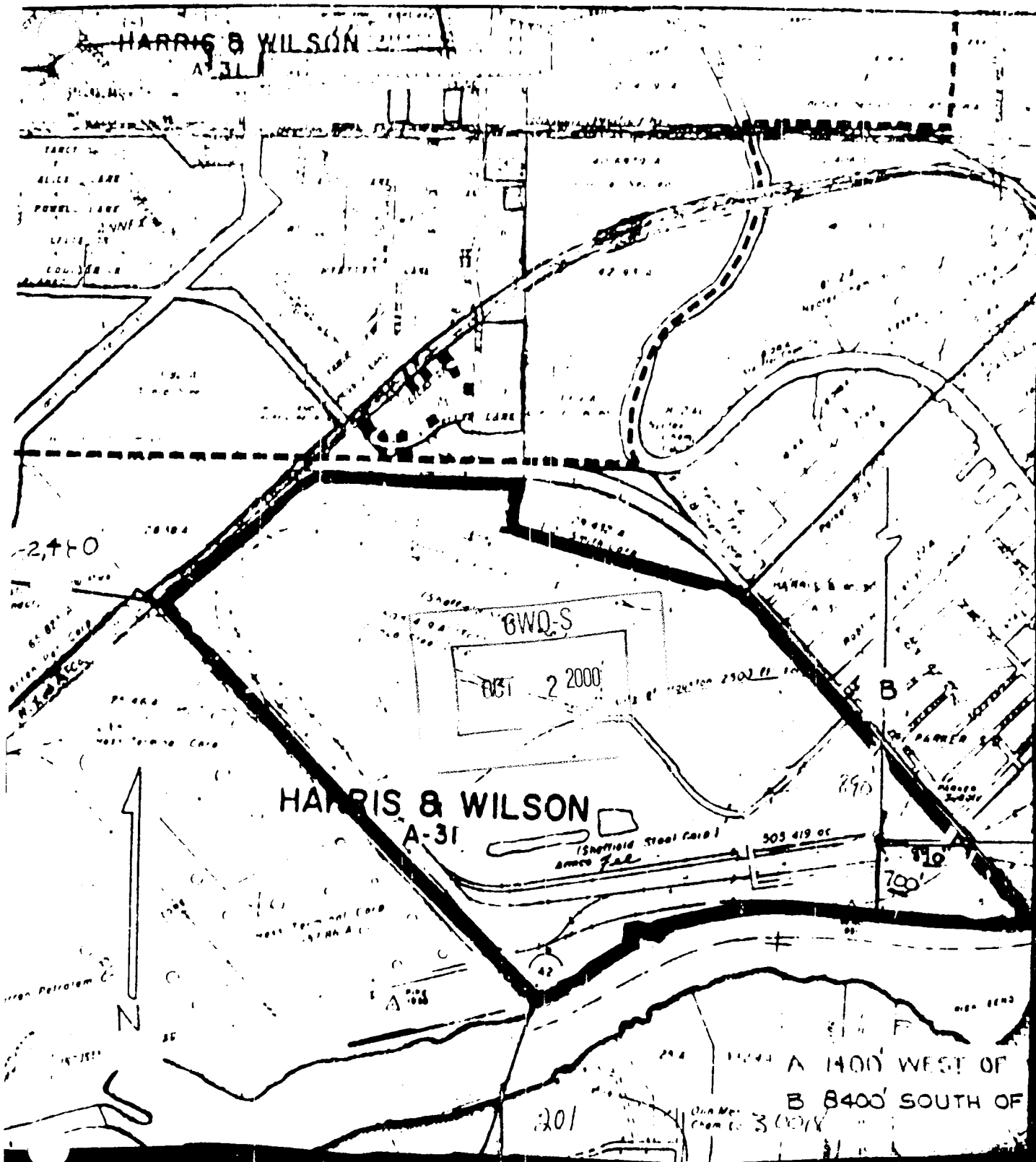
CERTIFICATE

I hereby certify that I am authorized by the above named operator to make this report; that this report was prepared by me or under my supervision and direction; that the facts stated therein are true, correct, and complete to the best of my knowledge.

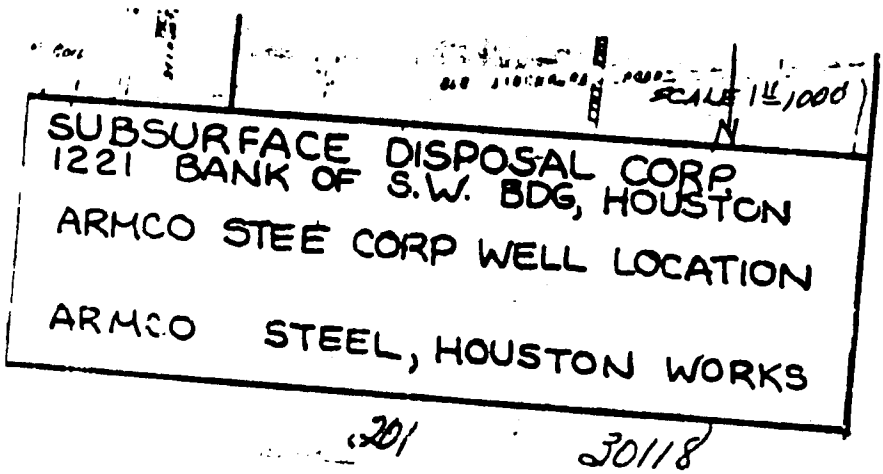
Signature: Jess E. Bailey
Title: Vice President
Date: 4-24-71
Telephone Area Code 713 - [illegible]

- OVER -

30183 201


HARRIS & WILSON
A-31
HARRIS & WILSON
A-31
(Sheffield Steel Corp)
505 419 oc
B
700'
N
A 1400' WEST OF
B 8400' SOUTH OF
201
GWQ-S
OCT 2 2000

6WQ-S
OCT 2 2000



Richard Crawford 7-17-84

6WQ-S

OCT 2 2000

TEXAS DEPARTMENT OF WATER RESOURCES
P. O. Box 13087, Capitol Station
Austin, Texas 78711

DISPOSAL WELL PLUGGING REPORT

Company Name ARMCO Inc.

Permit No. WDW-90

Well No. WDW-90

Address Houston, Texas

County Harris

Point Name Houston Works

Total Depth 2700'

Date Plugged March 8, 1984

Depth of Base of Fresh Water 1650

Injection Interval None

Surface Location 690' N 3W of U.S. Department of Interior (Station 862.00)

feet from line and feet from line

Section, Block, and Survey Harry & Wilson Survey A-31

Bbls. of Salt Water to Kill Well None required

Witnessed By TDWR Personnel Mr. Tom Roth

Size of Long String Casing None

Total Depth of Casing 2700' surface casing 13 3/8"

Placement of Plugs

Plug No. 1	76 sacks	Top	2520 ft	Bottom	2620 ft	Type Cement	Portland
Plug No. 2	76 sacks	Top	1600 ft	Bottom	1700 ft	Type Cement	Portland
Plug No. 3	40 sacks	Top	0 ft	Bottom	50 ft	Type Cement	Portland
Plug No. 4	sacks	Top	ft	Bottom	ft	Type Cement	
Plug No. 5	sacks	Top	ft	Bottom	ft	Type Cement	

Name and address of service company plugging well

Stewart Well Service - Manvel, Texas

Remarks Surface casing had not been drilled out. Shoe joint and float joint was already filled with cement.

I certify that the above information is true and correct

[signature] Engineer March 21, 1984

Signature of representative of service company — Title — Date

RECEIVED

[signature] Environmental Coordinator March 23, 1984

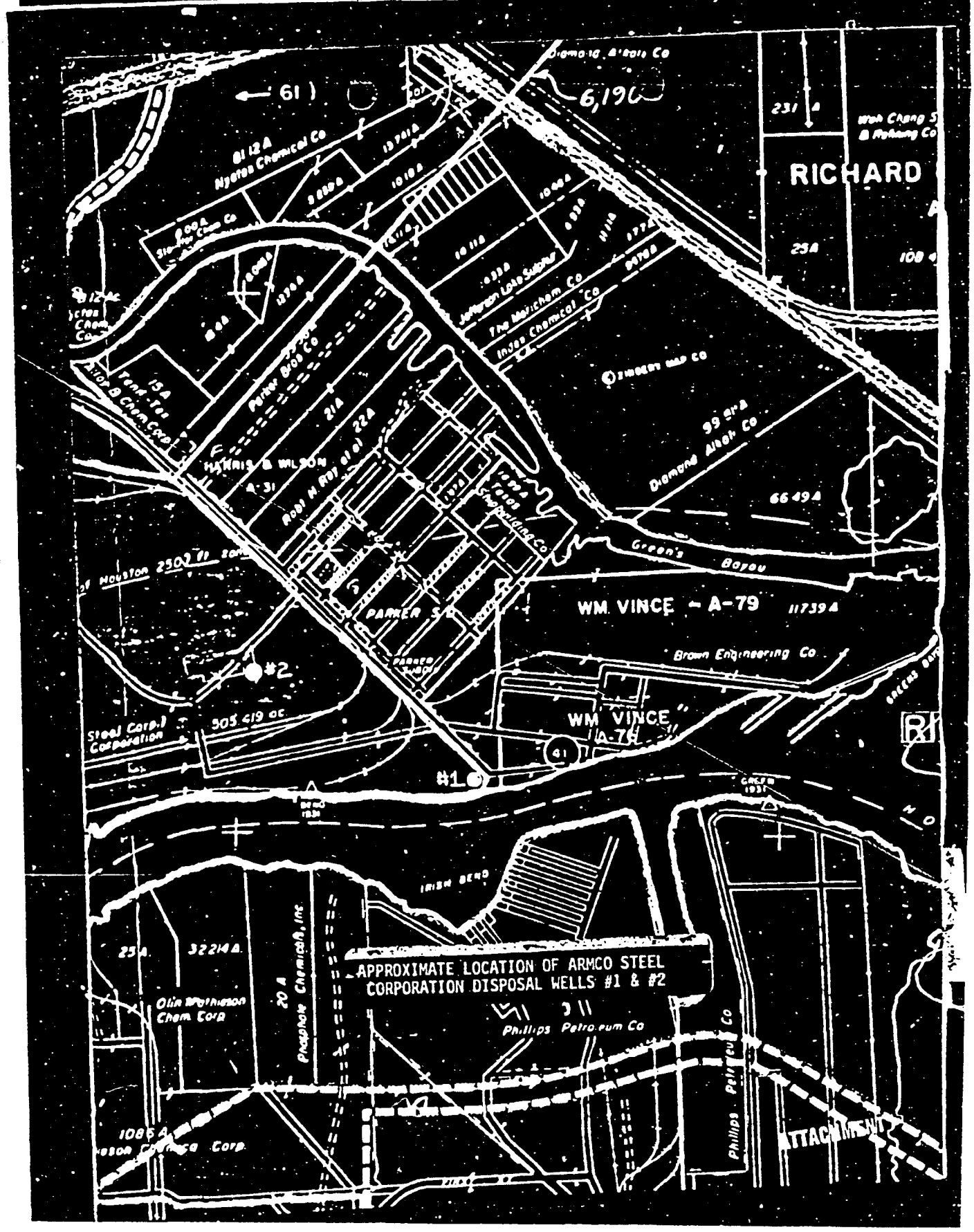
Signature of representative of permittee — Title — Date

TDWR-0072

GWO-S

Judith G. Bell 7-18-83

2 20



6WQ-S
OCT 2 2000

WDW NO.	COMPANY, ADDRESS	WELL NO.	TWC DIST	DATE ISSUED	LAST AMENDED	COUNTY	FORMATION & DEPTH	MAX RATE MAX VOL.	MAX INJ PRESSURE	STATUS OF WELL COMMENTS
89	Armco Steel Corporation P. O. Box 1367 Houston, Tx. 77001 (713) 960-6561	2	7	12/30/70		Harris	Frio Sands 6300-7000 ft	72,000,000 gals/mo	2500 psi	Not drilled Cancelled 6/14/83
90	Armco Steel Corporation P. O. Box 1367 Houston, Tx. 77001 (713) 960-6561	2	7	12/30/70		Harris				Partially drilled P&A 3/8/84 Cancellation pending
91	Monsanto Company Texas City Plant P. O. Box 1311 Texas City, Tx. 77590 (409) 942-3102	1	7	4/2/71	5/18/81 Reper-mitted 1/21/86	Galveston	Miocene Sands 5000-7500 ft	1200 gpm, cum max. rate w/ WDW-196 1000 gpm ave. 53.568 mgm w/196 525.6 mg/yr. w/196	1500 psi	PIS 1/1/77
92	Cities Service Fractionators Mt. Belvieu Plant P. O. Drawer 550 Mont Belvieu, Tx. 77580 (918) 586-2567	1	7	3/3/71		Chambers	Pliocene Sand TD 2203 ft Perfs.: 2104-2120 ft	90,000 gals/mo	800 psi	PIS 3/1/71 Cancelled 2/28/85 Transferred to RRC
97	Coastal States Petrochemical Company Corpus Christi Refinery P. O. Drawer 521 Corpus Christi, Tx. 78403 (512) 883-5211	1	12	3/31/72		Nueces	Miocene Sands 5000-6200 ft	250 gpm 7,500,000 gals/mo	2000 psi	Not drilled Cancelled 8/16/82
98	Coastal States Petrochemical Company Corpus Christi Refinery P. O. Drawer 521 Corpus Christi, Tx. 78403 (512) 883-5211	2	12	3/31/72		Nueces	Miocene Sands 5000-6200 ft	250 gpm 7,500,000 gals/mo	2000 psi	Not drilled Cancelled 8/16/82
99	Badische Corporation Freeport Plant 602 Copper Road Freeport, Tx. 77541 (409) 238-6195	2	7	8/6/71	10/20/80 Reper-mitted 1/8/85	Brazoria	Catahoula 6700-7400 ft	300 gpm (monthly ave.) 350 gpm (inst.)	1050 psi	PIS 5/19/83

FRESHWATER ARTIFICIAL PENETRATIONS

WATER WELL NO. 113630

STATE OF TEXAS PLUGGING REPORT for Tracking #113630

Owner:	**VoPak**	Owner Well #:	**WP-59**
Address:	**1500 Clinton Drive Galena Park, TX 77547**	Grid #:	**65-23-1**
Well Location:	**1500 Clinton Drive Galena Park, TX 77547**	Latitude:	**29° 43' 39" N**
		Longitude:	**095° 14' 06" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Test Well**

Drilling Information

Company: **BEST DRILLING SERVICES, INC.** Date Drilled: **2/18/2006**

Driller: **Lawrence H Tobola** License Number: **3026**

Well Report Tracking #80201

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**25**

Plugging Information

Date Plugged: **2/18/2006** Plugger: **Lawrence Tobola**

Plug Method: **Unknown**

Casing Left in Well:

No Data

Plug(s) Placed in Well:

Description (number of sacks & material)
NONE 0 - 25 / 5 cement bentonite

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **BEST DRILLING SERVICES, INC.**

P.O. BOX 845
FRIENDSWOOD, TX 77549

Driller Name: **Lawrence Tobola** License Number: **3026**

Comments: **Project No.: TX000553.0010.00004**

STATE OF TEXAS WELL REPORT for Tracking #80201

Owner:	**VoPak**	Owner Well #:	**WP-59**
Address:	**1500 Clinton Drive Galena Park, TX 77547**	Grid #:	**65-23-1**
Well Location:	**1500 Clinton Drive Galena Park, TX 77547**	Latitude:	**29° 43' 39" N**
		Longitude:	**095° 14' 06" W**
Well County:	**Harris**	Elevation:	**No Data**
		****Plugged Within 48 Hours****	

****This well has been plugged**** **Plugging Report Tracking #113630**

Type of Work: **New Well** Proposed Use: **Test Well**

Drilling Start Date: **2/18/2006** Drilling End Date: **2/18/2006**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
8.25	**0**	**25**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
12	**25**	**Gravel**	**20/40**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**10**	**5 cement benton**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Unknown**

Water Level: **No Data**

Packers: **Bentonite 10' - 12'**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Plug Information:

Description (number of sacks & material)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
NONE 0 - 25 / 5 cement bentonite		

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **Unknown**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **Unknown**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **BEST DRILLING SERVICES, INC.**

P.O. BOX 845
FRIENDSWOOD, TX 77549

Driller Name: **Lawrence Tobola** License Number: **3026**

Comments: **Project No.: TX000553.0010.00004**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**0.1**	**White gravel mixed w/SILTY CLAY, brown**
0.1	**3**	**SILTY CLAY, brown**
3	**3.5**	**Lens of black stained SILTY CLAY**
3.5	**5**	**SILTY CLAY, olive gray**
5	**14**	**SILTY CLAY, drk. gray**
14	**14.5**	**Caliche lens**
14.5	**25**	**SAND, drk. gray**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
2	**N**	**SCHL 40 PVC**	**RISER 0/14**
2	**N**	**SCHL 40 PVC**	**SCREEN 14/25 0.010**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

WATER WELL NO. 113631

STATE OF TEXAS PLUGGING REPORT for Tracking #113631

Owner:	**VoPak**	Owner Well #:	**WP-60**
Address:	**1500 Clinton Drive Galena Park, TX 77547**	Grid #:	**65-23-1**
Well Location:	**1500 Clinton Drive Galena Park, TX 77547**	Latitude:	**29° 43' 32" N**
		Longitude:	**095° 14' 06" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Test Well**

Drilling Information

Company: **BEST DRILLING SERVICES, INC.** Date Drilled: **2/18/2006**

Driller: **Lawrence H Tobola** License Number: **3026**

Well Report Tracking #80202

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**20**

Plugging Information

Date Plugged: **2/18/2006** Plugger: **Lawrence Tobola**

Plug Method: **Unknown**

Casing Left in Well:

No Data

Plug(s) Placed in Well:

Description (number of sacks & material)
NONE 0 - 20 / 2 cement bentonite

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **BEST DRILLING SERVICES, INC.**

P.O. BOX 845
FRIENDSWOOD, TX 77549

Driller Name: **Lawrence Tobola** License Number: **3026**

Comments: **Project No.: TX000553.0010.00004**

STATE OF TEXAS WELL REPORT for Tracking #80202

Owner:	**VoPak**	Owner Well #:	**WP-60**
Address:	**1500 Clinton Drive Galena Park, TX 77547**	Grid #:	**65-23-1**
		Latitude:	**29° 43' 32" N**
Well Location:	**1500 Clinton Drive Galena Park, TX 77547**	Longitude:	**095° 14' 06" W**
Well County:	**Harris**	Elevation:	**No Data**
		****Plugged Within 48 Hours****	

****This well has been plugged**** **Plugging Report Tracking #113631**

Type of Work: **New Well** Proposed Use: **Test Well**

Drilling Start Date: **2/18/2006** Drilling End Date: **2/18/2006**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
8.25	**0**	**20**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
12	**20**	**Gravel**	**20/40**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**5**	**2 cement benton**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Unknown**

Water Level: **No Data**

Packers: **Bentonite 5' - 7'**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Plug Information:

Description (number of sacks & material)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
NONE 0 - 20 / 2 cement bentonite		

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **Unknown**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **Unknown**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **BEST DRILLING SERVICES, INC.**

P.O. BOX 845
FRIENDSWOOD, TX 77549

Driller Name: **Lawrence Tobola** License Number: **3026**

Comments: **Project No.: TX000553.0010.00004**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**1.5**	**Fill, gravel, SANDY SILTY CLAY**
1.5	**4**	**SILTY CLAY, brown**
4	**7**	**SILTY SAND, tan brown**
7	**9**	**SILTY CLAY, olive gray**
9	**15**	**SAND, drk. gray to 10 turns brown**
15	**18**	**SILTY CLAY, gray**
18	**20**	**SILTY CLAY**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
2 N SCHL 40 PVC RISER 0/9			
2 N SCHL 40 PVC SCREEN 9/19 0.010			

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

WATER WELL NO. 204750

STATE OF TEXAS WELL REPORT for Tracking #204750

Owner:	**Eddie Valdez**	Owner Well #:	**Well Log #03602**
Address:	**640 Red Bluff Pasadena, TX 77506**	Grid #:	**65-23-2**
		Latitude:	**29° 43' 04" N**
Well Location:	**640 Red Bluff Pasadena, TX 77506**	Longitude:	**095° 12' 26" W**
Well County:	**Harris**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Industrial**

Drilling Start Date: **6/11/2009** Drilling End Date: **6/11/2009**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
7	**0**	**20**
5	**20**	**200**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**100**	**20**

Seal Method: **Pressure - Tremie Pipe**

Sealed By: **AWWS**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **50+**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **Owner**

Surface Completion: **Alternative Procedure Used**

Water Level: **68 ft.** below land surface on **2009-06-11** Measurement Method: **Unknown**

Packers: **Burlap 100'**
Burlap 180'

Type of Pump: **Jet** Pump Depth (ft.): **100**

Well Tests: **Jetted** **Yield: 10 GPM**

Water Quality:

Strata Depth (ft.)	Water Type
200	**Not Tested**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Almeda Water Well Service**

P.O. Box 266
Manvel, TX 77578

Driller Name: **Mike Pyburn** License Number: **2843**

Apprentice Name: **Gonzalo Cortez**

Comments: **Proposed Use: Commercial**
$mew

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**3**	**Soil**
3	**86**	**Clay-Gray Clay-Red**
86	**96**	**Sand-Tan-Fine**
96	**140**	**Clay-Red**
140	**148**	**Sand-Tan-Fine**
148	**153**	**Clay-Red**
153	**168**	**Sand-Tan-Fine**
168	**180**	**Clay-Red**
180	**200**	**Sand-Tan-Fine**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
2	**New**	**PVC SCH 40**	**0 - 180 Casing**
2	**New**	**PVC - Underbar**	**180 - 200 .004**

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

WATER WELL NO. 259669

STATE OF TEXAS WELL REPORT for Tracking #259669

Owner:	**Pasadena Refining System, Inc.**	Owner Well #:	**mw-13**
Address:	**No Data**	Grid #:	**65-23-1**
Well Location:	**111 Red Bluff Rd. TX**	Latitude:	**29° 43' 07" N**
		Longitude:	**095° 12' 40" W**
Well County:	**Harris**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Test Well**

Drilling Start Date: **4/26/2011** Drilling End Date: **4/26/2011**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
8.25	**0**	**9.5**

Drilling Method: **Hand Auger**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
2.5	**9.5**	**Gravel**	**20/40**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**1**	**.5 bentonite gr**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed**

Water Level: **No Data**

Packers: **Bentonite 1' - 2.5'**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **Unknown**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **Unknown**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Best Drilling Services, Inc.**

P.O. Box 845
Friendswood, TX 77549

Driller Name: **Alfredo Palacios** License Number: **5036**

Comments: **Project: PRSI-West**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**1**	**silty clay, DRK. BROWN**
1	**5**	**clayey silt, brown 7 black mottling**
5	**9.5**	**SILTY CLAY, brown w/black mottling**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
1	**N**	**SCH 40 PVC RISER**	**0/4.5**
1	**N**	**SCH 40 PVC SCREEN**	**4.5/9.5 0.01**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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WATER WELL NO. 327863

STATE OF TEXAS WELL REPORT for Tracking #327863

Owner:	**Troy Construction LLC.**	Owner Well #:	**No Data**
Address:	**8521 McHard Rd. Houston, TX 77053**	Grid #:	**65-23-1**
Well Location:	**Holland Ave & 10th St Galena Park, TX 77547**	Latitude:	**29° 44' 24" N**
		Longitude:	**095° 13' 45" W**
Well County:	**Harris**	Elevation:	**27 ft. above sea level**
Type of Work:	**New Well**	Proposed Use:	**Industrial**

Drilling Start Date: **7/22/2013** Drilling End Date: **7/24/2013**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
14.75	**0**	**17**
10	**17**	**300**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**17**	**10 Sacks Cement**
50	**300**	**150 Bags RC3**

Seal Method: **Unknown**

Sealed By: **BWW**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Unknown**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **Unknown**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **Unknown**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Ballard Water Well Co. LLC**

P.O. Box 970
Willis, TX 77378

Driller Name: **Sam Ballard** License Number: **54411**

Apprentice Name: **Kenneth Snuffer** Apprentice Number: **57320**

Comments: **The well drilled is a Cathodic Protection well for anode installation, not a water producing well.**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**1**	**Topsoil**
1	**30**	**Clay**
30	**50**	**Sand**
50	**75**	**Clay**
75	**90**	**Sand**
90	**140**	**Clay**
140	**170**	**Sand**
170	**220**	**Shale, Clay**
220	**290**	**Sand**
290	**300**	**Shale, Clay**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
10in New PVC Casing 0-17 Sch 40			

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WATER WELL NO. 151396

STATE OF TEXAS PLUGGING REPORT for Tracking #151396

Owner:	**Kinder Morgan**	Owner Well #:	**INJ-1 & INJ-2**
Address:	**906 Clinton Dr Galena Park, TX 77547**	Grid #:	**65-23-1**
Well Location:	**906 Clinton Drive Houston, TX 77547**	Latitude:	**29° 44' 10" N**
		Longitude:	**095° 13' 13" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Injection**

Drilling Information

Company: **BEST DRILLING SERVICES, INC.** Date Drilled: **12/16/2013**

Driller: **Alfredo Palacios** License Number: **5036**

Well Report Tracking #401072

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**2**	**0**	**25**

Plugging Information

Date Plugged: **12/16/2013** Plugger: **Alfredo Palacios**

Plug Method: **Unknown**

Casing Left in Well:

No Data

Plug(s) Placed in Well:

Description (number of sacks & material)
NONE 0/25 .5 cement bentonite grout

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **BEST DRILLING SERVICES, INC.**

P.O. BOX 845
FRIENDSWOOD, TX 77549

Driller Name: **Alfredo Palacios** License Number: **5036**

Comments: **No Data**

STATE OF TEXAS WELL REPORT for Tracking #401072

Owner:	**Kinder Morgan**	Owner Well #:	**INJ-1 & INJ-2**
Address:	**906 Clinton Dr Galena Park, TX 77547**	Grid #:	**65-23-1**
Well Location:	**906 Clinton Drive Houston, TX 77547**	Latitude:	**29° 44' 10" N**
		Longitude:	**095° 13' 13" W**
Well County:	**Harris**	Elevation:	**No Data**
		****Plugged Within 48 Hours****	

****This well has been plugged**** **Plugging Report Tracking #151396**

Type of Work: **New Well** Proposed Use: **Injection**

Drilling Start Date: **12/16/2013** Drilling End Date: **12/16/2013**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**2**	**0**	**25**

Drilling Method: **Direct Push**

Borehole Completion: **Plugged**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**25**	**.5 BENTONITE GR**

Seal Method: **TREMMIE**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Unknown**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Description (number of sacks & material)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Plug Information:	**NONE 0/25 .5 cement bentonite grout**		

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **Unknown**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **Unknown**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **BEST DRILLING SERVICES, INC.**

P.O. BOX 845
FRIENDSWOOD, TX 77549

Driller Name: **Alfredo Palacios** License Number: **5036**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**20**	**CLAY**
20	**25**	**SAND**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
No Data			

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WATER WELL NO. 151404

STATE OF TEXAS PLUGGING REPORT for Tracking #151404

Owner:	**Kinder Morgan**	Owner Well #:	**INJ-16 - INJ-20**
Address:	**906 Clinton Dr Galena Park, TX 77547**	Grid #:	**65-23-1**
Well Location:	**906 Clinton Drive Houston, TX 77547**	Latitude:	**29° 44' 10" N**
		Longitude:	**095° 13' 13" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Injection**

Drilling Information

Company: **BEST DRILLING SERVICES, INC.** Date Drilled: **12/16/2014**

Driller: **Alfredo Palacios** License Number: **5036**

Well Report Tracking #401130

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**2**	**0**	**25**

Plugging Information

Date Plugged: **12/16/2014** Plugger: **Alfredo Palacios**

Plug Method: **Unknown**

Casing Left in Well:

No Data

Plug(s) Placed in Well:

Description (number of sacks & material)
NONE 0/25 .5 cement bentonite grout

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **BEST DRILLING SERVICES, INC.**

P.O. BOX 845
FRIENDSWOOD, TX 77549

Driller Name: **Alfredo Palacios** License Number: **5036**

Comments: **No Data**

STATE OF TEXAS WELL REPORT for Tracking #401130

Owner:	**Kinder Morgan**	Owner Well #:	**INJ-16 - INJ-20**
Address:	**906 Clinton Dr Galena Park, TX 77547**	Grid #:	**65-23-1**
		Latitude:	**29° 44' 10" N**
Well Location:	**906 Clinton Drive Houston, TX 77547**	Longitude:	**095° 13' 13" W**
Well County:	**Harris**	Elevation:	**No Data**
		****Plugged Within 48 Hours****	

****This well has been plugged**** **Plugging Report Tracking #151404**

Type of Work: **New Well** Proposed Use: **Injection**

Drilling Start Date: **12/16/2014** Drilling End Date: **12/16/2014**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**2**	**0**	**25**

Drilling Method: **Direct Push**

Borehole Completion: **Plugged**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**25**	**.5 BENTONITE GR**

Seal Method: **TREMMIE**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Unknown**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Description (number of sacks & material)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Plug Information:	**NONE 0/25 .5 cement bentonite grout**		

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **Unknown**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **Unknown**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **BEST DRILLING SERVICES, INC.**

P.O. BOX 845
FRIENDSWOOD, TX 77549

Driller Name: **Alfredo Palacios** License Number: **5036**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**20**	**CLAY**
20	**25**	**SAND**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
No Data			

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WATER WELL NO. 438610

STATE OF TEXAS WELL REPORT for Tracking #438610

Owner:	**Kinder Morgan**	Owner Well #:	**ART-1**
Address:	**906 Clinton Dr. Galena Park, TX 77547**	Grid #:	**65-23-2**
		Latitude:	**29° 44' 02.79" N**
Well Location:	**906 Clinton Dr. Galena Park, TX 77547**	Longitude:	**095° 12' 20.9" W**
Well County:	**Harris**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Groundwater Remediation**

Drilling Start Date: **10/4/2016** Drilling End Date: **10/4/2016**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
12.75	**0**	**30.5**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
19	**30.5**	**Sand**	**20/40**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**17**	**Cement 1 Bags/Sacks**
17	**19**	**Sand 30 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **BEST DRILLING SERVICES, INC.**

P.O. BOX 845
FRIENDSWOOD, TX 77549

Driller Name: **Lawrence Tobola** License Number: **3026**

Comments: **Project No.: 60481537**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	2.5	CLAY, gray
2.5	4.5	CLAY, gray
4.5	10.5	CLAY, strong brown
10.5	12	CLAYEY SILT, strong brown
12	13.5	CLAY, strong brown
13.5	14	becomes SILTY
14	19	CLAY, strong brown
19	19.5	SILTY CLAY, gray
19.5	22.5	CLAY, strong brown
22.5	23	SILTY CLAY
23	26.5	CLAY, strong brown
26.5	27	SILT, reddish yellow
27	29	CLAY, strong brown
29	29.5	SANDY CLAY
29.5	30	CLAY, strong brown

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	5
2	Screen	New Plastic (PVC)	40 0.010	5	15
2	Blank	New Plastic (PVC)	40	15	20
2	Screen	New Plastic (PVC)	40 0.010	20	30
2	SILT TRAP	New Plastic (PVC)	40	30	30.5

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WATER WELL NO. 458049

STATE OF TEXAS WELL REPORT for Tracking #458049

Owner:	**Foroni Metals of Texas, Inc**	Owner Well #:	**No Data**
Address:	**3040 Post Oak Blvd, Ste 1030 Houston, TX 77056**	Grid #:	**65-15-8**
Well Location:	**13609 Industrial Rd. Houston, TX 77015**	Latitude:	**29° 45' 09.93" N**
		Longitude:	**095° 12' 12.94" W**
Well County:	**Harris**	Elevation:	**29 ft. above sea level**
Type of Work:	**Replacement**	Proposed Use:	**Domestic/Commercial**

Drilling Start Date: **8/10/2017** Drilling End Date: **8/15/2017**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
7	**0**	**420**
3.875	**420**	**440**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**420**	**Cement 35 Bags/Sacks**

Seal Method: **Halliburton**

Sealed By: **Driller**

Distance to Property Line (ft.): **10+**

Distance to Septic Field or other concentrated contamination (ft.): **100+**

Distance to Septic Tank (ft.): **100+**

Method of Verification: **Customer**

Surface Completion: **Surface Sleeve Installed** **Surface Completion by Driller**

Water Level: **112 ft.** below land surface on **2017-08-15** Measurement Method: **Sonic/Radar**

Packers: **K-Packer at 400 ft.**

Type of Pump: **Submersible** Pump Depth (ft.): **300**

Well Tests: **Jetted** **Yield: 30 GPM**

Water Quality:

Strata Depth (ft.)	Water Type
420 - 440	**Good**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Ballard Water Well Co LLC**

PO Box 1843
Willis, TX 77378

Driller Name: **Kenneth Snuffer** License Number: **59847**

Apprentice Name: **John Greenhaw** Apprentice Number: **59690**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**2**	**topsoil**
2	**180**	**clay**
180	**210**	**shale**
210	**239**	**sand**
239	**240**	**clay**
240	**259**	**sand**
259	**320**	**shale**
320	**360**	**clay**
360	**395**	**clay, w/sand streak**
395	**408**	**clay**
408	**440**	**sand**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
4	**Blank**	**New Plastic (PVC)**	**40**	**0**	**420**
2.5	**Blank**	**New Plastic (PVC)**	**80**	**400**	**420**
2.5	**Screen**	**New Stainless Steel**	**0.008**	**420**	**440**

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WATER WELL NO. 487581

STATE OF TEXAS WELL REPORT for Tracking #487581

Owner:	**Robert Goolsby/Canal Barge Co**	Owner Well #:	**No Data**
Address:	**3260 Penn City RD Houston, TX 77015**	Grid #:	**65-23-3**
Well Location:	**3260 Penn City RD Houston, TX 77015**	Latitude:	**29° 44' 35.24" N**
		Longitude:	**095° 09' 19.08" W**
Well County:	**Harris**	Elevation:	**36 ft. above sea level**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **8/20/2018** Drilling End Date: **8/22/2018**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
9	**0**	**340**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**20**	**Concrete 24 Bags/Sacks**
20	**100**	**Cement 14 Bags/Sacks**

Seal Method: **Pumped**

Sealed By: **Driller**

Distance to Property Line (ft.): **40**

Distance to Septic Field or other concentrated contamination (ft.): **not installed**

Distance to Septic Tank (ft.): **not installed**

Method of Verification: **step**

Surface Completion: **Surface Sleeve Installed** **Surface Completion by Driller**

Water Level: **115 ft.** below land surface on **2018-08-21** Measurement Method: **Air Line**

Packers: **Plastic at 100 ft.**
Plastic at 200 ft.
Plastic at 270 ft.
Plastic at 300 ft.

Type of Pump: **Submersible** Pump Depth (ft.): **160**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
275 - 340	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **paskell waterwell ser.**

235 decker rd
vidor, TX 77662

Driller Name: **John Paskell** License Number: **54902**

Comments: **5HP deep set 50 GPM Submersible set on schedule 80 threaded pvc.**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**35**	**brown clay**
35	**38**	**brown sand**
38	**91**	**brown clay**
91	**96**	**fine sand**
96	**275**	**grey hard clay/shale**
275	**340**	**very fine to medium sand**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
4	**Blank**	**New Plastic (PVC)**	**40**	**-2**	**300**
4	**Screen**	**New Plastic (PVC)**	**40 0.006**	**300**	**320**
4	**Screen**	**New Plastic (PVC)**	**40 0.008**	**320**	**340**

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(512) 334-5540

WATER WELL NO. 189683

STATE OF TEXAS PLUGGING REPORT for Tracking #189683

Owner:	**Geotest Engineering Inc**	Owner Well #:	**GBC3P-3**
Address:	**5600 Bintliff Dr Houston, TX 77036**	Grid #:	**65-23-5**
Well Location:	**2324 Marshall Street Pasadena, TX 77506**	Latitude:	**29° 42' 20.7" N**
		Longitude:	**095° 10' 51.3" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Piezometer**

Drilling Information

Company:	**Envirotech Drilling Services LLC**	Date Drilled:	**4/23/2019**
Driller:	**Jaime Vasquez**	License Number:	**58171**

Well Report Tracking #519529

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**4**	**0**	**25**

Plugging Information

Date Plugged: **7/12/2019** Plugger:

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

No Data

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**25**	**Bentonite 1.25 Bags/Sacks**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Envirotech Drilling Services LLC**

PO BOX 19064
Houston, TX 77224

Driller Name: **Jaime Vasquez** License Number: **58171**

Comments: **No Data**

STATE OF TEXAS WELL REPORT for Tracking #519529

Owner:	**Geotest Engineering Inc**	Owner Well #:	**GBC3P-3**
Address:	**5600 Bintliff Dr Houston, TX 77036**	Grid #:	**65-23-5**
Well Location:	**2324 Marshall Street Pasadena, TX 77506**	Latitude:	**29° 42' 20.7" N**
		Longitude:	**095° 10' 51.3" W**
Well County:	**Harris**	Elevation:	**No Data**

****This well has been plugged**** **Plugging Report Tracking #189683**

Type of Work: **New Well** Proposed Use: **Piezometer**

Drilling Start Date: **4/23/2019** Drilling End Date: **4/23/2019**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
4	**0**	**25**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
5	**25**	**Sand**	**16/30**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**2.5**	**Concrete 1 Bags/Sacks**
2.5	**5**	**Bentonite 1 Bags/Sacks**

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **No Data**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Envirotech Drilling Services LLC**

PO BOX 19064
Houston, TX 77224

Driller Name: **Jaime Vasquez** License Number: **58171**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**25**	**Clay**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	**Riser**	**New Plastic (PVC)**	**40**	**0**	**15**
2	**Riser**	**New Plastic (PVC)**	**40 0.010**	**15**	**25**

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(512) 334-5540

WATER WELL NO. 189685

STATE OF TEXAS PLUGGING REPORT for Tracking #189685

Owner:	**Geotest Engineering Inc**	Owner Well #:	**GBC3P-7**
Address:	**5600 Bintliff Dr Houston, TX 77036**	Grid #:	**65-23-5**
Well Location:	**301 Brown Drive Pasadena, TX 77506**	Latitude:	**29° 42' 29.4" N**
		Longitude:	**095° 10' 24.6" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Piezometer**

Drilling Information

Company: **Envirotech Drilling Services LLC** Date Drilled: **4/22/2019**

Driller: **Jaime Vasquez** License Number: **58171**

Well Report Tracking #519536

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**4**	**0**	**25**

Plugging Information

Date Plugged: **7/12/2019** Plugger:

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

No Data

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**25**	**Bentonite 1 Bags/Sacks**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Envirotech Drilling Services LLC**

PO BOX 19064
Houston, TX 77224

Driller Name: **Jaime Vasquez** License Number: **58171**

Comments: **No Data**

STATE OF TEXAS WELL REPORT for Tracking #519536

Owner:	**Geotest Engineering Inc**	Owner Well #:	**GBC3P-7**
Address:	**5600 Bintliff Dr Houston, TX 77036**	Grid #:	**65-23-5**
Well Location:	**301 Brown Drive Pasadena, TX 77506**	Latitude:	**29° 42' 29.4" N**
		Longitude:	**095° 10' 24.6" W**
Well County:	**Harris**	Elevation:	**No Data**

****This well has been plugged**** **Plugging Report Tracking #189685**

Type of Work: **New Well** Proposed Use: **Piezometer**

Drilling Start Date: **4/22/2019** Drilling End Date: **4/22/2019**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
4	**0**	**25**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
5	**25**	**Sand**	**16/30**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**2.5**	**Concrete 1 Bags/Sacks**
2.5	**5**	**Bentonite 1 Bags/Sacks**

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **No Data**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Envirotech Drilling Services LLC**

PO BOX 19064
Houston, TX 77224

Driller Name: **Jaime Vasquez** License Number: **58171**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**25**	**Clay**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	**Riser**	**New Plastic (PVC)**	**40**	**0**	**15**
2	**Riser**	**New Plastic (PVC)**	**40 0.010**	**15**	**25**

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WATER WELL NO. 189696

STATE OF TEXAS PLUGGING REPORT for Tracking #189696

Owner:	**Geotest Engineering Inc**	Owner Well #:	**GBC6-2**
Address:	**5600 Bintliff Dr Houston, TX 77036**	Grid #:	**65-23-5**
Well Location:	**2207 Pomona Drive Pasadena, TX 77506**	Latitude:	**29° 42' 27.9" N**
		Longitude:	**095° 11' 01.2" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Piezometer**

Drilling Information

Company: **Envirotech Drilling Services LLC** Date Drilled: **4/17/2019**

Driller: **Jaime Vasquez** License Number: **58171**

Well Report Tracking #519563

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**4**	**0**	**25**

Plugging Information

Date Plugged: **7/12/2019** Plugger:

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

No Data

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**25**	**Bentonite 1.25 Bags/Sacks**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Envirotech Drilling Services LLC**

PO BOX 19064
Houston, TX 77224

Driller Name: **Jaime Vasquez** License Number: **58171**

Comments: **No Data**

STATE OF TEXAS WELL REPORT for Tracking #519563

Owner:	**Geotest Engineering Inc**	Owner Well #:	**GBC6-2**
Address:	**5600 Bintliff Dr Houston, TX 77036**	Grid #:	**65-23-5**
Well Location:	**2207 Pomona Drive Pasadena, TX 77506**	Latitude:	**29° 42' 27.9" N**
		Longitude:	**095° 11' 01.2" W**
Well County:	**Harris**	Elevation:	**No Data**

****This well has been plugged**** **Plugging Report Tracking #189696**

Type of Work: **New Well** Proposed Use: **Piezometer**

Drilling Start Date: **4/17/2019** Drilling End Date: **4/17/2019**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
4	**0**	**25**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
5	**25**	**Sand**	**16/30**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**2.5**	**Concrete 1 Bags/Sacks**
2.5	**5**	**Bentonite 1 Bags/Sacks**

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **No Data**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Envirotech Drilling Services LLC**

PO BOX 19064
Houston, TX 77224

Driller Name: **Jaime Vasquez** License Number: **58171**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**25**	**Clay**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	**Riser**	**New Plastic (PVC)**	**40**	**0**	**15**
2	**Riser**	**New Plastic (PVC)**	**40 0.010**	**15**	**25**

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WATER WELL NO. 534061

STATE OF TEXAS WELL REPORT for Tracking #534061

Owner:	**LJA Rail LLC**	Owner Well #:	**No Data**
Address:	**2929 Briarpark Ste 600 Houston , TX 77042**	Grid #:	**65-23-2**
Well Location:	**1001 N. South St Pasadena, TX, TX 77503**	Latitude:	**29° 43' 40.64" N**
		Longitude:	**095° 10' 19.7" W**
Well County:	**Harris**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **11/11/2019** Drilling End Date: **11/12/2019**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
7	**0**	**330**
3.875	**330**	**350**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **2 string**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**330**	**Cement 42 Bags/Sacks**
0	**10**	**Concrete 12 Bags/Sacks**

Seal Method: **Pressure**

Sealed By: **Driller**

Distance to Property Line (ft.): **40**

Distance to Septic Field or other concentrated contamination (ft.): **n/a**

Distance to Septic Tank (ft.): **n/a**

Method of Verification: **owner**

Surface Completion: **Surface Sleeve Installed** **Surface Completion by Driller**

Water Level: **115 ft.** below land surface on **2019-11-12** Measurement Method: **Weighted Line**

Packers: **K-Packer at 320 ft.**

Type of Pump: **Submersible** Pump Depth (ft.): **180**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
300 - 350	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Robinson Water Well**

11819 W Montgomery
Houston, TX 77086

Driller Name: **Kyle Robinson** License Number: **59450**

Apprentice Name: **Aaron Joohnson**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**60**	**clay**
60	**130**	**shale**
130	**150**	**clay**
150	**165**	**sand**
165	**255**	**shale**
255	**265**	**sand**
265	**300**	**clay**
300	**350**	**sand**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
4		**New Plastic (PVC)**	**40**	**0**	**330**
2.5		**New Plastic (PVC)**	**40**	**320**	**330**
2.5		**New Plastic (PVC)**	**40**	**330**	**350**

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WATER WELL NO. 541359

STATE OF TEXAS WELL REPORT for Tracking #541359

Owner:	**Clough USA**	Owner Well #:	**No Data**
Address:	**9800 Richmond Ave Ste 600 Houston , TX 77042**	Grid #:	**65-23-2**
Well Location:	**601 N South Street Pasadena, TX 77503**	Latitude:	**29° 43' 34" N**
		Longitude:	**095° 10' 20" W**
Well County:	**Harris**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Industrial**

Drilling Start Date: **4/13/2020** Drilling End Date: **4/16/2020**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
8.75	**0**	**420**
5	**420**	**460**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**420**	**Cement 30 Bags/Sacks**

Seal Method: **Halliburton**

Sealed By: **Driller**

Distance to Property Line (ft.): **50+**

Distance to Septic Field or other concentrated contamination (ft.): **100+**

Distance to Septic Tank (ft.): **100+**

Method of Verification: **Customer**

Surface Completion: **Surface Sleeve Installed** **Surface Completion by Driller**

Water Level: **114 ft.** below land surface on **2020-04-16** Measurement Method: **Sonic/Radar**

Packers: **K-Packer at 400 ft.**

Type of Pump: **Submersible** Pump Depth (ft.): **315**

Well Tests: **Jetted** **Yield: 200 GPM**

Water Quality:

Strata Depth (ft.)	Water Type
420 - 460	**Good**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Ballard Water Well Co. LLC**

P.O. Box 970
Willis, TX 77378

Driller Name: **Samuel Ballard** License Number: **54411**

Apprentice Name: **John Greenhaw** Apprentice Number: **59690**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**80**	**clay**
80	**90**	**sand**
90	**222**	**clay**
222	**227**	**sand**
227	**320**	**clay**
320	**350**	**sand**
350	**380**	**clay**
380	**420**	**sand w/clay breaks**
420	**460**	**sand**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
5	**Blank**	**New Plastic (PVC)**	**SDR17**	**0**	**420**
3	**Blank**	**New Galvanized Steel**	**40**	**400**	**420**
3	**Screen**	**New Stainless Steel**	**0.008**	**420**	**440**
3	**Screen**	**New Stainless Steel**	**0.010**	**440**	**460**

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WATER WELL NO. 198069

STATE OF TEXAS PLUGGING REPORT for Tracking #198069

Owner:	**CP & Y Inc.**	Owner Well #:	**PZ-1**
Address:	**11757 Katy Freeway Suite 1540 Houston, TX 77079**	Grid #:	**65-23-1**
		Latitude:	**29° 44' 05.89" N**
Well Location:	**2342 Federal Road Houston, TX 77015**	Longitude:	**095° 12' 57.04" W**
		Elevation:	**No Data**
Well County:	**Harris**		

Well Type: **Piezometer**

Drilling Information

Company: **Envirotech Drilling Services LLC** Date Drilled: **8/28/2019**

Driller: **Jaime Vasquez** License Number: **58171**

Well Report Tracking #541530

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**6**	**0**	**50**

Plugging Information

Date Plugged: **3/31/2020** Plugger:

Plug Method: **Large diameter well filled with clay material from top to bottom**

Casing Left in Well:

No Data

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**50**	**Bentonite 2.5 Bags/Sacks**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Envirotech Drilling Services LLC**

PO BOX 19064
Houston, TX 77224

Driller Name: **Jaime Vasquez** License Number: **58171**

Comments: **No Data**

Report Amended on 5/5/2020 by Request #18568

STATE OF TEXAS WELL REPORT for Tracking #541530

Owner:	**CP & Y Inc.**	Owner Well #:	**PZ-1**
Address:	**11757 Katy Freeway Suite 1540 Houston, TX 77079**	Grid #:	**65-23-1**
		Latitude:	**29° 44' 05.89" N**
Well Location:	**2342 Federal Road Houston, TX 77015**	Longitude:	**095° 12' 57.04" W**
		Elevation:	**No Data**
Well County:	**Harris**		

****This well has been plugged**** **Plugging Report Tracking #198069**

Type of Work: **New Well** Proposed Use: **Piezometer**

Drilling Start Date: **8/28/2019** Drilling End Date: **8/28/2019**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
6	**0**	**50**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
38	**50**	**Sand**	**16/30**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**36**	**Cement 6 Bags/Sacks**
36	**38**	**Bentonite 1 Bags/Sacks**

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Envirotech Drilling Services LLC**

PO BOX 19064
Houston, TX 77224

Driller Name: **Jaime Vasquez** License Number: **58171**

Comments: **No Data**

Report Amended on 5/5/2020 by Request #31680

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**4**	**Fat Clay with Sand**
4	**8**	**Fat Clay**
8	**12**	**Silty Sand**
12	**18**	**Fat Clay**
18	**28**	**Sandy Lean Clay**
28	**42**	**Silty Sand**
42	**50**	**Fat Clay**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	**Riser**	**New Plastic (PVC)**	**40**	**0**	**39**
2	**Screen**	**New Plastic (PVC)**	**40 0.010**	**39**	**49**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

WATER WELL NO. 198071

STATE OF TEXAS PLUGGING REPORT for Tracking #198071

Owner:	**CP & Y Inc.**	Owner Well #:	**PZ-2**
Address:	**11757 Katy Freeway Suite 1540 Houston, TX 77079**	Grid #:	**65-23-1**
		Latitude:	**29° 44' 07.12" N**
Well Location:	**2342 Federal Road Houston, TX 77015**	Longitude:	**095° 12' 54.33" W**
		Elevation:	**No Data**
Well County:	**Harris**		

Well Type: **Piezometer**

Drilling Information

Company: **Envirotech Drilling Services LLC** Date Drilled: **8/28/2019**

Driller: **Jaime Vasquez** License Number: **58171**

Well Report Tracking #541546

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**6**	**0**	**50**

Plugging Information

Date Plugged: **3/31/2020** Plugger:

Plug Method: **Large diameter well filled with clay material from top to bottom**

Casing Left in Well:

No Data

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**50**	**Bentonite 2.5 Bags/Sacks**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Envirotech Drilling Services LLC**

PO BOX 19064
Houston, TX 77224

Driller Name: **Jaime Vasquez** License Number: **58171**

Comments: **No Data**

Report Amended on 5/5/2020 by Request #18569

STATE OF TEXAS WELL REPORT for Tracking #541546

Owner:	**CP & Y Inc.**	Owner Well #:	**PZ-2**
Address:	**11757 Katy Freeway Suite 1540 Houston, TX 77079**	Grid #:	**65-23-1**
		Latitude:	**29° 44' 07.12" N**
Well Location:	**2342 Federal Road Houston, TX 77015**	Longitude:	**095° 12' 54.33" W**
		Elevation:	**No Data**
Well County:	**Harris**		

****This well has been plugged**** **Plugging Report Tracking #198071**

Type of Work: **New Well** Proposed Use: **Piezometer**

Drilling Start Date: **11/15/2019** Drilling End Date: **11/15/2019**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
6	**0**	**50**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
38	**50**	**Sand**	**16/30**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**36**	**Cement 6 Bags/Sacks**
36	**38**	**Bentonite 1 Bags/Sacks**

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Envirotech Drilling Services LLC**

PO BOX 19064
Houston, TX 77224

Driller Name: **Jaime Vasquez** License Number: **58171**

Comments: **No Data**

Report Amended on 5/5/2020 by Request #31681

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**0.5**	**Concrete**
0.5	**6**	**Fat Clay**
6	**16**	**Lean Clay**
16	**28**	**Lean Clay with Sand**
28	**48**	**Fat Clay**
48	**50**	**Lean Clay**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	**Riser**	**New Plastic (PVC)**	**40**	**0**	**39**
2	**Screen**	**New Plastic (PVC)**	**40 0.010**	**39**	**49**

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

WATER WELL NO. 198072

STATE OF TEXAS PLUGGING REPORT for Tracking #198072

Owner:	**CP & Y Inc.**	Owner Well #:	**PZ-3**
Address:	**11757 Katy Freeway Suite 1540 Houston, TX 77079**	Grid #:	**65-23-1**
		Latitude:	**29° 44' 05.56" N**
Well Location:	**2342 Federal Road Houston, TX 77015**	Longitude:	**095° 12' 51.57" W**
		Elevation:	**No Data**
Well County:	**Harris**		

Well Type: **Piezometer**

Drilling Information

Company: **Envirotech Drilling Services LLC** Date Drilled: **11/15/2019**

Driller: **Jaime Vasquez** License Number: **58171**

Well Report Tracking #541581

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**6**	**0**	**50**

Plugging Information

Date Plugged: **3/31/2020** Plugger:

Plug Method: **Large diameter well filled with clay material from top to bottom**

Casing Left in Well:

No Data

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**50**	**Bentonite 2.5 Bags/Sacks**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Envirotech Drilling Services LLC**

PO BOX 19064
Houston, TX 77224

Driller Name: **Jaime Vasquez** License Number: **58171**

Comments: **No Data**

Report Amended on 5/5/2020 by Request #18570

STATE OF TEXAS WELL REPORT for Tracking #541581

Owner:	**CP & Y Inc.**	Owner Well #:	**PZ-3**
Address:	**11757 Katy Freeway Suite 1540 Houston, TX 77079**	Grid #:	**65-23-1**
		Latitude:	**29° 44' 05.56" N**
Well Location:	**2342 Federal Road Houston, TX 77015**	Longitude:	**095° 12' 51.57" W**
		Elevation:	**No Data**
Well County:	**Harris**		

****This well has been plugged**** **Plugging Report Tracking #198072**

Type of Work: **New Well** Proposed Use: **Piezometer**

Drilling Start Date: **11/15/2019** Drilling End Date: **11/15/2019**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
6	**0**	**50**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
38	**50**	**Sand**	**16/30**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**36**	**Cement 6 Bags/Sacks**
36	**38**	**Bentonite 1 Bags/Sacks**

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Envirotech Drilling Services LLC**

PO BOX 19064
Houston, TX 77224

Driller Name: **Jaime Vasquez** License Number: **58171**

Comments: **No Data**

Report Amended on 5/5/2020 by Request #31682

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**1**	**Concrete**
1	**8**	**Sandy Fat Clay**
8	**10**	**Fat Clay**
10	**16**	**Sandy Lean Clay**
16	**50**	**Fat Caly**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	**Riser**	**New Plastic (PVC)**	**40**	**0**	**39**
2	**Screen**	**New Plastic (PVC)**	**40 0.010**	**39**	**49**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

WATER WELL NO. 198073

STATE OF TEXAS PLUGGING REPORT for Tracking #198073

Owner:	**CP & Y Inc.**	Owner Well #:	**PZ-4**
Address:	**11757 Katy Freeway Suite 1540 Houston, TX 77079**	Grid #:	**65-23-1**
		Latitude:	**29° 44' 04.03" N**
Well Location:	**2342 Federal Road Houston, TX 77015**	Longitude:	**095° 12' 56.34" W**
		Elevation:	**No Data**
Well County:	**Harris**		

Well Type: **Piezometer**

Drilling Information

Company: **Envirotech Drilling Services LLC** Date Drilled: **8/29/2019**

Driller: **Jaime Vasquez** License Number: **58171**

Well Report Tracking #541587

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**6**	**0**	**50**

Plugging Information

Date Plugged: **4/1/2020** Plugger:

Plug Method: **Large diameter well filled with clay material from top to bottom**

Casing Left in Well:

No Data

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**50**	**Bentonite 2.5 Bags/Sacks**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Envirotech Drilling Services LLC**

PO BOX 19064
Houston, TX 77224

Driller Name: **Jaime Vasquez** License Number: **58171**

Comments: **No Data**

Report Amended on 5/5/2020 by Request #18571

STATE OF TEXAS WELL REPORT for Tracking #541587

Owner:	**CP & Y Inc.**	Owner Well #:	**PZ-4**
Address:	**11757 Katy Freeway Suite 1540 Houston, TX 77079**	Grid #:	**65-23-1**
		Latitude:	**29° 44' 04.03" N**
Well Location:	**2342 Federal Road Houston, TX 77015**	Longitude:	**095° 12' 56.34" W**
		Elevation:	**No Data**
Well County:	**Harris**		

****This well has been plugged**** **Plugging Report Tracking #198073**

Type of Work: **New Well** Proposed Use: **Piezometer**

Drilling Start Date: **8/29/2019** Drilling End Date: **8/29/2019**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**6**	**0**	**50**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**38**	**50**	**Sand**	**16/30**

Annular Seal Data: **No Data**

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Envirotech Drilling Services LLC**

PO BOX 19064
Houston, TX 77224

Driller Name: **Jaime Vasquez** License Number: **58171**

Comments: **No Data**

Report Amended on 5/5/2020 by Request #31683

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**2**	**Sandy Lean Clay**
2	**10**	**Fat Clay**
10	**23**	**Sandy Lean Clay**
23	**38**	**Poorly Graded Sand with Silt**
38	**50**	**Fat Clay**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	**Riser**	**New Plastic (PVC)**	**40**	**0**	**39**
2	**Screen**	**New Plastic (PVC)**	**40 0.010**	**39**	**49**

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

WATER WELL NO. 205888

STATE OF TEXAS PLUGGING REPORT for Tracking #205888

Owner:	**Targa Midstream**	Owner Well #:	**LSNG-26A**
Address:	**12510 American Petroleum Rd. Houston, TX 77015**	Grid #:	**65-23-2**
Well Location:	**12510 American Petroleum Rd. Houston, TX 77015**	Latitude:	**29° 44' 40.16" N**
		Longitude:	**095° 12' 16.6" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Test Well**

Drilling Information

Company: **BEST DRILLING SERVICES, INC.** Date Drilled: **12/8/2020**

Driller: **Ali Firouzbakht** License Number: **4997**

Well Report Tracking #563277

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	**3**	**0**	**20**

Plugging Information

Date Plugged: **12/8/2020** Plugger: **Ramon Gutierrez**

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

Dia (in.)	Top (ft.)	Bottom (ft.)
0	**0**	**0**

Plug(s) Placed in Well:

Top (ft.)	Bottom (ft.)	Description (number of sacks & material)
0	**20**	**Bentonite 1 Bags/Sacks**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **BEST DRILLING SERVICES, INC.**

P.O. BOX 70822
Houston, TX 77270

Driller Name: **Ali Firouzbakht** License Number: **4997**

Apprentice Name: **Ramon Gutierrez** Apprentice Number: **58111**

Comments: **No Data**

STATE OF TEXAS WELL REPORT for Tracking #563277

Owner:	**Targa Midstream**	Owner Well #:	**LSNG-26A**
Address:	**12510 American Petroleum Rd. Houston, TX 77015**	Grid #:	**65-23-2**
Well Location:	**12510 American Petroleum Rd. Houston, TX 77015**	Latitude:	**29° 44' 40.16" N**
		Longitude:	**095° 12' 16.6" W**
Well County:	**Harris**	Elevation:	**No Data**
		****Plugged Within 48 Hours****	

****This well has been plugged**** **Plugging Report Tracking #205888**

Type of Work: **New Well** Proposed Use: **Test Well**

Drilling Start Date: **12/8/2020** Drilling End Date: **12/8/2020**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**3**	**0**	**20**

Drilling Method: **Hand Auger**

Borehole Completion: **Plugged**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**20**	**Bentonite 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **No Data** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **BEST DRILLING SERVICES, INC.**

P.O. BOX 70822
Houston, TX 77270

Driller Name: **Ali Firouzbakht** License Number: **4997**

Apprentice Name: **Ramon Gutierrez** Apprentice Number: **58111**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**11**	**CLAYEY SAND, lt. gray**
11	**11.5**	**SANDY CLAY, gray**
11.5	**13.5**	**SANDY CLAY, brown**
13.5	**17**	**SANDY CLAY, gray**
17	**20**	**SANDY CLAY, red**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
1	**Blank**	**New Plastic (PVC)**	**40**	**0**	**10**
1	**Screen**	**New Plastic (PVC)**	**40 0.010**	**10**	**20**

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P.O. Box 12157
Austin, TX 78711
(512) 334-5540

WATER WELL NO. 205894

STATE OF TEXAS PLUGGING REPORT for Tracking #205894

Owner:	**Targa Midstream**	Owner Well #:	**LSNG-22A**
Address:	**12510 American Petroleum Rd. Houston, TX 77015**	Grid #:	**65-23-2**
Well Location:	**12510 American Petroleum Rd. Houston, TX 77015**	Latitude:	**29° 44' 39.48" N**
		Longitude:	**095° 12' 16.75" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Test Well**

Drilling Information

Company: **BEST DRILLING SERVICES, INC.** Date Drilled: **12/8/2020**

Driller: **Ali Firouzbakht** License Number: **4997**

Well Report Tracking #563279

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	**3**	**0**	**20**

Plugging Information

Date Plugged: **12/8/2020** Plugger: **Ramon Gutierrez**

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

Dia (in.)	Top (ft.)	Bottom (ft.)
0	**0**	**0**

Plug(s) Placed in Well:

Top (ft.)	Bottom (ft.)	Description (number of sacks & material)
0	**20**	**Bentonite 1 Bags/Sacks**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **BEST DRILLING SERVICES, INC.**

P.O. BOX 70822
Houston, TX 77270

Driller Name: **Ali Firouzbakht** License Number: **4997**

Apprentice Name: **Ramon Gutierrez** Apprentice Number: **58111**

Comments: **No Data**

STATE OF TEXAS WELL REPORT for Tracking #563279

Owner:	**Targa Midstream**	Owner Well #:	**LSNG-22A**
Address:	**12510 American Petroleum Rd. Houston, TX 77015**	Grid #:	**65-23-2**
Well Location:	**12510 American Petroleum Rd. Houston, TX 77015**	Latitude:	**29° 44' 39.48" N**
		Longitude:	**095° 12' 16.75" W**
Well County:	**Harris**	Elevation:	**No Data**
		****Plugged Within 48 Hours****	

****This well has been plugged**** **Plugging Report Tracking #205894**

Type of Work: **New Well** Proposed Use: **Test Well**

Drilling Start Date: **12/8/2020** Drilling End Date: **12/8/2020**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**3**	**0**	**20**

Drilling Method: **Hand Auger**

Borehole Completion: **Plugged**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**20**	**Bentonite 1 Bags/Sacks**

Seal Method: **Tremie**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **No Data** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **BEST DRILLING SERVICES, INC.**

P.O. BOX 70822
Houston, TX 77270

Driller Name: **Ali Firouzbakht** License Number: **4997**

Apprentice Name: **Ramon Gutierrez** Apprentice Number: **58111**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**13.5**	**SANDY CLAY, lt. gray**
13.5	**14.5**	**CLAYE SAND, brown**
14.5	**16.5**	**SANDY CLAY, red**
16.5	**19.5**	**SANDY CLAY, gray**
19.5	**20**	**Fine SAND, gray**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
1	**Blank**	**New Plastic (PVC)**	**40**	**0**	**10**
1	**Screen**	**New Plastic (PVC)**	**40 0.010**	**10**	**20**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

WATER WELL NO. 596977

STATE OF TEXAS WELL REPORT for Tracking #596977

Owner:	**Air Products, LLC**	Owner Well #:	**TIP-3**
Address:	**7201 Hamilton Blvd. Allentown, PA 18195**	Grid #:	**65-23-2**
Well Location:	**1423 Highway 225 Pasadena, TX 77506**	Latitude:	**29° 43' 08.43" N**
		Longitude:	**095° 11' 32.4" W**
Well County:	**Harris**	Elevation:	**No Data**
Type of Work:	**Soil boring**	Proposed Use:	**Injection - Temporary**

Drilling Start Date: **1/10/2022** Drilling End Date: **1/12/2022**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**2**	**0**	**37**

Drilling Method: **Direct Push**

Borehole Completion: **Plugged**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**37**	**CEMENT BENTONITE GROUT 2 Bags/Sacks**

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **No Data** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **BEST DRILLING SERVICES, INC.**

P.O. BOX 70822
Houston, TX 77270

Driller Name: **Ali Firouzbakht** License Number: **4997**

Apprentice Name: **Calistro Campozano** Apprentice Number: **56591**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**2**	**Fill**
2	**5**	**CLAY, drk. gray, slightly SILTY**
5	**13**	**SILTY CLAY, yellowish-red to yellowish-gray CLAY**
13	**20**	**CLAY, yellowish-red with CLAYEY SAND seams**
20	**35**	**CLAY, yellowish-red to yellowish-gray, SILTY CLAY**
35	**38**	**CLAYEY SILT to SAND SILT, yellowish-red with CLAY seams**
38	**40**	**CLAY, yellowish-red**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
No Data			

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WATER WELL NO. 604806

STATE OF TEXAS WELL REPORT for Tracking #604806

Owner:	**EMS MANAGMENT**	Owner Well #:	**No Data**
Address:	**PO BOX 157 DENISON, TX 75021**	Grid #:	**65-23-2**
Well Location:	**185 ETHYL RD PASADENA, TX 77503**	Latitude:	**29° 43' 24" N**
		Longitude:	**095° 10' 09" W**
Well County:	**Harris**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**COMM NON PUBLIC**

Drilling Start Date: **4/13/2022** Drilling End Date: **4/14/2022**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**7.5**	**0**	**365**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **2 STRING**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**340**	**Cement 45 Bags/Sacks**
	0	**10**	**Cement & Sand Mix 10 Bags/Sacks**

Seal Method: **Pressure**

Sealed By: **Driller**

Variance Number: **DRILLER**

Distance to Property Line (ft.): **45**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **OWNER**

Surface Completion: **Surface Sleeve Installed** **Surface Completion by Driller**

Water Level: **120 ft.** below land surface on **No Data**

Packers: **K-Packer at 330 ft.**

Type of Pump: **Submersible**

Well Tests: **Yield: 40 GPM**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Scott Drilling Inc.**

11923 Green Pines Circle
Houston, TX 77066

Driller Name: **SCOTT ROBINSON** License Number: **4839**

Apprentice Name: **FRANKIE VASQUEZ** Apprentice Number: **59059**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**80**	**CLAY**
80	**105**	**SAND**
105	**335**	**CLAY**
335	**365**	**SAND .006**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
4	**CASING**	**New Plastic (PVC)**		**0**	**340**
2.5	**LINER**	**New Plastic (PVC)**		**330**	**340**
2.5	**Screen**	**New Plastic (PVC)**	**0.006**	**340**	**365**

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WATER WELL NO. 623224

STATE OF TEXAS WELL REPORT for Tracking #623224

Owner:	**Geoscience Engineering and Testing**	Owner Well #:	**B3**
Address:	**405 E 20th St. Houston, TX 77008**	Grid #:	**65-23-2**
Well Location:	**Bearle St Pasadena, TX**	Latitude:	**29° 42' 37.38" N**
		Longitude:	**095° 11' 06.11" W**
Well County:	**Harris**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Piezometer**

Drilling Start Date: **11/8/2022** Drilling End Date: **11/8/2022**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
5	**0**	**25**

Drilling Method: **auger**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
13	**25**	**Gravel**	

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**13**	**Bentonite 0.5 Bags/Sacks**

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **pvc stickup with orange locking cap** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Soltek LLC**

30211 W Geneva Dr.
Spring, TX 77386

Driller Name: **Brian K Johnson** License Number: **59632**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**6**	**sandy clay**
6	**14**	**clay**
14	**18**	**silty sand with clay**
18	**25**	**sandy clay**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	**Riser**	**New Plastic (PVC)**	**40**	**0**	**15**
2	**Screen**	**New Plastic (PVC)**	**40 0.010**	**15**	**25**

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WATER WELL NO. 623226

STATE OF TEXAS WELL REPORT for Tracking #623226

Owner:	**Geoscience Engineering and Testing**	Owner Well #:	**B9**
Address:	**405 E 20th St. Houston, TX 77008**	Grid #:	**65-23-5**
Well Location:	**Delta St. Pasadena, TX**	Latitude:	**29° 42' 23.7" N**
		Longitude:	**095° 10' 39.6" W**
Well County:	**Harris**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Piezometer**

Drilling Start Date: **11/8/2022** Drilling End Date: **11/8/2022**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
5	**0**	**25**

Drilling Method: **auger**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
13	**25**	**Gravel**	

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**13**	**Bentonite 0.5 Bags/Sacks**

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **pvc stickup with orange locking cap** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Soltek LLC**

30211 W Geneva Dr.
Spring, TX 77386

Driller Name: **Brian K Johnson** License Number: **59632**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**6**	**sandy clay**
6	**25**	**clay**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	**Riser**	**New Plastic (PVC)**	**40**	**0**	**15**
2	**Screen**	**New Plastic (PVC)**	**40 0.010**	**15**	**25**

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WATER WELL NO. 9423

STATE OF TEXAS PLUGGING REPORT for Tracking #9423

Owner:	**Kinder Morgan**	Owner Well #:	**WW-2104**
Address:	**916 N. Witter Pasadena, TX**	Grid #:	**65-23-2**
Well Location:	**916 N. Witter Pasadena, TX**	Latitude:	**29° 44' 33" N**
		Longitude:	**095° 11' 01" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company:	**No Data**	Date Drilled:	**No Data**
Driller:	**No Data**	License Number:	**No Data**

Borehole: **No Data**

Plugging Information

Date Plugged: **11/8/2002** Plugger: **Alfredo**

Plug Method: **Tremmie pipe cement from bottom to top**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
8	**0**	**700**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**700**	**60**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Best Drilling**

PO Box 845
Friendswood, TX 77549

Driller Name: **Alfredo** License Number: **5036**

Comments: **Entered by DG**

WATER WELL NO. 19429

STATE OF TEXAS PLUGGING REPORT for Tracking #19429

Owner:	**GB Biosciences Corp.**	Owner Well #:	**G1010074A**
Address:	**2239 Haden Road Houston, TX 77015**	Grid #:	**65-15-8**
Well Location:	**2239 Haden Road Houston, TX 77015**	Latitude:	**29° 45' 34" N**
		Longitude:	**095° 10' 10" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company:	**No Data**	Date Drilled:	**12/8/1955**
Driller:	**E.W.Davis**	License Number:	**No Data**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
15		
8		**1175**

Plugging Information

Date Plugged: **9/23/2004** Plugger: **Richard H. Allbritton**

Plug Method: **Tremmie pipe cement from bottom to top**

Casing Left in Well:

DIa (in.)	*Top (ft.)*	*Bottom (ft.)*
16	**-1**	**909**
8.625	**811**	**1175**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**1175**	**855**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Richard H. Allbritton**

5931 Brittmore Rd.
Houston, TX 77539

Driller Name: **Rik Allbritton** License Number: **4633**

Comments: **Amended 10-7-04 Ref#442**
Amended 9-24-04 Ref#378

Report Amended on by Request #378

Report Amended on by Request #442

WATER WELL NO. 92548

STATE OF TEXAS PLUGGING REPORT for Tracking #92548

Owner:	**Ballard Exploration Company In**	Owner Well #:	**HoustonShipCh#2**
Address:	**1021 Main St., Suite 2310 Houston, TX 77002**	Grid #:	**65-23-3**
Well Location:	**3300 Penn City Rod Houston, TX 77015**	Latitude:	**29° 44' 37" N**
		Longitude:	**095° 09' 21" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company: **No Data** Date Drilled: **11/10/2006**

Driller: **Harry C. Bryson** License Number: **1314**

Well Report Tracking #283466

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**7.25**		**350**

Plugging Information

Date Plugged: **1/14/2014** Plugger: **Harry C. Bryson**

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
4	**0**	**350**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**10**	**4**
10	**350**	**14 Bags**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **B & L Water Well Service,Inc.**

P.O. Box 213
Winnie, TX 77665

Driller Name: **Harry C. Bryson** License Number: **1314**

Apprentice Name: **David Tobey** Apprentice Number: **57147**

Comments: **No Data**

STATE OF TEXAS WELL REPORT for Tracking #283466

Owner:	**Ballard Exploration Inc.**	Owner Well #:	**See Comments**
Address:	**1021 Main St. Ste.2310 Houston, TX 77002**	Grid #:	**65-23-3**
		Latitude:	**29° 44' 37" N**
Well Location:	**3250 Penn City Rd. Channelview, TX 77053**	Longitude:	**095° 09' 21" W**
Well County:	**Harris**	Elevation:	**No Data**

****This well has been plugged**** **Plugging Report Tracking #92548**

Type of Work: **New Well** Proposed Use: **Rig Supply**

Drilling Start Date: **11/10/2006** Drilling End Date: **11/10/2006**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**7.25**	**0**	**350**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Straight Wall**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**10**	**10**

Seal Method: **Unknown**

Sealed By: **Driller**

Distance to Property Line (ft.): **n/a**

Distance to Septic Field or other concentrated contamination (ft.): **n/a**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Sleeve Installed**

Water Level: **90 ft.** below land surface on **2006-11-10** Measurement Method: **Unknown**

Packers: **No Data**

Type of Pump: **Submersible** Pump Depth (ft.): **185**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**Fresh**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **B & L Water Well Service Inc.**

PO Box 213
Winnie, TX 77665

Driller Name: **Harry Bryson** License Number: **1314**

Apprentice Name: **David Tobey** Apprentice Number: **57147**

Comments: **Well #: Houston Ship channel #2**
Letter submitted with well reports expaining why reprots were filed so late.
^EAD

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**180**	**clay**
180	**215**	**sand**
215	**295**	**clay**
295	**340**	**sand**
340	**350**	**clay**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.) New/Used Type Setting From/To (ft.)
4" New Plastic 0'-310' Sch 40
4" New Plastic Slotted 310'-350' .010

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WATER WELL NO. 94033

STATE OF TEXAS PLUGGING REPORT for Tracking #94033

Owner:	**AES Deepwater**	Owner Well #:	**No Data**
Address:	**701 Light Co. Rd. Pasadena, TX 77506**	Grid #:	**65-23-1**
Well Location:	**701 Light Co. Rd. Pasadena, TX 77506**	Latitude:	**29° 43' 00" N**
		Longitude:	**095° 13' 38" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company:	**No Data**	Date Drilled:	**No Data**
Driller:	**No Data**	License Number:	**No Data**

Borehole: **No Data**

Plugging Information

Date Plugged: **5/1/2014** Plugger: **Rodney Simonelli**

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
5	**0**	**400**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**100**	**8 Sacks Cement**
100	**200**	**8 Sacks Bentonite**
200	**300**	**8 Sacks Cement**
300	**400**	**8 Sacks Bentonite**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information:	**Ballard Water Well Co. LLC** **P.O. Box 970** **Willis, TX 77378**		
Driller Name:	**Sam Ballard**	License Number:	**54411**
Apprentice Name:	**Rodney Simonelli**	Apprentice Number:	**57590**
Comments:	**Unable to remove pump.**		

WATER WELL NO. 81642

STATE OF TEXAS PLUGGING REPORT for Tracking #81642

Owner:	**ChevronPhillips Chemical Compl**	Owner Well #:	**WW-6**
Address:	**1400 Jefferson Road Pasadena, TX 77506**	Grid #:	**65-23-2**
Well Location:	**1400 Jefferson Road Pasadena, TX 77506**	Latitude:	**29° 44' 10" N**
		Longitude:	**095° 10' 54" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company:	**No Data**	Date Drilled:	**No Data**
Driller:	**No Data**	License Number:	**No Data**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
20		
12		**1416**

Plugging Information

Date Plugged: **6/7/2012** Plugger: **Mario Moya**

Plug Method: **Tremmie pipe cement from bottom to top**

Casing Left in Well:

DIa (in.)	*Top (ft.)*	*Bottom (ft.)*
20	**0**	**624**
12	**624**	**1416**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**1416**	**~ 1300 Portland**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Advanced Drilling Systems, Inc.**

904 W. Tidwell Rd.
Houston, TX 77091

Driller Name: **Mario Moya** License Number: **4990**

Comments: **No Data well plugged with mixture of 93% portland & 7% Quik-jel (Bentonite)**

WATER WELL NO. 98818

STATE OF TEXAS PLUGGING REPORT for Tracking #98818

Owner:	**ReCon Services**	Owner Well #:	**No Data**
Address:	**530 N. Witter Pasadena, TX 77506**	Grid #:	**65-23-2**
Well Location:	**530 N.Witter Pasadena, TX 77506**	Latitude:	**29° 44' 07" N**
		Longitude:	**095° 11' 59" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company:	**No Data**	Date Drilled:	**No Data**
Driller:	**No Data**	License Number:	**No Data**

Borehole: **No Data**

Plugging Information

Date Plugged: **1/5/2015** Plugger: **Sam Ballard**

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
4	**0**	**180**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**90**	**3 sacks cement**
90	**180**	**3 bags bentonite**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Ballard Water Well Co. LLC**

P.O. Box 970
Willis, TX 77378

Driller Name: **Sam Ballard** License Number: **54411**

Comments: **No Data**

WATER WELL NO. 62324

STATE OF TEXAS PLUGGING REPORT for Tracking #62324

Owner:	**OCTG**	Owner Well #:	**1458**
Address:	**615 OLIVER CT. CORPUS CHRISTI, TX 78408**	Grid #:	**65-15-8**
Well Location:	**13500 INDUSTRAIL HOUSTON, TX 77015**	Latitude:	**29° 45' 21" N**
		Longitude:	**095° 11' 20" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company:	**No Data**	Date Drilled:	**No Data**
Driller:	**UNKNOWN**	License Number:	**No Data**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**5**		**1706**

Plugging Information

Date Plugged:	**3/6/2010**	Plugger:	**GLEN R. BONDS**
Plug Method:	**See Comments**		

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
5	**0**	**1706**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**1706**	**17 YARDS MIXED CEMENT**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **NORTHWEST WATER WELLS**

25143 FM 1488
MAGNOLIA, TX 77355

Driller Name: **GLEN R. BONDS** License Number: **50950**

Comments: **CEMENT TRUCK POURED 17 YARDS OF CEMENT INTO EXISTING WATER WELL TO PLUG**

WATER WELL NO. 85511

STATE OF TEXAS PLUGGING REPORT for Tracking #85511

Owner:	**Prince Minerals**	Owner Well #:	**WW-1**
Address:	**13501 Industrial Road Houston, TX 77015**	Grid #:	**65-15-8**
Well Location:	**13501 Industrial Road Houston, TX 77015**	Latitude:	**29° 45' 27" N**
		Longitude:	**095° 11' 22" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company:	**No Data**	Date Drilled:	**No Data**
Driller:	**No Data**	License Number:	**No Data**

Borehole: **No Data**

Plugging Information

Date Plugged: **12/18/2012** Plugger: **Jaime Vasquez**

Plug Method: **Tremmie pipe cement from bottom to top**

Variance Number: **049-13**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
6	**2**	**60**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**60**	**28-cement**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Envirotech Drilling Services**

2718 South Brompton Drive
Pearland, TX 77584

Driller Name: **Jaime Vasquez** License Number: **58171**

Comments: **No Data**

WATER WELL NO. 34241

STATE OF TEXAS PLUGGING REPORT for Tracking #34241

Owner:	**Greens Port Industrial Park**	Owner Well #:	**6058**
Address:	**P.O. Box 96120 Houston, TX 77213**	Grid #:	**65-15-8**
Well Location:	**Industrial (Armco Steel Docks) Houston, TX 77215**	Latitude:	**29° 45' 16" N**
		Longitude:	**095° 11' 33" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company:	**No Data**	Date Drilled:	**No Data**
Driller:	**No Data**	License Number:	**No Data**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**6**		**425**

Plugging Information

Date Plugged: **8/22/2006** Plugger: **Barry Sanderson**

Plug Method: **Tremmie pipe bentonite from bottom to 2 feet from surface, cement top 2 feet**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
6	**0**	**425**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**10**	**10 portland**
10	**425**	**20 sacks Ben Seal**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **AAA Water Well Service**

10 Gentle Haze Court
The Woodlands, TX 77382

Driller Name: **Barry Sanderson** License Number: **54397**

Comments: **No Data**

WATER WELL NO. 4765

STATE OF TEXAS PLUGGING REPORT for Tracking #4765

Owner:	**Ballard Exploration**	Owner Well #:	**Ho Sh Ch 1**
Address:	**1021 Main Street Suite # 1705 Houston, TX 77002**	Grid #:	**65-23-3**
Well Location:	**Deadend of Penn City Rd at Houston Ship Channel TX**	Latitude:	**29° 44' 08" N**
		Longitude:	**095° 09' 03" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company: **No Data** Date Drilled: **12/30/2000**

Driller: **John Bryson** License Number: **1315**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**7.875**		**335**

Plugging Information

Date Plugged: **5/2/2001** Plugger: **John Bryson**

Plug Method: **Tremmie pipe bentonite from bottom to 2 feet from surface, cement top 2 feet**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
4	**3**	**335**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**15**	**4**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **B & L Water Well Service**

P.O. Box 213
Winnie, TX 77665

Driller Name: **John Bryson** License Number: **1315**

Comments: **logged by TF**

WATER WELL NO. 13322

STATE OF TEXAS PLUGGING REPORT for Tracking #13322

Owner:	**Clark Chrisman**	Owner Well #:	**No Data**
Address:	**12102 Bexhill Houston, TX 77065**	Grid #:	**65-15-7**
Well Location:	**12102 Behill Houston, TX 77065**	Latitude:	**29° 45' 46" N**
		Longitude:	**095° 12' 52" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company:	**No Data**	Date Drilled:	**No Data**
Driller:	**No Data**	License Number:	**No Data**

Borehole: **No Data**

Plugging Information

Date Plugged: **8/13/2003** Plugger: **Raymond Services Inc.**

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
4	**1**	**220**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**12**	**2**
12	**220**	**18**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Raymond Services Inc.**

10011 Airline Dr.
Houston, TX 77037

Driller Name: **Ty Raymond 4577WI** License Number: **4577**

Comments: **No Data**

WATER WELL NO. 22599

STATE OF TEXAS PLUGGING REPORT for Tracking #22599

Owner:	**Brown and Root Inc**	Owner Well #:	**1011218 B**
Address:	**P. O. Box 9807 Houston, TX 77213**	Grid #:	**65-15-8**
Well Location:	**Industrial Blvd Houston, TX**	Latitude:	**29° 45' 15" N**
		Longitude:	**095° 10' 42" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company:	**No Data**	Date Drilled:	**No Data**
Driller:	**unknown**	License Number:	**No Data**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**12**		**550**

Plugging Information

Date Plugged: **2/1/2005** Plugger: **Barry Sanderson**

Plug Method: **Tremmie pipe cement from bottom to top**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
12	**0**	**550**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**10**	**Portland slurry 8**
10	**550**	**Baroid EZ Plug 87**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **AAA Water Well Service**

10 Gentle Haze Ct.
The Woodlands, TX 77382

Driller Name: **Barry Sanderson** License Number: **54397**

Comments: **No Data**

WATER WELL NO. 22598

STATE OF TEXAS PLUGGING REPORT for Tracking #22598

Owner:	**Brown and Root Inc.**	Owner Well #:	**1011218 A**
Address:	**P. O. Box 9807 Houston, TX 77213**	Grid #:	**65-15-8**
Well Location:	**Industrial Blvd. Houston, TX**	Latitude:	**29° 45' 05" N**
		Longitude:	**095° 10' 26" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company:	**No Data**	Date Drilled:	**No Data**
Driller:	**unknown**	License Number:	**No Data**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**12**		**564**

Plugging Information

Date Plugged: **2/1/2005** Plugger: **Barry Sanderson**

Plug Method: **Tremmie pipe bentonite from bottom to 2 feet from surface, cement top 2 feet**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
12	**0**	**560**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**10**	**8 portland grout**
10	**560**	**96 Baroid EZ Plug**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **AAA Water Well Service**

10 Gentle Haze Ct.
The Woodlands, TX 77382

Driller Name: **Barry Sanderson** License Number: **54397**

Comments: **No Data**

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-821

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515821
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.751389
Latitude (degrees minutes seconds)	29° 45' 05" N
Longitude (decimal degrees)	-95.173889
Longitude (degrees minutes seconds)	095° 10' 26" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CHCTL - Chicot Aquifer, Lower
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	30
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	462
Well Depth Source	Another Government Agency
Drilling Start Date	
Drilling End Date	5/0/1942
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	The Port at Greens Bayou
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1011218A
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	10/2/1997
Last Update Date	10/2/1997

Remarks	101 ft of screen between 280 and 460 ft. Well 2.

Casing - No Data

Well Tests - No Data

Lithology - No Data

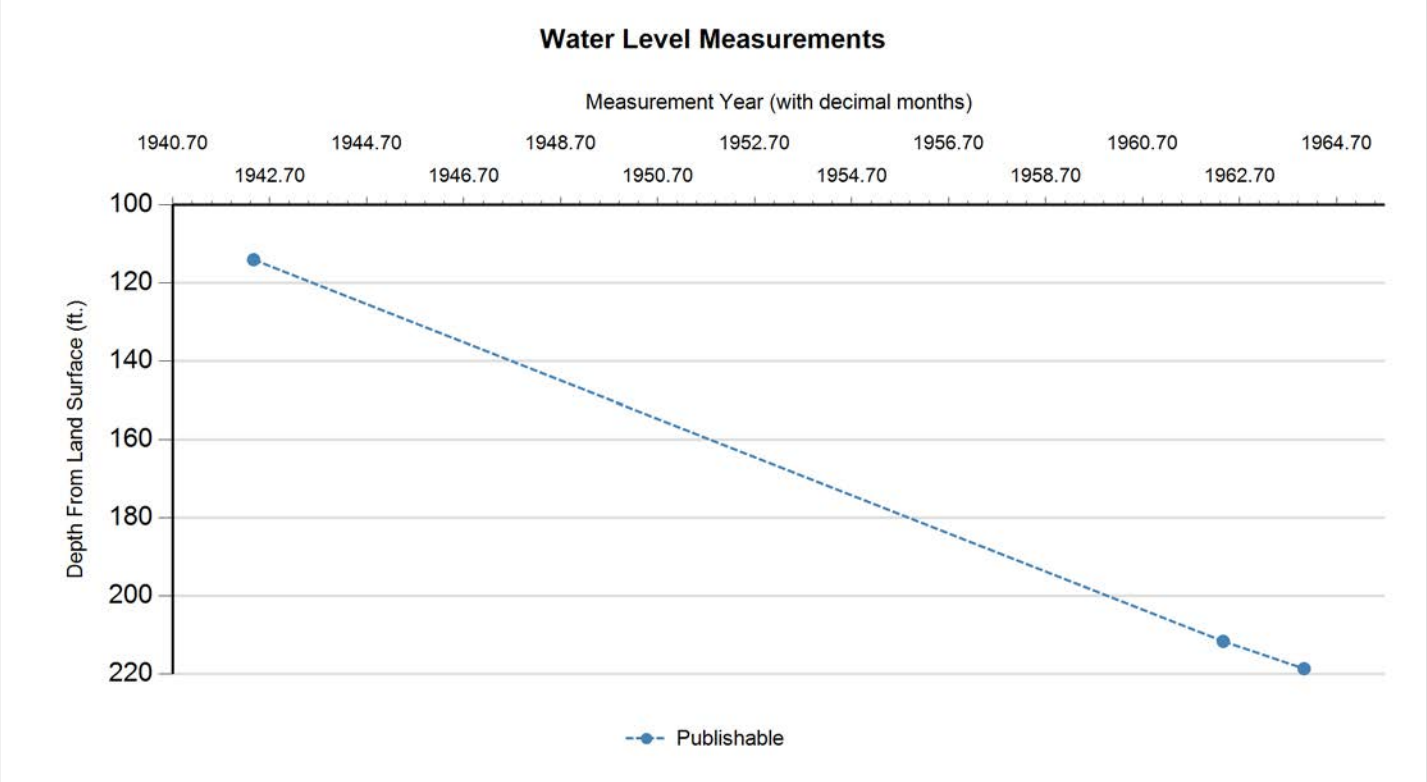
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	5/12/1942		114		-84	1	Registered Water Well Driller	Unknown		
P	5/10/1962		211.6	97.60	-181.6	1	Texas Water Development Board	Steel Tape		
P	1/8/1964		218.6	7.00	-188.6	1	Texas Water Development Board	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 9/6/1943 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot Aquifer, Lower

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		210.66	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		257	mg/L	
00910	CALCIUM (MG/L)		30	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		29	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.4	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		103	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		7	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		2.13		
00955	SILICA, DISSOLVED (MG/L AS SI02)		16	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		3.29		
00932	SODIUM, CALCULATED, PERCENT		61	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		77	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		17	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		302	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 22600

STATE OF TEXAS PLUGGING REPORT for Tracking #22600

Owner:	**Brown and Root Inc.**	Owner Well #:	**1011218 C**
Address:	**P. O. Box 9807 Houston, TX 77213**	Grid #:	**65-15-8**
Well Location:	**Industrial Blvd Houston, TX**	Latitude:	**29° 45' 13" N**
		Longitude:	**095° 10' 56" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company:	**No Data**	Date Drilled:	**No Data**
Driller:	**unknown**	License Number:	**No Data**

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	**4**		**360**

Plugging Information

Date Plugged: **2/1/2005** Plugger: **Barry Sanderson**

Plug Method: **Tremmie pipe bentonite from bottom to 2 feet from surface, cement top 2 feet**

Casing Left in Well:

Dia (in.)	Top (ft.)	Bottom (ft.)
4	**0**	**360**

Plug(s) Placed in Well:

Top (ft.)	Bottom (ft.)	Description (number of sacks & material)
0	**10**	**Portland slurry 6**
10	**360**	**Baroid EZ Plug 12**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **AAA Water Well Service**

10 Gentle Haze Ct.
The Woodlands, TX 77382

Driller Name: **Barry Sanderson** License Number: **54397**

Comments: **No Data**

WATER WELL NO. 1631

STATE OF TEXAS PLUGGING REPORT for Tracking #1631

Owner:	**ATOFINA**	Owner Well #:	**WEST WELL**
Address:	**2230 HADEN ROAD HOUSTON, TX 75015**	Grid #:	**65-15-8**
Well Location:	**2230 HADEN ROAD HOUSTON, TX 75015**	Latitude:	**29° 45' 38" N**
		Longitude:	**095° 10' 36" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company:	**No Data**	Date Drilled:	**3/15/1973**
Driller:	**TEXAS WATER WELL**	License Number:	**No Data**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**14.75**		**1141**

Plugging Information

Date Plugged: **4/26/2001** Plugger: **RICHARD H. ALLBRITTON**

Plug Method: **Tremmie pipe cement from bottom to top**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
10.75	**-2**	**865**
6.625	**765**	**1044**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**1044**	**550**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **RICHARD H. ALLBRITTON**

5931 BRITTMORE RD.
HOUSTON, TX 77041

Driller Name: **RIK ALLBRITTON** License Number: **4633**

Comments: **WELL PLUGED BACK TO 1044' IN '1994**

WATER WELL NO. 154891

STATE OF TEXAS PLUGGING REPORT for Tracking #154891

Owner:	**City of Galena Park**	Owner Well #:	**6523142**
Address:	**2000 Clinton Drive Galena Park, TX 77547**	Grid #:	**65-23-1**
Well Location:	**304 Stewart Street Galena Park, TX 77547**	Latitude:	**29° 44' 03" N**
		Longitude:	**095° 14' 19" W**
	Well #1; State Well number 6523142	Elevation:	**No Data**
Well County:	**Harris**		

Well Type: **Public Supply**

Drilling Information

Company: **No Data** Date Drilled: **2/6/1956**

Driller: **No Data** License Number: **No Data**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
13.63	**5**	**467**
6.63	**467**	**679**

Plugging Information

Date Plugged: **1/6/2016** Plugger: **Superior Energy Services**

Plug Method: **Tremmie pipe cement from bottom to top**

Variance Number: **005-16**

Casing Left in Well:

No Data

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
5	**457**	**6% Bentonite Cement 350 Bags/Sacks**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Layne Christensen**

5931 Brittmoore Rd
Houston, TX 77041

Driller Name: **Larry Jernigin** License Number: **50285**

Comments: **No Data**

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-142

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523142
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.734167
Latitude (degrees minutes seconds)	29° 44' 03" N
Longitude (decimal degrees)	-95.238611
Longitude (degrees minutes seconds)	095° 14' 19" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CEVG - Chicot and Evangeline Aquifers
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	30
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	680
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	0/0/1936
Drilling Method	
Borehole Completion	Perforated or Slotted

Well Type	Withdrawal of Water
Well Use	Public Supply
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	City of Galena Park Well #1
Driller	Layne Texas
Other Data Available	Aquifer Test
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1010009A
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	12/20/1939
Last Update Date	4/28/2011

Remarks	Reported yield 429 GPM in 1939. Aquifer test results in TWDB R-98. No test data in TWDB files. Reported screened 84 feet between 593 and 677 feet.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/13/1937		67		-37	1	Registered Water Well Driller	Unknown		
P	2/15/1963		306	239.00	-276	1	U.S. Geological Survey	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 170683

STATE OF TEXAS PLUGGING REPORT for Tracking #170683

Owner:	**Foroni Metals of Texas, Inc**	Owner Well #:	**No Data**
Address:	**3040 Post Oak Blvd. Ste 1030 Houston , TX 77056**	Grid #:	**65-15-8**
Well Location:	**13609 Industrial Rd. Houston, TX 77015**	Latitude:	**29° 45' 09" N**
		Longitude:	**095° 12' 15" W**
Well County:	**Harris**	Elevation:	**29**

Well Type: **Domestic**

Drilling Information

Company:	**No Data**	Date Drilled:	**No Data**
Driller:	**No Data**	License Number:	**No Data**

Borehole: **No Data**

Plugging Information

Date Plugged: **8/16/2017** Plugger: **Kenneth Snuffer**

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
4	**0**	**40**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**20**	**Cement 5 Bags/Sacks**
20	**40**	**Bentonite 5 Bags/Sacks**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Ballard Water Well Co LLC**

PO Box 1843
Willis, TX 77378

Driller Name: **Kenneth Snuffer** License Number: **59847**

Apprentice Name: **59847**

Comments: **No Data**

WATER WELL NO. 181583

STATE OF TEXAS PLUGGING REPORT for Tracking #181583

Owner:	**Southern Tube Facility**	Owner Well #:	**State ID 6515812**
Address:	**13500 Industrial Rd. Houston, TX 77015**	Grid #:	**65-15-8**
Well Location:	**13500 Industrial Rd. Houston, TX 77015**	Latitude:	**29° 45' 27" N**
		Longitude:	**095° 11' 44" W**
Well County:	**Harris**	Elevation:	**32**

Well Type: **Industrial**

Drilling Information

Company:	**Layne Texas Co.**	Date Drilled:	**12/27/1949**
Driller:	**No Data**	License Number:	**No Data**

Borehole: **No Data**

Plugging Information

Date Plugged: **10/18/2018**

Plugger: **Mathers-Letter of explanation sent to TDLR at TDLR request**

Plug Method: **Well previously plugged, no report received**

Casing Left in Well:

No Data

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**1102**	**Cement**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **MATHERS ENVIRONMENTAL DRILLING, INC.**

12243 B. FM 529
HOUSTON, TX 77041

Driller Name: **Thomas Mathers**

License Number: **3096**

Comments: **During investigation of this well (State ID 6515812) Tom Mathers DL# 3096 and Lee Ellmaker PE 121760 were unable to find location of the well. Well was reportedly plugged by previous owner without filing a State of Texas Well Report. The further investigation of property for well site was to provide closure for the Texas Department of Licensing and Regulation. A letter of the site investigation will be provided to TDLR.**

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-812

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515812
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.757501
Latitude (degrees minutes seconds)	29° 45' 27" N
Longitude (decimal degrees)	-95.195556
Longitude (degrees minutes seconds)	095° 11' 44" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	32
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1102
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	12/27/1949
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	None
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	A O Smith Corp.
Driller	Layne Texas Co.
Other Data Available	Drillers Log
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	1/25/1999
Last Update Date	1/25/1999

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 181584

STATE OF TEXAS PLUGGING REPORT for Tracking #181584

Owner:	**Southern Tube Facility**	Owner Well #:	**State ID 6515825**
Address:	**13500 Industrial RD Houston, TX 77015**	Grid #:	**65-15-8**
Well Location:	**13500 Industrial RD Houston, TX 77015**	Latitude:	**29° 45' 20" N**
		Longitude:	**095° 11' 48" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Industrial**

Drilling Information

Company: **Layne Texas Co.** Date Drilled: **4/29/1968**

Driller: **C. Brewer** License Number: **No Data**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**16**	**0**	**1706**

Plugging Information

Date Plugged: **10/18/2018** Plugger: **Mathers-Letter of explanation sent to TDLR at TDLR request**

Plug Method: **Well previously plugged, no report received**

Casing Left in Well:

No Data

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**1706**	**Cement**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **MATHERS ENVIRONMENTAL DRILLING, INC.**

12243 B. FM 529
HOUSTON, TX 77041

Driller Name: **Thomas Mathers** License Number: **3096**

Comments: **During investigation of this well (State ID 651825) Tom Mathers DL# 3096 and Lee Ellmaker PE 121760 were unable to find location of the well. Well was reportedly plugged by previous owner without filing a State of Texas Well Report. The further investigation of property for well site was to provide closure for the Texas Department of Licensing and Regulation. A letter of the site investigation will be provided to TDLR.**

WATER WELL NO. 209852

STATE OF TEXAS PLUGGING REPORT for Tracking #209852

Owner:	**GB Biosciences**	Owner Well #:	**No Data**
Address:	**2239 Haden Rd. Houston , TX 77015**	Grid #:	**65-15-8**
Well Location:	**2239 Haden Rd. Houston, TX 77015**	Latitude:	**29° 45' 44" N**
		Longitude:	**095° 10' 26" W**
Well County:	**Harris**	Elevation:	**No Data**

Well Type: **Backup**

Drilling Information

Company:	**No Data**	Date Drilled:	**No Data**
Driller:	**No Data**	License Number:	**No Data**

Borehole: **No Data**

Plugging Information

Date Plugged: **6/22/2021** Plugger: **Cody Bybee**

Plug Method: **Tremmie pipe cement from bottom to top**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
20	**3**	**1290**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**1290**	**Portland w/6% Bentonite Mix 1600 Bags/Sacks**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Ballard Water Well Co. LLC**

P.O. Box 970
Willis, TX 77378

Driller Name:	**Samuel Ballard**	License Number:	**54411**
Apprentice Name:	**Cody Bybee**	Apprentice Number:	**60601**

Comments: **No Data**

WATER WELL NO. 6515804

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-804

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515804
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.771667
Latitude (degrees minutes seconds)	29° 46' 18" N
Longitude (decimal degrees)	-95.17
Longitude (degrees minutes seconds)	095° 10' 12" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CHCTL - Chicot Aquifer, Lower
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	33
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	559
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	7/11/1944
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Harris County WCID 36
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	1/25/1999
Last Update Date	1/25/1999

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

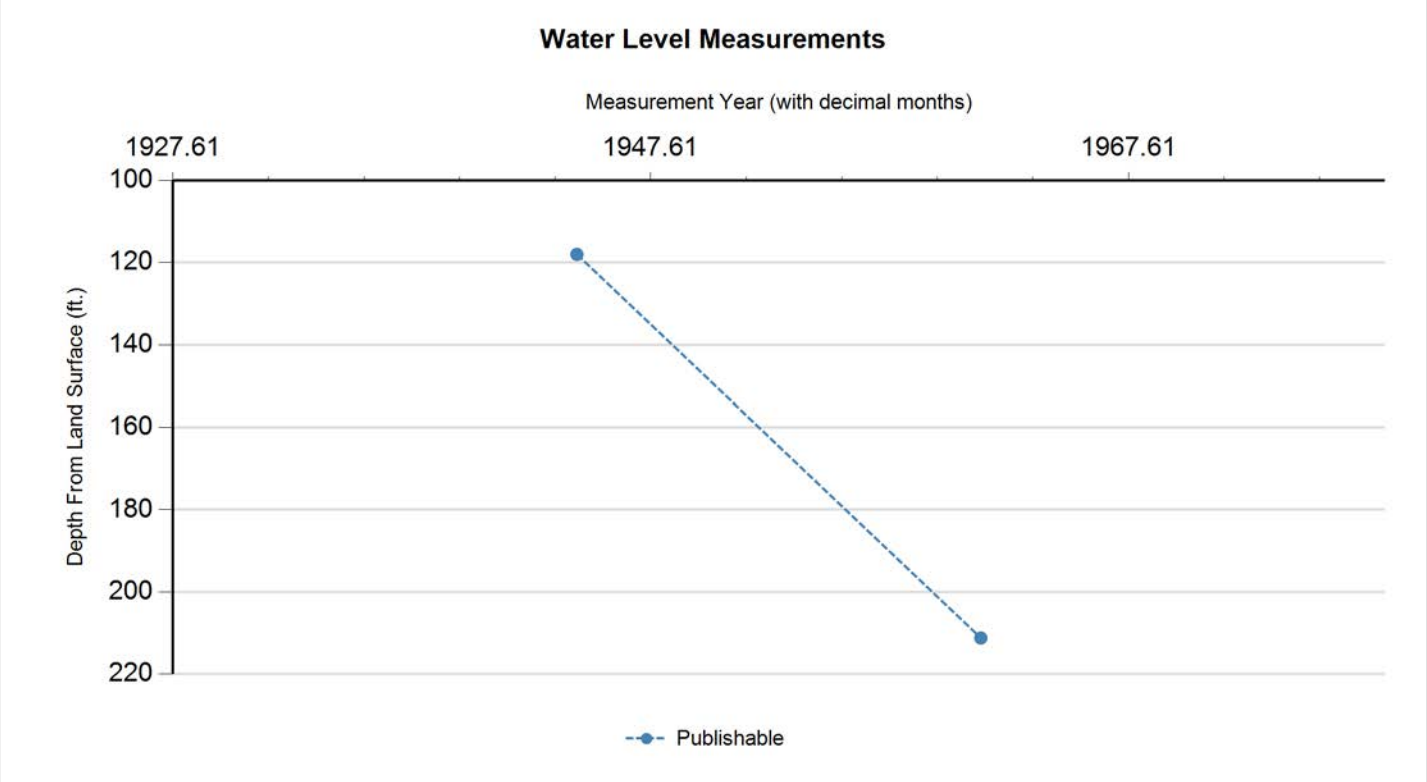
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	7/11/1944		118		-85	1	Registered Water Well Driller	Unknown		
P	6/8/1961		211.2	93.20	-178.2	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6515810

Texas Water Development Board
Well Schedule

State Well Number 6515810 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294514 **Longitude** 951218 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Armco Steel Corp.
#5

Driller
Layne Texas Co.

Address _____ **Tenant/Oper.** _____

Date Drilled / /1944 **Depth** 1370 **Source of Depth** D **Altitude** 33 **Source of Alt.** M

Well Type W **User** 35510

WELL CONSTRUCTION

Const-Method

Casing Material

Screen Material

Completion blank

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** N **Quality -** N **Logs -** **Other Data -**

WATER LEVELS

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency 02

REMARKS -

Aquifer - 121EVGL **ID -** 15

EVANGELINE
AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-810

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515810
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.753889
Latitude (degrees minutes seconds)	29° 45' 14" N
Longitude (decimal degrees)	-95.205001
Longitude (degrees minutes seconds)	095° 12' 18" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	33
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1370
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	0/0/1944
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	None
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Armco Steel Corp. #5
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	1/25/1999
Last Update Date	1/25/1999

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis - No Data Available

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WATER WELL NO. 6515838

TEXAS DEPARTMENT OF WATER RESOURCES

WELL SCHEDULE

Aquifer(s) Evangeline Project No._____ State Well No. 65-15-838

Field No./Owner's Well No._____ County Harris

1. Location: ____ ¼, ____ ¼, Section ____, Block ____, Survey _____, Lat. _____, Long. _____

2. Owner: Brown & Root Address:

Tenant (other): Address:

Driller: Layne Texas Address:

3. Land Surface Elevation: 24 ft. above msl determined by

4. Drilled: 8-25 19 67; Dug, Cable Tool, Rotary, Air,

5. Depth: Rept. 1091 ft. Meas. _____ ft.

6. Borehole Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfr. _____ Type T

No. Stages ____, Bowls Diam. ____ in., Setting _____ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Mfr. _____ Fuel E HP. 150

9. Yield: Flow ____ gpm, Pump ____ gpm, Meas., Rept., Est. ____ Date

10. Performance Test: Date 9/12/67 Length of Test ____ Made by L-T

Static Level 407 ft. Pumping Level ____ ft. Drawdown 68 ft.

Production 717 gpm Specific Capacity _____ gpm/ft.

11. Quality: (Remarks on taste, odor, color, etc.)

Analyses

Date _____ Laboratory _____ TDS ____ Sp Cond ____

Date _____ Laboratory _____ TDS ____ Sp Cond ____

12. Other data available (as circled): Pumping Test, Power & Yield Test, (Drillers Log), Formation Samples, Geophysical Log(s) Q 1723 (type)

13. Water Level(s): ____ ft. rept. meas. ____ 19__ above below _____ which is ____ ft. above below Land Surface

____ ft. rept. meas. ____ 19__ above below _____ which is ____ ft. above below Land Surface

14. Use: Dom., Stock, Public Supply, (Ind), Irr., Observation, Other (Test Hole, Oil Test, etc.)

15. Recorded by: Source of data: Date:

16. Remarks:

17. Location or Sketch:

CASING, BLANK PIPE & WELL SCREEN Cemented From ____ ft. to ____ ft.			
Diam. (in.)	Type	Setting (feet) from	to

Q1723

W/L Obs. Well ____ W/Q Obs. Well ____

State Well No. 65-15-838

TDWR-0308

FORM NO. 28

State

65-23-2C

LAYNE TEXAS COMPANY,

HOUSTON -:- DALLAS

WELL LOG

REPORT NO 7631 db
S. O. 2518-67
PAGE 1 of 1
FILE NO 3217
DATE 9/22/67

CUSTOMER LOCATION	WELL DATA
FOR Brown & Root Marine Operators	NAME WELL / WELL NO. 2
LOCATION WELL Houston, Texas	ELEVATION / DATUM
SURVEY / FIELD	RT / C / GR
COUNTY Harris / STATE Texas	TEST HOLE SIZE 9-7/8" TD 1091'
OTHER LAND MARKS 14035 Industrial Road	DATE STARTED DRILLING 8-22-67
	DATE FINISHED DRILLING 8-25-67
	DRILLER W. Patton / RIG NO. 3
	TYPE MUD Gel / NO. SACKS 40
	ELECTRIC LOG Yes / TYPE Widco
	SURVEY Eastman / TYPE Single shot
	OTHER driller: Pat Heffernan

DEPTH STRATA	EACH STRATUM	DESCRIPTION FORMATION	SAMPLES DEPTH	SAMPLES TYPE	SAMPLES NUMBER
3	3	Soil			
17	14	Clay			
21	4	Sand			
41	20	Clay			
119	78	Red clay			
177	58	Blue shale			
207	30	Sandy shale			
222	15	Sandy shale & sand streaks			
238	16	Shale			
253	15	Shale & sand streaks			
267	14	Shale			
308	41	Sand & streaks of shale			
365	57	Shale			
416	51	Sand & streaks of shale			
427	11	Streaks of sand & shale			
507	80	Shale			
540	33	Sand & streaks of shale			
572	32	Shale & streaks of sand			
589	17	Sand			
607	18	Shale			
613	6	Sand			
650	37	Shale			
665	15	Sandy shale			
680	15	Shale			
695	15	Sand			
726	31	Sand & streaks of shale			
749	23	Coarse sand			
756	7	Shale			
769	13	Sand			
840	71	Shale & streaks of sandy shale			
858	18	Sand			
885	27	Shale			
912	27	Shale & streaks of sand			
922	10	Sand			
938	16	Shale			
985	47	Streaks of sand & shale			
1000	15	Sand & streaks of shale			
1033	33	Sand			
1055	22	Sandy shale			
1072	17	Sand			
1091	19	Shale & sandy shale - Total depth			

65-15-838

Q-1723

FORM NO. 1202

LAYNE TEXAS COMPANY

HOUSTON -:- DALLAS

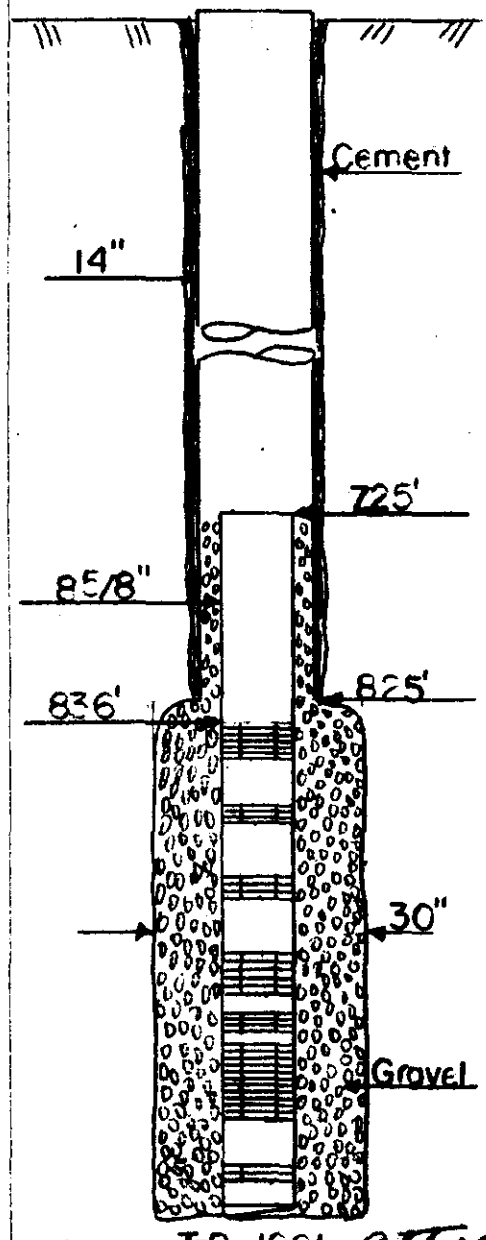
MATERIAL SETTING

REPORT NO. 7632
B. O. 2518-67
PAGE 1 OF 1
FILE NO. 3217
DATE 9/22/67

CUSTOMER LOCATION	WELL DATA
FOR Brown & Root Marine Operators	NAME WELL WELL NO. 2
LOCATION WELL Houston	ELEVATION DATUM
SURVEY FIELD	TYPE WELL Gravel-wall
COUNTY Harris STATE Texas	SURFACE CASING CEMENTED Yes NO. SACKS 450
OTHER LAND MARKS 14035 Industrial Road	SIZE HOLE UNDERREAMED 30" DEPTH 1091'
	GRAVEL TYPE 112-165-131 NO. CU. YDS. 80
	TYPE SCREEN SS WW Barlug GAGE .045"
	DRILLER W. Patton RIG NO. 3
	OTHER Pat Heffernan

DEPTH	LENGTH	SIZE, KIND, WEIGHT MATERIAL
+ 2'		14" O.D. surface casing 54.57# 2' above ground level
0		Surface
725'		Top of 8-5/8" liner
825'	827'	14" O.D. 54.57# casing
836'	111'	8-5/8" blank liner
856'	20'	8-5/8" O.D. S.S. W.W. Barlug screen .045" ga.
878'	22'	8-5/8" blank pipe
888'	10'	8-5/8" O.D. S.S. W.W. Barlug screen .045" ga.
912'	24'	8-5/8" blank pipe
922'	10'	8-5/8" O.D. S.S. W.W. Barlug screen .045" ga.
950'	28'	8-5/8" blank pipe
970'	20'	8-5/8" O.D. S.S. W.W. Barlug screen .045" ga.
977'	7'	8-5/8" blank pipe
987'	10'	8-5/8" O.D. S.S. W.W. Barlug screen .045" ga.
992'	5'	8-5/8" blank pipe
1032'	40'	8-5/8" O.D. S.S. W.W. Barlug screen .045" ga.
1060'	28'	8-5/8" blank pipe
1070'	10'	8-5/8" O.D. S.S. W.W. Barlug screen .045" ga.
1089'	19'	8-5/8" blank pipe
1091'	2'	8-5/8" set nipple and back pressure valve
T.D. 1091 ft.		

SKETCH



65-15-638 TD 1091 attach 9-22-67

LAYNE TEXAS COMPANY,

HOUSTON -:- DALLAS

WATER WELL TEST

REPORT NO. 7633
S. O. 2518-67
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FILE NO. 3217
DATE 9/22/67

CUSTOMER LOCATION

TEST FOR Brown & Root Marine Operators
LOCATION OF WELL Houston, Texas
SURVEY FIELD
COUNTY Harris STATE Texas
DESCRIPTION OF LAND MARKS 14035 Industrial Road

WELL DATA

NAME WELL WELL NO. 2
ELEVATION DATUM
WELL SIZE 14" x 8-5/8" x 30" x 1091 ft.
TOTAL DEPTH 1091' TOP SCREEN 836'-1070'
GRAVEL WELL Yes STRAIGHT WELL
TYPE SCREEN S.S. W.W. Barlug GAGE .045"
TEMPERATURE OF WATER
WATER CONDITION

WATER MEASURING DEVICE

ORIFICE SIZE 8"x6" LENGTH 4'
OTHER

TEST PUMP DATA

DEPTH SETTING TOP OF BOWL 460'
LENGTH AIR LINE 460' SIZE 1/4"
TYPE BOWL RKHC 10" NO. STAGES 10
LENGTH BOWL SUCTION LT.

SAND CONTENT OZ. PER 100 GAL.
WATER SAMPLE TAKEN NO. SAMPLES
BACTERIOLOGICAL SAMPLE TAKEN
DRAWDOWN SPECIFIC CAPACITY

ACTIVE STATIC HEAD AFTER PUMP STOPPED

5 MIN. 421 FT. 20 MIN. 419½ FT.
10 MIN. 420½ FT. 25 MIN. 419 FT.
15 MIN. 420 FT. 30 MIN. 419 FT.
4 Hr. static level 407 ft.

DATE HOUR	AIR LINE GAGE	PUMPING LEVEL	DISCH. PRESS.	HEAD ON ORIFICE INCHES	GPM	RPM	OPERATOR	REMARKS
9/13/67 - Started test at 7:00 A.M.								
8:00AM	35	465		21	726			
9:00	33	467		21	726			
10:00	32	468		21	726			
11:00	30	470		21	726			
12:00 N	29	471		21	726			
1:00PM	29	471		21	726			
2:00	28	472		21	726			
3:00	28	472		21	726			
4:00	27	473		20½	717			
5:00	25	475		20½	717			
6:00	25	475		20½	717			
7:00	25	475		20½	717			

OBSERVERS

FOR OWNER

Warren Patton
FOR LAYNE TEXAS CO.

Attach 9-22-67

65-15-838

FORM NO. 25

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-838

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515838
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.751112
Latitude (degrees minutes seconds)	29° 45' 04" N
Longitude (decimal degrees)	-95.177778
Longitude (degrees minutes seconds)	095° 10' 40" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	24
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1091
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1967
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Brown and Root, Inc Marine Operators
Driller	Layne TExas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1011218C
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/13/1999
Last Update Date	5/13/1999

Remarks	120 ft of screen between 836 and 1070 ft. Reported yield 717 gpm with 68 ft drawdown when drilled. Well 2.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

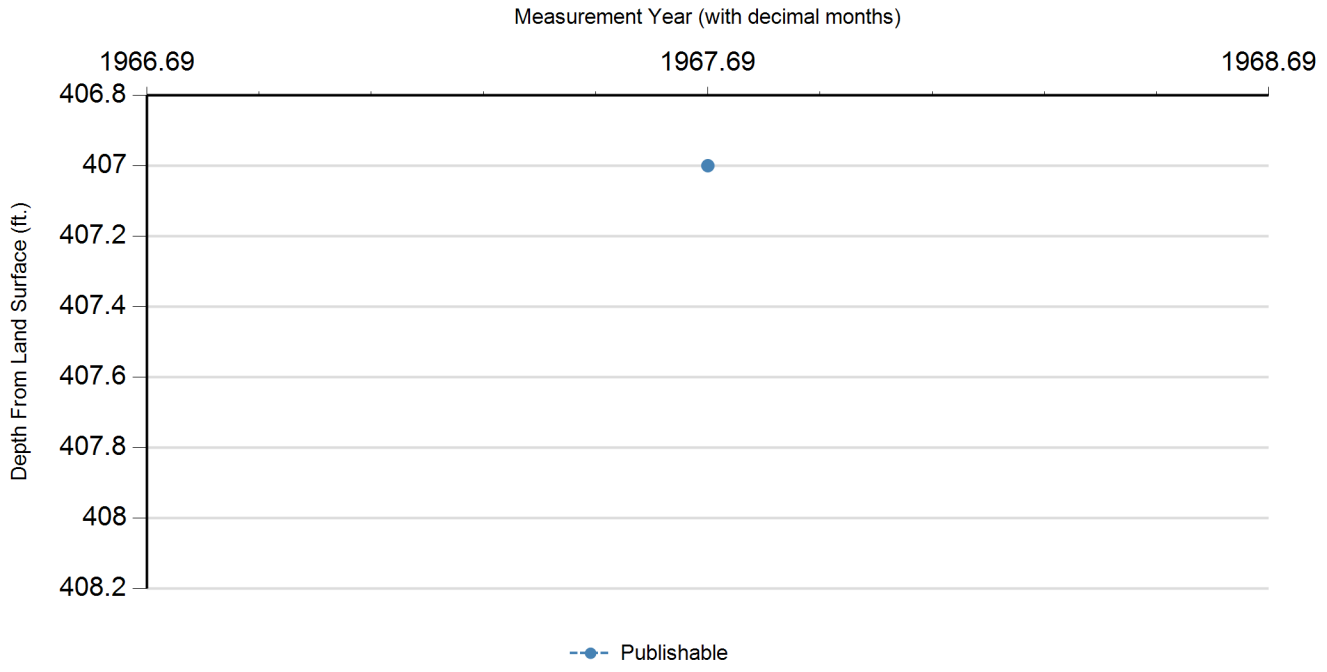
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/13/1967		407		-383	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 9/13/1967 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		266.39	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		325	mg/L	
00910	CALCIUM (MG/L)		5	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		38	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		1	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.1	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		4.99		
00955	SILICA, DISSOLVED (MG/L AS SI02)		14	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		15.06		
00932	SODIUM, CALCULATED, PERCENT		94	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		141	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		590	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		3	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		361	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6515835

Texas Water Development Board
Well Schedule

groundwater resources division

State Well Number: **65-15-835** Previous Well Number: County: **Harris** **201**

Latitude (dms): **294612** Longitude (dms): **951223** Coordinate Accuracy: **+/- 5 Seconds**

River Basin: **San Jacinto River** GMA: **14** RWPA: **H** GCD: **Harris-Galveston Subsidence District**

Owner: **Texaco Inc.** Driller: **Lowry Water Wells** Aquifer ID: **Gulf Coast**

Aquifer Code: **112CHCTL**

CHICOT AQUIFER,LOWER

Depth (ft): **449** Elevation (ft): **32**

Source of Depth: Source of Elevation:

Date Drilled: **00/00/1964** Well Type: **Withdrawal of Water**

Type of Lift: **Submersible Pump** Power: **Electric Motor** Horsepower:

Construction: Completion:

Casing Material: Screen Material:

CASING INTERVALS:
Casing/Blank Pipe (C)
Well Screen/Slotted Zone (S)
Open Hole (O)

Dia. (in.)	Top (ft.)	Bottom (ft.)

WATER USE

Primary: **Industrial** Secondary: Tertiary:

Water Levels: **Miscellaneous Measurements** Water Quality: **N**

1 measurement
1964
-190

Other Data: Logs:

REMARKS:
TWDB R178: Screen from 434 to 449 ft.

Reporting Agency: **TWDB or Predecessor Agency**

Date Collected or Reported: **01/06/2003**

Recorded by: _____

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-835

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515835
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.77
Latitude (degrees minutes seconds)	29° 46' 12" N
Longitude (decimal degrees)	-95.206389
Longitude (degrees minutes seconds)	095° 12' 23" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CHCTL - Chicot Aquifer, Lower
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	32
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	449
Well Depth Source	Owner
Drilling Start Date	
Drilling End Date	0/0/1964
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Submersible
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Texaco Inc.
Driller	Lowry Water Wells
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	Texas Water Development Board
Created Date	1/6/2003
Last Update Date	1/6/2003

Remarks	TWDB R178: Screen from 434 to 449 ft.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

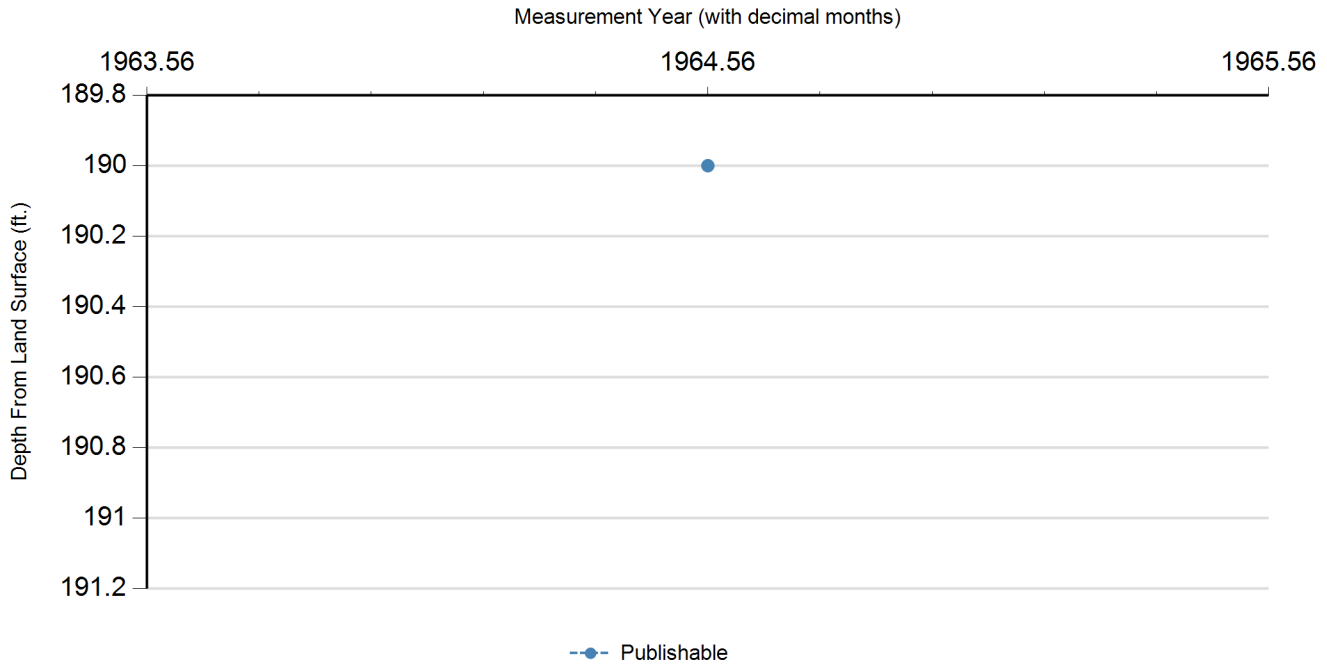
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	7/24/1964		190		-158	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6515814

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-814

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515814
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.757501
Latitude (degrees minutes seconds)	29° 45' 27" N
Longitude (decimal degrees)	-95.203334
Longitude (degrees minutes seconds)	095° 12' 12" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CHCT - Chicot Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	31
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	376
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	0/0/1948
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Fire
Water Level Observation	None
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Armco Steel Corp.
Driller	McMasters & Pomeroy
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	1/25/1999
Last Update Date	1/25/1999

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis - No Data Available

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WATER WELL NO. 6515807

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-807

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515807
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.768889
Latitude (degrees minutes seconds)	29° 46' 08" N
Longitude (decimal degrees)	-95.206945
Longitude (degrees minutes seconds)	095° 12' 25" W
Coordinate Source	+/- 10 Seconds
Aquifer Code	112CEVG - Chicot and Evangeline Aquifers
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	33
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	853
Well Depth Source	Another Government Agency
Drilling Start Date	
Drilling End Date	0/0/1949
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	Historical
Water Quality Available	Yes
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	City of Houston Woodland
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1010013QO
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	2/3/1999
Last Update Date	2/3/1999

Remarks	173 ft of screen between 579 and 851 ft. Reported yield 750 gpm with 90 ft drawdown when drilled. Well 2.

Casing - No Data

Well Tests - No Data

Lithology - No Data

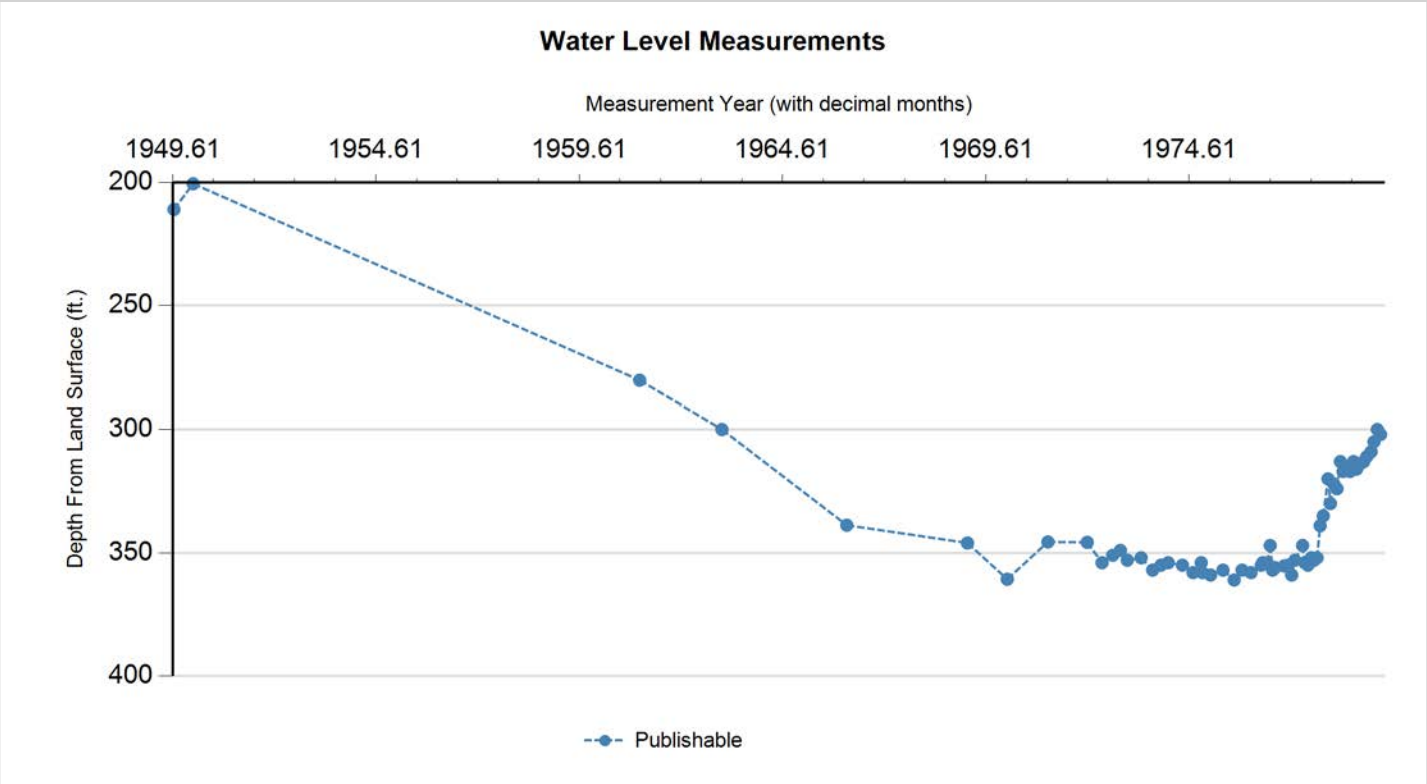
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	8/21/1949		211		-178	1	Registered Water Well Driller	Unknown		
P	2/8/1950		200.58	(10.42)	-167.58	1	U.S. Geological Survey	Steel Tape		
P	2/3/1961		280.23	79.65	-247.23	1	U.S. Geological Survey	Steel Tape		
P	2/12/1963		300	19.77	-267	1	U.S. Geological Survey	Steel Tape		
P	3/8/1966		338.8	38.80	-305.8	1	U.S. Geological Survey	Steel Tape		
P	2/27/1969		346	7.20	-313	1	U.S. Geological Survey	Steel Tape		
P	2/19/1970		360.7	14.70	-327.7	1	U.S. Geological Survey	Steel Tape		
P	2/19/1971		345.58	(15.12)	-312.58	1	U.S. Geological Survey	Steel Tape		
P	2/7/1972		345.72	0.14	-312.72	1	U.S. Geological Survey	Steel Tape		
P	6/20/1972		354	8.28	-321	1	U.S. Geological Survey	Air Line		
P	9/26/1972		351	(3.00)	-318	1	U.S. Geological Survey	Air Line		
P	12/5/1972		349	(2.00)	-316	1	U.S. Geological Survey	Air Line		
P	2/2/1973		353	4.00	-320	1	U.S. Geological Survey	Air Line		
P	6/6/1973		352	(1.00)	-319	1	U.S. Geological Survey	Air Line		
P	9/20/1973		357	5.00	-324	1	U.S. Geological Survey	Air Line		
P	12/4/1973		355	(2.00)	-322	1	U.S. Geological Survey	Air Line		
P	2/4/1974		354	(1.00)	-321	1	U.S. Geological Survey	Air Line		
P	6/12/1974		355	1.00	-322	1	U.S. Geological Survey	Air Line		
P	9/18/1974		358	3.00	-325	1	U.S. Geological Survey	Air Line		
P	12/1/1974		354	(4.00)	-321	1	U.S. Geological Survey	Air Line		
P	12/11/1974		358	4.00	-325	1	U.S. Geological Survey	Air Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/20/1975		359	1.00	-326	1	U.S. Geological Survey	Air Line		
P	6/11/1975		357	(2.00)	-324	1	U.S. Geological Survey	Air Line		
P	9/22/1975		361	4.00	-328	1	U.S. Geological Survey	Air Line		
P	12/3/1975		357	(4.00)	-324	1	U.S. Geological Survey	Air Line		
P	2/18/1976		358	1.00	-325	1	U.S. Geological Survey	Air Line		
P	5/20/1976		355	(3.00)	-322	1	U.S. Geological Survey	Air Line		
P	6/3/1976		354	(1.00)	-321	1	U.S. Geological Survey	Air Line		
P	7/13/1976		354	0.00	-321	1	U.S. Geological Survey	Air Line		
P	8/10/1976		347	(7.00)	-314	1	U.S. Geological Survey	Air Line		
P	9/2/1976		357	10.00	-324	1	U.S. Geological Survey	Air Line		
P	9/24/1976		356	(1.00)	-323	1	U.S. Geological Survey	Air Line		
P	12/16/1976		355.31	(0.69)	-322.31	1	U.S. Geological Survey	Steel Tape		
P	1/18/1977		355	(0.31)	-322	1	U.S. Geological Survey	Air Line		
P	2/18/1977		359	4.00	-326	1	U.S. Geological Survey	Air Line		
P	3/17/1977		353	(6.00)	-320	1	U.S. Geological Survey	Air Line		
P	5/26/1977		347	(6.00)	-314	1	U.S. Geological Survey	Air Line		
P	6/16/1977		354	7.00	-321	1	U.S. Geological Survey	Air Line		
P	7/14/1977		355	1.00	-322	1	U.S. Geological Survey	Air Line		
P	8/15/1977		352	(3.00)	-319	1	U.S. Geological Survey	Air Line		
P	9/9/1977		353	1.00	-320	1	U.S. Geological Survey	Air Line		
P	10/6/1977		352	(1.00)	-319	1	U.S. Geological Survey	Air Line		
P	11/4/1977		339	(13.00)	-306	1	U.S. Geological Survey	Air Line		
P	12/2/1977		335	(4.00)	-302	1	U.S. Geological Survey	Air Line		
P	1/9/1978		320	(15.00)	-287	1	U.S. Geological Survey	Air Line		
P	2/1/1978		330	10.00	-297	1	U.S. Geological Survey	Air Line		
P	3/1/1978		322	(8.00)	-289	1	U.S. Geological Survey	Air Line		
P	3/30/1978		324	2.00	-291	1	U.S. Geological Survey	Air Line		
P	5/1/1978		313	(11.00)	-280	1	U.S. Geological Survey	Air Line		
P	5/25/1978		317	4.00	-284	1	U.S. Geological Survey	Air Line		
P	6/22/1978		315	(2.00)	-282	1	U.S. Geological Survey	Air Line		
P	7/27/1978		317	2.00	-284	1	U.S. Geological Survey	Air Line		
P	8/29/1978		313	(4.00)	-280	1	U.S. Geological Survey	Air Line		
P	9/26/1978		316	3.00	-283	1	U.S. Geological Survey	Air Line		
P	10/25/1978		314	(2.00)	-281	1	U.S. Geological Survey	Air Line		
P	11/29/1978		313	(1.00)	-280	1	U.S. Geological Survey	Air Line		
P	12/27/1978		311	(2.00)	-278	1	U.S. Geological Survey	Air Line		
P	1/31/1979		309	(2.00)	-276	1	U.S. Geological Survey	Air Line		
P	2/27/1979		305	(4.00)	-272	1	U.S. Geological Survey	Air Line		
P	3/27/1979		300	(5.00)	-267	1	U.S. Geological Survey	Air Line		
P	4/26/1979		302	2.00	-269	1	U.S. Geological Survey	Air Line		
X	5/25/1979					1	U.S. Geological Survey		18	

Code Descriptions

Status Code	Status Description
P	Publishable
X	No Measurement

Remark ID	Remark Description
18	Well destroyed

Water Quality Analysis

Sample Date: 4/5/1968 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot and Evangeline Aquifers

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		193.44	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		236	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		24	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		97	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.7	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		463	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		25	C	

Water Quality Analysis

Sample Date: 2/14/1969 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot and Evangeline Aquifers

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		206.56	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		252	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		24	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		96	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.6	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		466	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		25	C	

Water Quality Analysis

Sample Date: 2/13/1970 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot and Evangeline Aquifers

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		193.44	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		236	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)		100	ug/L	
00910	CALCIUM (MG/L)		28	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		25	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.4	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		94	mg/L as CACO3	
00920	MAGNESIUM (MG/L)		6	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		1.3	mg/L as NO3	
00937	POTASSIUM, TOTAL (MG/L AS K)		1.6	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		1.97		
00955	SILICA, DISSOLVED (MG/L AS SI02)		19	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		3.04		
00932	SODIUM, CALCULATED, PERCENT		60	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		68	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		15	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		280	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6515818

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-818

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515818
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.761667
Latitude (degrees minutes seconds)	29° 45' 42" N
Longitude (decimal degrees)	-95.184445
Longitude (degrees minutes seconds)	095° 11' 04" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	14
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1242
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1951
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Stauffer Chemical Co #4
Driller	Layne TExas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/13/1999
Last Update Date	5/13/1999

Remarks	124 ft of screen between 1000 and 1222 ft. Reported yield 1060 gpm with 47 ft drawdown when drilled. Well 4.

Casing - No Data

Well Tests - No Data

Lithology - No Data

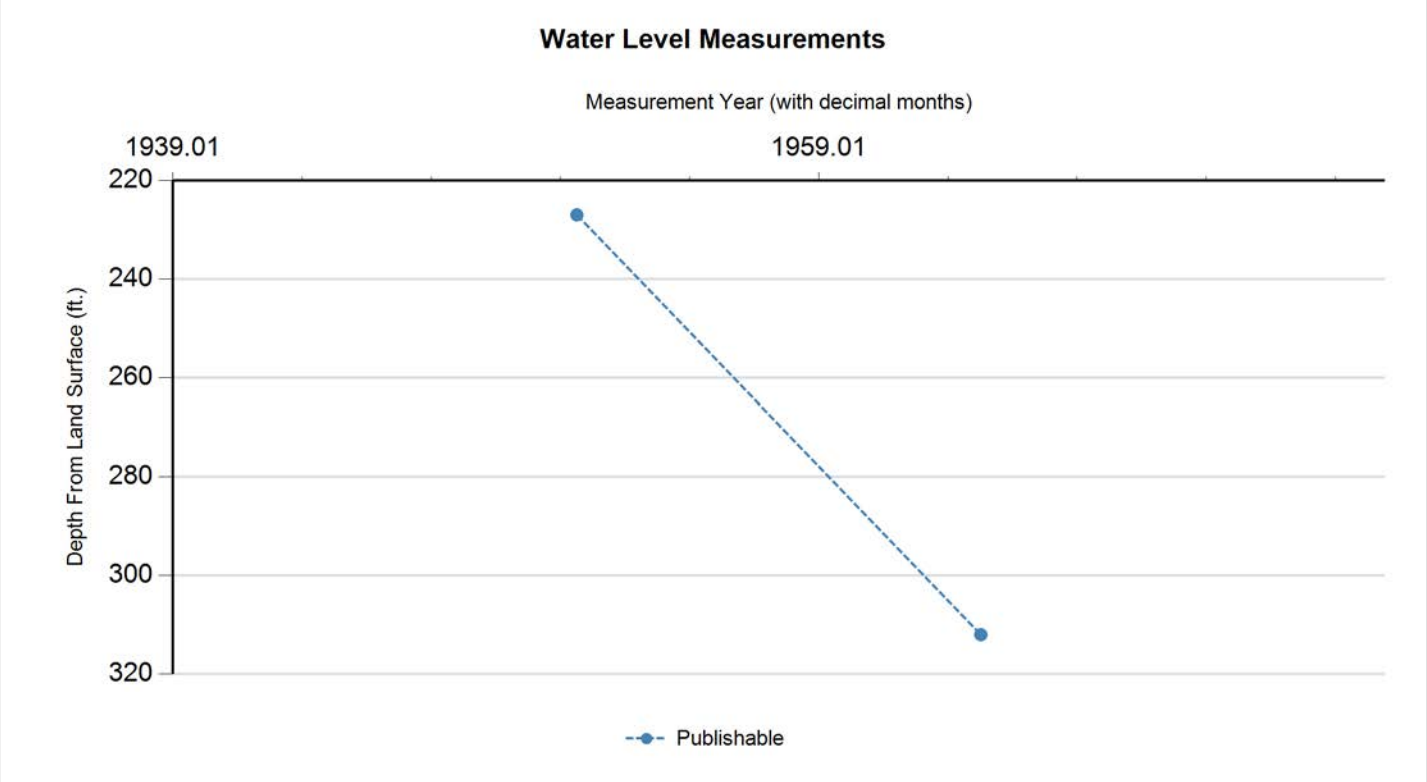
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	7/9/1951		227		-213	1	Registered Water Well Driller	Unknown		
P	1/10/1964		312	85.00	-298	1	Texas Water Development Board	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 7/9/1951 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		294.18	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		359	mg/L	
00910	CALCIUM (MG/L)		6	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		38	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		19	mg/L as CACO3	
00920	MAGNESIUM (MG/L)		1	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.3	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		5.5		
00955	SILICA, DISSOLVED (MG/L AS SI02)		14	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		15.14		
00932	SODIUM, CALCULATED, PERCENT		94	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		152	mg/L	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		374	mg/L	

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-818

Water Quality Analysis

Sample Date: 2/6/1959 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		236	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		288	mg/L	
00910	CALCIUM (MG/L)		12	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		60	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		36	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)	<	1	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		4.04		
00955	SILICA, DISSOLVED (MG/L AS SI02)		12	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		24.15		
00932	SODIUM, CALCULATED, PERCENT		95	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		324	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		4	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		554	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6515837

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-837

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515837
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.761945
Latitude (degrees minutes seconds)	29° 45' 43" N
Longitude (decimal degrees)	-95.205278
Longitude (degrees minutes seconds)	095° 12' 19" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	32
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1070
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1967
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Armco Steel Corp
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/13/1999
Last Update Date	5/13/1999

Remarks	331 ft of screen between 809 and 1672 ft. Reported yield 1461 gpm with 73 ft drawdown when drilled. Test hole drilled to 2520 ft. Well 10.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

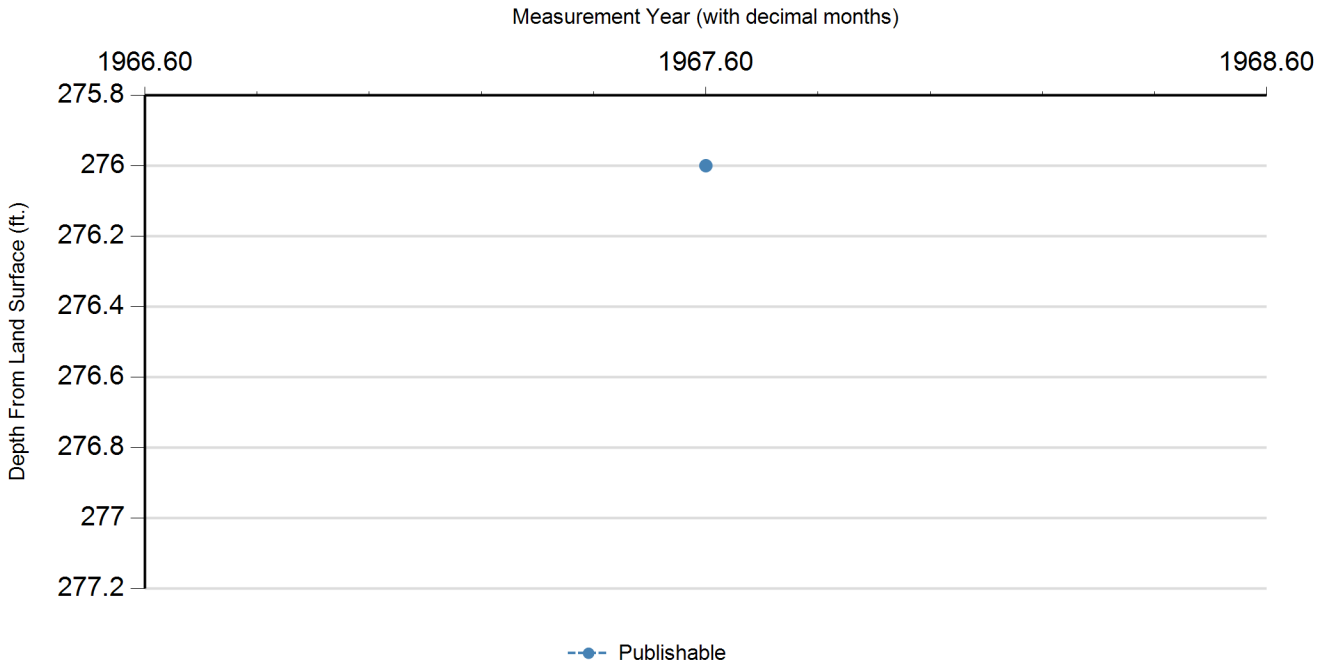
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	8/8/1967		276		-244	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 6/29/1967 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		336.07	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		410	mg/L	
00910	CALCIUM (MG/L)		5	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		90	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		15	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		400	ug/L	
00920	MAGNESIUM (MG/L)		1	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.1	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		6.38		
00955	SILICA, DISSOLVED (MG/L AS SI02)		12	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		21.89		
00932	SODIUM, CALCULATED, PERCENT		96	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		205	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		858	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		5	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		519	mg/L	

Water Quality Analysis

Sample Date: 7/8/1967 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		435.25	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		531	mg/L	
00910	CALCIUM (MG/L)		6	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		101	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		22	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		300	ug/L	
00920	MAGNESIUM (MG/L)		2	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		8.23		
00955	SILICA, DISSOLVED (MG/L AS SI02)		11	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		23.21		
00932	SODIUM, CALCULATED, PERCENT		96	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		257	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1100	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		3	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		641	mg/L	

Water Quality Analysis

Sample Date: 7/11/1967 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		358.2	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		437	mg/L	
00910	CALCIUM (MG/L)		8	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		72	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		27	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		1200	ug/L	
00920	MAGNESIUM (MG/L)		2	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.1	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		6.59		
00955	SILICA, DISSOLVED (MG/L AS SI02)		13	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		16.3		
00932	SODIUM, CALCULATED, PERCENT		93	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		199	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		882	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		1	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		509	mg/L	

Water Quality Analysis

Sample Date: 8/8/1967 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		318.03	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		388	mg/L	
00910	CALCIUM (MG/L)		6	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		61	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		1	mg/L	
00400	PH (STANDARD UNITS), FIELD		8	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		5.97		
00955	SILICA, DISSOLVED (MG/L AS SI02)		14	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		17.62		
00932	SODIUM, CALCULATED, PERCENT		95	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		177	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		775	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		1	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		450	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6515811

Texas Water Development Board
Well Schedule

State Well Number 6515811 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294508 **Longitude** 951128 **Source of Coords** 1

Owner's Well No. _____ **Location** _____

Owner
Armco Steel Corp.
#6

Driller
Layne Texas Co.

Address _____ **Tenant/Oper.** _____

Date Drilled / /1948 **Depth** 1381 **Source of Depth** D **Altitude** 31 **Source of Alt.** M

Well Type W **User** 35510

WELL CONSTRUCTION **Const-Method** **Casing Material**

Completion blank **Screen Material**

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -** 150

YIELD Flow- _____**GPM** **Pump-** _____**GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** N **Quality -** N **Logs -** **Other Data -**

WATER LEVELS

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency 02

REMARKS -

Aquifer - 121EVGL **ID -** 15.

EVANGELINE
AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-811

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515811
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.752223
Latitude (degrees minutes seconds)	29° 45' 08" N
Longitude (decimal degrees)	-95.191111
Longitude (degrees minutes seconds)	095° 11' 28" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	31
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1381
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	0/0/1948
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	None
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Armco Steel Corp. #6
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	1/25/1999
Last Update Date	1/25/1999

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6515813

TEXAS DEPARTMENT OF WATER RESOURCES

WELL SCHEDULE

Aquifer(s) Evangeline Project No. _____ State Well No. 65-15-813

Field No./Owner's Well No. 3 County HARRIS

1. Location: ___ ¼, ___ ¼, Section ___, Block ___, Survey _____, Lat. _____, Long. _____

2. Owner: Diamond Shamrock Address: _____

Tenant (other): _____ Address: _____

Driller: Layne Texas Address: _____

3. Land Surface Elevation: 32 ft. above msl determined by _____

4. Drilled: 1-22 19 68 ; Dug, Cable Tool, ~~Rotary~~, Air, _____

5. Depth: Rept. 1290 ft. Meas. _____ ft.

6. Borehole Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfr. _____ Type S

No. Stages _____, Bowls Diam. ___ in., Setting _____ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Mfr. _____ Fuel E HP. 300

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. ___ Date ___

10. Performance Test: Date 2/29/68 Length of Test _____ Made by L-T

Static Level 368 ft. Pumping Level 478 ft. Drawdown 110 ft.

Production 1640 gpm Specific Capacity _____ gpm/ft.

11. Quality: (Remarks on taste, odor, color, etc.) _____

Analyses

Date _____ Laboratory Edna Wood TDS ___ Sp Cond _____

Date _____ Laboratory _____ TDS ___ Sp Cond _____

12. Other data available (as circled): Pumping Test, Power & Yield Test, Drillers Log, Formation Samples, Geophysical Log(s) Q1733 (type)

13. Water Level(s): _____ ft. rept. meas. _____ 19 ___ above below _____ which is ___ ft. above below Land Surface

_____ ft. rept. meas. _____ 19 ___ above below _____ which is ___ ft. above below Land Surface

14. Use: Dom., Stock, Public Supply, (Ind.), Irr., Observation, Other (Test Hole, Oil Test, etc.) _____

15. Recorded by: _____ Source of data: _____ Date: _____

16. Remarks: _____

17. Location or Sketch:

CASING, BLANK PIPE & WELL SCREEN Cemented From ___ ft. to ___ ft.			
Diam. (in.)	Type	Setting (feet) from	to
20			840
12			1290

Q1733

W/L Obs. Well W/Q Obs. Well

State Well No. 65-13-813

TDWR-0308

FM NO. 28

State

WAYNE TEXAS COMPANY

HOUSTON -:- DALLAS

WELL LOG

REPORT NO. 7755
S. O. 2531-67
PAGE 1 of 2
FILE NO. 3250
DATE 3/18/68

CUSTOMER LOCATION

FOR Diamond Shamrock Corporation

LOCATION WELL Haden Road, Houston

SURVEY FIELD

COUNTY Harris STATE Texas

OTHER LAND MARKS Green's Bayou Plant 2239 Haden Rd

WELL DATA

NAME WELL Diamond WELL NO. 3
ELEVATION Shamrock DATUM 65-15-8C
RT C GR
TEST HOLE SIZE 9-7/8" TO 1504'
DATE STARTED DRILLING 1-15-68
DATE FINISHED DRILLING 1-22-68
DRILLER P. Heffernan RIG NO. 3
TYPE MUD Milgel NO. SACKS 50
ELECTRIC LOG Yes TYPE Schlumberger
SURVEY Eastman TYPE Single-shot
OTHER driller: J. B. Williams

DEPTH STRATA	EACH STRATUM	DESCRIPTION FORMATION	SAMPLES DEPTH	TYPE	NUMBER
0		Surface			
3	3	Soil			
15	12	Clay			
35	20	Sand			
138	103	Clay			
170	32	Sand			
175	5	Shale			
245	70	Sand			
268	23	Shale			
285	17	Sand			
289	4	Shale			
324	35	Sand			
345	21	Shale			
370	25	Sandy shale			
402	32	Shale			
411	9	Sand			
446	35	Shale			
466	20	Sand			
474	8	Shale			
488	14	Sand			
657	169	Shale			
682	25	Sandy shale			
704	22	Shale			
721	17	Sandy shale			
845	124	Hard shale			
866	21	Shale			
881	15	Sand			
956	75	Shale			
988	32	Sandy shale			
1032	44	Hard shale			
1052	20	Sandy shale			
1068	16	Shale			
1078	10	Sandy shale			
1099	21	Sand & shale streaks			
1156	57	Sand			
1168	12	Shale			
1184	16	Sand			
1199	15	Shale			
1227	28	Sand			
1254	27	Shale Q-1733			65-15-8C

65-13-813 GM

FM O. 28

YNE TEXAS COMPA

HOUSTON -:- DALLAS

WELL LOG

REPORT NO. 7755
S. O. 2531-67
PAGE 2 of 2
FILE NO. 3250
DATE 3/18/68

CUSTOMER LOCATION

FOR Diamond Shamrock Corporation

LOCATION WELL Haden Road, Houston

SURVEY FIELD

COUNTY Harris STATE Texas

OTHER LAND MARKS

WELL DATA

NAME WELL Diamond WELL NO. 3
ELEVATION Shamrock DATUM
RT C GR
TEST HOLE SIZE 9-7/8" TO 1504'
DATE STARTED DRILLING 1-15-68
DATE FINISHED DRILLING 1-22-68
DRILLER Heffernan RIG NO. 3
TYPE MUD Milgel NO. SACKS 50
ELECTRIC LOG Yes TYPE Schlumberger
SURVEY Eastman TYPE Single-shot
OTHER driller: J. B. Williams

DEPTH STRATA	EACH STRATUM	DESCRIPTION FORMATION	SAMPLES DEPTH	SAMPLES TYPE	SAMPLES NUMBER
1254					
1269	15	Sand			
1393	124	Shale			
1423	30	Sand			
1445	22	Shale			
1460	15	Sandy shale			
1470	10	Shale			
1488	18	Sand			
1490	2	Shale			
1504	14	Shale			
T.D. 1504 ft.					

65-15-8C

65-13-813

FORM NO 1202 · 1M · 8-51 · B&L

THE LAYNE TEXAS COMPANY, LTD.

HOUSTON -:- DALLAS

MATERIAL SETTING

REPORT NO. 7757
S. O. 2531-67
PAGE 1 OF 1
FILE NO. 3250
DATE 3-18-68

CUSTOMER LOCATION

FOR Diamond Shamrock Corporation

LOCATION WELL Haden Road, Houston

SURVEY

FIELD

COUNTY Harris

STATE Texas

OTHER LAND MARKS

WELL DATA

NAME WELL Diamond WELL NO. 3

ELEVATION Shamrock DATUM

TYPE WELL Gravel-wall

SURFACE CASING CEMENTED Yes NO. SACKS 510'

SIZE HOLE UNDERREAMED 30" DEPTH 1290'

GRAVEL TYPE 112-113- NO. CU. YDS. 160

TYPE SCREEN 165-131 SS WW Barlug GAGE .045"

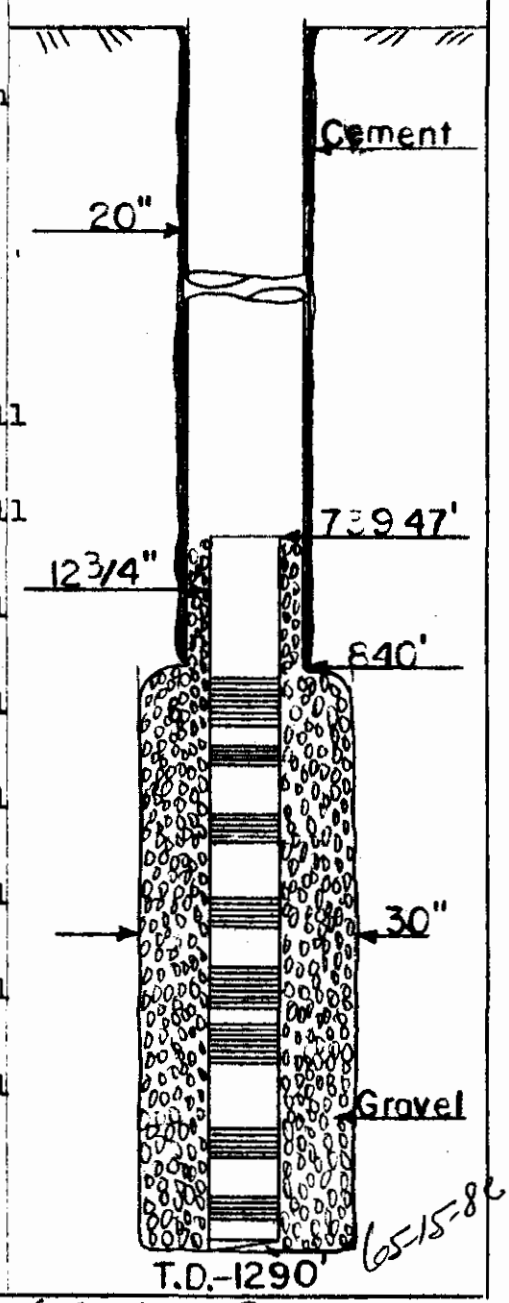
DRILLER P.Heffernan RIG NO. 4

OTHER drillers: J. Williams, B.F. Tolley

DEPTH	LENGTH	SIZE. KIND. WEIGHT MATERIAL
+3'		20" O.D. surface casing 3' above ground
0		Surface
739.47'		Top of 12-3/4" O.D. liner with R&L coupling
34'	34'	26" O.D. conductor pipe 3/8" wall
840'	843'	20" O.D. surface casing 3/8" wall
849.90'	110.43'	12-3/4" O.D. blank liner 3/8" wall
889.90'	40.00'	12-3/4" O.D. S.S. W.W. Barlug screen .045" ga.
906.73'	16.83'	12-3/4" OD blank liner 3/8"wall
921.73'	15.00'	12-3/4" O.D. S.S. W.W. Barlug screen .045" ga.
961.85'	40.12'	12-3/4"OD blank liner 3/8" wall
986.85'	25.00'	12-3/4" O.D. S.S. W.W. Barlug screen .045" ga.
1029.80'	42.95'	12-3/4"OD blank liner 3/8"wall
1054.80'	25.00'	12-3/4" O.D. S.S. W.W. Barlug screen .045" ga.
1084.90'	30.10'	12-3/4"OD blank liner 3/8"wall
1114.90'	30.00'	12-3/4" O.D. S.S. W.W. Barlug screen .045" ga.
1124.90'	10.00'	12-3/4"OD blank liner 3/8"wall
1154.90'	30.00'	12-3/4" O.D. S.S. W.W. Barlug screen .045" ga.
1207.00'	52.10'	12-3/4"OD blank liner 3/8"wall
1227.00'	20.00'	12-3/4" O.D. S.S. W.W. Barlug screen .045" ga.
1254.90'	27.90'	12-3/4"OD blank liner 3/8"wall
1269.90'	15.00'	12-3/4" O.D. S.S. W.W. Barlug screen .045" ga.
1288.00'	18.10'	12-3/4"OD blank liner 3/8"wall
1290.00'	2.00'	12-3/4" O.D. set nipple & back pressure valve

Total depth 1290 ft.

SKETCH



65-15-82

65-13-813

MICROBIOLOGY SERVICE LABORATORIES

water technologists . . chemists . . microbiologists

26 January 1968

To: Layne Texas Company
Houston, Texas

SO 2531-67

Sample marked: Well No. 2, Sample 1, Diamond Shamrock Corp., Houston, Harris Cty, Texas. Taken: 1-25-68 after 10 hrs. pumping at 15 gpm with air. Gravel Packer. Screened: 1120-1167'. Cloudy. P.B.H.

Rec'd: 1-25-68. Turbid sample; filtered for analysis.

WATER ANALYSIS

results in parts per million (mg/1) except as noted

Dissolved Residue at 105°C		386	Conductance, micromhos/cm, 25°C		651
Total Dissolved Solids, actual†		547	Color, units		40
Total Dissolved Solids, calc.		545	Turbidity, units		70
Silica	SiO_2	12	As Calcium Carbonate, $CaCO_3$:		
Iron and Aluminum Oxides	R_2O_3	1	Phenolphthalein Alkalinity		16
Calcium	Ca	4	Total Alkalinity		292
Magnesium	Mg	1	Total Hardness		15
Sodium (diff.) Na + K as	Na	152	Free Carbon Dioxide	CO_2	0
Carbonate	CO_3	19	pH . . . 8.50		
Bicarbonate	HCO_3	317	HYPOTHETICAL COMBINATIONS		
Sulfate	SO_4	0	Calcium Bicarbonate		16
			Magnesium Bicarbonate		7
Chloride	Cl	39	Sodium Bicarbonate		412
			Sodium Carbonate		23
Total Iron	Fe	2.9	Sodium Chloride		64
			$SiO_2 + R_2O_3$		13
Iron, filtered sample	Fe	0.21	Total Dissolved Solids, calc.		545

RECEIVED AUG 19 1968

†Total Dissolved Solids, actual = Dissolved Residue + 50.8% of bicarbonate (HCO_3) ion

Microbiology Service Laboratories

By: Edna Woodruff 65-158C

Edna Wood 65-13-813

TEXAS WATER DEVELOPMENT BOARD

8787
ilc

RI 7-7271 • P. O. BOX 14171 • 4820 OLD SPANISH TRAIL • HOUSTON, TEXAS 77021

MICROBIOLOGY SERVICE LABORATORIES

water technologists . . chemists . . microbiologists

4 March 1968

To: Layne Texas Company
Houston, Texas

SO 2531-67

Sample marked: Well No. 3, Diamond Shamrock, Greens Bayou, Harris Cty, Texas. Taken: 3-1-68 after 16 hrs. pumping at 1660 gpm with Layne Test Pump. Static Head: 374'. Pumping Level: 484'. Screened: 850-1240'. Clear. Warren Patton.

Rec'd: 3-1-68

WATER ANALYSIS

results in parts per million (mg/l) except as noted

Dissolved Residue at 105°C		306	Conductance, micromhos/cm, 25°C		635
Total Dissolved Solids, actual†		367	Color, units		5
Total Dissolved Solids, calc.		368	Turbidity, units		1
Silica	SiO_2	12	As Calcium Carbonate, $CaCO_3$:		
Iron and Aluminum Oxides	R_2O_3	1	Phenolphthalein Alkalinity		0
Calcium	Ca	5	Total Alkalinity		293
Magnesium	Mg	1	Total Hardness		18
Sodium (diff.) Na + K as	Na	152	Free Carbon Dioxide	CO_2	0
Carbonate	CO_3	0	pH . . . 8.25		
Bicarbonate	HCO_3	357	HYPOTHETICAL COMBINATIONS		
Sulfate	SO_4	1	Calcium Bicarbonate		20
Chloride	Cl	39	Magnesium Bicarbonate		8
Total Iron	Fe	0.06	Sodium Bicarbonate		461
			Sodium Sulfate		1
			Sodium Chloride		64
			$SiO_2 + R_2O_3$		13
			Total Dissolved Solids, calc.		367

†Total Dissolved Solids, actual = Dissolved Residue + 50.8% of bicarbonate (HCO_3) ion

Microbiology Service Laboratories

By: Edna Wood 65-15-8C
Edna Wood
65-13-813

0952
1b

RI 7-7271 • P. O. BOX 14171 • 4820 OLD SPANISH TRAIL • HOUSTON, TEXAS 77021

RECEIVED AUG 19 1968 TEXAS WATER DEVELOPMENT BOARD

Rep. No. 7756
S. O. 2531-67
PAGE 1 of 1
FILE NO. 3250
DATE 3/18/68

.YNE TEXAS COMPA

HOUSTON -:- DALLAS

WATER WELL TEST

CUSTOMER LOCATION

T ST FOR Diamond Shamrock Corporation

LOCATION OF WELL Haden Road

SURVEY FIELD

COUNTY Harris STATE Texas

DESCRIPTION OF LAND MARKS

Diamond WELL DATA

NAME WELL Shamrock WELL NO. 3

ELEVATION DATUM

WELL SIZE 20" x 12" x 1290'

TOTAL DEPTH 1290' TOP SCREEN 849.90'

GRAVEL WELL Yes STRAIGHT WELL

TYPE SCREEN Layne Bar-lug GAGE .045"

TEMPERATURE OF WATER

WATER CONDITION Good

WATER MEASURING DEVICE

ORIFICE SIZE 9"x12" LENGTH 4'-8"

OTHER

TEST PUMP DATA

DEPTH SETTING TOP OF BOWL 520'

LENGTH AIR LINE 520' SIZE 1/4"

TYPE BOWL THC 12" NO. STAGES 9

LENGTH BOWL 11' SUCTION LT.

SAND CONTENT OZ. PER 100 GAL.

ACTIVE STATIC HEAD AFTER PUMP STOPPED

5 MIN. 404' FT. 30 MIN. 394 FT.

10 MIN. 399' FT. 35 MIN. 393 FT.

15 MIN. 396' FT. 60 MIN. 391 FT.

S.L. before start 374 ft.

WATER SAMPLE TAKEN NO. SAMPLES

BACTERIOLOGICAL SAMPLE TAKEN

DRAWDOWN SPECIFIC CAPACITY

Pump is 6 ft. above ground. Measurements taken 6 ft. above ground

DATE HOUR	AIR LINE GAGE	PUMPING LEVEL	DISCH. PRESS.	HEAD ON ORIFICE INCHES	GPM	RPM	OPERATOR	REMARKS
2/29/68	Started	test @5:30PM			1600			
6:00PM	52	468		25	1783			
6:30	46	474		24	1750			
7:00	48	472		21	1640			
7:30	46	474		21	1640			
8:00	45	475		21	1640			
8:30	44	476		21	1640			
9:00	41	479		22	1677			
9:30	41	479		21	1640			
10:00	40	480		22	1677			
10:30	44	476		20	1600			
11:00	43	477		20	1600			
11:30	42	478		20	1600		3/1/68	
12:00M	41	479		21	1640			
12:30AM	41	479		21	1640			
1:00	40	480		21	1640			
1:30	40	480		21	1640			
2:00	39	481		21	1640			
2:30	39	481		21	1640			
3:00	39	481		21	1640			
3:30	39	481		21	1640			
4:00	38	482		21	1640			
4:30	38	482		21	1640			
5:00	36	484		22	1677			
5:30	35	485		22	1677			
6:00	35	485		22	1677			
6:30	35	485		21	1640			
7:00	36	484		21	1640			

OBSERVERS

FOR OWNER

P. B. Heffernan
FOR LAYNE TEXAS CO.

FORM NO. 35 -

65-13-813

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-813

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515813
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.762501
Latitude (degrees minutes seconds)	29° 45' 45" N
Longitude (decimal degrees)	-95.171944
Longitude (degrees minutes seconds)	095° 10' 19" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	32
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1290
Well Depth Source	Driller's Log
Drilling Start Date	1/15/1968
Drilling End Date	1/22/1968
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Submersible
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	ISK Biosciences Corp. Greens Bayou
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1010074C
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	2/5/2013
Last Update Date	7/27/2016

Remarks	199 ft of screen between 850 and 1270 ft. Reported yield 1640 gpm with 110 ft drawdown when drilled. Test hole drilled to 1504 ft.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/29/1968		368		-336	1	Texas Water Development Board	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 1/25/1968 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		356	mg/L	
00910	CALCIUM (MG/L)		4	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		39	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		15	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		2900	ug/L	
00920	MAGNESIUM (MG/L)		1	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.6	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		5.55		
00955	SILICA, DISSOLVED (MG/L AS SI02)		12	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		17.61		
00932	SODIUM, CALCULATED, PERCENT		95	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		152	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		651	MICR	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		383	mg/L	

Water Quality Analysis

Sample Date: 3/1/1968 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		292.62	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		357	mg/L	
00910	CALCIUM (MG/L)		5	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		39	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		1	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		5.51		
00955	SILICA, DISSOLVED (MG/L AS SI02)		12	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		16.23		
00932	SODIUM, CALCULATED, PERCENT		95	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		152	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		638	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		1	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		385	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6515808

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 15 808 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 46 05 Longitude - 95 12 25 Source of Coords - 3

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - City of Houston
Woodland

Driller - Texas Water Wells

Address _____ Tenant/Oper. _____
Date Drilled - / /1958 Depth - 1,208 ft. Source of Depth - Altitude - 33 ft. Source of Alt. - M
Aquifer - 121EVGL EVANGELINE AQUIFER Well Type - W User - 396200

WELL CONSTRUCTION
Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

| Casing or Blank Pipe (C)
| Well Screen or Slotted Zone (
| Open Hole (O)
| Cemented from_____to_____

Diam. (in.)	Setting(feet) From	To
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		

LIFT DATA - Pump Mfr. _____ Type - TURBINE PUMP No. Stages ____
Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.
Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower -

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- PUBLIC SUPPLY Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- M Quality- Y Logs- Other Data-

WATER LEVELS Date- 12/15/1958 Measurement- -291.80
Date- 02/03/1966 Measurement- -339.00

Recorded By _____ Date Record Collected or Updated- / /

Reporting Agency - UNITED STATES GEOLOGICAL SURVEY
REMARKS -
175 ft of screen between 790 and
1105 ft. WEll deepened from 753
to 1208 in 1958 by Texas Water
Wells, Inc. Well 3.

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-808

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515808
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.768333
Latitude (degrees minutes seconds)	29° 46' 06" N
Longitude (decimal degrees)	-95.207223
Longitude (degrees minutes seconds)	095° 12' 26" W
Coordinate Source	+/- 10 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	33
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1208
Well Depth Source	Another Government Agency
Drilling Start Date	
Drilling End Date	0/0/1958
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Public Supply
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	City of Houston Woodland
Driller	Texas Water Wells
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1010013QP
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	9/26/1997
Last Update Date	9/26/1997

Remarks	175 ft of screen between 790 and 1105 ft. Well deepened from 753 to 1208 in 1958 by Texas Water Wells, Inc. Well 3.

Casing - No Data

Well Tests - No Data

Lithology - No Data

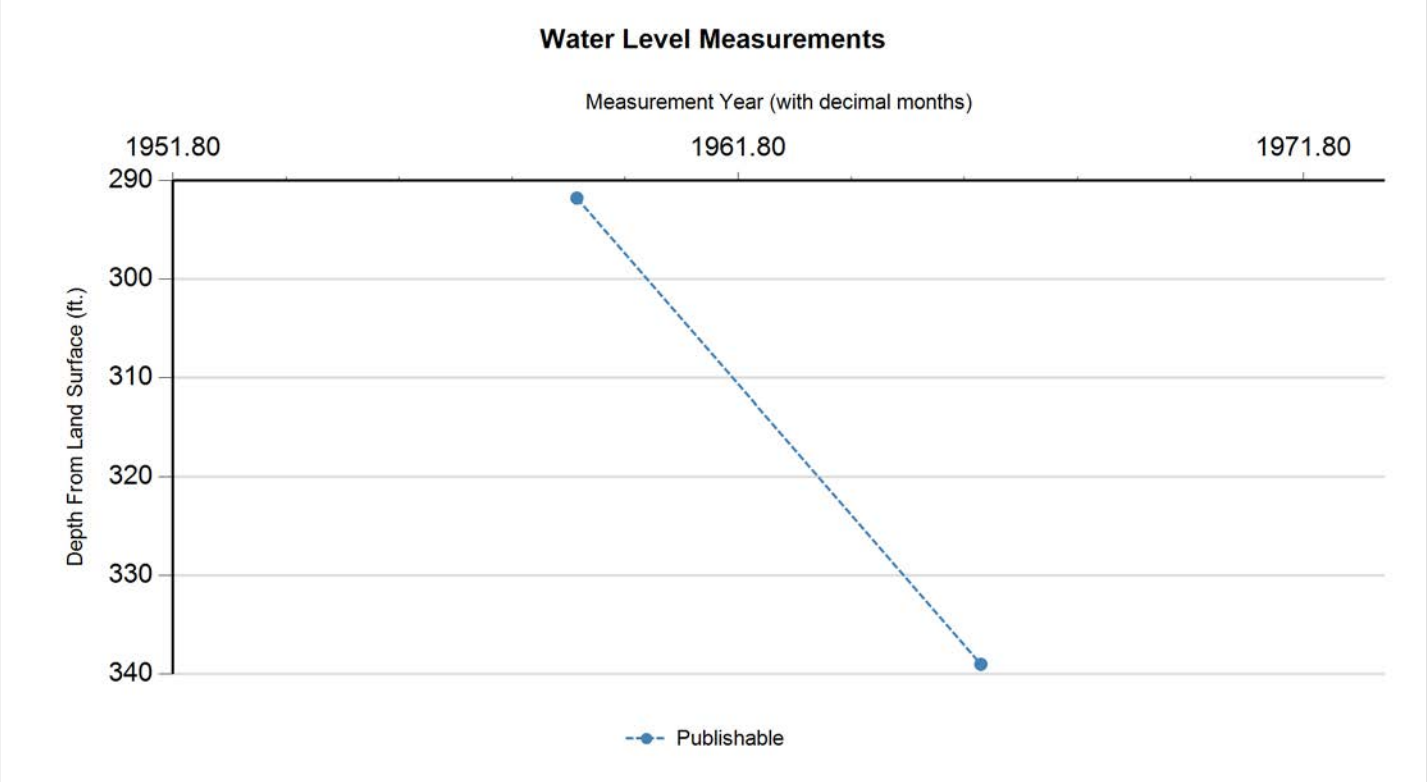
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	12/15/1958		291.8		-258.8	1	Texas Water Development Board	Steel Tape		
P	2/3/1966		339	47.20	-306	1	Texas Water Development Board	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 5/10/1958 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		245.08	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		299	mg/L	
00910	CALCIUM (MG/L)		7	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		34	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		1	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		26	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		2	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00400	PH (STANDARD UNITS), FIELD		7.9	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		4.38		
00955	SILICA, DISSOLVED (MG/L AS SI02)		16	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		10.81		
00932	SODIUM, CALCULATED, PERCENT		91	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		126	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		558	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		5	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		28	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		338	mg/L	

Water Quality Analysis

Sample Date: 7/20/1962 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		246.72	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		301	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		36	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		23	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.6	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		557	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		28	C	

Water Quality Analysis

Sample Date: 3/31/1965 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		288	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		31	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		32	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.5	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		529	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		27	C	

Water Quality Analysis

Sample Date: 3/21/1966 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		249.18	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		304	mg/L	
00910	CALCIUM (MG/L)		6	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		30	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		24	mg/L as CACO3	
00920	MAGNESIUM (MG/L)		2	mg/L	
00400	PH (STANDARD UNITS), FIELD		7.8	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		4.51		
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		533	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		28	C	

Water Quality Analysis

Sample Date: 4/3/1967 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		236.07	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		288	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		30	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		30	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		535	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		27	C	

Water Quality Analysis

Sample Date: 4/5/1968 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		237.7	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		290	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		31	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		38	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		544	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		28	C	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6515809

Texas Water Development Board
Well Schedule

State Well Number 6515809 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294511 **Longitude** 951153 **Source of Coords** 1

Owner's Well No. _____ **Location** _____

Owner
Armco Steel Corp.
#4

Driller
Layne Texas Co.

Address _____ **Tenant/Oper.** _____

Date Drilled / /1945 **Depth** 1400 **Source of Depth** D **Altitude** 31 **Source of Alt.** M

Well Type W **User** 35510

WELL CONSTRUCTION

Const-Method

Casing Material

Screen Material

Completion blank

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- _____**GPM** **Pump-** _____**GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** N **Quality -** N **Logs -** **Other Data -**

WATER LEVELS

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency 02

REMARKS -

Aquifer - 121EVGL **ID -** 15

EVANGELINE
AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-809

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515809
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.753056
Latitude (degrees minutes seconds)	29° 45' 11" N
Longitude (decimal degrees)	-95.198056
Longitude (degrees minutes seconds)	095° 11' 53" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	31
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1400
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	0/0/1945
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	None
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Armco Steel Corp. #4
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	1/25/1999
Last Update Date	1/25/1999

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis - No Data Available

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WATER WELL NO. 6515823

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-823

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515823
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.761389
Latitude (degrees minutes seconds)	29° 45' 41" N
Longitude (decimal degrees)	-95.171944
Longitude (degrees minutes seconds)	095° 10' 19" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	33
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1231
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	12/8/1955
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	None
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	ISK Biosciences Corp. Greens Bayou
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1010074A
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	10/1/1997
Last Update Date	10/1/1997

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6515824

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-824

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515824
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.757501
Latitude (degrees minutes seconds)	29° 45' 27" N
Longitude (decimal degrees)	-95.202778
Longitude (degrees minutes seconds)	095° 12' 10" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	32
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1634
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1957
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Armco Steel Corp.
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/13/1999
Last Update Date	5/13/1999

Remarks	200 ft of screen between 848 and 1418 ft. Reported yield 1200 gpm with 52 ft drawdown when drilled.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

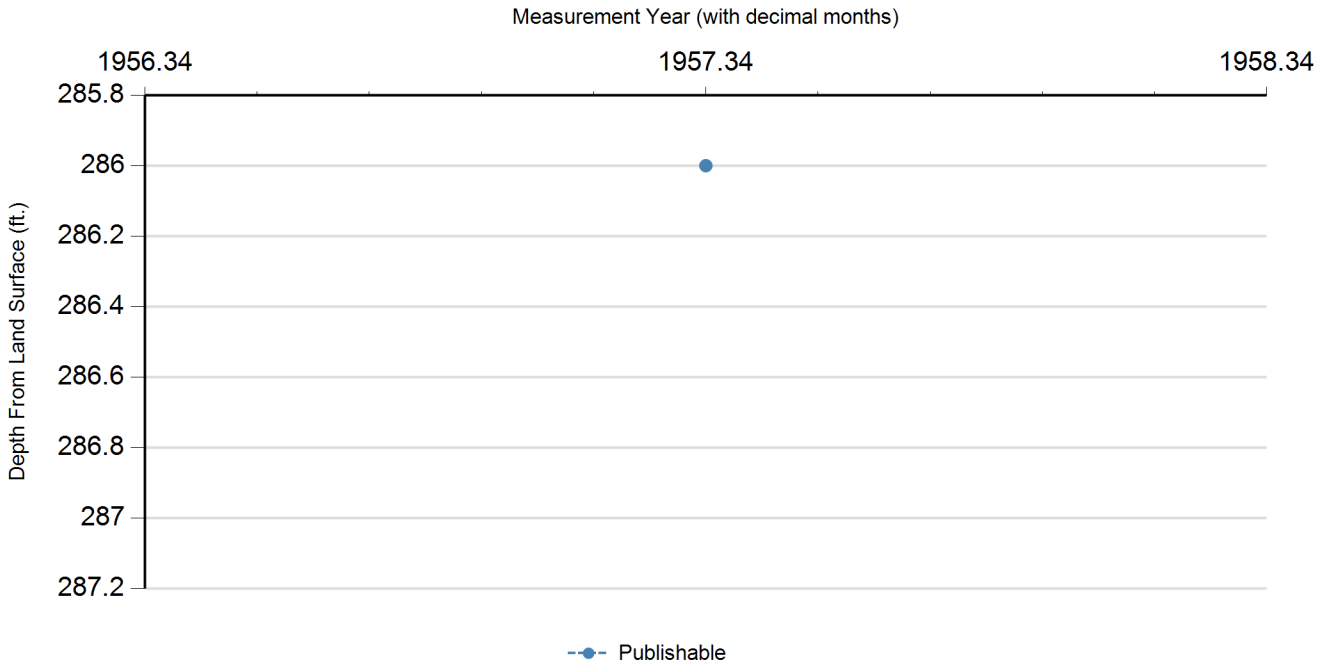
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	5/6/1957		286		-254	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 4/15/1957 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		422	mg/L	
00910	CALCIUM (MG/L)		10	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		94	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		36	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		3	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.5	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		6.17		
00955	SILICA, DISSOLVED (MG/L AS SI02)		17	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		14.53		
00932	SODIUM, CALCULATED, PERCENT		92	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		204	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		856	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		0	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		535	mg/L	

Water Quality Analysis

Sample Date: 4/17/1957 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		549	mg/L	
00910	CALCIUM (MG/L)		8	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		74	mg/L	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		2	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.6	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		8.43		
00955	SILICA, DISSOLVED (MG/L AS SI02)		16	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		19.99		
00932	SODIUM, CALCULATED, PERCENT		94	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		244	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1020	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		1	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		614	mg/L	

Water Quality Analysis

Sample Date: 4/18/1957 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		409.84	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		500	mg/L	
00910	CALCIUM (MG/L)		9	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		146	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		33	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		3	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		7.49		
00955	SILICA, DISSOLVED (MG/L AS SI02)		20	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		20.13		
00932	SODIUM, CALCULATED, PERCENT		94	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		273	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1228	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		8	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		704	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6515827

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-827

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515827
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.760278
Latitude (degrees minutes seconds)	29° 45' 37" N
Longitude (decimal degrees)	-95.176944
Longitude (degrees minutes seconds)	095° 10' 37" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	32
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	950
Well Depth Source	Owner
Drilling Start Date	
Drilling End Date	0/0/1957
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Submersible
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Jefferson Lake Sulphur Co.
Driller	Lowry Water Wells
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	Texas Water Development Board
Created Date	1/6/2003
Last Update Date	1/6/2003

Remarks	TWDB R178: 82 ft. of screen between 700 and 930 ft.

Casing - No Data

Well Tests - No Data

Lithology - No Data

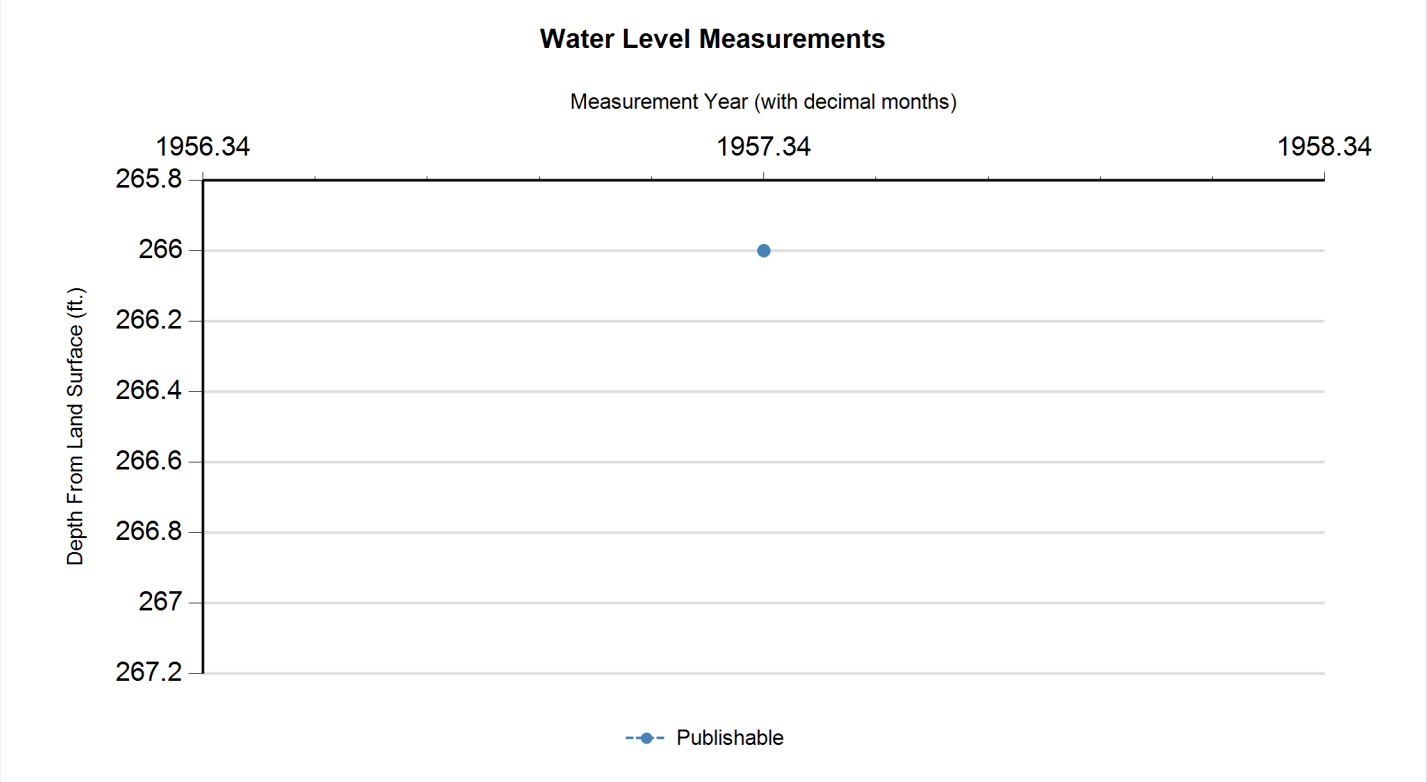
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	5/3/1957		266		-234	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6515817

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-817

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515817
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.761945
Latitude (degrees minutes seconds)	29° 45' 43" N
Longitude (decimal degrees)	-95.184167
Longitude (degrees minutes seconds)	095° 11' 03" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	20
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1224
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	0/0/1945
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	None
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Stauffer Chemical Co #3
Driller	Layne Texas
Other Data Available	Drillers Log
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	1/25/1999
Last Update Date	1/25/1999

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6515825

TEXAS DEPARTMENT OF WATER RESOURCES

WELL SCHEDULE

Aquifer(s) Evangeline Project No. _____ State Well No. 65-15-825

_____ Field No./Owner's Well No. _____ County Harris

1. Location: ___ ¼, ___ ¼, Section ___, Block ___, Survey _____, Lat. _____, Long. _____

2. Owner: A.O. Smith Corp Address: _____

Tenant (other): _____ Address: _____

Driller: Layne Texas Address: _____

3. Land Surface Elevation: 31 ft. above msl determined by _____

4. Drilled: _____ 19 68 ; Dug, Cable Tool, Rotary, Air, _____

5. Depth: Rept. 1706 ft. Meas. _____ ft.

6. Borehole Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfr. _____ Type T

No. Stages _____, Bowls Diam. ___ in., Setting _____ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Mfr. _____ Fuel E HP. ___

9. Yield: Flow ___ gpm, Pump ___ gpm, Meas., Rept., Est. ___ Date ___

10. Performance Test: Date 4/26/68 Length of Test ___ Made by L-T

Static Level 288 ft. Pumping Level ___ ft. Drawdown 82 ft.

Production 1200 gpm Specific Capacity _____ gpm/ft.

11. Quality: (Remarks on taste, odor, color, etc.) _____

Analyses

Date _____ Laboratory _____ TDS ___ Sp Cond ___

Date _____ Laboratory _____ TDS ___ Sp Cond ___

12. Other data available (as circled): Pumping Test, Power & Yield Test, Drillers Log, Formation Samples, Geophysical Log(s) Q1724 (type)

13. Water Level(s): _____ ft. rept. meas. _____ 19__ above below _____ which is ___ ft. above below Land Surface

_____ ft. rept. meas. _____ 19__ above below _____ which is ___ ft. above below Land Surface

14. Use: Dom., Stock, Public Supply, Ind., Irr., Observation, Other (Test Hole, Oil Test, etc.) _____

15. Recorded by: _____ Source of data: _____ Date: _____

16. Remarks: _____

17. Location or Sketch:

CASING, BLANK PIPE & WELL SCREEN Cemented From ___ ft. to ___ ft.			
Diam. (in.)	Type	Setting (feet) from	to
16			1010
10			1706

TDWR-0308

W/L Obs. Well ___ W/Q Obs. Well ___

State Well No. 65-15-825

AM NO. 28

State

65-15-8A

AYNE TEXAS COMPANY

HOUSTON -:- DALLAS

WELL LOG

REPORT NO. 7790 ab
S. O. 2535-67
PAGE 1 of 2
FILE NO. 3258
DATE 4/12/68

CUSTOMER LOCATION	WELL DATA
FOR A. O. Smith Corporation	NAME WELL / WELL NO. 2
LOCATION WELL Houston Plant	ELEVATION / DATUM
SURVEY / FIELD	RT / C / GR
COUNTY Harris / STATE Texas	TEST HOLE SIZE 9-7/8" / TD 1704'
OTHER LAND MARKS Parking lot	DATE STARTED DRILLING 3-20-68
	DATE FINISHED DRILLING 3-26-68
	DRILLER C.Brewer / RIG NO. 18
	TYPE MUD Gel / NO. SACKS 13
	ELECTRIC LOG Yes / TYPE Widco
	SURVEY Eastman / TYPE Double-shot
	OTHER driller: B.F. Tolley

DEPTH STRATA	EACH STRATUM	DESCRIPTION FORMATION	SAMPLES DEPTH	TYPE	NUMBER
0		Cement surface			
2	2	Black top soil			
90	88	Clay			
110	20	Sandy clay			
132	22	Clay			
264	132	Sand & sandy clay			
332	68	Clay			
421	89	Clay, broken sand & clay			
451	30	Sand			
595	144	Shale & sandy shale			
610	15	Sand			
661	51	Shale & sand breaks			
769	108	Sand & shale breaks			
854	85	Shale & sand breaks			
867	13	Hard shale			
945	78	Sand & broken sand & shale			
956	11	Shale			
1005	49	Sand & sandy shale			
1015	10	Shale			
1090	75	Sand & sandy shale			
1105	15	Shale			
1129	24	Sand			
1146	17	Shale			
1160	14	Sand			
1191	31	Sandy shale			
1234	43	Sand & shale streaks			
1284	50	Shale & sand streaks			
1308	24	Shale			
1373	65	Sandy shale			
1399	26	Hard shale			
1431	32	Sand & sandy shale			
1437	6	Shale			
1496	59	Shale & sandy shale			
1519	23	Shale			
1534	15	Sand			
1548	14	Shale			
1582	34	Sand & sandy shale			
1583	1	Rock			
1585	2	Sand			
1596	11	Shale Q-1724			

65-15-8A

65-15-8Z5 GM

AM :O. 28

.YNE TEXAS COMPAN..

HOUSTON -:- DALLAS

WELL LOG

REPORT NO. 7790
P. O. 2535-67
PAGE 2 of 2
FILE NO. 3258
DATE 4/12/68

CUSTOMER LOCATION	WELL DATA
FOR A. O. Smith Corporation	NAME WELL — WELL NO. 2
LOCATION WELL Houston Plant	ELEVATION — DATUM
SURVEY — FIELD	RT — C — GR
COUNTY Harris — STATE Texas	TEST HOLE SIZE 9-7/8" TD 1704'
OTHER LAND MARKS Parking lot	DATE STARTED DRILLING 3-20-68
	DATE FINISHED DRILLING 3-26-68
	DRILLER C. Brewer — RIG NO. 18
	TYPE MUD Gel — NO. SACKS 13
	ELECTRIC LOG Yes — TYPE Widco
	SURVEY Eastman — TYPE Double-shot
	OTHER driller: B. Tolley

DEPTH STRATA	EACH STRATUM	DESCRIPTION FORMATION	SAMPLES DEPTH	SAMPLES TYPE	SAMPLES NUMBER
1596					
1617	21	Sand & breaks of sandy shale			
1623	6	Shale			
1632	9	Sandy shale			
1661	29	Sand & breaks of sandy shale			
1668	7	Shale & sand breaks			
1693	25	Sand & streaks of shale			
1704	11	Shale			
Total depth 1704 ft.					

65-15-80

65-15-825

FORM NO. 1202 - 1M - 8-51 - BBL

THE LAYNE TEXAS COMPANY, LTD.

HOUSTON -:- DALLAS

MATERIAL SETTING

REPORT NO. 7791
S. O. 2535-67
PAGE 1 OF 2
FILE NO. 3258
DATE 4/29/68

CUSTOMER LOCATION	WELL DATA
FOR A. O. Smith Corporation	NAME WELL WELL NO. 2
LOCATION WELL Industrial Road	ELEVATION DATUM
SURVEY FIELD	TYPE WELL Gravel-wall
COUNTY Harris STATE Texas	SURFACE CASING CEMENTED 1010' NO. SACKS 495+8% Gel
OTHER LAND MARKS Parking lot area at Plant site.	SIZE HOLE UNDERREAMED 30" DEPTH 1010'-1706'
	GRAVEL TYPE 112,113, NO. CU. YDS. 210
	TYPE SCREEN 165, 131 S.S. W.W. GAGE .045"
	DRILLER C. Brewer RIG NO. 18
	OTHER B. F. Tolley

DEPTH	LENGTH	SIZE, KIND, WEIGHT MATERIAL	SKETCH
+4.50'		16" O.D. surface casing 4.50' above ground	
0		Surface	
916'		Top of 10-3/4" O.D. liner 31.20#	
1010'	1014.50'	16" O.D. surface casing 62.58#	
1025'	109'	10-3/4" O.D. blank liner	
1045'	20'	10-3/4" O.D. S.S. W.W. screen, .045" ga.	
1070'	25'	10-3/4" O.D. blank pipe	
1090'	20'	10-3/4" O.D. S.S. W.W. screen, .045" ga.	
1140'	50'	10-3/4" O.D. blank pipe	
1160'	20'	10-3/4" O.D. S.S. W.W. screen, .045" ga.	
1209'	49'	10-3/4" O.D. blank pipe	
1229'	20'	10-3/4" O.D. S.S. W.W. screen, .045" ga.	
1261'	32'	10-3/4" O.D. blank pipe	
1281'	20'	10-3/4" O.D. S.S. W.W. screen, .045" ga.	
1316'	35'	10-3/4" O.D. blank pipe	
1346'	30'	10-3/4" O.D. S.S. W.W. screen, .045" ga.	
1403'	57'	10-3/4" O.D. blank pipe	
1423'	20'	10-3/4" O.D. S.S. W.W. screen, .045" ga.	
1458'	35'	10-3/4" O.D. blank pipe	
1479'	21'	10-3/4" O.D. S.S. W.W. screen, .045" ga.	
1489'	10'	10-3/4" O.D. blank pipe	
1499'	10'	10-3/4" O.D. S.S. W.W. screen, .045" ga.	
1565'	66'	10-3/4" O.D. blank pipe	
1575'	10'	10-3/4" O.D. S.S. W.W. screen, .045" ga.	
1600'	25'	10-3/4" O.D. blank pipe	
1610'	10'	10-3/4" O.D. S.S. W.W. screen, .045" ga.	
1640'	30'	10-3/4" O.D. blank pipe	
1650'	10'	10-3/4" O.D. S.S. W.W. screen, .045" ga.	

65-15-8A

65-15-825

FORM NO. 1202 - 1M - 6-51 - B&L

THE LAYNE TEXAS COMPANY, LTD.

HOUSTON -:- DALLAS

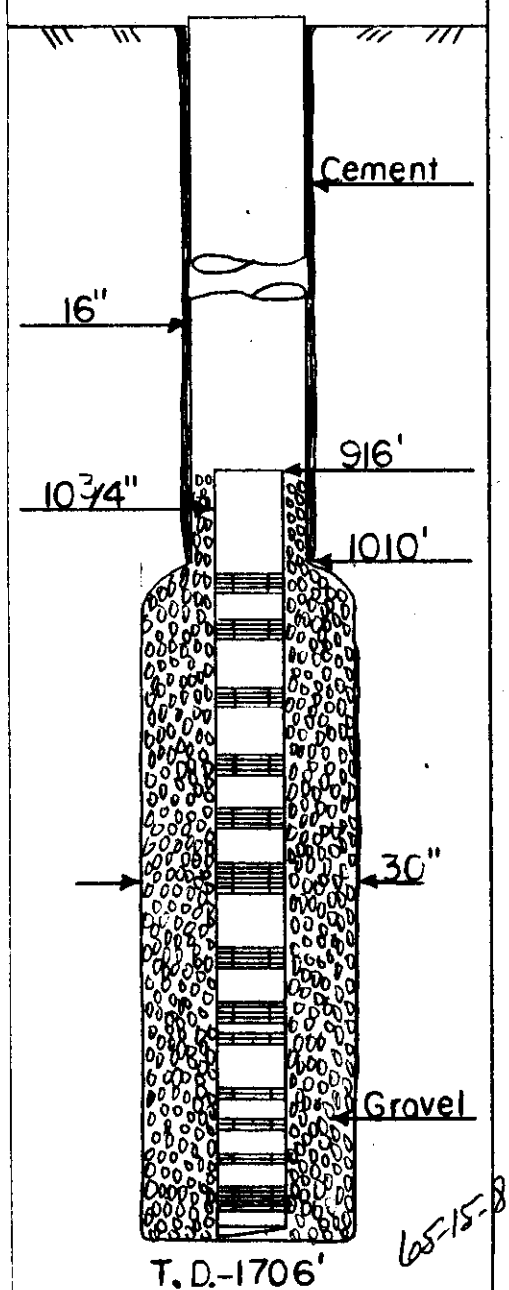
MATERIAL SETTING

REPORT NO. 7791
S. O. 2535-67
PAGE 2 OF 2
FILE NO. 3258
DATE 4/29/68

CUSTOMER LOCATION	WELL DATA
FOR A. O. Smith Corporation	NAME WELL / WELL NO. 2
LOCATION WELL Industrial Road	ELEVATION / DATUM
SURVEY / FIELD	TYPE WELL Gravel-wall
COUNTY Harris / STATE Texas	SURFACE CASING CEMENTED 1010' NO. SACKS 495+8% Gel
OTHER LAND MARKS Parking lot area at plant site.	SIZE HOLE UNDERREAMED 30" DEPTH 1010-1706'
	GRAVEL TYPE 112,113, NO. CU. YDS. 210
	TYPE SCREEN 165, 131 S.S. W.W. GAGE .045"
	DRILLER C. Brewer RIG NO. 18
	OTHER B.F. Tolley

DEPTH	LENGTH	SIZE, KIND, WEIGHT MATERIAL
1650'		
1672'	22'	10-3/4" O.D. blank pipe
1692'	20'	10-3/4" O.D. S.S. W.W. screen, .045" ga.
1704'	12'	10-3/4" O.D. blank pipe
1706'	2'	10-3/4" O.D. set nipple & back pressure valve
Total depth		

SKETCH



65-15-8P

65-85-825

Report No. 7792
S. O. 2535-67
PAGE 1 of 2
FILE NO. 3258
DATE 4/29/68

LAYNE TEXAS COMPANY
HOUSTON -:- DALLAS
WATER WELL TEST

CUSTOMER LOCATION

TEST FOR A. O. Smith Corporation
LOCATION OF WELL Industrial Road
SURVEY FIELD
COUNTY Harris STATE Texas
DESCRIPTION OF LAND MARKS Parking lot area, plant site

WELL DATA

NAME WELL WELL NO. 2
ELEVATION DATUM
WELL SIZE 16" x10-3/4" x 30" UR
TOTAL DEPTH 1706' TOP SCREEN 1045'
GRAVEL WELL Yes STRAIGHT WELL
TYPE SCREEN S.S. W.W. GAGE .045"
TEMPERATURE OF WATER
WATER CONDITION

WATER MEASURING DEVICE

ORIFICE SIZE 10"x7" LENGTH 4'
OTHER

TEST PUMP DATA

DEPTH SETTING TOP OF BOWL 500'
LENGTH AIR LINE 500' SIZE 1/4"
TYPE BOWL THC 12" NO. STAGES 9
LENGTH BOWL SUCTION LT.

SAND CONTENT OZ. PER 100 GAL.
WATER SAMPLE TAKEN NO. SAMPLES
BACTERIOLOGICAL SAMPLE TAKEN
DRAWDOWN SPECIFIC CAPACITY

ACTIVE STATIC HEAD AFTER PUMP STOPPED

5 MIN.	297 FT.	20 MIN.	294 FT.
10 MIN.	296 FT.	25 MIN.	293.50
15 MIN.	295 FT.	30 MIN.	293 FT.

S.L. before start 288 ft.

DATE HOUR	AIR LINE GAGE	PUMPING LEVEL	DISCH. PRESS.	HEAD ON ORIFICE INCHES	GPM	RPM	OPERATOR	REMARKS
4/26/68 - Started 8 hour test								
6:30AM	149	351		24	1022			
7:00	149	351		24	1022			
7:30	147	353		24	1022			
8:00	146	354		24	1022			
8:30	145	355		24	1022			
9:00	144	356		24	1022			
9:30	143	357		24	1022			
10:00	144	356		24	1022			
10:30	145	355		24	1022			
11:00	145	355		24	1022			
11:30	145	355		24	1022			
12:00 N	145	355		24	1022			
12:30PM	145	355		24	1022			
1:00	145	355		24	1022			
1:30	144	356		24	1022			
2:00	144	356		24	1022			
2:30	144	356		24	1022	Dropped back to 600 GPM		
2:45	162	338		8.5	617			
3:00	167	333		8.5	617			
3:15	167	333		8.5	617			
3:15-speeded pump up to					800			
3:30	157	343		15	800			
3:45	156	344		15	800			
4:00	155	345		15	800			
4:15	154	346		15	800			
4:30	154	346		15	800			

OBSERVERS C. Brewer - B. F. Tolley

FOR OWNER FOR LAYNE TEXAS CO.

FORM NO. 25

65-15-8A
65-15-825

MICROBIOLOGY SERVICE LABORATORIES

water technologists . . chemists . . microbiologists

1 May 1968

To: Layne Texas Company
Houston, Texas

SO 2535-67

Sample marked: Well No. 2, A. O. Smith Corp., Greens Bayou, Harris Cty, Texas. Taken: 2-26-68 after 8 hrs. pumping at 1022 gpm with Test Pump. Static Head: 288'. Pumping Level: 355'. Screened: 1020-1692'. Water Temp. 88°F. C. Brewer.

Received: 4-30-68.

WATER ANALYSIS

results in parts per million (mg/1) except as noted

Dissolved Residue at 105°C		509	Conductance, micromhos/cm, 25°C		853
Total Dissolved Solids, actual†		734	Color, units		5
Total Dissolved Solids, calc.		727	Turbidity, units		1
Silica	SiO_2	14	As Calcium Carbonate, $CaCO_3$:		
Iron and Aluminum Oxides	R_2O_3	1	Phenolphthalein Alkalinity		0
Calcium	Ca	6	Total Alkalinity		347
Magnesium	Mg	2	Total Hardness		22
Sodium (diff.) Na + K as	Na	201	Free Carbon Dioxide	CO_2	0
Carbonate	CO_3	0	pH . . . 8.27		
Bicarbonate	HCO_3	423	HYPOTHETICAL COMBINATIONS		
Sulfate	SO_4	0	Calcium Bicarbonate		25
Chloride	Cl	80	Magnesium Bicarbonate		10
Total Iron	Fe	0.18	Sodium Bicarbonate		545
			Sodium Chloride		132
			SiO_2 + R_2O_3		15
			Total Dissolved Solids, calc.		727

†Total Dissolved Solids, actual = Dissolved Residue + 50.8% of bicarbonate (HCO_3) ion

Microbiology Service Laboratories

By: Edna Wood 65-15-8A

Edna Wood

65-15-825

9237
1b

RECEIVED
SEP 3 1968
Central Records
Texas Water Development Board

RECEIVED
AUG 19 1968
TEXAS WATER
DEVELOPMENT BOARD

271 • P. O. BOX 14171 • 4820 OLD SPANISH TRAIL • HOUSTON, TEXAS 77021

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-825

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515825
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.757223
Latitude (degrees minutes seconds)	29° 45' 26" N
Longitude (decimal degrees)	-95.192778
Longitude (degrees minutes seconds)	095° 11' 34" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	31
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1706
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1968
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	A.O.Smith Corp
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	6/2/1999
Last Update Date	6/2/1999

Remarks	231 ft of screen between 1025 and 1692 ft. Reportd yield 1200 gpm with 82 ft drawdown when drilled.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

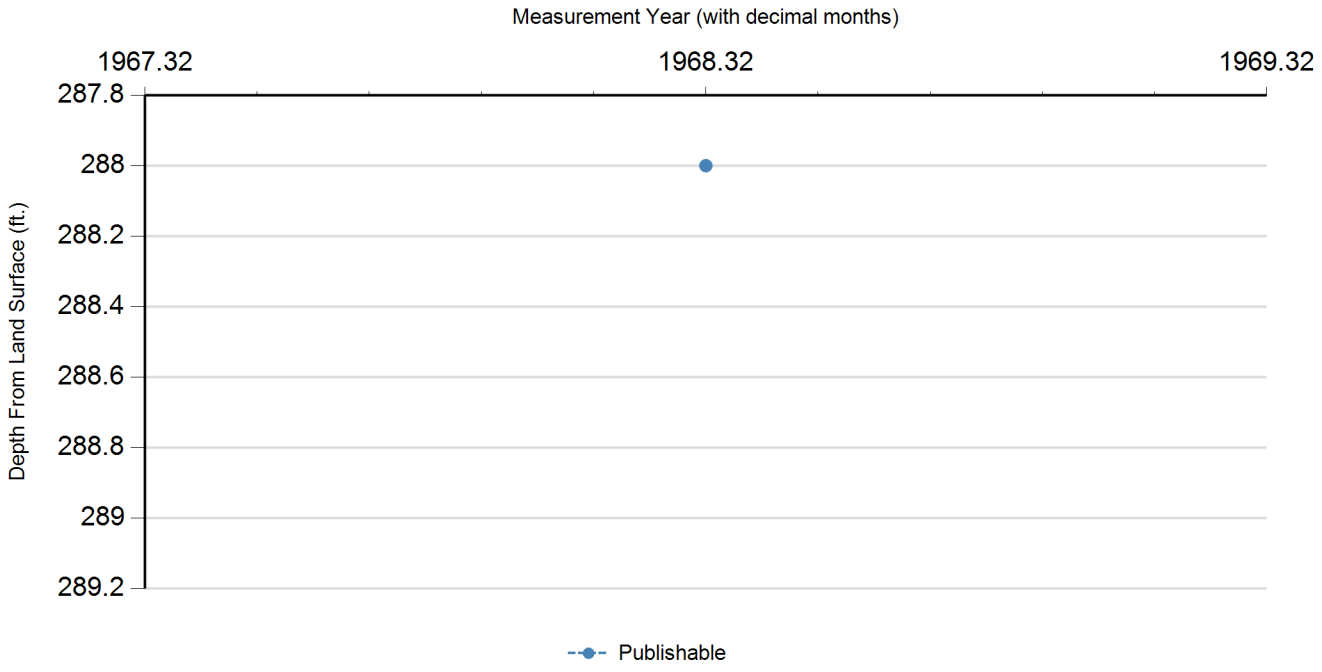
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	4/26/1968		288		-257	1	Texas Water Development Board	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 2/26/1968 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		346.72	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		423	mg/L	
00910	CALCIUM (MG/L)		6	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		80	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		22	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		200	ug/L	
00920	MAGNESIUM (MG/L)		2	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		6.46		
00955	SILICA, DISSOLVED (MG/L AS SI02)		14	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		18.15		
00932	SODIUM, CALCULATED, PERCENT		94	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		201	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		853	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		0	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		510	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6515830

Texas Water Development Board
Well Schedule

State Well Number 6515830 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294516 **Longitude** 951138 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Armco Steel Corp.
#3

Driller
Layne Texas Co.

Address _____ **Tenant/Oper.** _____

Date Drilled 10/17/1941 **Depth** 449 **Source of Depth** D **Altitude** 32 **Source of Alt.** M

Well Type W **User** 35510

WELL CONSTRUCTION

Const-Method

Casing Material

Screen Material

Completion blank

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** NONE **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** **Horsepower -**

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** UNUSED **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** N **Quality -** N **Logs -** **Other Data -**

WATER LEVELS

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency 02

REMARKS -

Aquifer - 112CHCTL **ID -** 15

CHICOT
AQUIFER,LOWER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-830

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515830
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.754445
Latitude (degrees minutes seconds)	29° 45' 16" N
Longitude (decimal degrees)	-95.193889
Longitude (degrees minutes seconds)	095° 11' 38" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CHCTL - Chicot Aquifer, Lower
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	32
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	449
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	10/17/1941
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	None
Water Quality Available	No
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Armco Steel Corp. #3
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	1/25/1999
Last Update Date	1/25/1999

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis - No Data Available

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WATER WELL NO. 6515819

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-819

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515819
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.760834
Latitude (degrees minutes seconds)	29° 45' 39" N
Longitude (decimal degrees)	-95.17
Longitude (degrees minutes seconds)	095° 10' 12" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	32
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1224
Well Depth Source	Owner
Drilling Start Date	
Drilling End Date	0/0/1951
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Diamond Shamrock Corp.
Driller	Texas Water Wells Inc.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	Texas Water Development Board
Created Date	1/6/2003
Last Update Date	1/6/2003

Remarks	TWDB R178: 164 ft. of screen between 855 and 1,180 ft.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	6/9/1960		289		-257	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6515828

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-828

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515828
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.760556
Latitude (degrees minutes seconds)	29° 45' 38" N
Longitude (decimal degrees)	-95.174444
Longitude (degrees minutes seconds)	095° 10' 28" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	32
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	735
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1962
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Pennsalt Chemical Co
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1011108A
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	9/16/1997
Last Update Date	9/16/1997

Remarks	65 ft of screen between 660 and 735 ft. Reported yeld 162 gpm with 40 drawdown when drilled.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	3/0/1962		291		-259	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 3/5/1962 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		204.1	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		249	mg/L	
00910	CALCIUM (MG/L)		22	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		38	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		76	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		5	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		2.57		
00955	SILICA, DISSOLVED (MG/L AS SI02)		16	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		4.21		
00932	SODIUM, CALCULATED, PERCENT		70	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		84	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		495	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		8	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		295	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6515815

Texas Water Development Board
Well Schedule

State Well Number 6515815 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294523 **Longitude** 951118 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Tenn-Tex Alloy and Chemical Co.

Driller
Layne Texas Co.

Address _____ **Tenant/Oper.** _____

Date Drilled / /1951 **Depth** 733 **Source of Depth** **Altitude** 27 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION **Const-Method** **Casing Material**

Completion blank **Screen Material**

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- _____**GPM** **Pump-** _____**GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** N **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1951
-254

Recorded By _____ **Date Record Collected or Updated -** 01/06/2003

Reporting Agency 01

REMARKS -
TWDB R178: 60 ft. of screen between 615 and 723 ft.
Yield: 151 gpm with 21 ft. drawdown when drilled.

Aquifer - 112CEVG **ID -** 15
CHICOT AND EVANGELINE AQUIFERS

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-815

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515815
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.756389
Latitude (degrees minutes seconds)	29° 45' 23" N
Longitude (decimal degrees)	-95.188334
Longitude (degrees minutes seconds)	095° 11' 18" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CEVG - Chicot and Evangeline Aquifers
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	27
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	733
Well Depth Source	Owner
Drilling Start Date	
Drilling End Date	0/0/1951
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Tenn-Tex Alloy and Chemical Co.
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	Texas Water Development Board
Created Date	1/6/2003
Last Update Date	1/6/2003

Remarks	TWDB R178: 60 ft. of screen between 615 and 723 ft. Yield: 151 gpm with 21 ft. drawdown when drilled.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

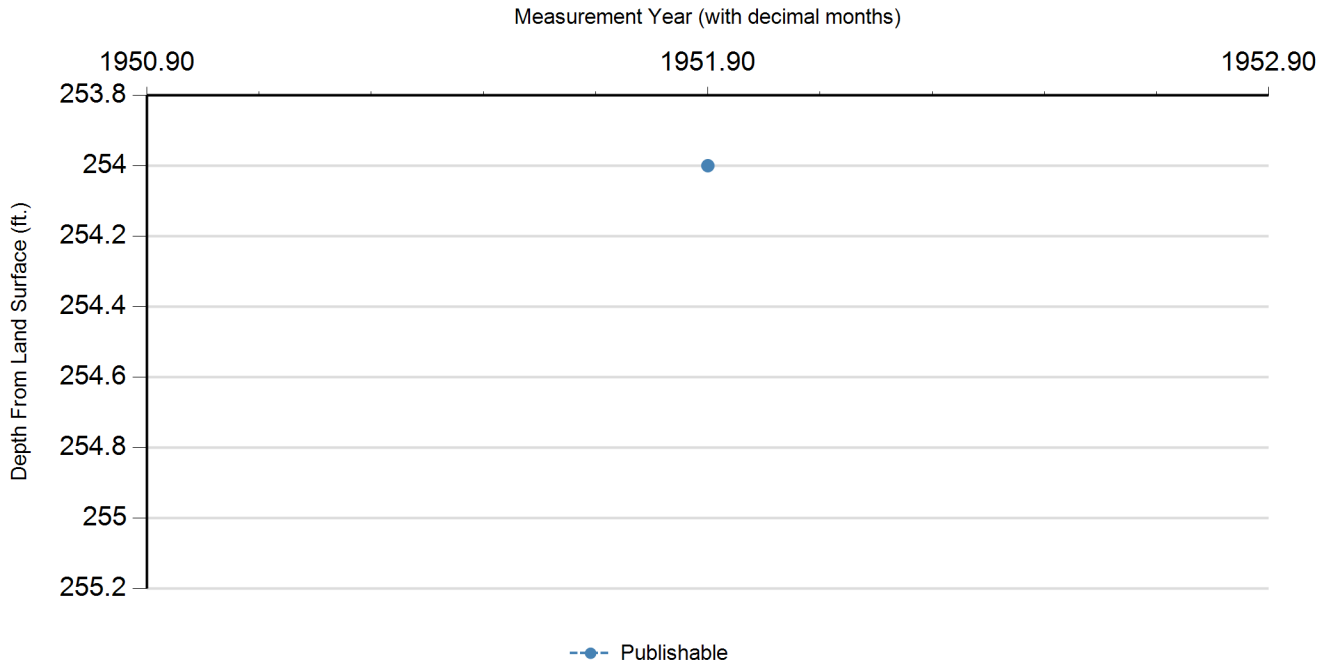
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	11/29/1951		254		-227	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6515836

TEXAS DEPARTMENT OF WATER RESOURCES

WELL SCHEDULE

Aquifer(s) Lower Chicot, Evangeline Project No._____ State Well No. 65-15-836

Field No./Owner's Well No. S-3 County Harris

1. Location: ___ ¼, ___ ¼, Section ___, Block ___, Survey _____, Lat. _____, Long. _____

2. Owner: Armco Steel Corp Address: _____

Tenant (other): _____ Address: _____

Driller: Layne-Texas Address: _____

3. Land Surface Elevation: 36 ft. above msl determined by _____

4. Drilled: 11-26 19 64; Dug, Cable Tool, Rotary, Air, ____

5. Depth: Rept. 730 ft. Meas. _____ ft.

6. Borehole Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfr. _____ Type T

No. Stages ____, Bowls Diam. ____ in., Setting _____ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Mfr. _____ Fuel E HP. 150

9. Yield: Flow ____ gpm, Pump ____ gpm, Meas., Rept., Est. ____ Date ___

10. Performance Test: Date 12/15/64 Length of Test ____ Made by L-T

Static Level 330 ft. Pumping Level ____ ft. Drawdown 69 ft.

Production 620 gpm Specific Capacity _____ gpm/ft.

11. Quality: (Remarks on taste, odor, color, etc.) _____

Analyses

Date _____ Laboratory _____ TDS ____ Sp Cond ____

Date _____ Laboratory _____ TDS ____ Sp Cond ____

12. Other data available (as circled): Pumping Test, Power & Yield Test, Drillers Log, Formation Samples, Geophysical Log(s) Q 1726 (type)

13. Water Level(s): ____ ft. rept. meas. ____ 19__ above below ____ which is ____ ft. above below Land Surface

____ ft. rept. meas. ____ 19__ above below ____ which is ____ ft. above below Land Surface

14. Use: Dom., Stock, Public Supply, Ind., Irr., Observation, Other (Test Hole, Oil Test, etc.) _____

15. Recorded by: _____ Source of data: _____ Date: _____

16. Remarks: _____

17. Location or Sketch:

CASING, BLANK PIPE & WELL SCREEN Cemented From ___ ft. to ___ ft.			
Diam. (in.)	Type	Setting (feet) from	to
22			23
16			506
10			506
8			730

TDWR-0308

W/L Obs. Well ___ W/Q Obs. Well ___

State Well No. 65-15-836

STATE

65-03-2D

FORM N 28

LAYNE TEXAS COMPANY,

HOUSTON -:- DALLAS

WELL LOG

REPORT NO 6908
S O 2039-64
PAGE 1 of 2
FILE NO. 2954
DATE 12-4-64

CUSTOMER LOCATION	WELL DATA
FOR Sheffield Division - Armco Steel Co.	NAME WELL / WELL NO. S-3
LOCATION WELL Houston Plant	ELEVATION / DATUM
SURVEY / FIELD	RT / C / GR
COUNTY Harris / STATE Texas	TEST HOLE SIZE 9 7/8" & 7 7/8" TD 856'
OTHER LAND MARKS	DATE STARTED DRILLING 11-25-64
	DATE FINISHED DRILLING 11-26-64
	DRILLER C. Brewer / RIG NO 7
	TYPE MUD / NO SACKS
	ELECTRIC LOG Yes / TYPE WIDCO
	SURVEY / TYPE
	OTHER

DEPTH STRATA	EACH STRATUM	DESCRIPTION FORMATION	SAMPLES DEPTH	SAMPLES TYPE	SAMPLES NUMBER
0		Surface			
35	35	Sand & Clay			
85	50	Sand			
105	20	Clay			
115	10	Clay			
127	12	Clay			
173	46	Sand & Streaks of Clay			
180	7	Clay			
208	28	Sand & Sandy Clay			
223	15	Gummy Clay			
248	25	Coarse Sand & Streaks of Clay			
254	6	Clay			
266	12	Sandy Clay			
300	34	Clay			
310	10	Sand			
350	40	Clay			
356	6	Sand			
395	39	Sand & Sandy Clay			
408	13	Clay & Sandy Clay			
413	5	Sand			
422	9	Sandy Clay			
430	8	Sand			
451	21	Clay & Streaks of Sand			
466	15	Sand & Streaks of Clay			
502	36	Clay			
522	20	Sand			
526	4	Clay			
557	31	Sand & Streaks of Clay			
598	41	Clay			
614	16	Sand (Broken)			
632	18	Clay			
656	24	Sand (Broken)			
684	28	Sandy Clay & Sand			
694	10	Sandy Clay			
714	20	Sand, Gravel, & Streaks of Shell			
750	36	Sandy Shell (Broken)			

Q-1726

65-15-836

FORM NO. 1202

LAYNE TEXAS COMPANY

HOUSTON -:- DALLAS

MATERIAL SETTING

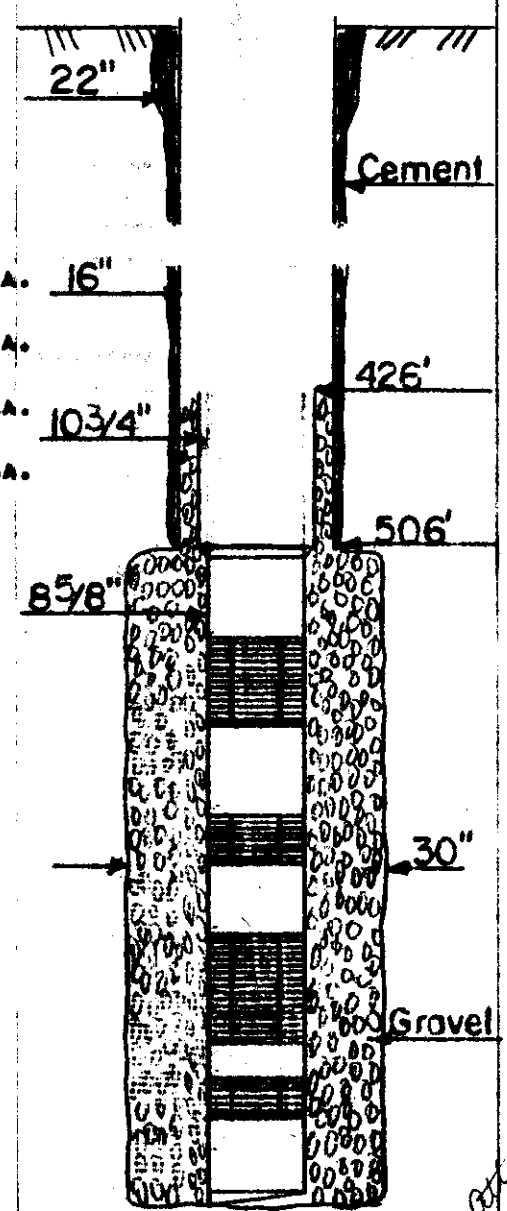
REPORT NO. 6909
S.O. 2039-64
PAGE 1 OF 1
FILE NO. 2954
DATE 12/18/64

CUSTOMER LOCATION	WELL DATA
FOR SHEFFIELD DIVISION-ARMCO STEEL COMPANY	NAME WELL — WELL NO S-3
LOCATION WELL HOUSTON PLANT	ELEVATION — DATUM
SURVEY — FIELD	TYPE WELL GRAVEL-WALL
COUNTY HARRIS — STATE TEXAS	SURFACE CASING CEMENTED YES — NO. SACKS 227
OTHER LAND MARKS NORTH OF COMBINATION BLDG.	SIZE HOLE UNDERREAMED 30" — DEPTH 506-730'
	GRAVEL TYPE 112, 13, 165 & 131 — NO. CU. YDS. 78
	TYPE SCREEN S.S. W.W. — GAGE .040"
	DRILLER J. HODGES — RIG NO. 7
	OTHER A. SISK & C. BREWER

DEPTH	LENGTH	SIZE, KIND, WEIGHT MATERIAL
+1'		16" O.D. SURFACE CASING 1' ABOVE GROUND
0		SURFACE
426'		TOP OF 10-3/4" O.D. LINER
23'	23'	22" O.D. CONDUCTOR PIPE
506'	507'	16" O.D. SURFACE CASING
506'	80'	10-3/4" O.D. BLANK LINER 52.36#
507'	1'	10-3/4"x8-5/8" O.D. SWAGE
532'	25'	8-5/8" O.D. BLANK PIPE 24.70#
562'	30'	8-5/8" O.D. S.S. W.W. SCREEN .040"GA.
602'	40'	8-5/8" O.D. BLANK PIPE
619'	17'	8-5/8" O.D. S.S. W.W. SCREEN .040"GA.
643'	24'	8-5/8" O.D. BLANK PIPE
688'	45'	8-5/8" O.D. S.S. W.W. SCREEN .040"GA.
700'	12'	8-5/8" O.D. BLANK PIPE
710'	10'	8-5/8" O.D. S.S. W.W. SCREEN .040"GA.
728'	18'	8-5/8" O.D. BLANK PIPE
730'	2'	8-5/8" O.D. SET NIPPLE & B.P. VALVE

TOTAL DEPTH 730 FT.

SKETCH



T.D.-730' 65-15-836

attach 4 pages
12-4-64

LAYNE TEXAS COMPANY

HOUSTON :-: DALLAS

WATER WELL TEST

REPORT NO. 6910
S. O. 2039-64
PAGE 2 OF 2
FILE NO. 2954
DATE 12/18/64

CUSTOMER LOCATION

TEST FOR SHEFFIELD DIVISION-ARMCO STEEL CO.

LOCATION OF WELL HOUSTON PLANT

SURVEY FIELD

COUNTY HARRIS STATE TEXAS

DESCRIPTION OF LAND MARKS NORTH OF COMBINATION BLDG.

WELL DATA

NAME WELL WELL NO. S-3

ELEVATION DATUM

WELL SIZE 22x16 x10-3/4" x 8-5/8"x30'UR

TOTAL DEPTH 730' TOP SCREEN 532'

GRAVEL WELL YES STRAIGHT WELL

TYPE SCREEN S.S. W.W. GAGE .040"

TEMPERATURE OF WATER

WATER CONDITION CLEAR

WATER MEASURING DEVICE

ORIFICE SIZE 6"x5" LENGTH 40' FROM PUMP

OTHER

TEST PUMP DATA

DEPTH SETTING TOP OF BOWL 410'

LENGTH AIR LINE 410' SIZE

TYPE BOWL THC 10" NO. STAGES 14

LENGTH BOWL 11.02' SUCTION LT. NONE

SAND CONTENT OZ. PER 100 GAL.

ACTIVE STATIC HEAD AFTER PUMP STOPPED

5 MIN.	FT.	20 MIN.	FT.
10 MIN.	FT.	25 MIN.	FT.
15 MIN.	FT.	30 MIN.	FT.

WATER SAMPLE TAKEN NO. SAMPLES

BACTERIOLOGICAL SAMPLE TAKEN

DRAWDOWN SPECIFIC CAPACITY

DATE HOUR	AIR LINE GAGE	PUMPING LEVEL	DISCH. PRESS	HEAD ON ORIFICE INCHES	GPM	RPM	OPERATOR	REMARKS
10:00PM	11	399		26	620			
10:30	11	399		26	620			
11:00	11	399		26	620			SLOWED PUMP TO
11:30	23	387		16	495			500 GPM
12:00 M	22	388		16.5	503			12/16/64
12:30 AM	22	388		16.5	503			
1:00	24	386		16.5	503			
RECOVERY								
35 MIN.		337						
40 "		337						
45 "		336						
50 "		336						
55 "		335.5						
60 "		335						
70 "		334						
80 "		334						
90 "		333.5						
1 HR. 55 MIN.		331						
3 HRS.		329.5						

OBSERVERS

D. W. BRYAN
FOR OWNER

JAKE HODGES
FOR LAYNE TEXAS CO.

FORM NO. 25

65-15-836

LAYNE TEXAS COMPANY,

HOUSTON -:- DALLAS

WATER WELL TEST

REPORT NO. 6910
S. O. 2039-64
PAGE 1 OF 2
FILE NO. 2954
DATE 12/18/64

CUSTOMER LOCATION

TEST FOR SHEFFIELD DIVISION-ARMCO STEEL CO.

LOCATION OF WELL HOUSTON PLANT

SURVEY FIELD

COUNTY HARRIS STATE TEXAS

DESCRIPTION OF LAND MARKS NORTH OF COMBINATION BUILDING

WELL DATA

NAME WELL WELL NO. S-3

ELEVATION DATUM

WELL SIZE 22"x16" x10-3/4" x8-5/8"x30" UR

TOTAL DEPTH 730' TOP SCREEN 532'

GRAVEL WELL YES STRAIGHT WELL

TYPE SCREEN S.S. W.W. GAGE .040"

TEMPERATURE OF WATER

WATER CONDITION CLEAR

WATER MEASURING DEVICE

ORIFICE SIZE 6"x5" LENGTH 40' FROM PUMP

OTHER

TEST PUMP DATA

DEPTH SETTING TOP OF BOWL 410'

LENGTH AIR LINE 410' SIZE

TYPE BOWL THC 10" NO. STAGES 14

LENGTH BOWL 11.02' SUCTION LT. NONE

SAND CONTENT 0 OZ. PER 100 GAL.

ACTIVE STATIC HEAD AFTER PUMP STOPPED

5 MIN. 345 FT. 20 MIN. 340 FT.
10 MIN. 343 FT. 25 MIN. 339 FT.
15 MIN. 341 FT. 30 MIN. 338 FT.

WATER SAMPLE TAKEN NO. SAMPLES

BACTERIOLOGICAL SAMPLE TAKEN

DRAWDOWN SPECIFIC CAPACITY

DATE HOUR	AIR LINE GAGE	PUMPING LEVEL	DISCH. PRESS.	HEAD ON ORIFICE INCHES	GPM	RPM	OPERATOR	REMARKS
12/15/64 - STARTED TEST AT 9:00 A.M.								
9:30 AM	12	398		28	645	1500		
10:00	12	398		27	632			
10:30	11	399		27.5	638			
11:00	11	399		27	632			
11:30	11	399		27	632			
12:00 N	11	399		27	632			
12:30 PM	11	399		27	632			
1:00	11	399		27	632			
1:30	11	399		27	632			
2:00	11	399		27	632			
2:30	11	399		26.5	626			
3:00	11	399		26	620			
3:30	11	399		26	620			
4:00	11	399		26	620			
4:30	11	399		26	620			
5:00	11	399		26	620			
5:30	11	399		26	620			
6:00	11	399		26	620			
6:30	11	399		26	620			
7:00	11	399		26	620			
7:30	11	399		26	620			
8:00	11	399		26	620			
8:30	11	399		26	620			
9:00	11	399		26	620			
9:30	11	399		26	620			

OBSERVERS

D. W. BRYAN
FOR OWNER

JAKE HODGES
FOR LAYNE TEXAS CO.

FORM NO. 55

65-15-836

MICROBIOLOGY SERVICE LABORATORIES

water technologists . . chemists . . microbiologists

21 December 1964

To: Layne Texas Company
P. O. Box 9098
Houston, Texas 77011

SO 2039-64

Sample marked: Well No. S-3, Sheffield Steel Co., Houston, Harris Cty, Texas.
Taken: 12-16-64 after 14 hrs. pumping at 503 gpm with Test Pump.
Static Head: 330'. Pumping Level: 387'. Screened: 532-710'.
Clear and free of sand. A. J. Sisk

Received: 12-17-64

WATER ANALYSIS

results in parts per million (mg/1) except as noted

Dissolved Residue at 105°C		[illegible]	Conductance, micromhos/cm, 25°C		474
Total Dissolved Solids, actual†		394	Color, units		0
Total Dissolved Solids, calc.		396	Turbidity, units		1
Silica	SiO_2	14	As Calcium Carbonate, $CaCO_3$:		
Iron and Aluminum Oxides	R_2O_3	0	Phenolphthalein Alkalinity		0
Calcium	Ca	27	Total Alkalinity		196
Magnesium	Mg	4	Total Hardness		85
Sodium (diff.) Na + K as	Na	74	Free Carbon Dioxide	CO_2	10
Carbonate	CO_3	0	pH . . . 7.58		
Bicarbonate	HCO_3	239	**HYPOTHETICAL COMBINATIONS**		
Sulfate	SO_4	11	Calcium Bicarbonate		109
			Magnesium Bicarbonate		26
Chloride	Cl	27	Sodium Bicarbonate		187
			Sodium Sulfate		16
Total Iron	Fe	<0.05	Sodium Chloride		44
			$SiO_2 + R_2O_3$		14
			Total Dissolved Solids, calc.		396

†Total Dissolved Solids, actual = Dissolved Residue + 50.8% of bicarbonate (HCO_3) ion

Microbiology Service Laboratories

By: Edna Wood
Edna Wood

4733

65-15-836

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-836

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515836
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.755001
Latitude (degrees minutes seconds)	29° 45' 18" N
Longitude (decimal degrees)	-95.196667
Longitude (degrees minutes seconds)	095° 11' 48" W
Coordinate Source	+/- 10 Seconds
Aquifer Code	112GLFC - Gulf Coast Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	30
Land Surface Elevation Method	Digital Elevation Model -DEM
Well Depth (feet below land surface)	730
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	11/26/1964
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	
Water Level Observation	None
Water Quality Available	No
Pump	
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Greens Port Industrial Park
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1010493B
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	9/26/1997
Last Update Date	9/26/1997

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6515801

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 15 801 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 46 35 Longitude - 95 11 11 Source of Coords - 3

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - City of Houston
Greens Bayou

Driller - Layne Texas Co.

Address _____ Tenant/Oper. _____
Date Drilled - 10/ /1948 Depth - 825 ft. Source of Depth - L Altitude - 22 ft. Source of Alt. - M
Aquifer - 112CEVG CHICOT AND EVANGELINE AQUIFERS Well Type - W User - 396200

WELL CONSTRUCTION
Const. Method - _____
Completion - _____
Casing Material - _____
Screen Material - _____

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (
Open Hole (O)
Cemented from _____ to _____

Diam. (in.)	Setting(feet) From	To

LIFT DATA - Pump Mfr. _____ Type - NONE No. Stages ____

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - Horsepower -

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- UNUSED Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- M Quality- N Logs- E Other Data-

WATER LEVELS Date- 08/01/1950 Measurement- -188.00
Date- / / Measurement-

Recorded By _____ Date Record Collected or Updated- / /

Reporting Agency - UNITED STATES GEOLOGICAL SURVEY
REMARKS -

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-801

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515801
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.776667
Latitude (degrees minutes seconds)	29° 46' 36" N
Longitude (decimal degrees)	-95.186667
Longitude (degrees minutes seconds)	095° 11' 12" W
Coordinate Source	+/- 10 Seconds
Aquifer Code	112CEVG - Chicot and Evangeline Aquifers
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	22
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	825
Well Depth Source	Geophysical Log
Drilling Start Date	
Drilling End Date	10/0/1948
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	City of Houston Greens Bayou
Driller	Layne Texas Co.
Other Data Available	Electric Log
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1010013MM
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	9/25/1997
Last Update Date	9/25/1997

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

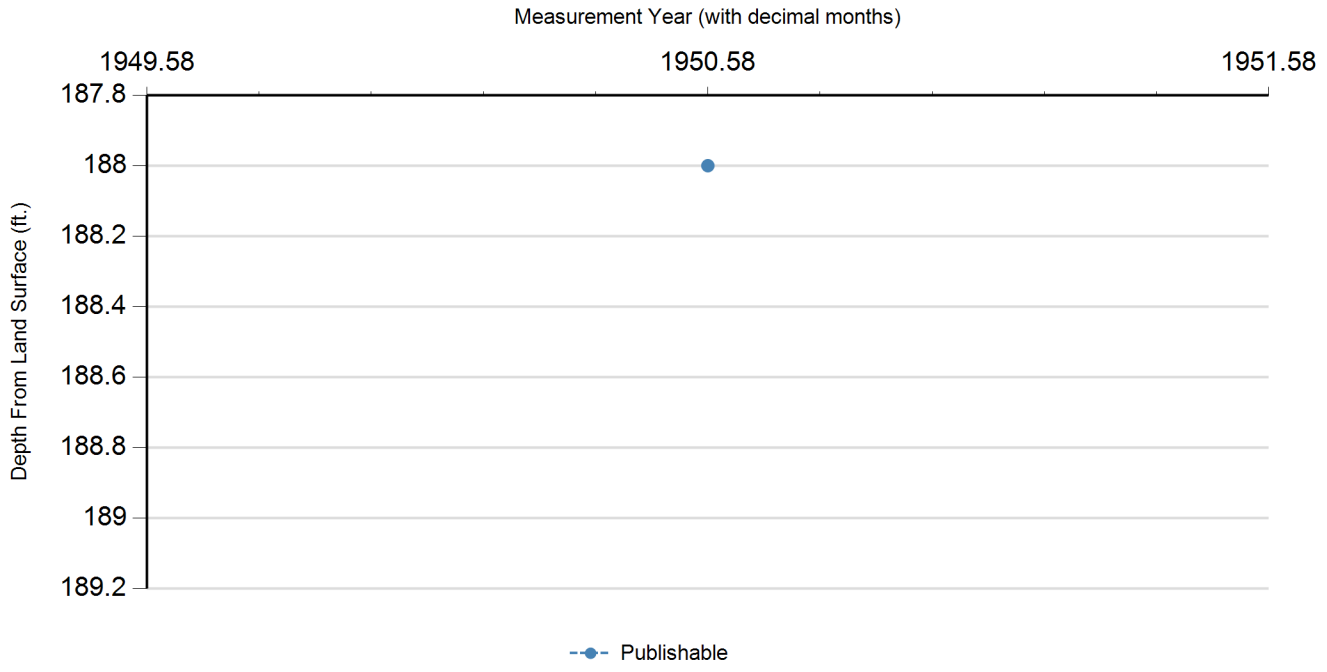
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	8/1/1950		188		-166	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6515831

Texas Water Development Board
Well Schedule

State Well Number 6515831 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294516 **Longitude** 951136 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Armco Steel Corp.
#2

Driller
Layne Texas Co.

Address _____ **Tenant/Oper.** _____

Date Drilled 09/20/1941 **Depth** 713 **Source of Depth** D **Altitude** 32 **Source of Alt.** M

Well Type W **User** 35510

WELL CONSTRUCTION **Const-Method** **Casing Material**

Completion blank **Screen Material**

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** NONE **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** **Horsepower -**

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** UNUSED **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** N **Quality -** N **Logs -** **Other Data -**

WATER LEVELS

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency 02

REMARKS -

Aquifer - 112CEVG **ID -** 15

CHICOT AND EVANGELINE AQUIFERS

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-831

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515831
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.754445
Latitude (degrees minutes seconds)	29° 45' 16" N
Longitude (decimal degrees)	-95.193334
Longitude (degrees minutes seconds)	095° 11' 36" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CEVG - Chicot and Evangeline Aquifers
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	32
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	713
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	9/20/1941
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	None
Water Quality Available	No
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Armco Steel Corp. #2
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	1/25/1999
Last Update Date	1/25/1999

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523118

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 23 118 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 43 53 Longitude - 95 13 42 Source of Coords - 2

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Velsicol Chemical Co. Driller - McMasters & Pomeroy

Address _____ Tenant/Oper. _____
Date Drilled - / /1950 Depth - 311 ft. Source of Depth - R Altitude - 26 ft. Source of Alt. -
Aquifer - 112CHCTL CHICOT AQUIFER,LOWER Well Type - W User -

WELL CONSTRUCTION
Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

| Casing or Blank Pipe (C)
| Well Screen or Slotted Zone (
| Open Hole (O)
| Cemented from_____to_____
| Diam. (in.) Setting(feet) From To

LIFT DATA - Pump Mfr. _____ Type - TURBINE PUMP No. Stages ____

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower -

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- INDUSTRIAL Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- M Quality- N Logs- Other Data-

WATER LEVELS Date- 02/09/1962 Measurement- -155.00
Date- / / Measurement-

Recorded By _____ Date Record Collected or Updated- 07/18/2003

Reporting Agency -
REMARKS -
TWDB R178: Screen from 294 to
311ft.

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-118

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523118
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.731389
Latitude (degrees minutes seconds)	29° 43' 53" N
Longitude (decimal degrees)	-95.228333
Longitude (degrees minutes seconds)	095° 13' 42" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CHCTL - Chicot Aquifer, Lower
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	26
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	311
Well Depth Source	Person Other than Owner
Drilling Start Date	
Drilling End Date	0/0/1950
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Velsicol Chemical Co.
Driller	McMasters & Pomeroy
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	7/18/2003
Last Update Date	7/18/2003

Remarks	TWDB R178: Screen from 294 to 311ft.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/9/1962		155		-129	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523227

Texas Water Development Board
Well Schedule

State Well Number 6523227 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294431 **Longitude** 951205 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Warren Petroleum Co.

Driller
Pomeroy Drlg. Co.

Address _____ **Tenant/Oper.** _____

Date Drilled / /1953 **Depth** 442 **Source of Depth** R **Altitude** 13 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION **Const-Method** **Casing Material**

Completion blank **Screen Material**

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** NONE **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** **Horsepower -**

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** UNUSED **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** N **Logs -** **Other Data -**

WATER LEVELS 2 measurements
1953 to 1962
MIN -165 MAX -150

Recorded By _____ **Date Record Collected or Updated -** 07/18/2003

Reporting Agency 02

REMARKS -
TWDB R178: 60ft. of screen between
217 and 434ft.

Aquifer - 112CHCTL **ID -** 15
CHICOT
AQUIFER,LOWER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-227

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523227
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.741945
Latitude (degrees minutes seconds)	29° 44' 31" N
Longitude (decimal degrees)	-95.201389
Longitude (degrees minutes seconds)	095° 12' 05" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CHCTL - Chicot Aquifer, Lower
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	13
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	442
Well Depth Source	Person Other than Owner
Drilling Start Date	
Drilling End Date	0/0/1953
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Warren Petroleum Co.
Driller	Pomeroy Drlg. Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	7/18/2003
Last Update Date	7/18/2003

Remarks	TWDB R178: 60ft. of screen between 217 and 434ft.

Casing - No Data

Well Tests - No Data

Lithology - No Data

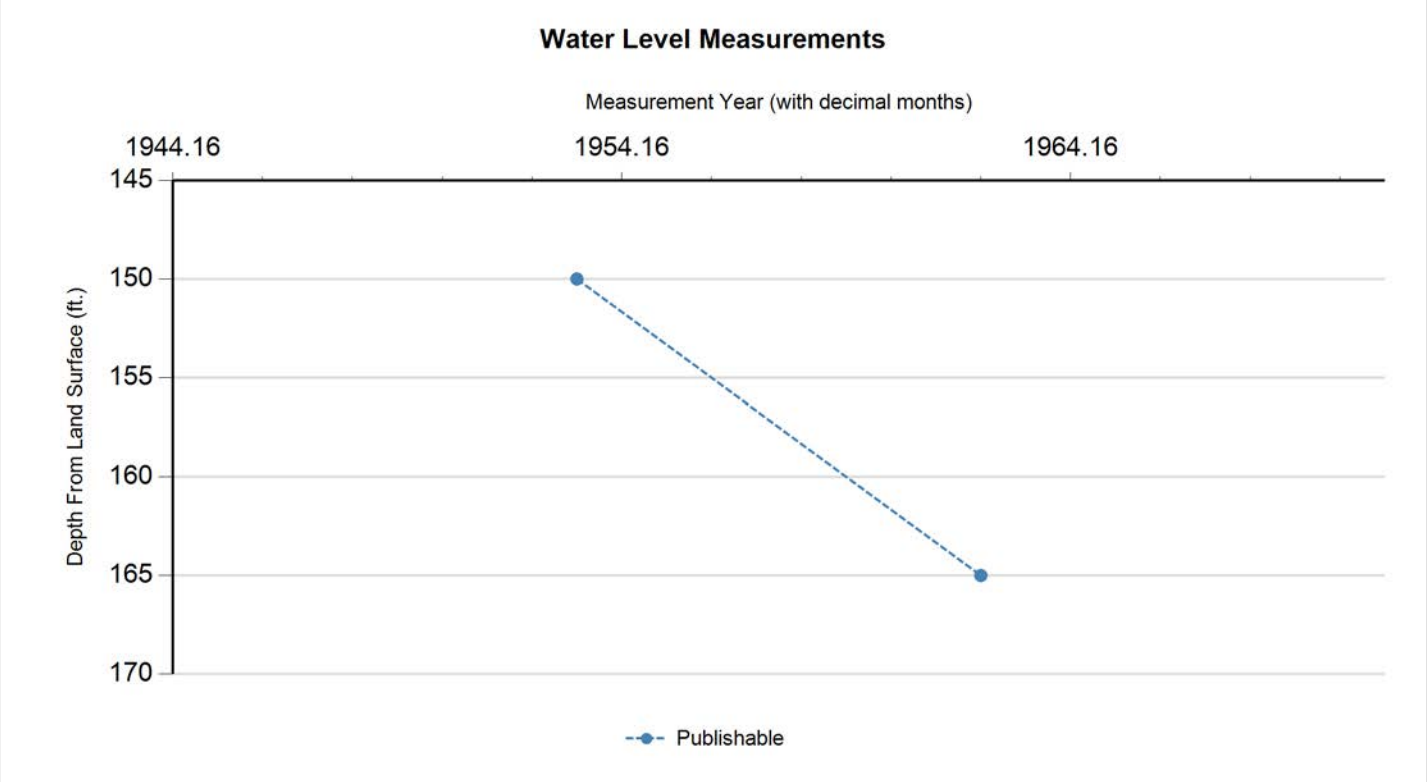
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	0/0/1953		150		-137	1	U.S. Geological Survey	Steel Tape		
P	0/0/1962		165	15.00	-152	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523132

FORM 9-1642B (DEC 68)

Well No. LJ-65-23-132

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

Northern most observation well, So. of HL&P #6

MASTER CARD

1:24000

Record by D. Jorgensen — Source of data Owner — Date 1-16-74 — Map Pasadena

State Texas [48] — County (or town) Harris [LJ]

Latitude: 29 43 15 N (deg, min, sec) — Longitude: 095 13 32 (degrees, min, sec) — Sequential number: 4

Lat-long accuracy: [1] T. ___ N S, R ___ E W, Sec ___, ___ ¼, ___ ¼, ___ ¼ B & M

Local well number: LJ-65-23-132 — Other number: TW-3

Local use: — Owner or name: U.S. Geological Survey

Owner or name: USGS — Address: Houston at HL&P Deepwater Plant

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist — [F]

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other — [U]

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed — [O]

DATA AVAILABLE: Well data [ ] — Freq. W/L meas.: [T] — Field aquifer char. [ ]

Hyd. lab. data: [ ]

Qual. water data; type: Complete, minor elements, [ ]

Freq. sampling: 1-74 [Ø] — Pumpage inventory: yes no, period: [ ]

Aperture cards: yes [ ]

Log data: ~~Drillers log~~ [Ø]

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD — Depth well: 45 ft [45] Meas. rept — accuracy [0]

Depth cased (first perf.): 35 ft [35] — Casing type: 4¼ to 35, 2½ to 45 — Diam. ___ in [4]

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (Ø) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) 22" plastic, other [3]

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other [A]

Date Drilled: 1-16-74 [974] — Pump intake setting: ___ ft [ ]

Driller: Birdwell Water Well (name), Alvin Texas (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other [N] — Deep Shallow [ ]

Power (type): diesel, elec, nat gas, gasoline, hand, LP gas, wind; H.P. none [ ] — Trans. or meter no. [ ]

Descrip. MP T.O.C. which is 1.7 ft above/below LSD, Alt. MP [ ]

Alt. LSD: [20] — Accuracy (source): topo ± 5' [ ]

Water Level 18.83 ft above/below MP; Ft above/below LSD [17] — Accuracy: topo [A]

Date meas: 1-16-74 ? — Yield: — gpm [ ] — Method determined [ ]

Drawdown: ___ ft [ ] — Accuracy: [ ] — Pumping period ___ hrs [ ]

QUALITY OF WATER DATA: Iron: 030 ppm [ ] — Sulfate 70 ppm [ ] — Chloride 300 ppm [ ] — Hard. 640 ppm [ ]

Sp. Conduct 1920 X x 10⁶ [ ] — Temp. 20°C [ ] — Date sampled 1-24-74 [ ]

Taste, color, etc.

Well No.

Well No. 65-78-132

Latitude-longitude ___ N/S ___ d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) Physiographic Province: ___ 0 3 (20–21) Section: ___

F (22) Drainage Basin: ___ 5 1 R (23–25) Subbasin: ___ (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat ___ (27) F

MAJOR AQUIFER: ___ system, ___ series Q (28–29) upper Chicot aquifer, formation, group C U (30–31)

Lithology: ___ (32–33) Origin: ___ (34) Aquifer Thickness: ___ ft

(35–37) Length of well open to: ___ ft 1 0 (38–40) Depth to top of: ___ ft 3 5 (41–43)

MINOR AQUIFER: ___ system, ___ series (44–45) ___ aquifer, formation, group (46–47)

Lithology: ___ (48–49) Origin: ___ (50) Aquifer Thickness: ___ ft

(51–53) Length of well open to: ___ ft (54–56) Depth to top of: ___ ft (57–59)

Intervals Screened: 35-45

Depth to consolidated rock: ___ ft (60–62) Source of data: ___ (64)

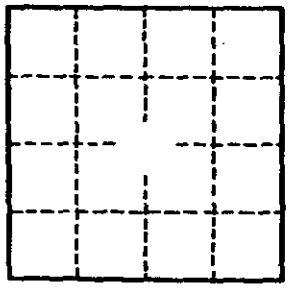
Depth to basement: ___ ft (65–68) Source of data: ___ (69)

Surficial material: ___ (70–71) Infiltration characteristics: ___ (72)

Coefficient Trans: ___ gpd/ft (73–75) Coefficient Storage: ___ (76–78)

Coefficient Perm: ___ gpd/ft^2; Spec cap: ___ gpm/ft; Number of geologic cards: ___ (79)

35' of 4" cemented in place
10' of 2½"
10' of 2½" plastic screen
Total depth of well 45'



Well No.

GPO 869-201

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-132

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523132
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.721111
Latitude (degrees minutes seconds)	29° 43' 16" N
Longitude (decimal degrees)	-95.225833
Longitude (degrees minutes seconds)	095° 13' 33" W
Coordinate Source	+/- 1 Second
Aquifer Code	112CHCTU - Chicot Aquifer, Upper
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	20
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	45
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	USGS Current Site Visit
Water Quality Available	Yes
Pump	
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	
Driller	
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	8/20/1996
Last Update Date	8/20/1996

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

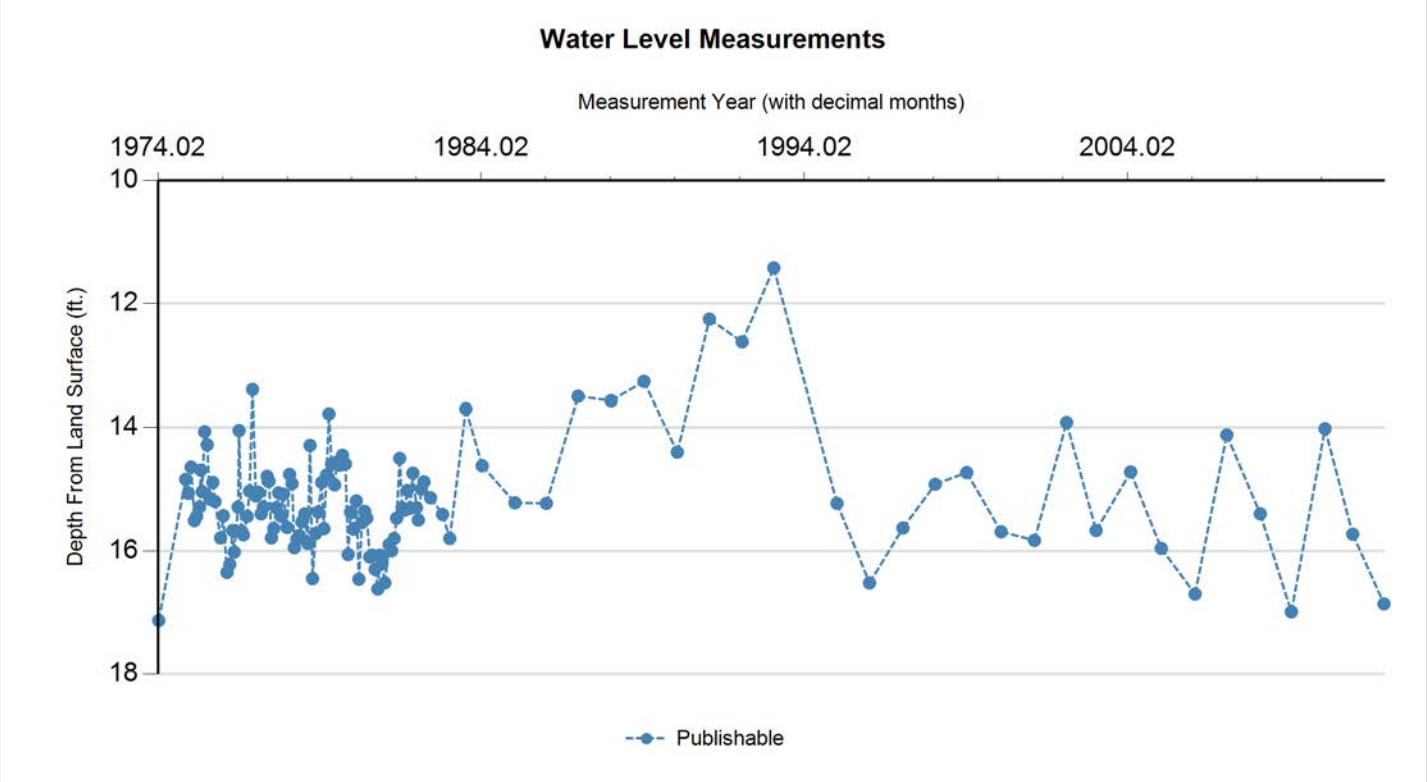
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/16/1974		17.13		2.87	1	U.S. Geological Survey	Steel Tape		
P	11/21/1974		14.84	(2.29)	5.16	1	U.S. Geological Survey	Steel Tape		
P	12/20/1974		15.07	0.23	4.93	1	U.S. Geological Survey	Steel Tape		
P	1/17/1975		14.64	(0.43)	5.36	1	U.S. Geological Survey	Steel Tape		
P	2/24/1975		15.51	0.87	4.49	1	U.S. Geological Survey	Steel Tape		
P	3/19/1975		15.44	(0.07)	4.56	1	U.S. Geological Survey	Steel Tape		
P	4/22/1975		15.29	(0.15)	4.71	1	U.S. Geological Survey	Steel Tape		
P	5/7/1975		14.69	(0.60)	5.31	1	U.S. Geological Survey	Steel Tape		
P	5/21/1975		15.04	0.35	4.96	1	U.S. Geological Survey	Steel Tape		
P	6/20/1975		14.07	(0.97)	5.93	1	U.S. Geological Survey	Steel Tape		
P	7/18/1975		14.28	0.21	5.72	1	U.S. Geological Survey	Steel Tape		
P	8/19/1975		15.16	0.88	4.84	1	U.S. Geological Survey	Steel Tape		
P	9/22/1975		14.89	(0.27)	5.11	1	U.S. Geological Survey	Steel Tape		
P	10/17/1975		15.2	0.31	4.8	1	U.S. Geological Survey	Steel Tape		
P	12/19/1975		15.79	0.59	4.21	1	U.S. Geological Survey	Steel Tape		
P	1/15/1976		15.43	(0.36)	4.57	1	U.S. Geological Survey	Steel Tape		
P	2/27/1976		16.35	0.92	3.65	1	U.S. Geological Survey	Steel Tape		
P	3/28/1976		16.22	(0.13)	3.78	1	U.S. Geological Survey	Steel Tape		
P	4/30/1976		15.67	(0.55)	4.33	1	U.S. Geological Survey	Steel Tape		
P	5/19/1976		16.02	0.35	3.98	1	U.S. Geological Survey	Steel Tape		
P	7/2/1976		15.29	(0.73)	4.71	1	U.S. Geological Survey	Steel Tape		

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-132

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	7/13/1976		14.05	(1.24)	5.95	1	U.S. Geological Survey	Steel Tape		
P	8/10/1976		15.68	1.63	4.32	1	U.S. Geological Survey	Steel Tape		
P	9/2/1976		15.74	0.06	4.26	1	U.S. Geological Survey	Steel Tape		
P	10/15/1976		15.44	(0.30)	4.56	1	U.S. Geological Survey	Steel Tape		
P	11/12/1976		15.03	(0.41)	4.97	1	U.S. Geological Survey	Steel Tape		
P	12/15/1976		13.39	(1.64)	6.61	1	U.S. Geological Survey	Steel Tape		
P	1/18/1977		15.11	1.72	4.89	1	U.S. Geological Survey	Steel Tape		
P	2/17/1977		15.05	(0.06)	4.95	1	U.S. Geological Survey	Steel Tape		
P	3/17/1977		15.4	0.35	4.6	1	U.S. Geological Survey	Steel Tape		
P	4/14/1977		15.29	(0.11)	4.71	1	U.S. Geological Survey	Steel Tape		
P	5/25/1977		14.79	(0.50)	5.21	1	U.S. Geological Survey	Steel Tape		
P	6/6/1977		14.87	0.08	5.13	1	U.S. Geological Survey	Steel Tape		
P	6/16/1977		14.87	0.00	5.13	1	U.S. Geological Survey	Steel Tape		
P	7/13/1977		15.79	0.92	4.21	1	U.S. Geological Survey	Steel Tape		
P	8/10/1977		15.64	(0.15)	4.36	1	U.S. Geological Survey	Steel Tape		
P	9/7/1977		15.3	(0.34)	4.7	1	U.S. Geological Survey	Steel Tape		
P	10/5/1977		15.06	(0.24)	4.94	1	U.S. Geological Survey	Steel Tape		
P	11/3/1977		15.44	0.38	4.56	1	U.S. Geological Survey	Steel Tape		
P	11/28/1977		15.08	(0.36)	4.92	1	U.S. Geological Survey	Steel Tape		
P	1/4/1978		15.62	0.54	4.38	1	U.S. Geological Survey	Steel Tape		
P	2/3/1978		14.76	(0.86)	5.24	1	U.S. Geological Survey	Steel Tape		
P	3/2/1978		14.91	0.15	5.09	1	U.S. Geological Survey	Steel Tape		
P	3/27/1978		15.95	1.04	4.05	1	U.S. Geological Survey	Steel Tape		
P	4/26/1978		15.81	(0.14)	4.19	1	U.S. Geological Survey	Steel Tape		
P	5/23/1978		15.75	(0.06)	4.25	1	U.S. Geological Survey	Steel Tape		
P	6/22/1978		15.53	(0.22)	4.47	1	U.S. Geological Survey	Steel Tape		
P	7/26/1978		15.4	(0.13)	4.6	1	U.S. Geological Survey	Steel Tape		
P	8/29/1978		15.88	0.48	4.12	1	U.S. Geological Survey	Steel Tape		
P	9/25/1978		14.29	(1.59)	5.71	1	U.S. Geological Survey	Steel Tape		
P	10/23/1978		16.45	2.16	3.55	1	U.S. Geological Survey	Steel Tape		
P	11/27/1978		15.72	(0.73)	4.28	1	U.S. Geological Survey	Steel Tape		
P	12/26/1978		15.37	(0.35)	4.63	1	U.S. Geological Survey	Steel Tape		
P	1/31/1979		14.89	(0.48)	5.11	1	U.S. Geological Survey	Steel Tape		
P	2/26/1979		15.64	0.75	4.36	1	U.S. Geological Survey	Steel Tape		
P	3/26/1979		14.77	(0.87)	5.23	1	U.S. Geological Survey	Steel Tape		
P	4/23/1979		13.78	(0.99)	6.22	1	U.S. Geological Survey	Steel Tape		
P	5/23/1979		14.59	0.81	5.41	1	U.S. Geological Survey	Steel Tape		
P	6/27/1979		14.93	0.34	5.07	1	U.S. Geological Survey	Steel Tape		
P	7/24/1979		14.56	(0.37)	5.44	1	U.S. Geological Survey	Steel Tape		
P	8/28/1979		14.61	0.05	5.39	1	U.S. Geological Survey	Steel Tape		
P	9/26/1979		14.45	(0.16)	5.55	1	U.S. Geological Survey	Steel Tape		
P	10/29/1979		14.59	0.14	5.41	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	11/30/1979		16.06	1.47	3.94	1	U.S. Geological Survey	Steel Tape		
P	12/28/1979		15.37	(0.69)	4.63	1	U.S. Geological Survey	Steel Tape		
P	1/28/1980		15.65	0.28	4.35	1	U.S. Geological Survey	Steel Tape		
P	2/27/1980		15.19	(0.46)	4.81	1	U.S. Geological Survey	Steel Tape		
P	3/26/1980		16.46	1.27	3.54	1	U.S. Geological Survey	Steel Tape		
P	5/1/1980		15.54	(0.92)	4.46	1	U.S. Geological Survey	Steel Tape		
P	5/30/1980		15.36	(0.18)	4.64	1	U.S. Geological Survey	Steel Tape		
P	6/26/1980		15.47	0.11	4.53	1	U.S. Geological Survey	Steel Tape		
P	7/29/1980		16.1	0.63	3.9	1	U.S. Geological Survey	Steel Tape		
P	8/27/1980		16.07	(0.03)	3.93	1	U.S. Geological Survey	Steel Tape		
P	9/30/1980		16.3	0.23	3.7	1	U.S. Geological Survey	Steel Tape		
P	10/30/1980		16.62	0.32	3.38	1	U.S. Geological Survey	Steel Tape		
P	11/24/1980		16.07	(0.55)	3.93	1	U.S. Geological Survey	Steel Tape		
P	12/18/1980		16.2	0.13	3.8	1	U.S. Geological Survey	Steel Tape		
P	1/14/1981		16.52	0.32	3.48	1	U.S. Geological Survey	Steel Tape		
P	3/2/1981		15.9	(0.62)	4.1	1	U.S. Geological Survey	Steel Tape		
P	3/30/1981		16	0.10	4	1	U.S. Geological Survey	Steel Tape		
P	4/29/1981		15.8	(0.20)	4.2	1	U.S. Geological Survey	Steel Tape		
P	5/28/1981		15.47	(0.33)	4.53	1	U.S. Geological Survey	Steel Tape		
P	7/2/1981		14.5	(0.97)	5.5	1	U.S. Geological Survey	Steel Tape		
P	7/29/1981		15.3	0.80	4.7	1	U.S. Geological Survey	Steel Tape		
P	8/27/1981		15.34	0.04	4.66	1	U.S. Geological Survey	Steel Tape		
P	9/30/1981		15.02	(0.32)	4.98	1	U.S. Geological Survey	Steel Tape		
P	10/29/1981		15.31	0.29	4.69	1	U.S. Geological Survey	Steel Tape		
P	12/1/1981		14.74	(0.57)	5.26	1	U.S. Geological Survey	Steel Tape		
P	1/7/1982		15.3	0.56	4.7	1	U.S. Geological Survey	Steel Tape		
P	1/27/1982		15.5	0.20	4.5	1	U.S. Geological Survey	Steel Tape		
P	3/2/1982		15	(0.50)	5	1	U.S. Geological Survey	Steel Tape		
P	3/31/1982		14.88	(0.12)	5.12	1	U.S. Geological Survey	Steel Tape		
P	6/15/1982		15.14	0.26	4.86	1	U.S. Geological Survey	Steel Tape		
P	11/1/1982		15.41	0.27	4.59	1	U.S. Geological Survey	Steel Tape		
P	1/17/1983		15.8	0.39	4.2	1	U.S. Geological Survey	Steel Tape		
P	7/19/1983		13.7	(2.10)	6.3	1	U.S. Geological Survey	Steel Tape		
P	1/18/1984		14.62	0.92	5.38	1	U.S. Geological Survey	Steel Tape		
P	1/24/1985		15.22	0.60	4.78	1	U.S. Geological Survey	Steel Tape		
P	1/13/1986		15.23	0.01	4.77	1	U.S. Geological Survey	Steel Tape		
P	1/6/1987		13.5	(1.73)	6.5	1	U.S. Geological Survey	Unknown		
P	1/14/1988		13.57	0.07	6.43	1	U.S. Geological Survey	Unknown		
P	1/20/1989		13.26	(0.31)	6.74	1	U.S. Geological Survey	Unknown		
P	2/1/1990		14.4	1.14	5.6	1	U.S. Geological Survey	Unknown		
P	1/29/1991		12.25	(2.15)	7.75	1	U.S. Geological Survey	Steel Tape		
P	2/4/1992		12.62	0.37	7.38	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/26/1993		11.42	(1.20)	8.58	1	U.S. Geological Survey	Steel Tape		
P	1/10/1995		15.23	3.81	4.77	1	U.S. Geological Survey	Steel Tape		
P	1/12/1996		16.52	1.29	3.48	1	U.S. Geological Survey	Steel Tape		
P	1/24/1997		15.63	(0.89)	4.37	1	U.S. Geological Survey	Steel Tape		
P	1/23/1998		14.92	(0.71)	5.08	1	U.S. Geological Survey	Steel Tape		
P	1/14/1999		14.73	(0.19)	5.27	1	U.S. Geological Survey	Steel Tape		
P	2/8/2000		15.69	0.96	4.31	1	U.S. Geological Survey	Steel Tape		
P	2/19/2001		15.83	0.14	4.17	1	U.S. Geological Survey	Steel Tape		
P	2/17/2002		13.92	(1.91)	6.08	1	U.S. Geological Survey	Steel Tape		
P	1/15/2003		15.67	1.75	4.33	1	U.S. Geological Survey	Steel Tape		
P	2/10/2004		14.72	(0.95)	5.28	1	U.S. Geological Survey	Steel Tape		
P	1/21/2005		15.96	1.24	4.04	1	U.S. Geological Survey	Steel Tape		
P	2/8/2006		16.7	0.74	3.3	1	U.S. Geological Survey	Steel Tape		
P	1/31/2007		14.12	(2.58)	5.88	1	U.S. Geological Survey	Steel Tape		
P	2/14/2008		15.4	1.28	4.6	1	U.S. Geological Survey	Steel Tape		
P	1/30/2009		16.99	1.59	3.01	1	U.S. Geological Survey	Steel Tape		
P	2/15/2010		14.02	(2.97)	5.98	1	U.S. Geological Survey	Electric Line		
P	12/28/2010		15.73	1.71	4.27	1	U.S. Geological Survey	Steel Tape		
P	12/16/2011		16.86	1.13	3.14	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 1/24/1974 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot Aquifer, Upper

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		506.56	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		618	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)		100	ug/L	
00910	CALCIUM (MG/L)		150	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		300	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.6	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		640	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		0	ug/L	
00920	MAGNESIUM (MG/L)		67	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0.1	mg/L as NO3	
00400	PH (STANDARD UNITS), FIELD		7.2	SU	
00937	POTASSIUM, TOTAL (MG/L AS K)		1.3	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		0		
00955	SILICA, DISSOLVED (MG/L AS SI02)		23	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		3.07		
00932	SODIUM, CALCULATED, PERCENT		37	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		180	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1920	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		70	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		20	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		1095	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523229

Texas Water Development Board
Well Schedule

State Well Number 6523229 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **Zone** 1 **Latitude** 294340 **Longitude** 951219 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
General Amer. Tank Co.
well #2

Driller
Pomeroy Drlg. Co.

Address _____ **Tenant/Oper.** _____

Date Drilled / /1958 **Depth** 485 **Source of Depth** R **Altitude** 24 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION **Const-Method** **Casing Material**

Completion **Screen Material**

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from_____**to**_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- _____**GPM** **Pump** _____**GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** N **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1962
-185

Recorded By _____ **Date Record Collected or Updated -** 07/18/2003

Reporting Agency 02

REMARKS -
TWDB R178: 40ft. of screen.

Aquifer - 112CHCTL **ID -** 15
CHICOT
AQUIFER,LOWER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-229

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523229
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.727778
Latitude (degrees minutes seconds)	29° 43' 40" N
Longitude (decimal degrees)	-95.205278
Longitude (degrees minutes seconds)	095° 12' 19" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CHCTL - Chicot Aquifer, Lower
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	24
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	485
Well Depth Source	Person Other than Owner
Drilling Start Date	
Drilling End Date	0/0/1958
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	General Amer. Tank Co. well #2
Driller	Pomeroy Drlg. Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	7/18/2003
Last Update Date	7/18/2003

Remarks	TWDB R178: 40ft. of screen.

Casing - No Data

Well Tests - No Data

Lithology - No Data

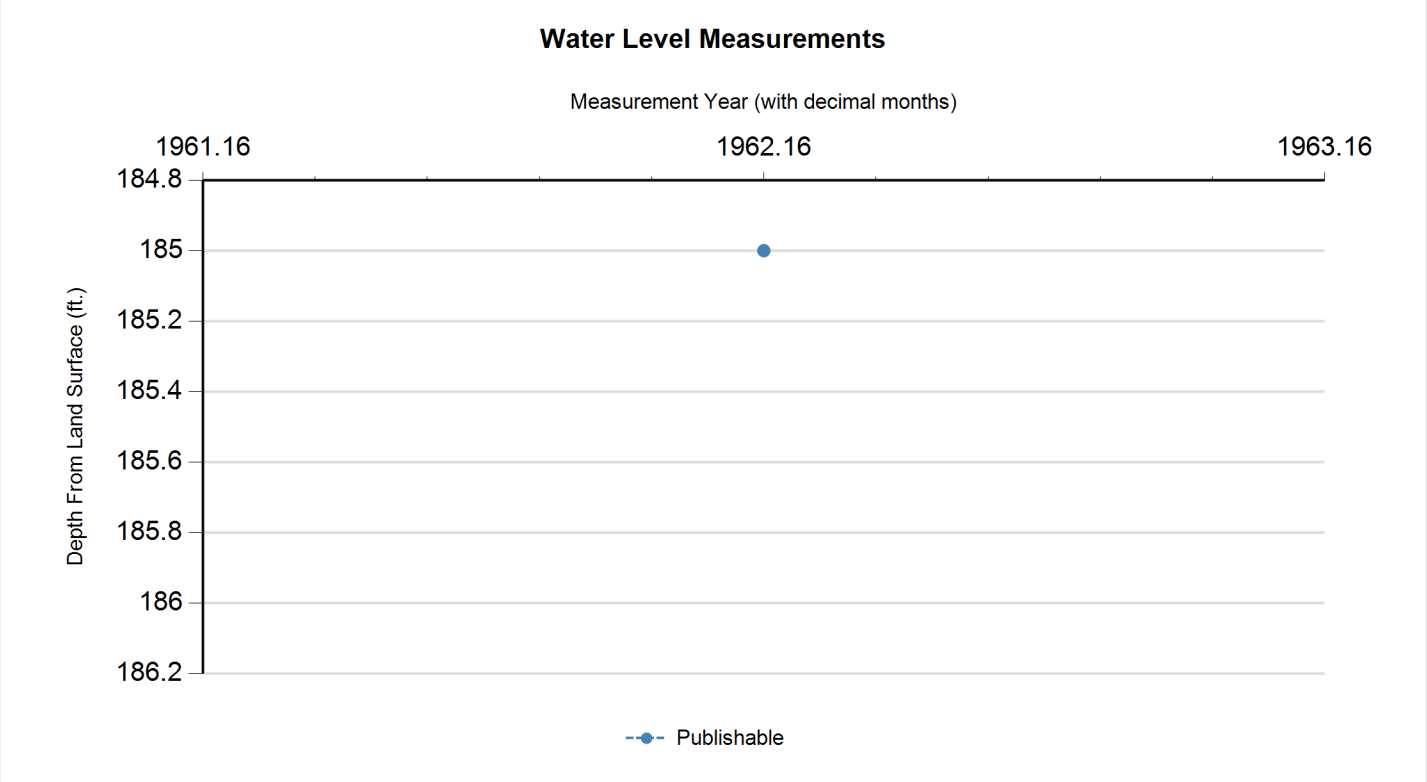
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/0/1962		185		-161	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523233

Texas Water Development Board
Well Schedule

State Well Number 6523233 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294339 **Longitude** 951047 **Source of Coords** 1

Owner's Well No. _____ **Location** _____

Owner
Champion Papers

Driller
Layne Texas

Address _____ **Tenant/Oper.** _____

Date Drilled / /1937 **Depth** 515 **Source of Depth** **Altitude** 29 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION

Const-Method blank

Casing Material blank

Screen Material blank

Completion blank

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -** 250

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** blank **Tertiary -** blank

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** Y **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1937
-75

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency

REMARKS -
Screen from 316 to 496 ft. Reported yield 1565 gpm with 101 ft drawdown when drilled. Test hole drilled to 523 ft. Well D-1.

Aquifer - 112CHCTL **ID -** 15

CHICOT AQUIFER,LOWER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-233

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523233
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.7275
Latitude (degrees minutes seconds)	29° 43' 39" N
Longitude (decimal degrees)	-95.179722
Longitude (degrees minutes seconds)	095° 10' 47" W
Coordinate Source	+/- 1 Second
Aquifer Code	112CHCTL - Chicot Aquifer, Lower
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	29
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	515
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1937
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Champion Papers
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	Champion Paper Mill well D-1
Other Well Number	Historical Id 1129
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	Screen from 316 to 496 ft. Reported yield 1565 gpm with 101 ft drawdown when drilled. Test hole drilled to 523 ft. Well D-1.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	8/11/1937		75		-46	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 7/3/1939 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot Aquifer, Lower

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		219.61	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		268	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		32	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		92	mg/L as CACO3	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00929	SODIUM, TOTAL (MG/L AS NA)		87	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		15	mg/L as SO4	

Water Quality Analysis

Sample Date: 7/8/1939 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot Aquifer, Lower

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		219.67	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		268	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		32	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		94	mg/L as CACO3	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00929	SODIUM, TOTAL (MG/L AS NA)		86	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		15	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		296	mg/L	

Water Quality Analysis

Sample Date: 2/19/1941 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot Aquifer, Lower

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		227.87	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		278	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		31	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		93	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		88	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		13	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		299	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523115

Texas Water Development Board
Well Schedule

State Well Number 6523115 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **Zone** 1 **Latitude** 294312 **Longitude** 951233 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Crown Central
Petroleum Co.

Driller
McMasters & Pomeroy

Address _____ **Tenant/Oper.** _____

Date Drilled / /1944 **Depth** 922 **Source of Depth** R **Altitude** 27 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION **Const-Method** **Casing Material**

Completion **Screen Material**

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from_____**to**_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- _____**GPM** **Pump** _____**GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** N **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1961
-298

Recorded By _____ **Date Record Collected or Updated -** 07/18/2003

Reporting Agency 02

REMARKS -
TWDB R178: 170ft. of screen between
651 and 911ft.

Aquifer - 121EVGL **ID -** 15
EVANGELINE
AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-115

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523115
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.72
Latitude (degrees minutes seconds)	29° 43' 12" N
Longitude (decimal degrees)	-95.209167
Longitude (degrees minutes seconds)	095° 12' 33" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	27
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	922
Well Depth Source	Person Other than Owner
Drilling Start Date	
Drilling End Date	0/0/1944
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Crown Central Petroleum Co.
Driller	McMasters & Pomeroy
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	7/18/2003
Last Update Date	7/18/2003

Remarks	TWDB R178: 170ft. of screen between 651 and 911ft.

Casing - No Data

Well Tests - No Data

Lithology - No Data

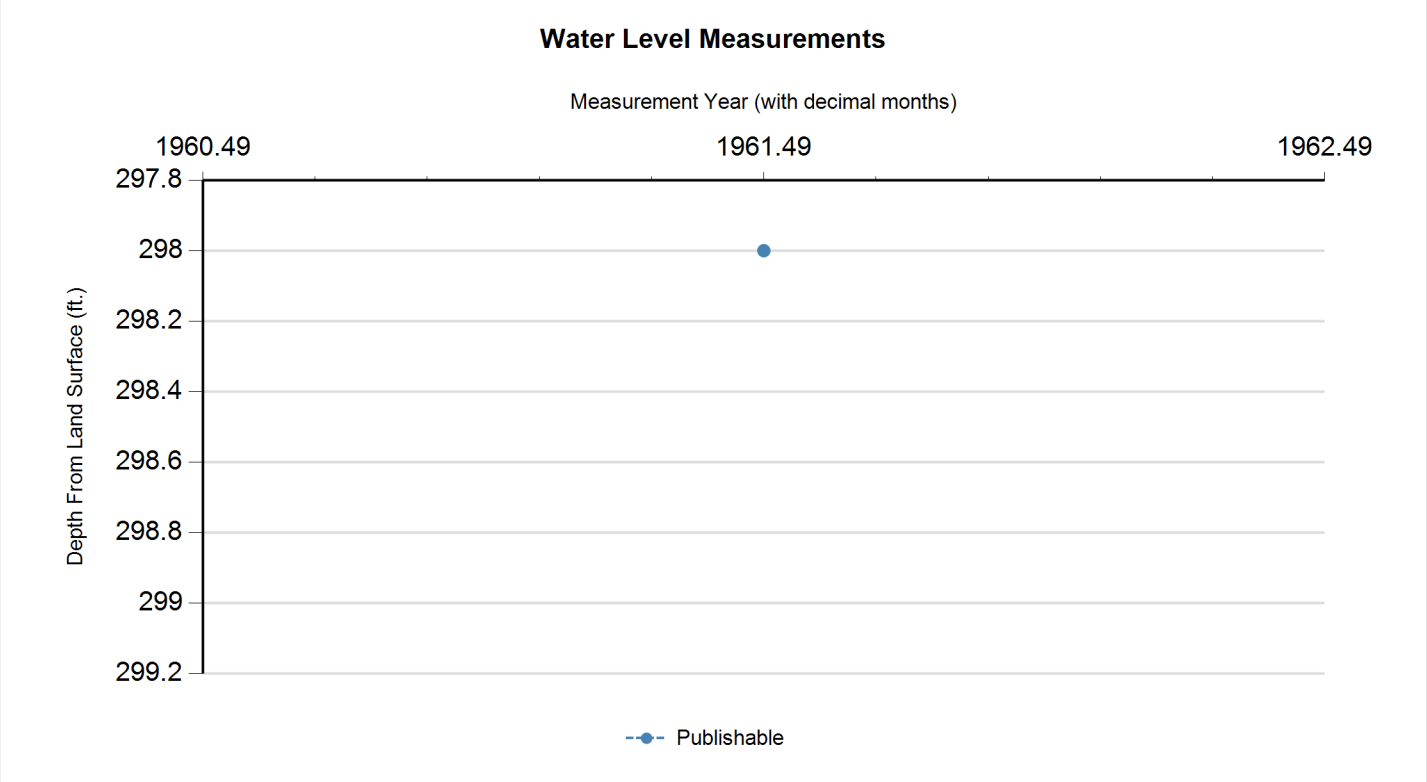
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	5/0/1961		298		-271	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523138

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 23 138 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 43 25 Longitude - 95 13 33 Source of Coords - 1

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Houston Light & Power
Deepwater Plant

Driller - Layne Texas

Address _____ Tenant/Oper. _____
Date Drilled - / /1924 Depth - 823 ft. Source of Depth - Altitude - 18 ft. Source of Alt. -
Aquifer - 121EVGL EVANGELINE AQUIFER Well Type - W User -

WELL CONSTRUCTION
Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

| Casing or Blank Pipe (C)
| Well Screen or Slotted Zone (
| Open Hole (O)
| Cemented from_____to_____
| Diam. (in.) Setting(feet) From To

LIFT DATA - Pump Mfr. _____ Type - NONE No. Stages ____

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - Horsepower -

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- UNUSED Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- N Quality- Y Logs- Other Data-

WATER LEVELS Date- / / Measurement-
Date- / / Measurement-

Recorded By _____ Date Record Collected or Updated- / /

Reporting Agency -
REMARKS -
119 ft of screen between 624 and
805 ft. Reported yield 500 gpm in
1937. Well destoyed. Well 2.

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-138

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523138
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.723611
Latitude (degrees minutes seconds)	29° 43' 25" N
Longitude (decimal degrees)	-95.225833
Longitude (degrees minutes seconds)	095° 13' 33" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	18
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	823
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1924
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	None
Water Quality Available	Yes
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Houston Light & Power Deepwater Plant
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	119 ft of screen between 624 and 805 ft. Reported yield 500 gpm in 1937. Well destoyed. Well 2. Well 1169 in M133. Report M133 gives a completed date of 1924 for this well but also has chemcial analysis results from 1922. M130 does not have the 1922 Results.Report M128 does not list a completed date but does have the chemical analysis from 1922.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis

Sample Date: 3/1/1922 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: Taken prior to well completion

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		186.07	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		227.06	mg/L	
00910	CALCIUM (MG/L)		9	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		41	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		43	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		4800	ug/L	
00920	MAGNESIUM (MG/L)		5	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0.5	mg/L as NO3	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		2.86		
00955	SILICA, DISSOLVED (MG/L AS SI02)		14	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		6.83		
00932	SODIUM, CALCULATED, PERCENT		84	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		103	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		12	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		296	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523205

Texas Water Development Board
Well Schedule

State Well Number 6523205 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294457 **Longitude** 951102 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Armco Steel Corp.
well #1

Driller
Layne Texas Co.

Address _____ **Tenant/Oper.** _____

Date Drilled / /1943 **Depth** 1385 **Source of Depth** R **Altitude** 25 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION **Const-Method** **Casing Material**

Completion blank **Screen Material**

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** N **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1951
-260

Recorded By _____ **Date Record Collected or Updated -** 07/18/2003

Reporting Agency 02

REMARKS -
TWDB R178: 217ft. of screen between
950 and 1,350ft.
Yield 1,365 gpm with 55ft. drawdown
Jan. 1951.

Aquifer - 121EVGL **ID -** 15

EVANGELINE
AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-205

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523205
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.749167
Latitude (degrees minutes seconds)	29° 44' 57" N
Longitude (decimal degrees)	-95.183889
Longitude (degrees minutes seconds)	095° 11' 02" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	25
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1385
Well Depth Source	Person Other than Owner
Drilling Start Date	
Drilling End Date	0/0/1943
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Armco Steel Corp. well #1
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	7/18/2003
Last Update Date	7/18/2003

Remarks	TWDB R178: 217ft. of screen between 950 and 1,350ft. Yield 1,365 gpm with 55ft. drawdown Jan. 1951.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

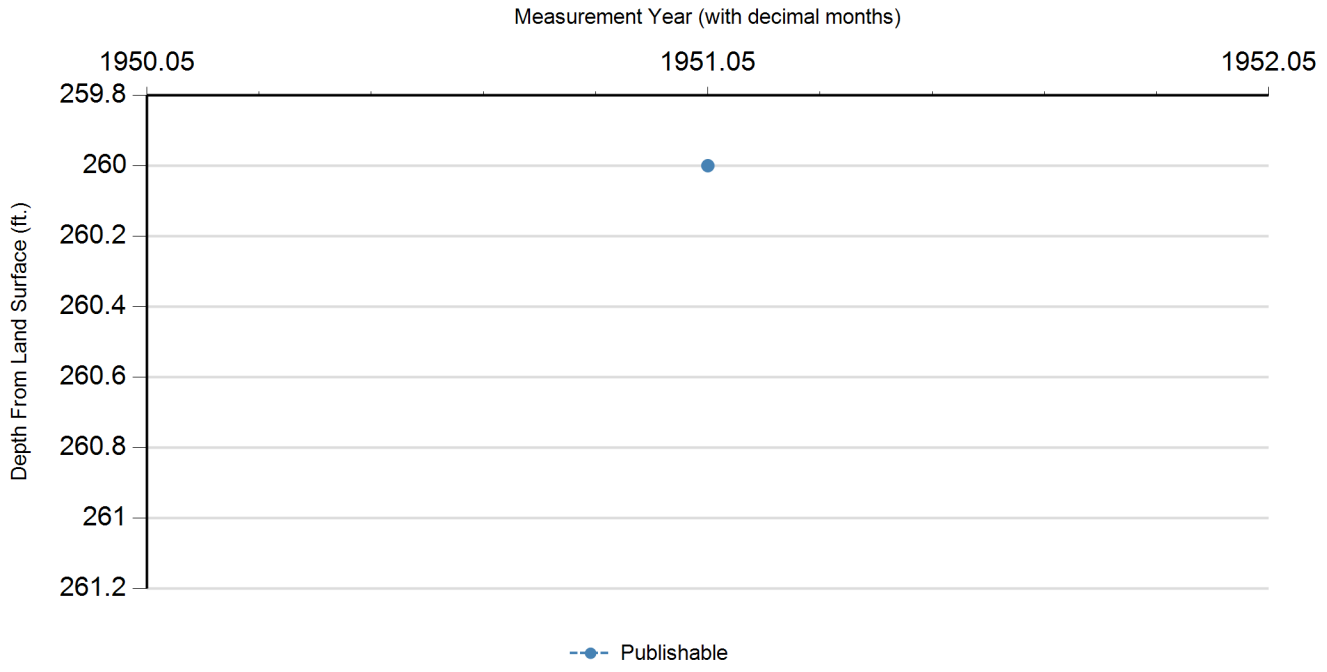
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/18/1951		260		-235	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523206

Texas Water Development Board
Well Schedule

State Well Number 6523206 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294455 **Longitude** 951135 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Armco Steel Corp.
well #2

Driller
Layne Texas Co.

Address _____ **Tenant/Oper.** _____

Date Drilled / /1943 **Depth** 1266 **Source of Depth** R **Altitude** 30 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION **Const-Method** **Casing Material**

Completion blank **Screen Material**

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** N **Logs -** **Other Data -**

WATER LEVELS 2 measurements
1951 to 1962
MIN -327 MAX -254

Recorded By _____ **Date Record Collected or Updated -** 07/18/2003

Reporting Agency 02

REMARKS -
TWDB R178: 161ft. of screen between
831 and 1,238ft.
Yield 1,266 gpm with 61ft.
drawdown Jan. 4, 1951.

Aquifer - 121EVGL **ID -** 15

EVANGELINE
AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-206

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523206
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.748611
Latitude (degrees minutes seconds)	29° 44' 55" N
Longitude (decimal degrees)	-95.193056
Longitude (degrees minutes seconds)	095° 11' 35" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	30
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1266
Well Depth Source	Person Other than Owner
Drilling Start Date	
Drilling End Date	0/0/1943
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Armco Steel Corp. well #2
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	7/18/2003
Last Update Date	7/18/2003

Remarks	TWDB R178: 161ft. of screen between 831 and 1,238ft. Yield 1,266 gpm with 61ft. drawdown Jan. 4, 1951.

Casing - No Data

Well Tests - No Data

Lithology - No Data

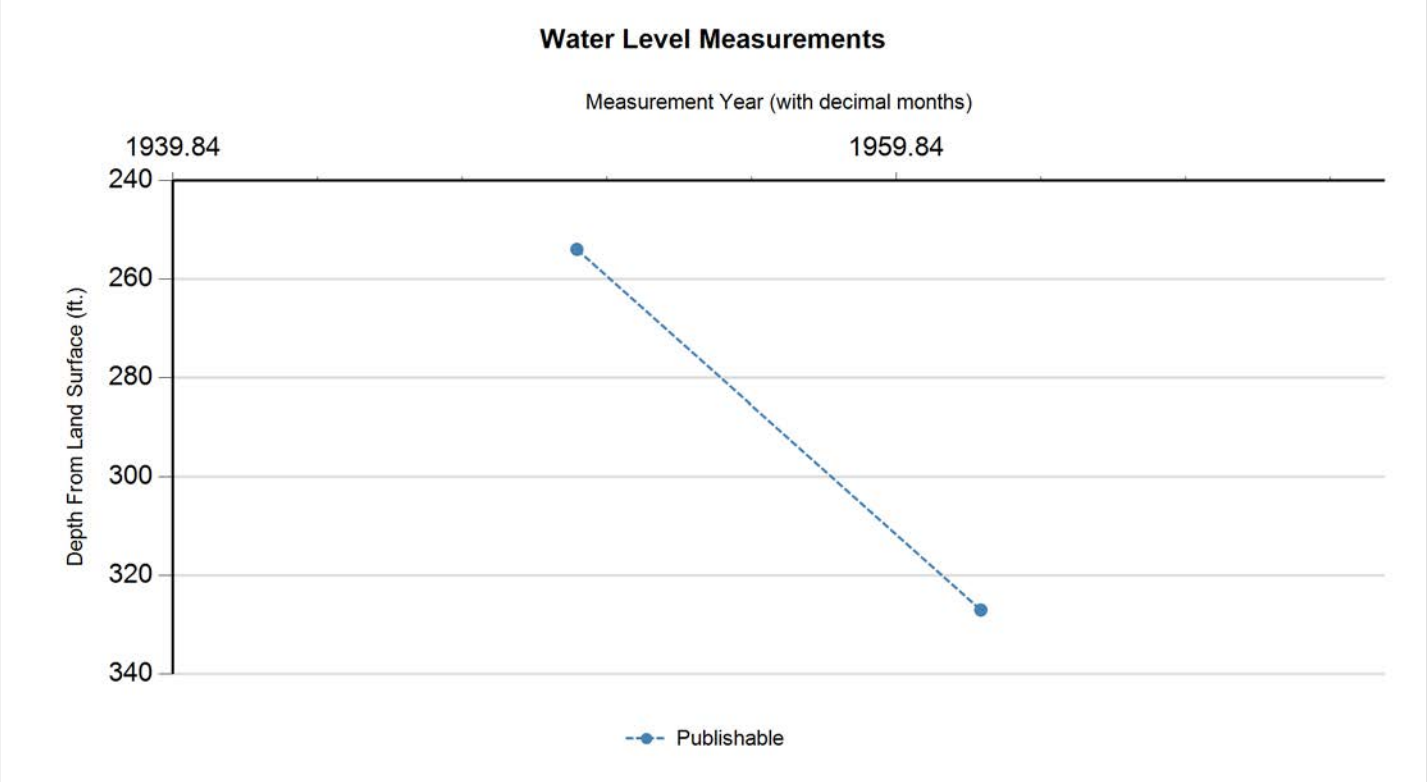
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/4/1951		254		-224	1	U.S. Geological Survey	Steel Tape		
P	3/6/1962		327	73.00	-297	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523228

Texas Water Development Board
Well Schedule

State Well Number 6523228 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294453 **Longitude** 951157 **Source of Coords** 1

Owner's Well No. _____ **Location** _____

Owner
Terminal Corp.

Driller
Pomeroy Drilling

Address _____ **Tenant/Oper.** _____

Date Drilled / /1961 **Depth** 822 **Source of Depth** **Altitude** 20 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION

Const-Method blank

Casing Material blank

Completion blank

Screen Material blank

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -** 50

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** blank **Tertiary -** blank

OTHER DATA AVAILABLE **Water Levels -** N **Quality -** Y **Logs -** **Other Data -**

WATER LEVELS

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency

REMARKS -
54 ft of screen between 622 and
820 ft.

Aquifer - 121EVGL **ID -** 15

EVANGELINE
AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-228

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523228
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.748056
Latitude (degrees minutes seconds)	29° 44' 53" N
Longitude (decimal degrees)	-95.199167
Longitude (degrees minutes seconds)	095° 11' 57" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	20
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	822
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1961
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	None
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Terminal Corp.
Driller	Pomeroy Drilling
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	54 ft of screen between 622 and 820 ft.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis

Sample Date: 5/2/1966 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		296.72	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		362	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)		300	ug/L	
00910	CALCIUM (MG/L)		6	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		39	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		1	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		0	ug/L	
00920	MAGNESIUM (MG/L)		1	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00400	PH (STANDARD UNITS), FIELD		7.9	SU	
00937	POTASSIUM, TOTAL (MG/L AS K)		1	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		5.55		
00955	SILICA, DISSOLVED (MG/L AS SI02)		15	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		14.94		
00932	SODIUM, CALCULATED, PERCENT		94	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		150	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		671	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		0	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		27	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		390	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523251

Texas Water Development Board
Well Schedule

State Well Number 6523251 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **Zone** 1 **Latitude** 294427 **Longitude** 951114 **Source of Coords** 2

Owner's Well No. **Location**

Owner
Phosphate Chemical Co.

Driller
Layne Texas Co.

Address **Tenant/Oper.**

Date Drilled / /1965 **Depth** 1230 **Source of Depth** R **Altitude** 15 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION

Const-Method

Casing Material

Completion

Screen Material

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** **Type -** TURBINE PUMP **No. Stages**

Bowls Diam - **in.** **Setting -** **ft.** **Column Diam. -** **in.**

Motor Mfr. - **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- **GPM** **Pump** **GPM** **Meas.,Rept.,Est.-** **Date-**

WATER USE **Primary -** INDUSTRIAL **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** N **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1965
-362

Recorded By **Date Record Collected or Updated -** 07/18/2003

Reporting Agency 02

REMARKS -
TWDB R178: 170ft. of screen betwe
835 and 1,215ft.
Yield 1,200 gpm with 68ft. drawdow
when drilled.

Aquifer - 121EVGL **ID -** 15

EVANGELINE
AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-251

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523251
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.740834
Latitude (degrees minutes seconds)	29° 44' 27" N
Longitude (decimal degrees)	-95.187222
Longitude (degrees minutes seconds)	095° 11' 14" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	15
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1230
Well Depth Source	Person Other than Owner
Drilling Start Date	
Drilling End Date	0/0/1965
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Phosphate Chemical Co.
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	7/18/2003
Last Update Date	7/18/2003

Remarks	TWDB R178: 170ft. of screen between 835 and 1,215ft. Yield 1,200 gpm with 68ft. drawdown when drilled.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

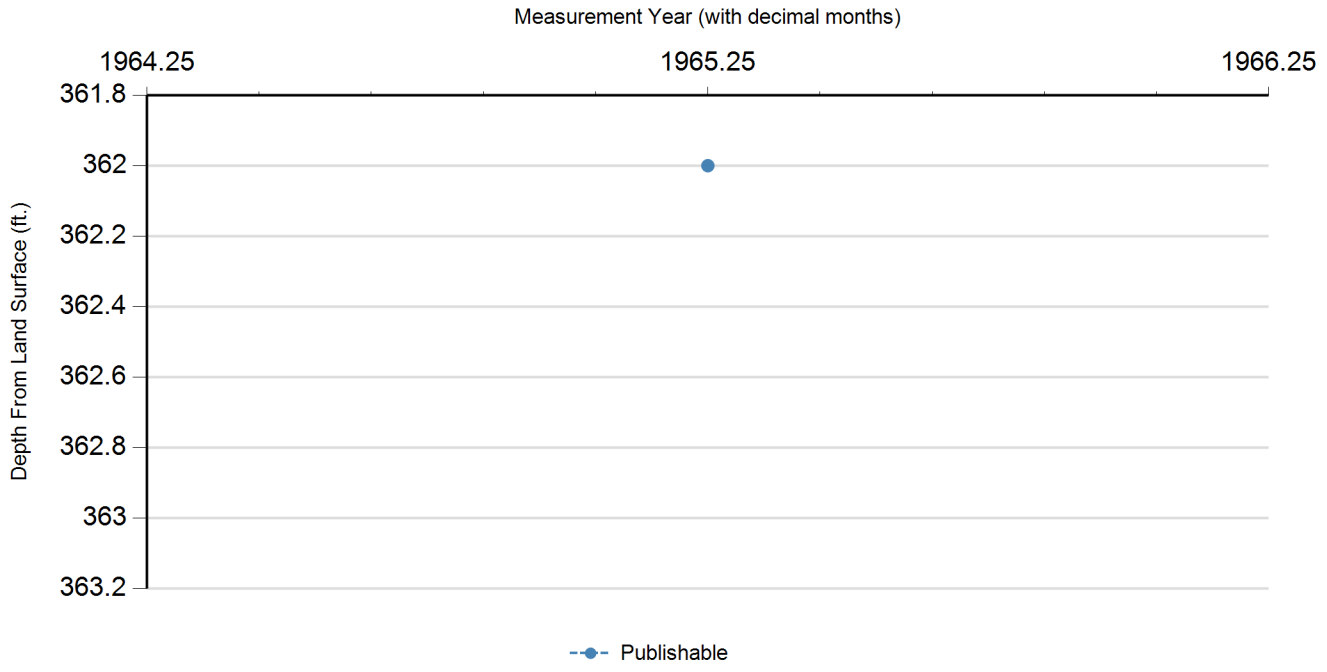
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	4/2/1965		362		-347	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523317

TEXAS DEPARTMENT OF WATER RESOURCES

WELL SCHEDULE

Aquifer(s) Evangeline Project No. _____ State Well No. 65-23-317

Field No./Owner's Well No. 4 County Harris

1. Location: ___ ¼, ___ ¼, Section ___, Block ___, Survey _____, Lat. _____, Long. _____

2. Owner: Tenneco Chemical Co. Address: _____

Tenant (other): _____ Address: _____

Driller: Layne Texas Address: _____

3. Land Surface Elevation: 31 ft. above msl determined by _____

4. Drilled: 10-29 19 63; Dug, Cable Tool, Rotary, Air, _____

5. Depth: Rept. 1240 ft. Meas. _____ ft.

6. Borehole Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfr. _____ Type T

No. Stages _____, Bowls Diam. ___ in., Setting _____ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Mfr. _____ Fuel E HP. ___

9. Yield: Flow ___ gpm, Pump ___ gpm, Meas., Rept., Est. ___ Date ___

10. Performance Test: Date 10/63 Length of Test ___ Made by LT

Static Level 320 ft. Pumping Level 376 ft. Drawdown 56 ft.

Production 1040 gpm Specific Capacity _____ gpm/ft.

11. Quality: (Remarks on taste, odor, color, etc.) _____

Analyses

Date _____ Laboratory _____ TDS ___ Sp Cond ___

Date _____ Laboratory _____ TDS ___ Sp Cond ___

12. Other data available (as circled): Pumping Test, Power & Yield Test, Drillers Log, Formation Samples, Geophysical Log(s) _____ (type)

13. Water Level(s): _____ ft. rept. meas. _____ 19__ above below _____ which is ___ ft. above below Land Surface

_____ ft. rept. meas. _____ 19__ above below _____ which is ___ ft. above below Land Surface

14. Use: Dom., Stock, Public Supply, Ind., Irr., Observation, Other (Test Hole, Oil Test, etc.) _____

15. Recorded by: _____ Source of data: _____ Date: _____

16. Remarks: _____

17. Location or Sketch:

CASING, BLANK PIPE & WELL SCREEN Cemented From 0 ft. to 1025 ft.			
Diam. (in.)	Type	Setting (feet) from	to
16	Steel	0	1025
10	Liner	916	1240

Q 1732

W/L Obs. Well ___ W/Q Obs. Well ___

State Well No. 65 23-317

TDWR-0308

FORM NO 28

65-23-3P

LAYNE TEXAS COMPANY,

HOUSTON -:- DALLAS

WELL LOG

REPORT NO 6528
S O 2427-63
PAGE 1 OF 1
FILE NO 2817
DATE 11/25/63

CUSTOMER LOCATION	WELL DATA
FOR TENNECO CHEMICAL COMPANY	NAME WELL WELL NO 4
LOCATION WELL DEER PARK REFINERY	ELEVATION DATUM
SURVEY FIELD	RT C
COUNTY HARRIS STATE TEXAS	TEST HOLE SIZE 11-3/4" & 7-7/8" 1254'
OTHER LAND MARKS 100 FT. S. OF WELL NO. 3	DATE STARTED DRILLING 10-22-63
65233	DATE FINISHED DRILLING 10-29-63
	DRILLER O. GUTZMANN RIG NO 17
	TYPE MUD CLAY & GEL NO SACKS
	ELECTRIC LOG YES TYPE WIDCO
	SURVEY EASTMAN TYPE SINGLE SHOT
	OTHER

DEPTH STRATA	EACH STRATUM	DESCRIPTION FORMATION	SAMPLES DEPTH	TYPE	NUMBER
0		SURFACE			
15	15	SANDY CLAY			
28	13	CLAY			
47	19	SAND			
55	8	CLAY			
63	8	SANDY CLAY			
93	30	SANDY SHALE & SHALE			
123	30	SHALE & SAND BREAKS			
183	60	SAND, FEW SHALE BREAKS			
320	137	SANDY SHALE & SHALE			
344	24	SAND			
367	23	SHALE & SANDY SHALE			
383	16	SAND (BROKEN)			
455	72	SAND (CUT HARD)			
478	23	SAND			
570	92	BROKEN SAND & SHALE			
630	60	SAND			
715	85	SHALE & SAND BREAKS			
800	85	SAND, FEW SHALE BREAKS			
806	6	SHALE			
825	19	SAND			
833	8	SHALE			
870	37	SAND			
880	10	CLAY			
902	22	SHALE			
914	12	SAND			
922	8	SANDY SHALE			
962	40	SAND (CUT GOOD)			
992	30	HARD SAND & SHALE			
1022	30	SHALE			
1057	35	SAND			
1070	13	SHALE			
1084	14	SANDY SHALE			
1112	28	SHALE			
1124	12	SANDY SHALE			
1142	18	SHALE			
1254	112	SAND & SHALE BREAKS			
T.D. 1254 FT.					

Q-1732

65-23-317

FORM NO. 1202

LAYNE TEXAS COMPANY

HOUSTON -:- DALLAS

MATERIAL SETTING

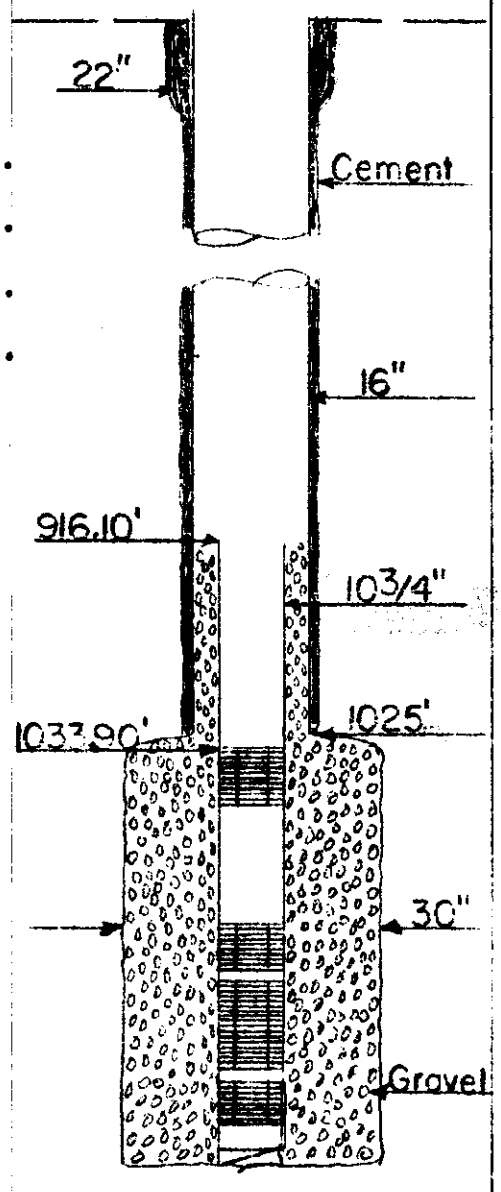
REPORT NO. 6529
S. O. 2427-63
PAGE 1 OF 1
FILE NO. 2817
DATE 11/25/63

CUSTOMER LOCATION	WELL DATA
FOR TENNECO CHEMICAL COMPANY	NAME WELL — WELL NO. 4
LOCATION WELL DEER PARK REFINERY	ELEVATION — DATUM
SURVEY — FIELD	TYPE WELL GRAVEL-WALL
COUNTY HARRIS — STATE TEXAS	SURFACE CASING CEMENTED YES — NO. SACKS 520+8% GEL
OTHER LAND MARKS 100' S. OF WELL #3	SIZE HOLE UNDERREAMED 30" — DEPTH 1040'
OK	GRAVEL TYPE 12,13,165 — NO. CU. YDS. 85
	TYPE SCREEN S.S. W.W. — GAGE .045"
	DRILLER O. GUTZMANN — RIG NO. 17
	OTHER

DEPTH	LENGTH	SIZE, KIND, WEIGHT MATERIAL
+3'		16" O.D. CASING 2' ABOVE GROUND
0		SURFACE
916.10'		TOP OF 10-3/4" O.D. LINER
36.95'	36.95'	22" CONDUCTOR PIPE
1025.00'	1028.00'	16" O.D. SURFACE CASING
1033.90'	117.80'	10-3/4" O.D. BLANK LINER
1063.80'	29.90'	10-3/4" OD S.S. W.W. SCREEN .045" GA.
1124.70'	60.90'	10-3/4" O.D. BLANK PIPE
1149.60'	24.90'	10-3/4" OD S.S. W.W. SCREEN .045" GA.
1154.80'	5.20'	10-3/4" O.D. BLANK PIPE
1199.85'	45.05'	10-3/4" OD S.S. W.W. SCREEN .045" GA.
1205.00'	5.15'	10-3/4" O.D. BLANK PIPE
1224.90'	19.90'	10-3/4" OD S.S. W.W. SCREEN .045" GA.
1238.00'	13.10'	10-3/4" O.D. BLANK PIPE
1240.00'	2.00'	10-3/4" O.D. SET NIPPLE & B.P. VALVE

TOTAL DEPTH 1240 FT.

SKETCH



T.D.-1240'

Log 3 pages attach. 11/25/63

65-23-317

MICROBIOLOGY SERVICE LABORATORIES

RI 7-7271 ~~RI 7-9170~~

analytical chemists . . . microbiologists

18 November 1963

[redacted]
Houston 21, Texas
4820 Old Spanish Trail

To: Layne Texas Company
Houston, Texas

SO 2427-63

Sample Marked: Well No. 4, TENNECO Chem. Co., Deer Park, Harris Cty, Texas.
Taken: 11-14-63 after 84 hrs. pumping at 1040 gpm with Turbine Pump.
Static Head: 323'. Pumping Level: 370'. Screened: 1035-1065';
1125-1225". Otto Gutzmann.

Rec"d: 11-15-63.

WATER ANALYSIS

results in parts per million (mg/l) except as noted

Dissolved Residue at 105°C		485	Conductance, micromhos/cm, 25°C	805
Total Dissolved Solids, actual†		711	Color, units	5
Total Dissolved Solids, calc.		707	Turbidity, units	0
Silica	SiO_2	11	As Calcium Carbonate, $CaCO_3$:	
Iron and Aluminum Oxides	R_2O_3	0	Phenolhpthalein Alkalinity	0
Calcium	Ca	3.5	Total Alkalinity	364
Magnesium	Mg	0.6	Total Hardness	11
Sodium (diff.) Na+K as	Na	196	Free Carbon Dioxide CO_2	0
Carbonate	CO_3	0	pH . . . 8.4	
Bicarbonate	HCO_3	444	HYPOTHETICAL COMBINATIONS	
Sulfate	SO_4	0	Calcium Bicarbonate	14
			Magnesium Bicarbonate	4
Chloride	Cl	52	Sodium Bicarbonate	592
			Sodium Chloride	86
Total Iron	Fe	0.08	$SiO_2+R_2O_3$	11
			Total Dissolved Solids, calc.	707

† Total Dissolved Solids, actual = Dissolved Residue + 50.8% of bicarbonate (HCO_3) ion

Microbiology Service Laboratories

By: [illegible]
Edna Wood

4153

65-23-317

LAYNE TEXAS COMPANY

HOUSTON -:- DALLAS

WATER WELL TEST

REPORT NO 6530
2427-63
PAGE 1 OF 1
FILE NO 2817
DATE 11/25/63

CUSTOMER LOCATION

TEST FOR TENNECO CHEMICAL COMPANY

LOCATION OF WELL DEER PARK REFINERY

SURVEY FIELD

COUNTY HARRIS STATE TEXAS

DESCRIPTION OF LAND MARKS 100 S. OF WELL #3

WELL DATA

NAME WELL WELL NO 4

ELEVATION DATUM

WELL SIZE 22"x16" x 10-3/4" x 30" UR

TOTAL DEPTH 1240' TOP SCREEN 1033.90'

GRAVEL WELL YES STRAIGHT WELL

TYPE SCREEN S.S. W.W. GAGE .045"

TEMPERATURE OF WATER 84° F.

WATER CONDITION CLEAR - NO SAND

WATER MEASURING DEVICE

ORIFICE SIZE 10"x8" LENGTH 4'

OTHER

TEST PUMP DATA

DEPTH OF PUMP BOWL 400'

LENGTH AIR LINE 400' SIZE 1/4"

TYPE BOWL THC 12" NO. STAGES 8

LENGTH BOWL SECTION LT

SAND CONTENT 0 OZ PER 100 GAL

ACTIVE STATIC HEAD AFTER PUMP STOPPED

5 MIN	323 FT	20 MIN	322 FT
10 MIN	323 FT	25 MIN	321 FT
15 MIN	322 FT	30 MIN	320 FT

WATER SAMPLE TAKEN NO. SAMPLES

BACTERIAL MILE TAKEN

DRAWDOWN SPEED AFA

DATE HOUR	AIR LINE GAGE	PUMPING LEVEL	DISCH PRESS	HEAD ON ORIFICE INCHES	GPM	RPM	OPERATOR	REMARKS
11/13/63	STARTED 24 HOUR TEST AT 9:30 A.M.							
10:00 AM	36	364		10	1040		O.G.	
11:00	35	365		10	1040			
12:00 N	32	368		10.5	1060			
1:00 PM	31	369		10.5	1060			
2:00	30	370		10.5	1060			
4:00	28	372		10.5	1060		C.W.B.	
5:00	28	372		10.0	1040			
6:00	28	372		10.0	1040			
7:00	26	374		10.0	1040			
8:00	26	374		10.0	1040			
9:00	26	374		10.0	1040			
10:00	26	374		10.0	1040			
11:00	26	374		10.0	1040			
12:00 M	25	375		10.0	1040			
11/14/63								
1:00 AM	25	375		10.0	1040			
2:00	25	375		10.0	1040			
3:00	24	376		10.0	1040			
4:00	24	376		10.0	1040			
5:00	24	376		10.0	1040			
6:00	24	376		10.0	1040			
7:00	24	376		10.0	1040			
8:00	24	376		10.0	1040			
9:00	24	376		10.0	1040			
9:30	24	376		10.0	1040			

OBSERVERS

FOR OWNER

OTTO GUTZMANN
FOR LAYNE TEXAS CO.

FORM NO 25

65-23-317

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-317

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523317
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.7325
Latitude (degrees minutes seconds)	29° 43' 57" N
Longitude (decimal degrees)	-95.152223
Longitude (degrees minutes seconds)	095° 09' 08" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	31
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1240
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	10/22/1963
Drilling Method	Mud (Hydraulic) Rotary
Borehole Completion	Gravel Pack w/Perforations

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Tenneco Chemical Co. well #4
Driller	Layne Texas Co.
Other Data Available	Aquifer Test; Drillers Log
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	7/18/2003
Last Update Date	4/28/2011

Remarks	Reported yield 1040 GPM with 56 feet recovery after pumping 24 hours in 1963. Specific capacity 18.5 GPM/ft. Aquifer test data in TWDB files.

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
16	Blank	Steel			0	1025
10	Blank	Steel			916	1034
10	Screen	Stainless Steel			1034	1064
10	Blank	Steel			1064	1125
10	Screen	Stainless Steel			1125	1150
10	Blank	Steel			1150	1155
10	Screen	Stainless Steel			1155	1200
10	Blank	Steel			1200	1205
10	Screen	Stainless Steel			1205	1225
10	Blank	Steel			1225	1240

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	10/0/1963		320		-289	1	Registered Water Well Driller	Air Line		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523327

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 23 327 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 43 55 Longitude - 95 09 05 Source of Coords - 2

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Aristech Chemicals Corp. Driller - Raymond Water Wells

Address _____ Tenant/Oper. _____
Date Drilled - 09/13/1982 Depth - 490 ft. Source of Depth - D Altitude - 26 ft. Source of Alt. - M
Aquifer - 112CHCT CHICOT AQUIFER Well Type - W User - 846405

WELL CONSTRUCTION Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

| Casing or Blank Pipe (C)
| Well Screen or Slotted Zone (
| Open Hole (O)
| Cemented from_____to_____
| Diam. (in.) Setting(feet) From To

LIFT DATA - Pump Mfr. _____ Type - _____ No. Stages ____

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - Horsepower -

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- PUBLIC SUPPLY Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- M Quality- N Logs- D Other Data-

WATER LEVELS Date- 09/13/1982 Measurement- -190.00
Date- / / Measurement-

Recorded By _____ Date Record Collected or Updated- 12/ /1988

Reporting Agency - UNITED STATES GEOLOGICAL SURVEY
REMARKS -
Repored yield 80 gpm with 20 ft
drawdown.

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-327

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523327
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.732222
Latitude (degrees minutes seconds)	29° 43' 56" N
Longitude (decimal degrees)	-95.151667
Longitude (degrees minutes seconds)	095° 09' 06" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CHCT - Chicot Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	26
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	490
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	9/13/1982
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Public Supply
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Aristech Chemicals Corp.
Driller	Raymond Water Wells
Other Data Available	Drillers Log
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1011974A
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	6/2/1999
Last Update Date	6/2/1999

Remarks	Repored yield 80 gpm with 20 ft drawdown.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

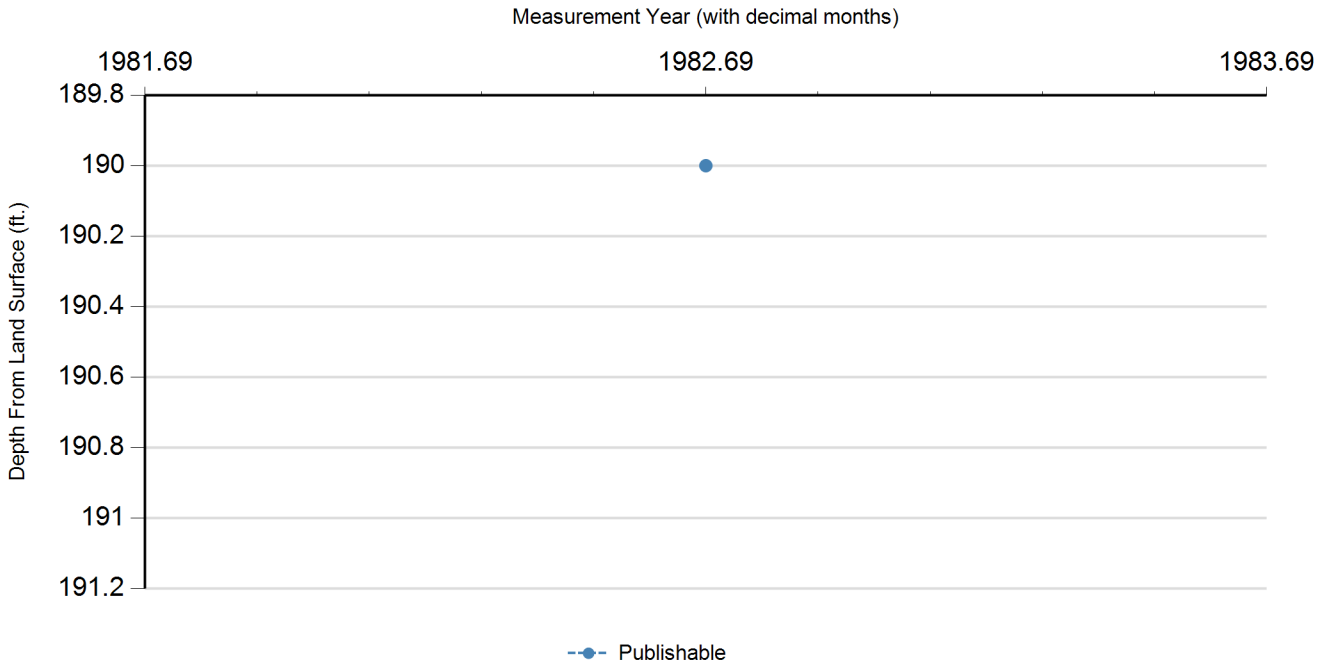
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/13/1982		190		-164	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 278332

STATE OF TEXAS WELL REPORT for Tracking #278332

Owner:	**East Houston Medical Center**	Owner Well #:	**Well Log 03140**
Address:	**13111 E Freeway Houston, TX 77015**	Grid #:	**65-15-8**
Well Location:	**946 Cimarron St. Houston, TX 77015**	Latitude:	**29° 46' 38" N**
		Longitude:	**095° 11' 26" W**
Well County:	**Harris**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Industrial**

Drilling Start Date: **8/1/2006** Drilling End Date: **8/22/2006**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
8.5	**0**	**326**
4.875	**326**	**358**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Two String/K-Packer**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**326**	**60**

Seal Method: **Pressure-Haliburton**

Sealed By: **AWWS**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **City Sewer**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed**

Water Level: **107 ft.** below land surface on **2006-08-03** Measurement Method: **Unknown**

Packers: **K-Packer 322'**
K-Packer 323'
K-Packer 324'

Type of Pump: **Submersible** Pump Depth (ft.): **297**

Well Tests: **Jetted** **Yield: 125 GPM**

Water Quality:

Strata Depth (ft.)	Water Type
358	**Not Tested**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Almeda Water Well Service**

PO Box 266
Manvel, TX 77578

Driller Name: **Carl Loftin** License Number: **2350**

Comments: **Proposed use of well as backup to city water.**
^EAD

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**2**	**soil**
2	**12**	**clay-gray clay-tan**
12	**16**	**sand-tan-fine**
16	**110**	**clay-red**
110	**120**	**sand-tan-.006-.008 sand-tan-.010-.012**
120	**185**	**clay-gray wood soft blue/gray clay**
185	**216**	**sand-white-fine sand-white-.006-.008**
216	**316**	**clay-gray clay / sand streaks**
316	**358**	**sand-white-.006-.008**
358	**359**	**clay-gray**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.) New/Used Type Setting From/To (ft.)
5" N PVC SDR 17 0'-326' Casing
3" N PVC Sch 40 322'-328' Liner
3" N Johnson Super Flow 328'-352' .006

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

WATER WELL NO. 6515820

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 15 820 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 45 04 Longitude - 95 10 26 Source of Coords - 2

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - The Port at Greens Bayou Driller - Layne Texas

Address _____ Tenant/Oper. _____
Date Drilled - 04/08/1942 Depth - 854 ft. Source of Depth - D Altitude - 30 ft. Source of Alt. - M
Aquifer - 121EVGL EVANGELINE AQUIFER Well Type - W User - 869600

WELL CONSTRUCTION
Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

| Casing or Blank Pipe (C)
| Well Screen or Slotted Zone (
| Open Hole (O)
| Cemented from_____to_____
| Diam. (in.) Setting(feet) From To

LIFT DATA - Pump Mfr. _____ Type - TURBINE PUMP No. Stages ____

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower - 60

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- INDUSTRIAL Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- M Quality- Y Logs- Other Data-

WATER LEVELS Date- 05/26/1942 Measurement- -119.00
Date- 01/08/1964 Measurement- -298.00

Recorded By _____ Date Record Collected or Updated- / /

Reporting Agency - UNITED STATES GEOLOGICAL SURVEY
REMARKS -
92 ft of screen between 656 and
804 ft. Well 1.

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-820

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515820
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.751389
Latitude (degrees minutes seconds)	29° 45' 05" N
Longitude (decimal degrees)	-95.174167
Longitude (degrees minutes seconds)	095° 10' 27" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	30
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	854
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	4/8/1942
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	The Port at Greens Bayou
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1011218B
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	10/2/1997
Last Update Date	10/2/1997

Remarks	92 ft of screen between 656 and 804 ft. Well 1.

Casing - No Data

Well Tests - No Data

Lithology - No Data

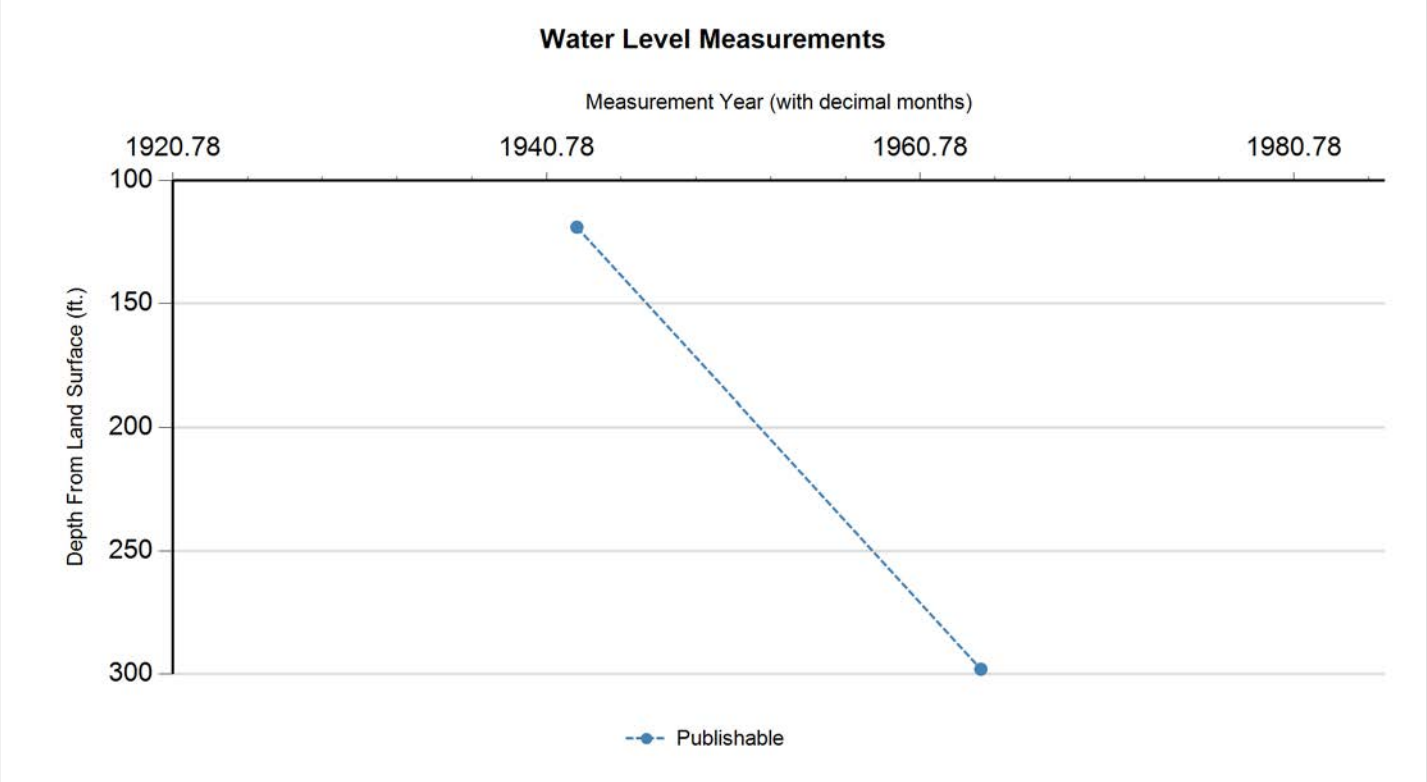
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	5/26/1942		119		-89	1	Texas Water Development Board	Steel Tape		
P	1/8/1964		298	179.00	-268	1	Texas Water Development Board	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 9/6/1943 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		209.02	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		255	mg/L	
00910	CALCIUM (MG/L)		21	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		30	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.2	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		73	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		5	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		2.72		
00955	SILICA, DISSOLVED (MG/L AS SI02)		16	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		4.53		
00932	SODIUM, CALCULATED, PERCENT		72	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		89	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		13	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		299	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6515921

Please use black ink. Send original copy by certified mail to the Texas Water Commission P.O. Box 13087 Austin, Texas 78711

State of Texas
WATER WELL REPORT
ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Texas Water Well Drillers Board
P. O. Box 13087
Austin, Texas 78711

1) OWNER Port of Houston Authority (Name) Address P.O. Box 2562 Houston, Texas 77252-2562 (Street or RFD) (City) (State) (Zip)

2) LOCATION OF WELL:
County Harris 12 miles in East (N.E., S.W., etc.) direction from Down town Houston (Town)
Well is located at Bulk Materials Handling Plant and is Well #3.

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. _____ Block No. _____ Township _____
Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____
☒ See attached map.

3) TYPE OF WORK (Check): ☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): ☐ Domestic ☒ Industrial ☐ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ Other _____

5) DRILLING METHOD (Check): ☐ Driven ☒ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other _____

6) WELL LOG:
Date Drilling: Started 23 May 1988 Completed 21 June 1988

DIAMETER OF HOLE Dia. (in.)	From (ft.)	To (ft.)
8½	Surface	925
14 3/4 "		774
9 7/8	774	925

From (ft.)	To (ft.)	Description and color of formation material
		Drillers log is on back.
		Material log.Figures are from top of casing, 2' above GL.
		~~14" casing(.365 wall) set to 775'.~~
		Top of K Packer--- 753'.
		8" R&L collar--- 756', 8" lap to 775'
		~~Top of 8", PB, stainless, ribbed screen~~
		775' to 813'. 12 Ga.
		8", liner(.277) 813' to 851'.
		8" screen--- 851'to 865'. 14 Ga.
		~~8" liner--- 865' to 869'.~~
		8" screen---869' to 877'. 16 ga.
		8" liner to 927' with was plug, back pressure valve and NN on bottem.

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(Use reverse side if necessary)

7) BOREHOLE COMPLETION:
☐ Open Hole ☒ Straight Wall ☐ Underreamed
☐ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from _____ ft. to _____ ft.

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
		Material setting is to left.			

9) CEMENTING DATA (Rule 319.44(b))
Cemented from 773 ft. to GL ft. No. of Sacks Used 270 sks,8% jell
_____ ft. to _____ ft. No. of Sacks Used 100 sks neat on botten
Method used ~~Halliburton~~
Cemented by Halliburton thru drill pipe.

10) SURFACE COMPLETION
☒ Specified Surface Slab Installed [Rule 319.44(c)]
☐ Pitless Adapter Used [Rule 319.44(d)]
☐ Approved Alternative Procedure Used [Rule 319.71]

11) WATER LEVEL: Measurement taken at pump base
Static level ~~247'7"~~ ft. below land surface Date ~~8 Sept.88~~
Artesian flow _____ gpm. Date _____

12) PACKERS: Type Depth
~~8"x 10" Western Well Screen K Packer at 753'. 8" ∅ connection on top.LH thread on~~ bottem.

13) TYPE PUMP:
☒ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., ~~360'~~ ft.

14) WELL TESTS:
Type Test: ☒ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: ~~300~~ gpm with ~~45½~~ ft. drawdown after ~~24~~ hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☒ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☒ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 12 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME ~~B.J. Swinehart Co., Inc~~ (Type or Print) Water Well Driller's License No. ~~229~~

ADDRESS 7524 N. Freeway Houston, Texas 77037 (Street or RFD) (City) (State) (Zip)

(Signed) B.J. Swinehart (Licensed Water Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only
Well No. 65-15-8
Located on map _____

TWC-0392 (Rev. 08-10-85) TEXAS WATER COMMISSION COPY

65-15-921

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING PRIVILEGE OF CONFIDENTIALITY

The Water Well Drillers Board and the Texas Water Commission are concerned that some persons having water wells drilled may not be aware of the confidentiality privilege provision of Section 5 of the Water Well Drillers Act. Section 5, the Reporting of Well Logs, reads as follows:

> "Every licensed water well driller drilling, deepening or otherwise altering a water well within this State shall make and keep, or cause to be made and kept, a legible and accurate well log, and within 30 days from the completion or cessation of drilling, deepening or otherwise altering such a water well, shall deliver or transmit by certified mail a copy of such well log to the Commission, and the owner thereof or the person having had such well drilled. Each copy of a well log, other than a Commission copy, shall include the name, mailing address, and telephone number of the Board and the Commission. The well log required herein shall at the request in writing to the Commission, by certified mail, by the owner or the person having such well drilled be held as confidential matter and not made of public record."

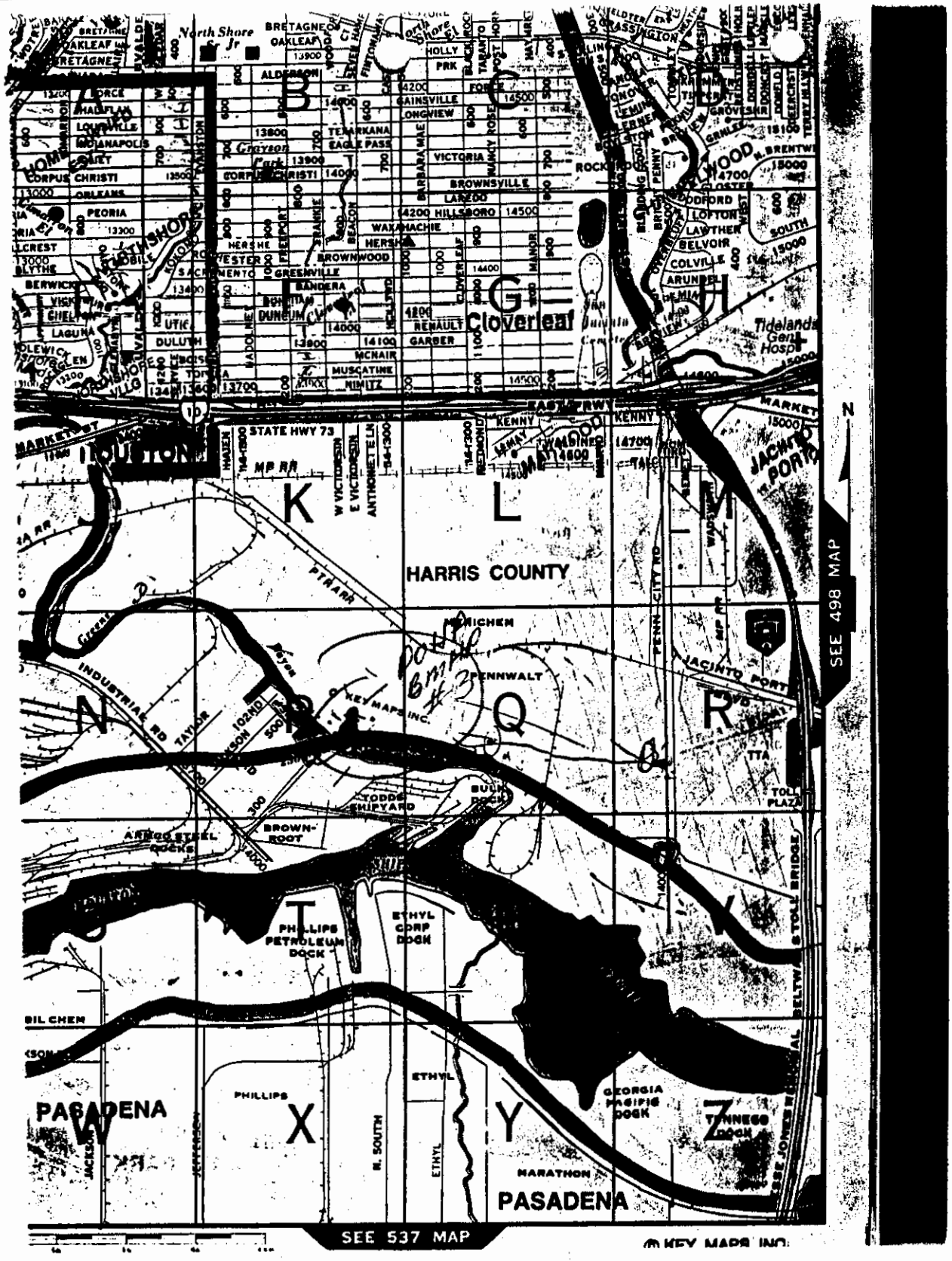
The last sentence specifies the means whereby you can, if you wish, assure that logs of your wells will be kept confidential.

Port of Houston Authority
Bulk Materials Handling Plant
Well # 3.

Drillers log--- Measurements taken top of Rotary table-5' above GL.

0' to 185'- rotary, clay with sand strks.
185' 208'- sand.
208 252'- red clay.
252' 264'- sand.
264' 272' clay.
272' 308' sand
308' 315' clay.
315' 415' sand.
415' 639' clay with sand layers.
639' 648' sand.
648' 655' clay.
655' 685' fine sand.
685' 718' clay.
718' 730' fine sand.
730' 766' clay.
766' 817' medium sand.'.
817' 848' clay.
848' 890' sand.
890' 930'. sand & clay.

0


HARRIS COUNTY
PASADENA
PASADENA
Cloverleaf
Tidelands Gen'l Hosp
SEE 498 MAP
SEE 537 MAP
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STATE HWY 73
MP RR
PTARR
INDUSTRIAL RD
TAYLOR
JACINTO PORT
PENN CITY RD
TODDS SHIPYARD
BULK DOCK
BROWN-ROOT
AMERICO STEEL DOCKS
PHILLIPS PETROLEUM DOCK
ETHYL CORP DOCK
GEORGIA PACIFIC DOCK
TENNECO DOCK
TOLL PLAZA
TOLL BRIDGE
MARATHON
PHILLIPS
ETHYL
R. SOUTH
BIL CHEM
MERICHEM
BRENNWALT
KEY MAPS INC.
TTA
MARKET
KENNY
WALLINER
BRETAGNE
OAKLEAF
ALDERSON
HOLLY PRK
FORGE
GAINSVILLE
LONGVIEW
TEXARKANA
EAGLE PASS
VICTORIA
BROWNSVILLE
LAREDO
HILLSBORO
WAXAHACHIE
HERSHE
BROWNWOOD
GREENVILLE
BANDERA
DONNITA
DUNCUM
RENAULT
GARBER
MCNAIR
MUSCATINE
MIMITZ
DULUTH
UTICA
LAGUNA
CHELTON
VISTA
BERWICK
BLYTHE
SACRAMENTO
CORPUS CHRISTI
ORLEANS
PEORIA
LOUISVILLE
INDIANAPOLIS
JOLIET
MOBILE
ROCKWOOD
BODFORD
LOFTON
LAWTHER
BELVOIR
COLVILLE
ARUNDEL
BEMIA
SOUTH
N. BRENTWD
GRAYSON
Park
North Shore Jr
W VICTORIA
E VICTORIA
ANTOINETTE LN
REDMOND
HAVEN
WADE
PENNY
BRIDGE
GRANLEY
GROVESHR
TERRY BLVD
DOMELO
DOMCEST
MAYFIELD
ROSEMARY
BARBARA MAE
NANCY ROSE
TARANTO
BLACK ROCK
MAYFIELD
WOODCREST
SILVER MAPLE
FINTONAVE
BEACON
FREEPORT
FRANKIE
MADONNE
CLOVER LAF
MANOR
HOLLY
WOODCREST
BRIDGE
BRIDGE
BRIDGE

EDNA WOOD LABORATORIES, INC

WATER TECHNOLOGISTS · · CHEMISTS · · MICROBIOLOGISTS

25 August 1988

To: B. J. Swinehart Company
7524 North Freeway
Houston, Texas 77037

For: Mr. B. J. Swinehart

Sample marked: Port of Houston Authority - Well NWBHHP taken 8-23-88, after one hour pumping at 300 GPM

Received: 8-23-88

WATER ANALYSIS

results in parts per million (mg/l) except as noted

Dissolved Residue at 350° C		347	Conductance, micromhos/cm, 25°C		600
Total Dissolved Solids, actual†		407	Color, units		0
Total Dissolved Solids, calc.		498	Turbidity, units		0.55
Silica	SiO_2	13	As Calcium Carbonate, $CaCO_3$:		
Calcium	Ca	8	*Phenolphthalein Alkalinity*		0
Magnesium	Mg	1	Total Alkalinity		242
Sodium (diff.) Na + K as	Na	131	*Total Hardness*		25
Carbonate	CO_3	0	Free Carbon Dioxide	CO_2	< 1
Bicarbonate	HCO_3	295	pH . . . 8.37		
Sulfate	SO_4	0	HYPOTHETICAL COMBINATIONS		
Chloride	Cl	49			
Total Fluoride	F	1.0			
Total Nitrate	NO_3	< 0.04			
Total Manganese	Mn	< 0.02			
Total Iron	Fe	0.1			
Iron, filtered sample	Fe	-			

†Total Dissolved Solids, actual = Dissolved Residue + 50.8% of bicarbonate (HCO_3) ion

EDNA WOOD LABORATORIES, INC.

By: Alice Perry

Alice Perry, Supervising Chemist

53

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-921

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515921
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.755556
Latitude (degrees minutes seconds)	29° 45' 20" N
Longitude (decimal degrees)	-95.161112
Longitude (degrees minutes seconds)	095° 09' 40" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	0
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	925
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	6/21/1988
Drilling Method	Mud (Hydraulic) Rotary
Borehole Completion	Screened

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Port OfHouston AuthorityWell # 3
Driller	Swinehart
Other Data Available	Drillers Log; Induction; Lateral Log
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1010336A
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	4/6/1990
Last Update Date	9/12/1997

Remarks	Cemented to 773 ft. Tested at 300 gpm with 45.5 ft drawdown.

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
14	Blank	Steel			0	775
8	Screen	Steel			775	813
8	Screen	Steel			851	877
8	Blank	Steel			877	925

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

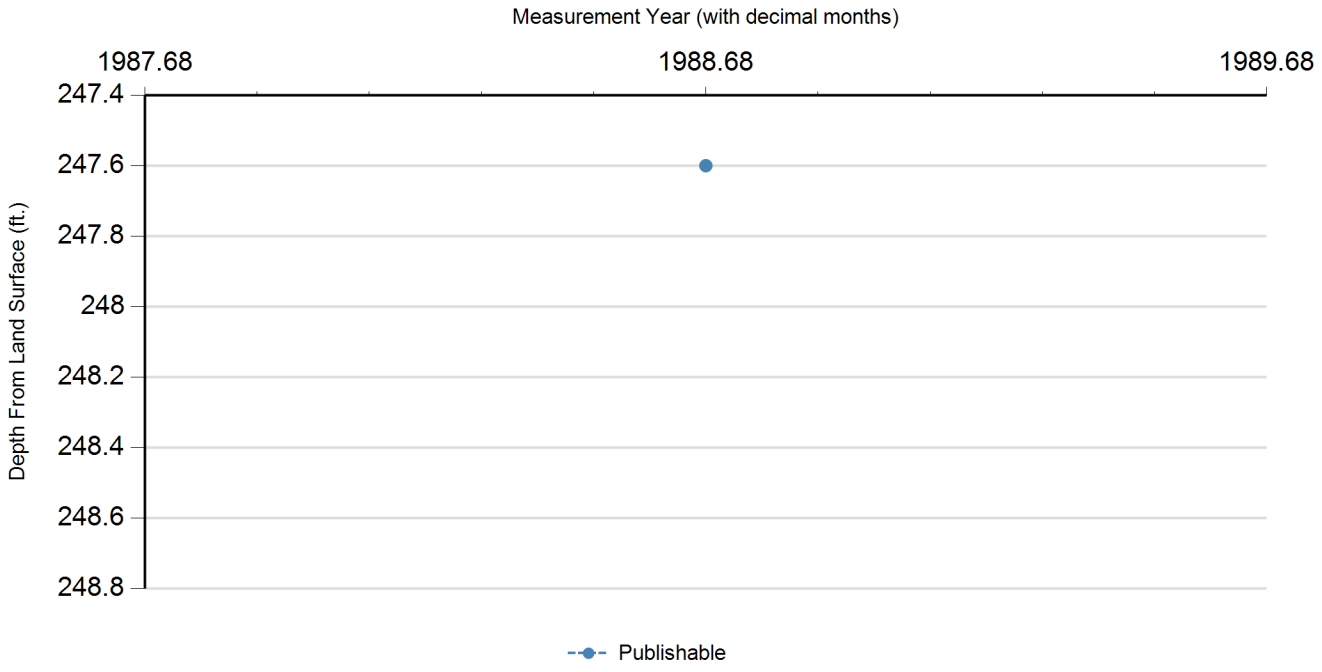
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/8/1988		247.6		-247.6	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 8/23/1988 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:** Registered Water Well Driller

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: Edna Wood Lab **Reliability:**

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		242	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		295.32	mg/L	
00910	CALCIUM (MG/L)		8	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		42	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		1	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		24	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		1	mg/L	
01055	MANGANESE, TOTAL (UG/L AS MN)	<	20	ug/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)	<	0.04	mg/L as NO3	
00400	PH (STANDARD UNITS), FIELD		8.3	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		4.36		
00955	SILICA, DISSOLVED (MG/L AS SI02)		13	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		11.61		
00932	SODIUM, CALCULATED, PERCENT		92	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)	calculated	131	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		600	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		8	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		349	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523102

~~43-30~~
~~15~~

WRD Exp. (SW)
April 1966

Well No J-65-23-102

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

MASTER CARD

Record by T.R.F. 1951? (G.D. McAdoo) Source of data File Date 1-22-68 Map Pasadena 1955 (1:24000)

State Texas [48] County (or town) Harris [LJ]

Latitude: 29 43 48 N (deg, min, sec) Longitude: 095 13 18 (degrees, min, sec) Sequential number: 1

Lat-long accuracy: 1 T. ___ S, R ___ W, Sec ___, ___ ¼, ___ ¼, ___ ¼

Local well number: LJ-65-23-102 Other number: Owner #7 (B & M) 6-89

Local use: Owner or name: West well, Ref. Texaco, Inc

Owner or name: Address:

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist [N]

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Mad, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other Seldom used [N]

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed [W]

DATA AVAILABLE: Well data 1 Freq. W/L meas.: Quarterly 1947 [Q] Field aquifer char.

Hyd. lab. data:

Qual. water data; type:

Freq. sampling: Pumpage inventory: yes no, period:

Aperture cards: yes

Log data: E-Log (CC-31) [E]

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 1410 ft [1410] Meas. (rept) Driller accuracy [3]

Depth cased: (first perf.) 697 ft [697] Casing type: S; Diam. 18-10 in [18]

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) other [G]

Method Drilled: (A) air rot, (B) hored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotery, (T) trenching, (V) driven, (W) drive wash, (Z) other [H]

Date Drilled: 12-1-45 [945] Pump intake setting: 420 (1952) ft [420]

Driller: Loyne-Texas Co. (name), Houston, Texas (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other [T] Deep Shallow [D]

Power (type): diesel, (elec) nat gas, gasoline, hand, LP gas, wind; H.P. 150 [W] Trans. or meter no.

Descrip. MP ___ ft above below LSD, Alt. MP

Alt. LSD: 15 [15] Accuracy: (source) Topo 5' [3]

Water Level — ft above below MP; Ft above below LSD Accuracy: —

Date meas: 12-45 Yield: 1084 gpm [1084] Method determined

Drawdown: 53 ft Accuracy: Pent. 1945 [3] Pumping period ___ hrs

QUALITY OF WATER DATA: Iron ___ ppm Sulfate ___ ppm Chloride ___ ppm Hard. ___ ppm

Sp. Conduct ___ K x 10^6 Temp. ___ °F Date sampled

Taste, color, etc.

Well No. LJ-65-23-102

Well No. LJ-65-23-102

Latitude-longitude 29 d, 43 m, 48 s N 095 d, 13 m, 18 s W

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) Physiographic Province: Coastal Plain 03 (20–21) Section: West

G.C.P. E (22) Drainage Basin: 511R (23–25) Subbasin: (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat (27)

MAJOR AQUIFER: system, series T (28–29) aquifer, formation, group E (30–31)

Lithology: (32–33) Origin: (34) Aquifer Thickness: ft

(35–37) Length of well open to: 230 ft 230 (38–40) Depth to top of: ft (41–43)

MINOR AQUIFER: system, series (44–45) aquifer, formation, group (46–47)

Lithology: (48–49) Origin: (50) Aquifer Thickness: ft

(51–53) Length of well open to: ft (54–56) Depth to top of: ft (57–59)

Intervals Screened: *Screen opp sand: 697-1371.

Depth to consolidated rock: ft (60–63) Source of data: (64)

Depth to basement: ft (65–68) Source of data: (69)

Surficial material: (70–71) Infiltration characteristics: (72)

Coefficient Trans: gpd/ft (73–75) Coefficient Storage: (76–78)

Coefficient Perm: gpd/ft^2; Spec cap: gpm/ft; Number of geologic cards: (79)

0-600' = 18" csg- 116' of lap
484-1410 = 10" csg.

* Screen.
697-707 - 10
727-747 - 20
767-797 - 30
837-847 - 10
871-882 - 11
947-972 - 25
988-999 - 11
1056-1068 - 12
1088-1099 - 11
1118-1148 - 30
1311-1371 - 60

Well No. LJ-65-23-102

GPO 857-700

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-102

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523102
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.730278
Latitude (degrees minutes seconds)	29° 43' 49" N
Longitude (decimal degrees)	-95.221944
Longitude (degrees minutes seconds)	095° 13' 19" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	15
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1410
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1945
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Historical
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Texasco Inc
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	2/4/1999
Last Update Date	2/4/1999

Remarks	230 ft of screen between 697 and 1371 ft. Reported yield 1084 gpm with 53 ft drawdown when drilled. Well 7.

Casing - No Data

Well Tests - No Data

Lithology - No Data

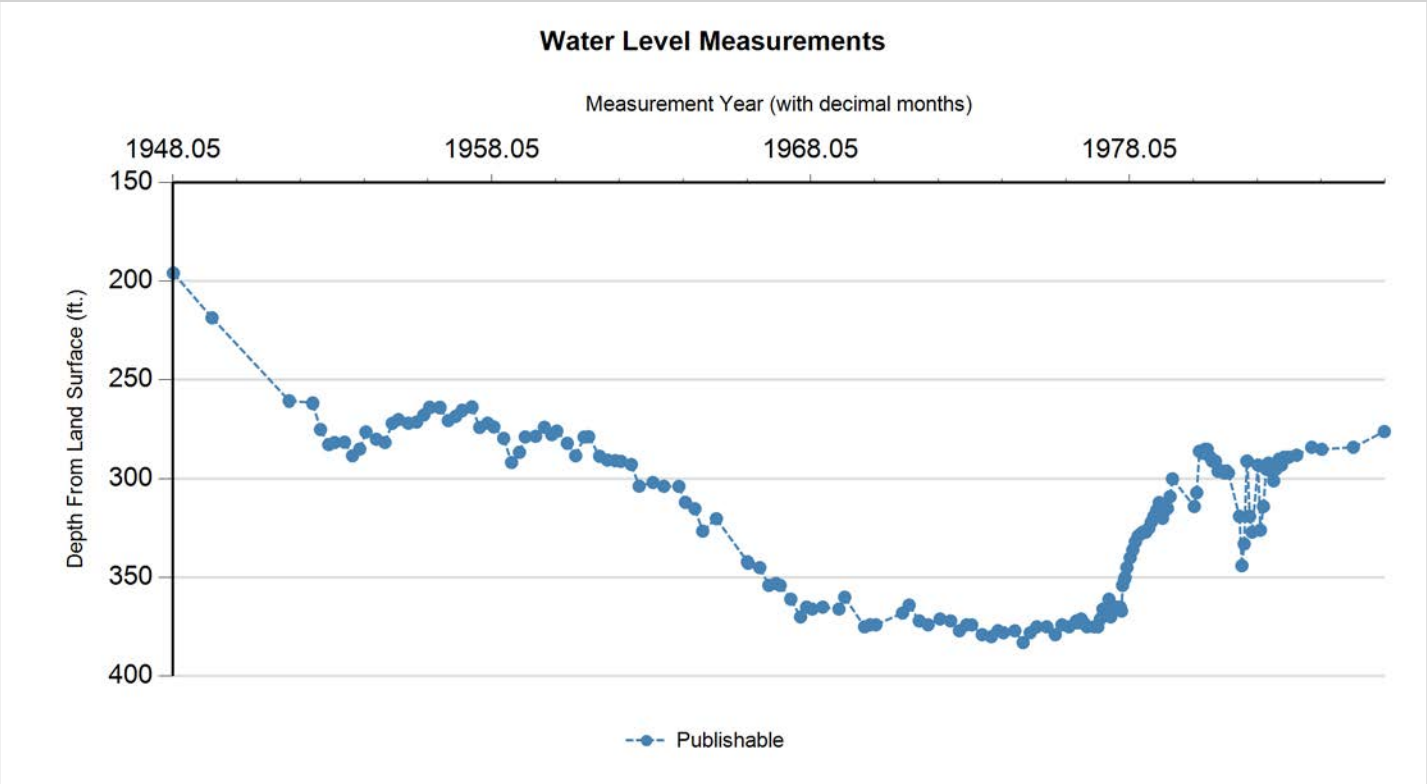
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	12/0/1947		196		-181	1	Other or Source of Measurement Unknown	Unknown		
P	4/11/1949		218.68	22.68	-203.68	1	U.S. Geological Survey	Steel Tape		
P	9/14/1951		260.7	42.02	-245.7	1	U.S. Geological Survey	Steel Tape		
P	6/9/1952		261.8	1.10	-246.8	1	U.S. Geological Survey	Steel Tape		
P	9/8/1952		275	13.20	-260	1	U.S. Geological Survey	Steel Tape		
P	12/12/1952		282.63	7.63	-267.63	1	U.S. Geological Survey	Steel Tape		
P	2/13/1953		281.57	(1.06)	-266.57	1	U.S. Geological Survey	Steel Tape		
P	6/8/1953		281.39	(0.18)	-266.39	1	U.S. Geological Survey	Steel Tape		
P	9/9/1953		288.29	6.90	-273.29	1	U.S. Geological Survey	Steel Tape		
P	12/2/1953		284.89	(3.40)	-269.89	1	U.S. Geological Survey	Steel Tape		
P	2/8/1954		276.23	(8.66)	-261.23	1	U.S. Geological Survey	Steel Tape		
P	6/7/1954		279.91	3.68	-264.91	1	U.S. Geological Survey	Steel Tape		
P	9/16/1954		281.57	1.66	-266.57	1	U.S. Geological Survey	Steel Tape		
P	12/9/1954		271.84	(9.73)	-256.84	1	U.S. Geological Survey	Steel Tape		
P	2/15/1955		269.95	(1.89)	-254.95	1	U.S. Geological Survey	Steel Tape		
P	6/8/1955		271.78	1.83	-256.78	1	U.S. Geological Survey	Steel Tape		
P	9/13/1955		271.22	(0.56)	-256.22	1	U.S. Geological Survey	Steel Tape		
P	12/5/1955		267.6	(3.62)	-252.6	1	U.S. Geological Survey	Steel Tape		
P	2/7/1956		264	(3.60)	-249	1	U.S. Geological Survey	Steel Tape		
P	6/5/1956		264.01	0.01	-249.01	1	U.S. Geological Survey	Steel Tape		
P	9/10/1956		270.46	6.45	-255.46	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	12/5/1956		268.32	(2.14)	-253.32	1	U.S. Geological Survey	Steel Tape		
P	2/11/1957		265.5	(2.82)	-250.5	1	U.S. Geological Survey	Steel Tape		
P	6/6/1957		263.81	(1.69)	-248.81	1	U.S. Geological Survey	Steel Tape		
P	9/5/1957		273.93	10.12	-258.93	1	U.S. Geological Survey	Steel Tape		
P	12/6/1957		271.76	(2.17)	-256.76	1	U.S. Geological Survey	Steel Tape		
P	2/11/1958		273.67	1.91	-258.67	1	U.S. Geological Survey	Steel Tape		
P	6/4/1958		279.5	5.83	-264.5	1	U.S. Geological Survey	Steel Tape		
P	9/5/1958		291.69	12.19	-276.69	1	U.S. Geological Survey	Steel Tape		
P	12/5/1958		286.53	(5.16)	-271.53	1	U.S. Geological Survey	Steel Tape		
P	2/6/1959		278.72	(7.81)	-263.72	1	U.S. Geological Survey	Steel Tape		
P	6/4/1959		278.42	(0.30)	-263.42	1	U.S. Geological Survey	Steel Tape		
P	9/15/1959		273.83	(4.59)	-258.83	1	U.S. Geological Survey	Steel Tape		
P	12/10/1959		277.58	3.75	-262.58	1	U.S. Geological Survey	Steel Tape		
P	2/2/1960		275.76	(1.82)	-260.76	1	U.S. Geological Survey	Steel Tape		
P	6/2/1960		281.94	6.18	-266.94	1	U.S. Geological Survey	Steel Tape		
P	9/8/1960		288.31	6.37	-273.31	1	U.S. Geological Survey	Steel Tape		
P	12/15/1960		278.8	(9.51)	-263.8	1	U.S. Geological Survey	Steel Tape		
P	2/2/1961		278.6	(0.20)	-263.6	1	U.S. Geological Survey	Steel Tape		
P	6/7/1961		288.54	9.94	-273.54	1	U.S. Geological Survey	Steel Tape		
P	9/6/1961		290.44	1.90	-275.44	1	U.S. Geological Survey	Steel Tape		
P	12/6/1961		290.77	0.33	-275.77	1	U.S. Geological Survey	Steel Tape		
P	2/6/1962		291.11	0.34	-276.11	1	U.S. Geological Survey	Steel Tape		
P	6/5/1962		292.71	1.60	-277.71	1	U.S. Geological Survey	Steel Tape		
P	9/5/1962		303.7	10.99	-288.7	1	U.S. Geological Survey	Steel Tape		
P	2/7/1963		301.81	(1.89)	-286.81	1	U.S. Geological Survey	Steel Tape		
P	6/12/1963		303.74	1.93	-288.74	1	U.S. Geological Survey	Steel Tape		
P	12/5/1963		303.8	0.06	-288.8	1	U.S. Geological Survey	Steel Tape		
P	2/14/1964		311.9	8.10	-296.9	1	U.S. Geological Survey	Steel Tape		
P	6/3/1964		315.16	3.26	-300.16	1	U.S. Geological Survey	Steel Tape		
P	9/2/1964		326.5	11.34	-311.5	1	U.S. Geological Survey	Steel Tape		
P	2/3/1965		320.19	(6.31)	-305.19	1	U.S. Geological Survey	Steel Tape		
P	12/0/1965		342	21.81	-327	1	U.S. Geological Survey	Steel Tape		
P	2/3/1966		342.8	0.80	-327.8	1	U.S. Geological Survey	Steel Tape		
P	6/15/1966		345	2.20	-330	1	U.S. Geological Survey	Air Line		
P	9/29/1966		354	9.00	-339	1	U.S. Geological Survey	Air Line		
P	12/20/1966		353	(1.00)	-338	1	U.S. Geological Survey	Air Line		
P	2/3/1967		354	1.00	-339	1	U.S. Geological Survey	Air Line		
P	6/5/1967		361	7.00	-346	1	U.S. Geological Survey	Air Line		
P	9/27/1967		370	9.00	-355	1	U.S. Geological Survey	Air Line		
P	12/6/1967		365	(5.00)	-350	1	U.S. Geological Survey	Air Line		
P	2/5/1968		366	1.00	-351	1	U.S. Geological Survey	Air Line		
P	6/6/1968		365	(1.00)	-350	1	U.S. Geological Survey	Air Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	12/11/1968		366	1.00	-351	1	U.S. Geological Survey	Air Line		
P	2/12/1969		360	(6.00)	-345	1	U.S. Geological Survey	Air Line		
P	9/29/1969		375	15.00	-360	1	U.S. Geological Survey	Air Line		
P	12/2/1969		374	(1.00)	-359	1	U.S. Geological Survey	Air Line		
P	2/4/1970		374	0.00	-359	1	U.S. Geological Survey	Air Line		
P	12/9/1970		368	(6.00)	-353	1	U.S. Geological Survey	Air Line		
P	2/19/1971		364	(4.00)	-349	1	U.S. Geological Survey	Air Line		
P	6/15/1971		372	8.00	-357	1	U.S. Geological Survey	Air Line		
P	9/27/1971		374	2.00	-359	1	U.S. Geological Survey	Air Line		
P	2/8/1972		371	(3.00)	-356	1	U.S. Geological Survey	Air Line		
P	6/9/1972		372	1.00	-357	1	U.S. Geological Survey	Air Line		
P	9/20/1972		377	5.00	-362	1	U.S. Geological Survey	Air Line		
P	12/13/1972		374	(3.00)	-359	1	U.S. Geological Survey	Air Line		
P	2/5/1973		374	0.00	-359	1	U.S. Geological Survey	Air Line		
P	6/6/1973		379	5.00	-364	1	U.S. Geological Survey	Air Line		
P	9/20/1973		380	1.00	-365	1	U.S. Geological Survey	Air Line		
P	12/7/1973		377	(3.00)	-362	1	U.S. Geological Survey	Air Line		
P	2/4/1974		378	1.00	-363	1	U.S. Geological Survey	Air Line		
P	6/14/1974		377	(1.00)	-362	1	U.S. Geological Survey	Air Line		
P	9/19/1974		383	6.00	-368	1	U.S. Geological Survey	Air Line		
P	12/10/1974		378	(5.00)	-363	1	U.S. Geological Survey	Air Line		
P	2/20/1975		375	(3.00)	-360	1	U.S. Geological Survey	Air Line		
P	6/16/1975		375	0.00	-360	1	U.S. Geological Survey	Air Line		
P	9/22/1975		379	4.00	-364	1	U.S. Geological Survey	Air Line		
P	12/8/1975		374	(5.00)	-359	1	U.S. Geological Survey	Air Line		
P	2/23/1976		375	1.00	-360	1	U.S. Geological Survey	Air Line		
P	5/20/1976		372	(3.00)	-357	1	U.S. Geological Survey	Air Line		
P	6/4/1976		373	1.00	-358	1	U.S. Geological Survey	Air Line		
P	7/13/1976		371	(2.00)	-356	1	U.S. Geological Survey	Air Line		
P	8/10/1976		373	2.00	-358	1	U.S. Geological Survey	Air Line		
P	9/2/1976		374	1.00	-359	1	U.S. Geological Survey	Air Line		
P	9/21/1976		375	1.00	-360	1	U.S. Geological Survey	Air Line		
P	12/16/1976		375	0.00	-360	1	U.S. Geological Survey	Air Line		
P	1/19/1977		375	0.00	-360	1	U.S. Geological Survey	Air Line		
P	2/18/1977		371	(4.00)	-356	1	U.S. Geological Survey	Air Line		
P	3/17/1977		366	(5.00)	-351	1	U.S. Geological Survey	Air Line		
P	5/26/1977		361	(5.00)	-346	1	U.S. Geological Survey	Air Line		
P	6/16/1977		370	9.00	-355	1	U.S. Geological Survey	Air Line		
P	7/13/1977		367	(3.00)	-352	1	U.S. Geological Survey	Air Line		
P	8/15/1977		365	(2.00)	-350	1	U.S. Geological Survey	Air Line		
P	9/20/1977		365	0.00	-350	1	U.S. Geological Survey	Air Line		
P	10/5/1977		365	0.00	-350	1	U.S. Geological Survey	Air Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	10/21/1977		367	2.00	-352	1	U.S. Geological Survey	Air Line		
P	11/2/1977		354	(13.00)	-339	1	U.S. Geological Survey	Air Line		
P	11/23/1977		351	(3.00)	-336	1	U.S. Geological Survey	Steel Tape		
P	12/1/1977		350	(1.00)	-335	1	U.S. Geological Survey	Steel Tape		
P	12/22/1977		345	(5.00)	-330	1	U.S. Geological Survey	Air Line		
P	1/24/1978		340	(5.00)	-325	1	U.S. Geological Survey	Air Line		
P	2/24/1978		336	(4.00)	-321	1	U.S. Geological Survey	Air Line		
P	3/23/1978		332	(4.00)	-317	1	U.S. Geological Survey	Air Line		
P	4/24/1978		329	(3.00)	-314	1	U.S. Geological Survey	Air Line		
P	5/22/1978		328	(1.00)	-313	1	U.S. Geological Survey	Air Line		
P	6/19/1978		327	(1.00)	-312	1	U.S. Geological Survey	Air Line		
P	7/25/1978		327	0.00	-312	1	U.S. Geological Survey	Air Line		
P	8/28/1978		325	(2.00)	-310	1	U.S. Geological Survey	Air Line		
P	9/25/1978		322	(3.00)	-307	1	U.S. Geological Survey	Air Line		
P	10/25/1978		319	(3.00)	-304	1	U.S. Geological Survey	Air Line		
P	11/27/1978		316	(3.00)	-301	1	U.S. Geological Survey	Air Line		
P	12/26/1978		312	(4.00)	-297	1	U.S. Geological Survey	Air Line		
P	1/29/1979		320	8.00	-305	1	U.S. Geological Survey	Air Line		
P	2/27/1979		316	(4.00)	-301	1	U.S. Geological Survey	Air Line		
P	3/26/1979		315	(1.00)	-300	1	U.S. Geological Survey	Air Line		
P	4/26/1979		309	(6.00)	-294	1	U.S. Geological Survey	Air Line		
P	5/23/1979		300	(9.00)	-285	1	U.S. Geological Survey	Air Line		
P	1/28/1980		314	14.00	-299	1	U.S. Geological Survey	Air Line		
P	2/26/1980		307	(7.00)	-292	1	U.S. Geological Survey	Air Line		
P	3/26/1980		286	(21.00)	-271	1	U.S. Geological Survey	Air Line		
P	4/28/1980		287	1.00	-272	1	U.S. Geological Survey	Air Line		
P	5/30/1980		285	(2.00)	-270	1	U.S. Geological Survey	Air Line		
P	6/26/1980		285	0.00	-270	1	U.S. Geological Survey	Air Line		
P	7/29/1980		289	4.00	-274	1	U.S. Geological Survey	Air Line		
P	8/25/1980		291	2.00	-276	1	U.S. Geological Survey	Air Line		
P	9/30/1980		291	0.00	-276	1	U.S. Geological Survey	Unknown		
P	10/30/1980		296.16	5.16	-281.16	1	U.S. Geological Survey	Steel Tape		
P	11/28/1980		295.81	(0.35)	-280.81	1	U.S. Geological Survey	Steel Tape		
P	1/5/1981		297	1.19	-282	1	U.S. Geological Survey	Air Line		
P	2/2/1981		296	(1.00)	-281	1	U.S. Geological Survey	Air Line		
P	2/23/1981		297	1.00	-282	1	U.S. Geological Survey	Air Line		
P	6/30/1981		319	22.00	-304	1	U.S. Geological Survey	Unknown		
P	7/28/1981		344	25.00	-329	1	U.S. Geological Survey	Unknown		
P	8/24/1981		333	(11.00)	-318	1	U.S. Geological Survey	Unknown		
P	9/24/1981		291	(42.00)	-276	1	U.S. Geological Survey	Unknown		
P	9/30/1981		291	0.00	-276	1	U.S. Geological Survey	Air Line		
P	10/27/1981		319	28.00	-304	1	U.S. Geological Survey	Air Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	11/25/1981		327	8.00	-312	1	U.S. Geological Survey	Air Line		
P	1/28/1982		293	(34.00)	-278	1	U.S. Geological Survey	Air Line		
P	2/24/1982		326	33.00	-311	1	U.S. Geological Survey	Air Line		
P	3/29/1982		314	(12.00)	-299	1	U.S. Geological Survey	Air Line		
P	4/30/1982		295	(19.00)	-280	1	U.S. Geological Survey	Air Line		
P	5/27/1982		292	(3.00)	-277	1	U.S. Geological Survey	Air Line		
P	6/21/1982		296	4.00	-281	1	U.S. Geological Survey	Air Line		
P	7/26/1982		301	5.00	-286	1	U.S. Geological Survey	Air Line		
P	8/23/1982		295	(6.00)	-280	1	U.S. Geological Survey	Air Line		
P	9/28/1982		290	(5.00)	-275	1	U.S. Geological Survey	Air Line		
P	10/25/1982		293	3.00	-278	1	U.S. Geological Survey	Air Line		
P	11/26/1982		289	(4.00)	-274	1	U.S. Geological Survey	Air Line		
P	1/13/1983		289	0.00	-274	1	U.S. Geological Survey	Air Line		
P	4/15/1983		288	(1.00)	-273	1	U.S. Geological Survey	Air Line		
P	10/7/1983		284	(4.00)	-269	1	U.S. Geological Survey	Air Line		
P	1/26/1984		285	1.00	-270	1	U.S. Geological Survey	Air Line		
P	1/23/1985		284	(1.00)	-269	1	U.S. Geological Survey	Steel Tape		
P	1/13/1986		276	(8.00)	-261	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523119

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 23 119 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 44 57 Longitude - 95 12 44 Source of Coords - 1

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Armco Steel Corp Driller - Layne Texas

Address _____ Tenant/Oper. _____
Date Drilled - / /1970 Depth - 1,711 ft. Source of Depth - Altitude - 29 ft. Source of Alt. -
Aquifer - 121EVGL EVANGELINE AQUIFER Well Type - W User -

WELL CONSTRUCTION Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (
Open Hole (O)
Cemented from_____to_____

Diam. (in.)	Setting(feet) From	To

LIFT DATA - Pump Mfr. _____ Type - TURBINE PUMP No. Stages ____

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower -

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- INDUSTRIAL Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- M Quality- Y Logs- Other Data-

WATER LEVELS Date- 06/10/1970 Measurement- -413.00
Date- / / Measurement-

Recorded By _____ Date Record Collected or Updated- / /

Reporting Agency -
REMARKS -
395 ft of screen between 790 and
1690 ft. Reported yield 1467 gpm
with 76 ft drawdown when drilled.
Well 11.

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-119

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523119
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.749167
Latitude (degrees minutes seconds)	29° 44' 57" N
Longitude (decimal degrees)	-95.212223
Longitude (degrees minutes seconds)	095° 12' 44" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	29
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1711
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1970
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Armco Steel Corp
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	395 ft of screen between 790 and 1690 ft. Reported yield 1467 gpm with 76 ft drawdown when drilled. Well 11.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	6/10/1970		413		-384	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-119

Water Quality Analysis

Sample Date: 6/10/1970 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		246.72	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		301	mg/L	
00910	CALCIUM (MG/L)		12	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		43	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		42	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		3	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.1	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		4.08		
00955	SILICA, DISSOLVED (MG/L AS SI02)		14	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		8.36		
00932	SODIUM, CALCULATED, PERCENT		86	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		125	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		605	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		7	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		352	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523151

Texas Water Development Board
Well Schedule

State Well Number 6523151 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **Zone** 1 **Latitude** 294249 **Longitude** 951245 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
City of Pasadena

Driller
McMasters and
Pomeroy

Address _____ **Tenant/Oper.** _____

Date Drilled / /1930 **Depth** 834 **Source of Depth** **Altitude** 27 **Source of Alt.**

Well Type W **User** 651900

WELL CONSTRUCTION

Const-Method

Completion

Casing Material Blank

Screen Material Blank

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from_____**to**_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** NONE **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** blank **Horsepower -**

YIELD Flow- _____ **GPM** **Pump** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** UNUSED **Secondary -** blank **Tertiary -** blank

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** Y **Logs -** **Other Data -**

WATER LEVELS 2 measurements
1937 to 1951
MIN -280.9 MAX -111.7

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency

REMARKS -
60 ft of screen between 700 and 834
ft. Reported yield 365 gpm in 1941
Well destroyed. Well 1.

Aquifer - 121EVGL **ID -** 15

EVANGELINE
AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-151

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523151
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.713612
Latitude (degrees minutes seconds)	29° 42' 49" N
Longitude (decimal degrees)	-95.212501
Longitude (degrees minutes seconds)	095° 12' 45" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	27
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	834
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1930
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Plugged or Destroyed
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	City of Pasadena
Driller	McMasters and Pomeroy
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	Historical production well 1
Other Well Number	Historical Id 1187
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	60 ft of screen between 700 and 834 ft. Reported yield 365 gpm in 1941 Well destroyed. Well 1.

Casing - No Data

Well Tests - No Data

Lithology - No Data

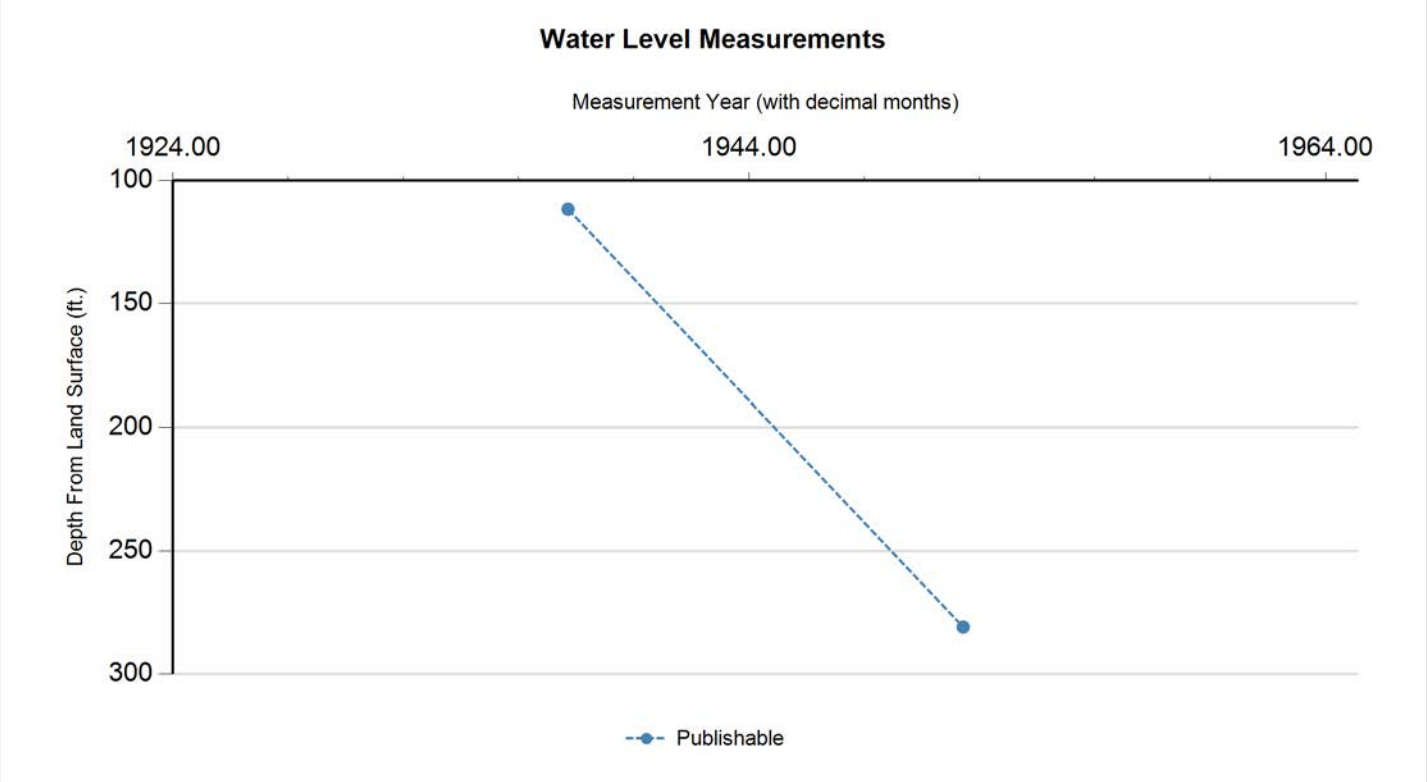
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/22/1937		111.7		-84.7	1	U.S. Geological Survey	Steel Tape		
P	6/7/1951		280.9	169.20	-253.9	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 1/18/1939 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		429.39	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		524	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		36	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.6	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		66	mg/L as CACO3	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0.1	mg/L as NO3	
00929	SODIUM, TOTAL (MG/L AS NA)		197	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		12	mg/L as SO4	

Water Quality Analysis

Sample Date: 8/5/1939 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		200	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		244	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		37	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.6	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		69	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		91	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		12	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		275	mg/L	

Water Quality Analysis

Sample Date: 5/21/1940 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		203.28	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		248	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		36	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		74	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		91	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		18	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		289	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523204

Texas Water Development Board
Well Schedule

State Well Number 6523204 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **Zone** 1 **Latitude** 294312 **Longitude** 951221 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Crown Central Pet. Co.
well #9

Driller
Layne Texas Co.

Address _____ **Tenant/Oper.** _____

Date Drilled / /1950 **Depth** 1274 **Source of Depth** R **Altitude** 32 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION **Const-Method** **Casing Material** **Screen Material** **Completion**

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- _____**GPM** **Pump** _____**GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** N **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1950
-288

Recorded By _____ **Date Record Collected or Updated -** 07/18/2003

Reporting Agency 02

REMARKS -
TWDB R178: 197ft. of screen between
816 and 1,263ft.

Aquifer - 121EVGL **ID -** 15
EVANGELINE
AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-204

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523204
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.72
Latitude (degrees minutes seconds)	29° 43' 12" N
Longitude (decimal degrees)	-95.205834
Longitude (degrees minutes seconds)	095° 12' 21" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	32
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1274
Well Depth Source	Person Other than Owner
Drilling Start Date	
Drilling End Date	0/0/1950
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Crown Central Pet. Co. well #9
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	7/18/2003
Last Update Date	7/18/2003

Remarks	TWDB R178: 197ft. of screen between 816 and 1,263ft.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

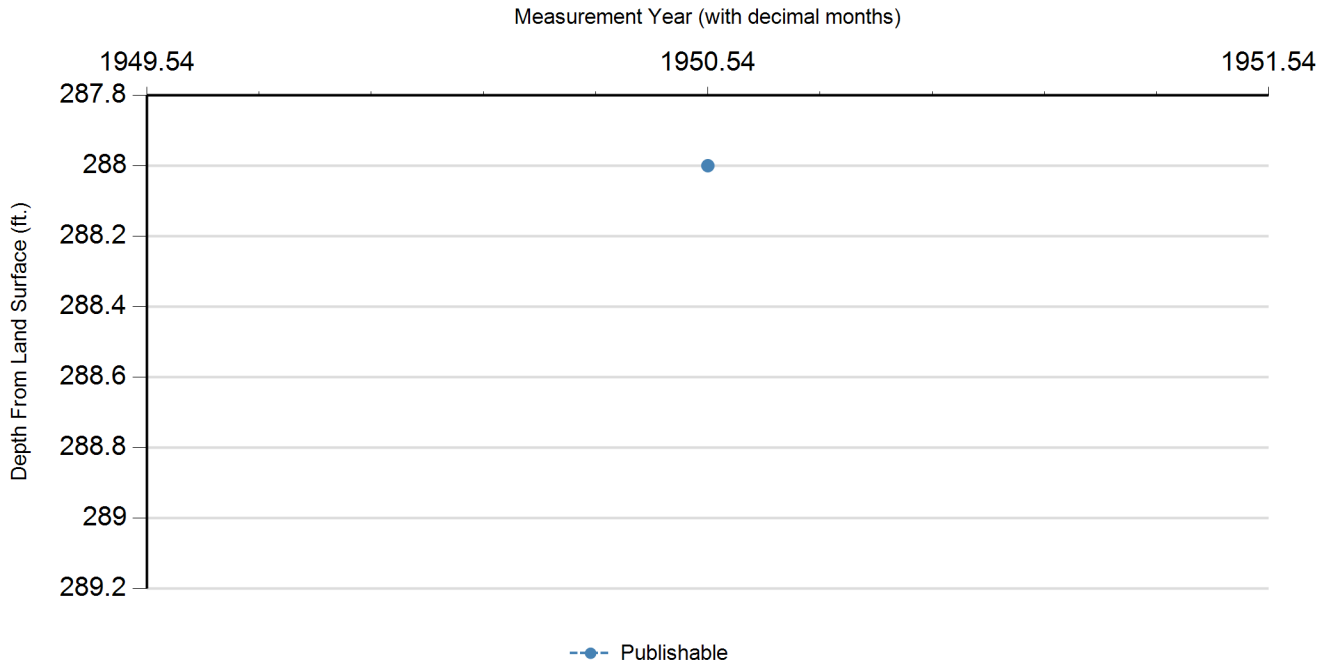
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	7/17/1950		288		-256	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523216

Texas Water Development Board
Well Schedule

State Well Number 6523216 **Previous Well Number** #3 **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294442 **Longitude** 951034 **Source of Coords** 1

Owner's Well No. _____ **Location** _____

Owner
Phillips 66 Co.
Houston Chemical

Driller
McMasters & Pomeroy

Address _____ **Tenant/Oper.** _____

Date Drilled 06/09/1943 **Depth** 639 **Source of Depth** D **Altitude** 10 **Source of Alt.** M

Well Type W **User** 667400

WELL CONSTRUCTION

Const-Method

Casing Material

Screen Material

Completion blank

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from_____**to**_____

LIFT DATA - Pump Mfr. - _____ **Type -** NONE **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** **Horsepower -**

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** UNUSED **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** N **Quality -** N **Logs -** **Other Data -**

WATER LEVELS

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency 02

REMARKS -

Aquifer - 112CHCTL **ID -** 15

CHICOT
AQUIFER,LOWER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-216

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523216
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.745
Latitude (degrees minutes seconds)	29° 44' 42" N
Longitude (decimal degrees)	-95.176111
Longitude (degrees minutes seconds)	095° 10' 34" W
Coordinate Source	+/- 1 Second
Aquifer Code	112CHCTL - Chicot Aquifer, Lower
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	10
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	639
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	6/9/1943
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	None
Water Quality Available	No
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Phillips 66 Co. Houston Chemical
Driller	McMasters & Pomeroy
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	1/25/1999
Last Update Date	1/25/1999

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523214

WRD Exp. (GW)
April 1966

Well No. -65-23-214

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

0

MASTER CARD

Record by C.W. BONNET WINSLOW WESSELMAN-1962 Source of data FILE Date 10-11-68 Map PASADENA 1955 1:24000

State TEXAS 48 County (or town) HARRIS LJ

Latitude: 29 44 09 N (deg, min, sec) Longitude: 095 10 55 (degrees, min, sec) Sequential number: 1

Lat-long accuracy: 1 T. ___ N S, R ___ E W, Sec ___, ___ ¼, ___ ¼, ___ ¼ B & M

Local well number: LJ-65-23-214 Other number:

Local use: Owner or name: PHILLIPS FHRN. #5

Owner or name: PHILLIPS ~~BETR~~ Address: PASADENA, TEXAS

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist N

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other standby pumped once a week (1hr.) N

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed W

DATA AVAILABLE: Well data ___ Freq. W/L meas.: 1952 - - - I Field aquifer char. ___

Hyd. lab. data: ___

Qual. water data; type: ___

Freq. sampling: ___ A Pumpage inventory: yes no, period: ___

Aperture cards: ___ yes

Log data: E-LOG CC-12 E

WELL-DESCRIPTION CARD

T.D. = 2100

SAME AS ON MASTER CARD Depth well: 1967 ft 1967 Meas. (Ref) D-Log accuracy 3

Depth cased: (first perf.) 1429 ft 1429 Casing type: S ; Diam 20-12 in 24

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) other G

Method Drilled: (A) air rot, (B) hored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other H

Date Drilled: ~~8-12-52~~ 7-29 952 Pump intake setting: ___ ft

Driller: LAYNE-TEXAS CO. HOUSTON TEXAS (name, address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other T Deep Shallow D

Power (type): diesel elec, nat gas, gasoline, hand, LP gas, wind; H.P. 200 W Trans. or meter no.

Descrip. MP ___ ft above below LSD, Alt. MP ___

Alt. LSD: 25 25 Accuracy: (source) TOPO 5' 3

Water Level 10 MIN. TATIC 275 ft above below MP; Ft above below LSD 275 Accuracy: REPT. D

Date meas: 7-29-52 752 Yield: 1705 gpm 1705 Method determined ___

Drawdown: 60 ft 60 Accuracy: WD REPT. 3 Pumping period — hrs ___

QUALITY OF WATER DATA: Iron ___ ppm Sulfate ___ ppm Chloride ___ ppm Hard. ___ ppm

Sp. Conduct ___ K x 10^6 Temp. ___ °F Date sampled ___

Taste, color, etc.

PL 335
276
60

Well No. LJ-65-23-214

Well No. LJ-MT-23-214

Latitude-longitude 29.44.09 S 95.10.55
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1, 19) Physiographic Province: COASTAL PLAIN 03 (20, 21) Section: _____

F (22) Drainage Basin: _____ 51R (23, 25) Subbasin: _____ (24)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat _____ (27)

MAJOR AQUIFER: _____ system, _____ series T (28, 29) _____ aquifer, formation, group E (30, 31)

Lithology: _____ (32, 33) Origin: _____ (34) Aquifer Thickness: _____ ft

(35, 37) Length of well open to: 216 ft 216 (38, 40) Depth to top of: _____ ft (41, 43)

MINOR AQUIFER: _____ system, _____ series (44, 45) _____ aquifer, formation, group (46, 47)

Lithology: _____ (48, 49) Origin: _____ (50) Aquifer Thickness: _____ ft

(51, 53) Length of well open to: _____ ft (54, 56) Depth to top of: _____ ft (57, 59)

* Intervals Screened: _____

Depth to consolidated rock: _____ ft (60, 63) Source of data: _____ (64)

Depth to basement: _____ ft (65, 68) Source of data: _____ (69)

Surficial material: _____ (70, 71) Infiltration characteristics: _____ (72)

Coefficient Trans: _____ gpd/ft (73, 75) Coefficient Storage: _____ (76, 78)

Coefficient Perm: _____ gpd/ft^2; Spec cap: _____ gpm/ft; Number of geologic cards: _____ (79)

* 1429 - 1489 - 60 Test 7-29-52
1604 - 1624 - 20 PL 335 @ 1705
1669 - 1730 - 61 Recovery
1795 - 1815 - 20 5 min - 280
1850 - 1860 - 10 10 " - 279
1910 - 1955 - 45 15 " - 275
216

1-29-53 S.L. 288' PL 380' @ 2503 GPM

3-20-57 S.L. 218' PL 265' @ 1000 GPM (?)

5-11-70 SL 353 meas by Co.
✓ PL 388 @ 1500 gpm pump set @ 400'

1220' of 20" csg.
55' of 26" conducting

Well No. LJ-65-23-214

GPO 857-700

Latitude ° ' "	Longitude ° ' "	Seq. No.
29 44 09	095 10 55	01

County code 201 County Harris

Well # LJ-65-23-214

Project number 4648-01000

Date 4-28-76 Time — Temp °C none

Owner Phillips Chemical Co. No. 5

Address Pasadena, Tex.

Date drld July, 1952 WBF code 121EV6-L

Sample interval: (top) 1429 (bottom) 1955

Water level — Appr clear Use Ind.

Collector Company (rattel) Yield — GPM

Smpld aftr pmpg 1 hr. Depth 1967

Pt of coll Tap on discharge Pipe

Field: Cond ____ pH ____ HCO_3 ____ DO ____

Indicate types of analyses

Coliform Phenols Minors

Nutrients MBAS BOD TOC DOC

5 chem schedule I

Other ____

Herbicide ____ Insecticide ____

Remarks: re-sample

Type 1 Station identification number 29440909510550 1 (2–16)

Y M D 74 04 28 (17–22) Begin

Time of measurement (29–32)

	Parameter code	Value	Exp.	Rmk
Depth	72008	1967	04	
Yield (GPM)	00059			
Sample interval TOP	72015	1429	04	
Sample interval BOTTOM	72016	1955	04	
Water level	72019			

	Parameter code	Value	Exp.	Rmk	
Sampled after pumping	72004				
DO (mg/l)	00300				
DO % Sat.	00301				
Temp °C	00010				
pH	00400	7900	01		7.9
Specific conductance	00095	1270	04		1270
HCO_3	00440	5580	03		558
CO_3	00445	0000	01		0
Chloride (Cl)	00940	1200	03		120
Sulfate (SO_4)	00945	1600	01		1.6
Color	00080				
Coliform, membrane filter	31501				
Coliform, fecal	31616				
Strep-tococci	31679				
BOD	00310				

(11-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
Water Resources Division
Austin, Texas

015648

Latitude ° ' "	Longitude ° ' "	Seq. No.
9 4 4 0 9	0 9 5 1 0 5 5	0 1

County code 201 County Harris

Well # LJ-65-23-214

Project number 5-4648-01000

Date 4-28-75 Time — Temp°C —

Owner Phillips Petroleum Co No. 5

Address Pasadena

Date drld 1952 WBF code [illegible]

Sample interval: (top) 1429 (bottom) 1955

Water level — Appr clear Use Ind

Collector Company Yield — GPM

Smpld aftr pmpg 4 hrs ? Depth 1967

Pt of coll —

Field: Cond ____ pH ____ HCO_3 ____ DO ____

Indicate types of analyses

Coliform Phenols Minors

rients MBAS BOD TOC DOC

Std chem schedule I + SO4

Other

Herbicide Insecticide

Remarks: Probably not pumped long enough? or wrong well?

Type 2 (1)

Station identification number 2 9 4 4 0 9 0 9 5 1 0 5 5 0 1 (2–16)

Y M D 7 5 0 4 2 8 (17–22) Begin

Time of measurement (29–32)

	Parameter code	Value	Exp.	Rmk
Depth	7 2 0 0 8	1 9 6 7	0 4	
Yield (GPM)	0 0 0 5 9			
Sample interval	7 2 0 1 5	1 4 2 9	0 4	
Sample interval BOTTOM	7 2 0 1 6	1 9 5 5	0 4	

	Parameter code	Value	Exp.	Rmk	
Sampled after pumping	7 2 0 0 4	2 4 0 0	0 3		
DO (mg/l)	0 0 3 0 0				
DO % Sat.	0 0 3 0 1				
Temp °C	0 0 0 1 0				
pH	0 0 4 0 0	7 6 0 0	0 1		7.6
Specific conductance	0 0 0 9 5	5 0 1 0	0 3		501
HCO_3	0 0 4 4 0	2 4 0 0	0 3		240
CO_3	0 0 4 4 5	0 0 0 0	0 1		0
Chloride (Cl)	0 0 9 4 0	3 3 0 0	0 2		33
Sulfate (SO_4)	0 0 9 4 5	1 1 0 0	0 2		11
Color	0 0 0 8 0				
Coliform, membrane filter	3 1 5 0 1				
Coliform, fecal	3 1 6 1 6				
Strep-tococci	3 1 6 7 9				
BOD	0 0 3 1 0				

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-214

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523214
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.7361111
Latitude (degrees minutes seconds)	29° 44' 10" N
Longitude (decimal degrees)	-95.1822222
Longitude (degrees minutes seconds)	095° 10' 56" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	25
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1967
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	6/24/1952
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Historical
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Gasoline Engine
Annular Seal Method	
Surface Completion	
Owner	Phillips 66 Co. Houston Chemical
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	294409095105501
Texas Commission on Environmental Quality Source Id	G1010312A
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	8/22/1996
Last Update Date	7/15/2023

Remarks	216 ft of screen between 1429 and 1955 ft. Reported yield 1705 gpm with 60 ft drawdown when drilled. Well 5.

Casing - No Data

Well Tests - No Data

Lithology - No Data

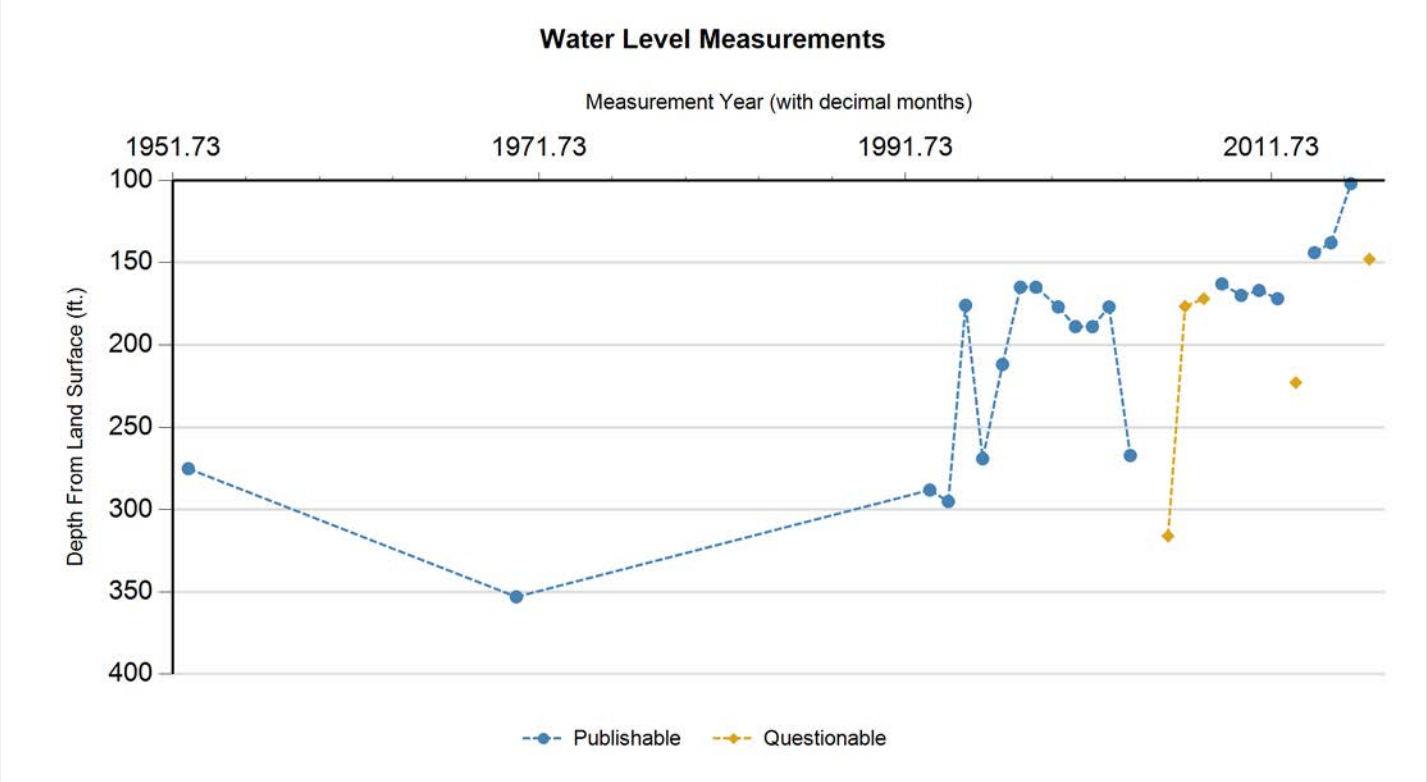
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	7/29/1952		275		-250	1	Registered Water Well Driller	Unknown		
P	5/0/1970		353	78.00	-328	1	U.S. Geological Survey	Steel Tape		
P	1/27/1993		288	(65.00)	-263	1	U.S. Geological Survey	Air Line		
P	1/30/1994		295	7.00	-270	1	U.S. Geological Survey	Air Line		
P	1/10/1995		176	(119.00)	-151	1	U.S. Geological Survey	Air Line		
P	12/20/1995		269	93.00	-244	1	U.S. Geological Survey	Air Line		
P	1/16/1997		212	(57.00)	-187	1	U.S. Geological Survey	Air Line		
P	1/8/1998		165	(47.00)	-140	1	U.S. Geological Survey	Air Line		
P	11/16/1998		165	0.00	-140	1	U.S. Geological Survey	Air Line		
P	2/1/2000		177	12.00	-152	1	U.S. Geological Survey	Unknown		
P	1/10/2001		189	12.00	-164	1	U.S. Geological Survey	Unknown		
P	12/18/2001		189	0.00	-164	1	U.S. Geological Survey	Unknown		
P	11/15/2002		177	(12.00)	-152	1	U.S. Geological Survey	Steel Tape		
P	1/8/2004		267	90.00	-242	1	U.S. Geological Survey	Steel Tape		
Q	1/31/2006		316	49.00	-291	1	U.S. Geological Survey	Steel Tape	4	
Q	1/4/2007		176.7	(139.30)	-151.7	1	U.S. Geological Survey	Other	4	
Q	1/14/2008		172	(4.70)	-147	1	U.S. Geological Survey	Unknown	4	
P	1/8/2009		163	(9.00)	-138	1	U.S. Geological Survey	Unknown		
P	1/28/2010		170	7.00	-145	1	U.S. Geological Survey	Unknown		
P	1/19/2011		167	(3.00)	-142	1	Well Owner or Operator	Steel Tape		
P	1/24/2012		172	5.00	-147	1	Well Owner or Operator	Air Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
Q	1/23/2013		223	51.00	-198	1	Well Owner or Operator	Unknown	4	
P	1/28/2014		144	(79.00)	-119	1	U.S. Geological Survey	Unknown		
P	12/30/2014		138	(6.00)	-113	1	U.S. Geological Survey	Unknown		
P	1/26/2016		102	(36.00)	-77	1	Other or Source of Measurement Unknown	Unknown		
Q	1/30/2017	0001	148	46.00	-123	1	U.S. Geological Survey	Unknown	4	

Code Descriptions

Status Code	Status Description
P	Publishable
Q	Questionable

Remark ID	Remark Description
4	Well pumped recently

Water Quality Analysis

Sample Date: 3/11/1954 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		446.72	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		545	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		88	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1070	MICR	

Water Quality Analysis

Sample Date: 3/2/1955 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		92	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1100	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		32	C	

Water Quality Analysis

Sample Date: 2/27/1956 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		540	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		93	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		17	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.4	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1090	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		32	C	

Water Quality Analysis

Sample Date: 3/20/1957 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		599	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		101	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.5	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1170	MICR	

Water Quality Analysis

Sample Date: 3/20/1957 **Sample Time:** 0000 **Sample Number:** 2 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		472.13	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		576	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		102	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1150	MICR	

Water Quality Analysis

Sample Date: 3/19/1958 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		553	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		94	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		19	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.9	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1090	MICR	

Water Quality Analysis

Sample Date: 4/20/1959 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		526	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		93	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		17	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.5	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1080	MICR	

Water Quality Analysis

Sample Date: 3/23/1960 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		445.9	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		544	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		94	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1070	MICR	

Water Quality Analysis

Sample Date: 4/19/1961 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		439.34	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		536	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		90	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		15	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1080	MICR	

Water Quality Analysis

Sample Date: 4/18/1962 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		538	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		94	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.3	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1080	MICR	

Water Quality Analysis

Sample Date: 4/3/1963 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		536	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		96	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.4	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1080	MICR	

Water Quality Analysis

Sample Date: 4/6/1964 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		455.74	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		556	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		107	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		17	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.9	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1140	MICR	

Water Quality Analysis

Sample Date: 4/9/1965 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		542	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		100	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		17	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.5	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1080	MICR	

Water Quality Analysis

Sample Date: 3/29/1966 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		445.08	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		543	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		101	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.6	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1120	MICR	

Water Quality Analysis

Sample Date: 4/6/1967 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		436.07	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		532	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		102	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1080	MICR	

Water Quality Analysis

Sample Date: 4/10/1968 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		478.69	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		584	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		121	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1200	MICR	

Water Quality Analysis

Sample Date: 4/9/1969 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		468.85	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		572	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		124	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		27	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1210	MICR	

Water Quality Analysis

Sample Date: 5/7/1970 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		467.21	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		570	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		127	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1230	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		32	C	

Water Quality Analysis

Sample Date: 4/7/1971 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		462.3	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		564	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		130	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		21	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1270	MICR	

Water Quality Analysis

Sample Date: 4/5/1972 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		475.41	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		580	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		130	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		19	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.7	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1280	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		27	C	

Water Quality Analysis

Sample Date: 4/29/1974 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		447.54	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		546	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		130	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		25	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1230	MICR	

Water Quality Analysis

Sample Date: 4/28/1975 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		196.72	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		240	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		33	mg/L	
00400	PH (STANDARD UNITS), FIELD		7.6	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		501	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		11	mg/L as SO4	

Water Quality Analysis

Sample Date: 4/28/1976 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		457.38	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		558	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		120	mg/L	
00400	PH (STANDARD UNITS), FIELD		7.9	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1270	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		2	mg/L as SO4	

Water Quality Analysis

Sample Date: 6/7/1978 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		459.02	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		560	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		130	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.1	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1240	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		2	mg/L as SO4	

Water Quality Analysis

Sample Date: 5/16/1979 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		475.41	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		580	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00400	PH (STANDARD UNITS), FIELD		7.7	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1320	MICR	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523222

Texas Water Development Board
Well Schedule

State Well Number 6523222 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **Zone** 1 **Latitude** 294401 **Longitude** 951204 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Texas Asphalt & Refin. Co.

Driller
Pomeroy Drlg. Co.

Address _____ **Tenant/Oper.** _____

Date Drilled / /1956 **Depth** 707 **Source of Depth** R **Altitude** 25 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION **Const-Method** **Casing Material**

Completion **Screen Material**

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** SUBMERSIBLE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- _____**GPM** **Pump** _____**GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** N **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1956
-270

Recorded By _____ **Date Record Collected or Updated -** 07/18/2003

Reporting Agency 02

REMARKS -
TWDB R178: 63ft. of screen between 642 and 708ft.

Aquifer - 121EVGL **ID -** 15

EVANGELINE AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-222

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523222
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.733611
Latitude (degrees minutes seconds)	29° 44' 01" N
Longitude (decimal degrees)	-95.201112
Longitude (degrees minutes seconds)	095° 12' 04" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	25
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	707
Well Depth Source	Person Other than Owner
Drilling Start Date	
Drilling End Date	0/0/1956
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Submersible
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Texas Asphalt & Refin. Co.
Driller	Pomeroy Drlg. Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	7/18/2003
Last Update Date	7/18/2003

Remarks	TWDB R178: 63ft. of screen between 642 and 708ft.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

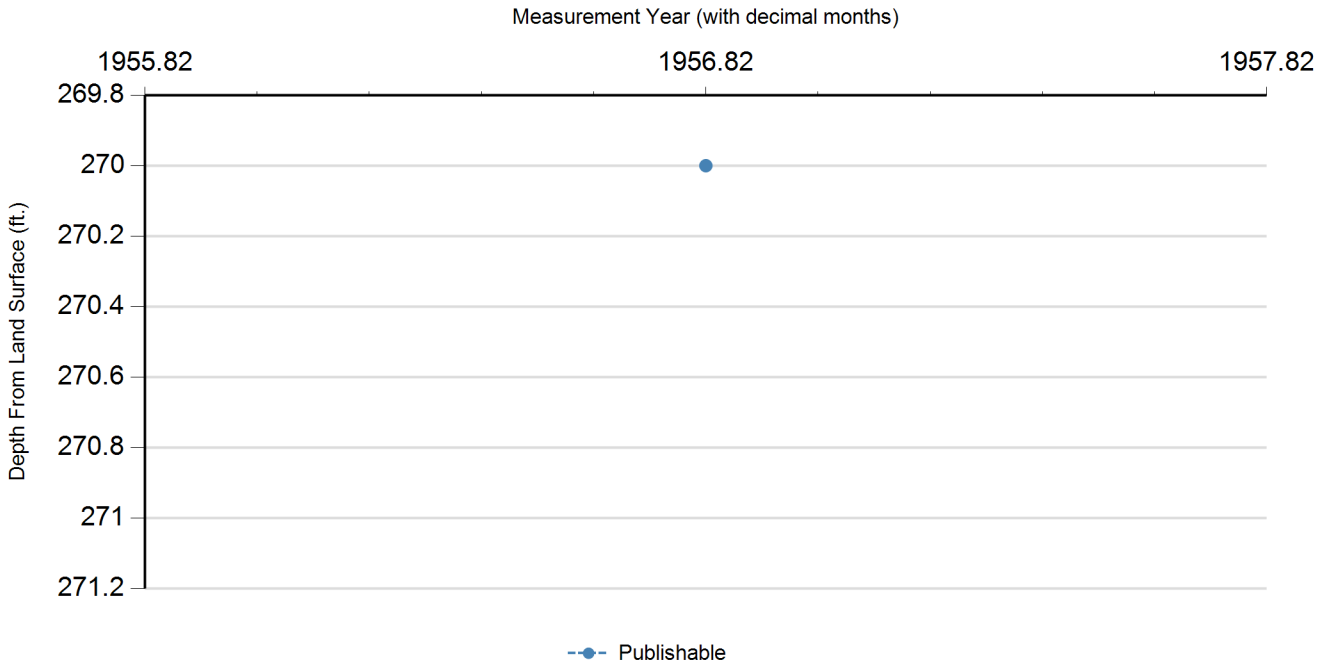
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	11/1/1956		270		-245	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523245

TEXAS DEPARTMENT OF WATER RESOURCES

WELL SCHEDULE

Aquifer(s) Evangeline Project No. _____ State Well No. 65-23-245

_____ Field No./Owner's Well No. 1 County HARRIS

1. Location: ___ ¼, ___ ¼, Section ___, Block ___, Survey _____, Lat. _____, Long. _____

2. Owner: Air Products & Chemicals, Inc. Address: _____

Tenant (other): _____ Address: _____

Driller: Layne-Texas Co. Address: _____

3. Land Surface Elevation: 28 ft. above msl determined by _____

4. Drilled: 10-12 19 72; Dug, Cable Tool, (Rotary) Air, _____

5. Depth: Rept. 1300 ft. Meas. _____ ft.

6. Borehole Completion: Open Hole, Straight Wall, (Underreamed, Gravel Packed)

7. Pump: Mfr. _____ Type T

No. Stages _____, Bowls Diam. ___ in., Setting _____ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Mfr. _____ Fuel G HP. ___

9. Yield: Flow ___ gpm, Pump ___ gpm, Meas., Rept., Est. ___ Date ___

10. Performance Test: Date 12/6/72 Length of Test ___ Made by L-T

Static Level 417 ft. Pumping Level ___ ft. Drawdown 125 ft.

Production 1266 gpm Specific Capacity _____ gpm/ft.

11. Quality: (Remarks on taste, odor, color, etc.) _____

Analyses

Date _____ Laboratory _____ TDS ___ Sp Cond ___

Date _____ Laboratory _____ TDS ___ Sp Cond ___

12. Other data available (as circled): Pumping Test, Power & Yield Test, (Drillers Log,)

Formation Samples, (Geophysical Log(s)) Q 1757 _____ (type)

13. Water Level(s): _____ ft. rept. meas. _____ 19 ___ above below _____ which is ___ ft. above below Land Surface

_____ ft. rept. meas. _____ 19 ___ above below _____ which is ___ ft. above below Land Surface

14. Use: Dom., Stock, Public Supply, (Ind.) Irr., Observation, Other (Test Hole, Oil Test, etc.) _____

15. Recorded by: _____ Source of data: _____ Date: _____

16. Remarks: _____

17. Location or Sketch:

CASING, BLANK PIPE & WELL SCREEN Cemented From 0 ft. to 898 ft.			
Diam. (in.)	Type	Setting (feet) from	to
16	Steel	0	898
10			1300

Q 1757

W/L Obs. Well ___ W/Q Obs. Well ___

State Well No. 65-23-245

TDWR-0308

nd original copy by
rtified mail to the
xas Water Development Board
O. Box 12386
stin, Texas 78711

State of Texas

WATER WELL REPORT

For TWDB use only
Well No.
Located on map
Received:

)OWNER:
Person having well drilled Air Products & Chemicals Co Address 437 Jackson Rd Pasadena Tex
(Name) (Street or RFD) (City) (State)

Landowner (Name) Address (Street or RFD) (City) (State)

)LOCATION OF WELL:
County Harris, miles in direction from
(N.E., S.W., etc.) (Town)

Locate by sketch map showing landmarks, roads, creeks, hiway number, etc.*

See attached map North

(Use reverse side if necessary)

or

Give legal location with distances and directions from adjacent sections or survey lines.

Labor League

Block Survey

Abstract No.

(NW¼ NE¼ SW¼ SE¼) of Section

)TYPE OF WORK (Check):
New Well Deepening
Reconditioning Plugging

4)PROPOSED USE (Check):
Domestic Industrial Municipal
Irrigation Test Well Other

5)TYPE OF WELL (Check):
Rotary Driven Dug
Cable Jetted Bored

)WELL LOG:
Diameter of hole in. Depth drilled ft. Depth of completed well ft. Date drilled

All measurements made from ft. above ground level.

From (ft.)	To (ft.)	Description and color of formation material
		See attached Completion Report

(Use reverse side if necessary)

9) Casing:
Type: Old New Steel Plastic Other
Cemented from ft. to ft.

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Gage

10) SCREEN:
Type
Perforated Slotted

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Slot Size

7) COMPLETION (Check):
Straight wall Gravel packed Other
Under reamed Open Hole

8) WATER LEVEL:
Static level ft. below land surface Date
Artesian pressure lbs. per square inch Date
Depth to pump bowls, cylinder, jet, etc., ft.
below land surface.

11) WELL TESTS:
Was a pump test made? Yes No If yes, by whom?
Yield: gpm with ft. drawdown after hrs.
Bailer test gpm with ft. drawdown after hrs.
Artesian flow gpm
Temperature of water

12) WATER QUALITY:
Was a chemical analysis made? Yes No
Did any strata contain undesirable water? Yes No
Type of water? depth of strata

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Gaston L. Alciatore (Type or Print) Water Well Drillers Registration No. 1201

ADDRESS P.O. Box 9465 Houston 77011
(Type or Print) (City) (State)

GASTON L. (GAS) ALCIATORE

(Signed) (Water Well Driller) Fugro Texas Co (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

*Additional instructions on reverse side.

Q-1757

TWDBE-GM-53

65-23-245

FORM NO. 28 State

65-23-2H

LAYNE TEXAS COMPANY.

HOUSTON -:- DALLAS

WELL LOG

REPORT NO 939
S O 1104 317
PAGE 1 of 2
FILE NO. 3627
DATE 10/16/72

CUSTOMER LOCATION	WELL DATA
FOR Air Products & Chemicals, Inc.	NAME WELL / WELL NO. 1
LOCATION WELL 400' N. of Jackson Road	ELEVATION 36.53' DATUM
SURVEY / FIELD	RT / C / GR
COUNTY Harris / STATE Texas	TEST HOLE SIZE 9-7/8" TD 1500'
OTHER LAND MARKS 27' from Plant Rd. #33	DATE STARTED DRILLING 10- 9-72
	DATE FINISHED DRILLING 10-12-72
	DRILLER F.R. Wall RIG NO. 2
	TYPE MUD Gel NO SACKS 27
	ELECTRIC LOG Yes TYPE Schlumberger
	SURVEY Eastman TYPE Single-shot
	OTHER driller: G.D. Tech

DEPTH STRATA	EACH STRATUM	DESCRIPTION FORMATION	SAMPLES DEPTH	TYPE	NUMBER
0		Surface			
50	50	Clay			
70	20	Clay & sandy clay			
101	31	Sand & shale streaks			
133	32	Shale & sand streaks			
173	40	Sand & shale breaks			
209	36	Shale			
226	17	Sand & sandy shale			
300	74	Shale			
390	90	Sandy shale			
450	60	Sand			
488	38	Sandy shale			
514	26	Sand & sandy shale			
585	71	Shale & sand streaks			
630	45	Hard shale			
638	8	Shale & sand streaks			
664	26	Hard shale			
688	24	Sand & hard shale			
706	18	Shale & sand streaks			
730	24	Sandy shale			
765	35	Sand			
800	35	Hard shale			
820	20	Shale & sand streaks			
870	50	Sand			
898	28	Hard shale			
928	30	Sand & shale streaks			
949	21	Sandy shale & sand			
961	12	Sand			
986	25	Shale & sand layers			
1007	21	Sand & shale breaks			
1017	10	Sandy shale			
1043	26	Hard shale			
1061	18	Sticky shale			
1088	27	Hard sand & shale			
1108	20	Shale			
1124	16	Sand			
1134	10	Shale			
1160	26	Sand			
1230	70	Shale			

65-23-245

FORM NO. 2a

LAYNE TEXAS COMPANY,
HOUSTON -:- DALLAS

WELL LOG

REPORT NO 8939
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CUSTOMER LOCATION

FOR Air Products & Chemicals, Inc.

LOCATION WELL 400' N. of Jackson Road

SURVEY FIELD

COUNTY Harris STATE Texas

OTHER LAND MARKS 27' from Plant Rd. #33

WELL DATA

NAME WELL WELL NO. 1
ELEVATION 36.53' DATUM
RT C GR
TEST HOLE SIZE 9-7/8" TD 1500'
DATE STARTED DRILLING 10- 9-72
DATE FINISHED DRILLING 10-12-72
DRILLER F.R. Wall RIG NO 2
TYPE MUD Gel NO. SACKS 27
ELECTRIC LOG Yes TYPE Schlumberger
SURVEY Eastman TYPE Single-shot
OTHER driller: G. Tech

DEPTH STRATA	EACH STRATUM	DESCRIPTION FORMATION	SAMPLES DEPTH	TYPE	NUMBER
1230					
1240	10	Sand			
1260	20	Shale			
1296	36	Sand			
1312	16	Shale			
1371	59	Sand & shale breaks			
1381	10	Shale & sand streaks			
1400	19	Shale			
1410	10	Sand			
1426	16	Shale			
1432	6	Sand			
1439	7	Shale			
1484	45	Sand			
1500	16	Sandy shale & shale			

Total depth 1500 ft.

65-23-245

FORM NO. 1202 - 1M - 8-61 - B&L

THE LAYNE TEXAS COMPANY, LTD.

HOUSTON -:- DALLAS

REPORT NO. 8940
S. O. 1104-2317
PAGE 1 OF 1
FILE NO. 3627
DATE 12/7/72

MATERIAL SETTING

CUSTOMER LOCATION

FOR Air Products & Chemicals, Inc.

LOCATION WELL 400' N. of Jackson Road

SURVEY FIELD

COUNTY Harris STATE Texas

OTHER LAND MARKS 27' from Plant Rd. #33

WELL DATA

NAME WELL WELL NO. 1

ELEVATION DATUM

TYPE WELL Gravel wall

SURFACE CASING CEMENTED Yes NO. SACKS 445+8% Gel

SIZE HOLE UNDERREAMED 30" DEPTH 900-1300'

GRAVEL TYPE 112-113-165-121 NO. CU. YDS. 152

TYPE SCREEN SS WW Rib GAGE .045"

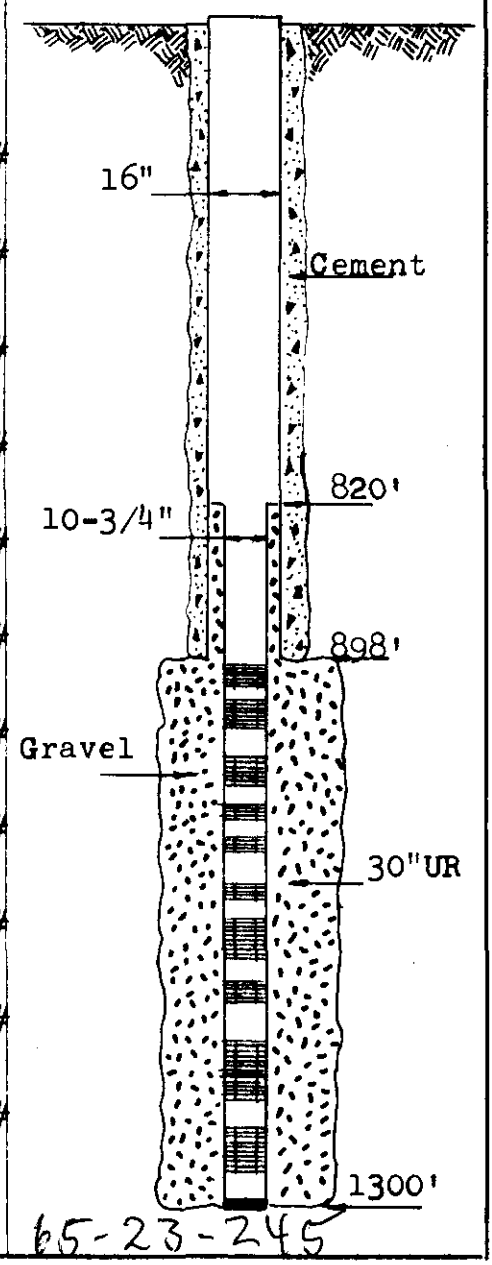
DRILLER F. R. Wall RIG NO. 2

OTHER G. D. Tesch

DEPTH	LENGTH	SIZE, KIND, WEIGHT MATERIAL
+2'		16" O.D. surface casing 62.58#
0		Surface
40'		22" O.D. 1/4" wall conductor pipe
820'		Top of 10-3/4" liner
898'	900'	16" O.D. surface casing 62.58#
914'	94'	10-3/4" O.D. blank liner 31.20#
944'	30'	10-3/4" O.D. S.S. W.W. Rib screen .045" ga.
960'	16'	10-3/4" O.D. blank liner 31.20#
995'	35'	10-3/4" O.D. S.S. W.W. Rib screen .045" ga.
1015'	20'	10-3/4" O.D. blank liner 31.20#
1045'	30'	10-3/4" O.D. S.S. W.W. Rib screen .045" ga.
1055'	10'	10-3/4" O.D. blank liner 31.20#
1065'	10'	10-3/4" O.D. S.S. W.W. Rib screen .045" ga.
1080'	15'	10-3/4" O.D. blank liner 31.20#
1090'	10'	10-3/4" O.D. S.S. W.W. Rib screen .045" ga.
1115'	25'	10-3/4" O.D. blank liner 31.20#
1125'	10'	10-3/4" O.D. S.S. W.W. Rib screen .045" ga.
1135'	10'	10-3/4" O.D. blank liner 31.20#
1170'	35'	10-3/4" O.D. S.S. W.W. Rib screen .045" ga.
1180'	10'	10-3/4" O.D. blank liner 31.20#
1190'	10'	10-3/4" O.D. S.S. W.W. Rib screen .045" ga.
1215'	25'	10-3/4" O.D. blank liner 31.20#
1250'	35'	10-3/4" O.D. S.S. W.W. Rib screen .045" ga.
1260'	10'	10-3/4" O.D. blank liner 31.20#
1285'	25'	10-3/4" O.D. S.S. W.W. Rib screen .045" ga.
1298'	13'	10-3/4" O.D. blank liner 31.20#
1300'	2'	10-3/4" O.D. set nipple & back pressure valve

Total depth 1300'

SKETCH



65-23-245

LAYNE TEXAS COMPANY

HOUSTON -:- DALLAS

WATER WELL TEST

REPORT NO 8941
S. O. 1104-2317
PAGE 1 of 2
FILE NO. 3627
DATE 12/7/72

CUSTOMER LOCATION

TEST FOR Air Products & Chemicals, Inc.

LOCATION OF WELL 400' N. of Jackson Road

SURVEY FIELD

COUNTY Harris STATE Texas

DESCRIPTION OF LAND MARKS

27' from Plant R#33

WELL DATA

NAME WELL WELL NO. 1

ELEVATION DATUM

WELL SIZE 16" x10-3/4" x 30"UR

TOTAL DEPTH 1300' TOP SCREEN 914-944'

GRAVEL WELL Yes STRAIGHT WELL

TYPE SCREEN S.S. W.W. Rib GAGE .045"

TEMPERATURE OF WATER

WATER CONDITION Clear

WATER MEASURING DEVICE

ORIFICE SIZE 10"x7" LENGTH 25'

OTHER

TEST PUMP DATA

DEPTH SETTING TOP OF BOWL 610'

LENGTH AIR LINE 610' SIZE 1/4"

TYPE BOWL TLC 8" NO STAGES 6

LENGTH BOWL SUCTION LT.

SAND CONTENT 0 OZ. PER 100 GAL.

ACTIVE STATIC HEAD AFTER PUMP STOPPED

5 MIN. 436 FT. 20 MIN. 429 FT.
10 MIN. 433 FT. 25 MIN. 428 FT.
15 MIN. 431 FT. 30 MIN. 427 FT.

S.L. before start 417 ft.

WATER SAMPLE TAKEN Yes NO. SAMPLES 1

BACTERIOLOGICAL SAMPLE TAKEN

DRAWDOWN SPECIFIC CAPACITY

DATE HOUR	AIR LINE GAGE	PUMPING LEVEL	DISCH. PRESS.	HEAD ON ORIFICE INCHES	GPM	RPM	OPERATOR	REMARKS
12/6/72 - Started test at 4:00 P.M.								
4:30 PM	77	533		37	1266			
5:00	74	536		37	1266			
5:30	72	538		37	1266			
6:00	72	538		37	1266			
6:30	72	538		37	1266			
7:00	71	539		37	1266			
7:30	71	539		37	1266			
8:00	71	539		37	1266			
8:30	71	539		37	1266			
9:00	70	540		37	1266			
9:30	70	540		37	1266			
10:00	70	540		37	1266			
10:30	70	540		37	1266			
11:00	69	541		37	1266			
11:30	69	541		37	1266			
12:00 M	69	541		37	1266			12/7/72
12:30 AM	69	541		37	1266			
1:00	69	541		37	1266			
1:30	69	541		37	1266			
2:00	68	542		37	1266			
2:30	68	542		37	1266			
3:00	68	542		37	1266			
3:30	68	542		37	1266			
4:00	68	542		37	1266			Shut down
Recovery on Page 2								

OBSERVERS

FOR OWNER

F.R. Wall
FOR LAYNE TEXAS CO.

65-23-245

FORM NO. 25

LAYNE TEXAS COMPANY

HOUSTON -:- DALLAS

WATER WELL TEST

REPORT NO. 8941
S.O. 1104-2317
PAGE 2 of 2
FILE NO. 3627
DATE 12/7/72

CUSTOMER LOCATION

TEST FOR Air Products & Chemicals, Inc.

LOCATION OF WELL 400' N. of Jackson Road

SURVEY FIELD

COUNTY Harris STATE Texas

DESCRIPTION OF LAND MARKS

WELL DATA

NAME WELL WELL NO. 1

ELEVATION DATUM

WELL SIZE 16" x 10-3/4" x 30" UR

TOTAL DEPTH 1300' TOP SCREEN 914-944'

GRAVEL WEL Wes STRAIGHT WELL

TYPE SCREEN SS WW Rib GAGE .045"

TEMPERATURE OF WATER

WATER CONDITION Clear

WATER MEASURING DEVICE

ORIFICE SIZE 10"x7" LENGTH 25'

OTHER

TEST PUMP DATA

DEPTH SETTING TOP OF BOWL 610'

LENGTH AIR LINE 610' SIZE 1/4"

TYPE BOWL TLC 8" NO. STAGES 6

LENGTH BOWL SUCTION LT.

SAND CONTENT OZ. PER 100 GAL.

ACTIVE STATIC HEAD AFTER PUMP STOPPED

5 MIN.	FT.	20 MIN.	FT.
10 MIN.	FT.	25 MIN.	FT.
15 MIN.	FT.	30 MIN.	FT.

WATER SAMPLE TAKEN NO. SAMPLES

BACTERIOLOGICAL SAMPLE TAKEN

DRAWDOWN SPECIFIC CAPACITY

DATE HOUR	AIR LINE GAGE	PUMPING LEVEL	DISCH. PRESS.	HEAD ON ORIFICE INCHES	GPM	RPM	OPERATOR	REMARKS
12/7/72 -								
RECOVERY		W.L.						
4:05AM	174	436						
4:10	177	433						
4:15	179	431						
4:20	181	429						
4:25	182	428						
4:30	183	427						

OBSERVERS

FOR OWNER

F. R. Wall
FOR LAYNE TEXAS CO.

FORM NO. 25 -

TECHNOLOGY INCORPORATED
LIFE SCIENCES DIVISION
17311 El Camino Real, Houston, Texas 77058
Tel. (713) 488-5970

TO: Layne Texas Company SO
Houston, Texas
Sample Marked: Air Products & Chemical, Well #1, Pasadena, Texas
Technology Incorporated Lab Number C-825

Received: December 12, 1972

WATER ANALYSIS

		mg/l		mg/l
Total Dissolved Solids		439.1	Color Units	5
Calcium*	Ca	2.7	Turbidity, Units	Less than 1
Magnesium*	Mg	0.6	As Calcium Carbonate $CaCO_3$	-
Sodium*	Na	158.5	Phenol Alkalinity	-
Carbonate	CO_3	0	Total Alkalinity	277.31
Bicarbonate	HCO_3	338.31	Total Hardness	Less than 1
Sulfate	SO_4	9.60	Free Carbon Dioxide, CO_2 (Calculated)	8
Chloride	Cl	18.4	pH. . . 7.85 at 26°C	
Total Iron*	Fe	0.11	Silica	18
Manganese*	Mn	Less than .01	HYPOTHETICAL COMBINATIONS	
Fluoride	F	1.20	Calcium Bicarbonate	10.9
			Magnesium Bicarbonate	3.6
Nitrate	NO_3	0.025	Sodium Bicarbonate	450.4
			Sodium Sulfate	14.2
Specific Conductivity, micromhos		610	Sodium Chloride	30.3
			NaF	1.5

*Atomic Absorption Method

REMARKS: No odor, exceptionally good water sample.

65-23-245

By: Robert J. Ehrlich

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-245

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523245
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.717222
Latitude (degrees minutes seconds)	29° 43' 02" N
Longitude (decimal degrees)	-95.191945
Longitude (degrees minutes seconds)	095° 11' 31" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	37
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1300
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	10/12/1972
Drilling Method	
Borehole Completion	Gravel Pack w/Screen

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Air Products & Chemicals, Inc.
Driller	Layne-Texas Co.
Other Data Available	Drillers Log; Specific Capacity
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	Texas Water Development Board
Created Date	4/30/2008
Last Update Date	10/14/2014

Remarks	Owners well #1. Measured yield 1266 GPM with 125 feet drawdown after pumping 12 hours in 1972. Pumping level 542 feet. Specific capacity 10.13 GPM/ft. Cemented from 0 to 898 feet. Gravel packed and under- reamed from 898 to 1300 feet. Pump set at 610 feet. Well was originally drilled to 1500 feet.

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
16	Blank	Steel			0	898
11	Blank	Steel			820	914
11	Screen	Stainless Steel			914	944
11	Blank	Steel			944	960
11	Screen	Stainless Steel			960	995
11	Blank	Steel			995	1015
11	Screen	Stainless Steel			1015	1045
11	Blank	Steel			1045	1055
11	Screen	Stainless Steel			1055	1065
11	Blank	Steel			1065	1080
11	Screen	Stainless Steel			1080	1090
11	Blank	Steel			1090	1115
11	Screen	Stainless Steel			1115	1125
11	Blank	Steel			1125	1135
11	Screen	Stainless Steel			1135	1170
11	Blank	Steel			1170	1180
11	Screen	Stainless Steel			1180	1190
11	Blank	Steel			1190	1215
11	Screen	Stainless Steel			1215	1250
11	Blank	Steel			1250	1260
11	Screen	Stainless Steel			1260	1285
11	Blank	Steel			1285	1300

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

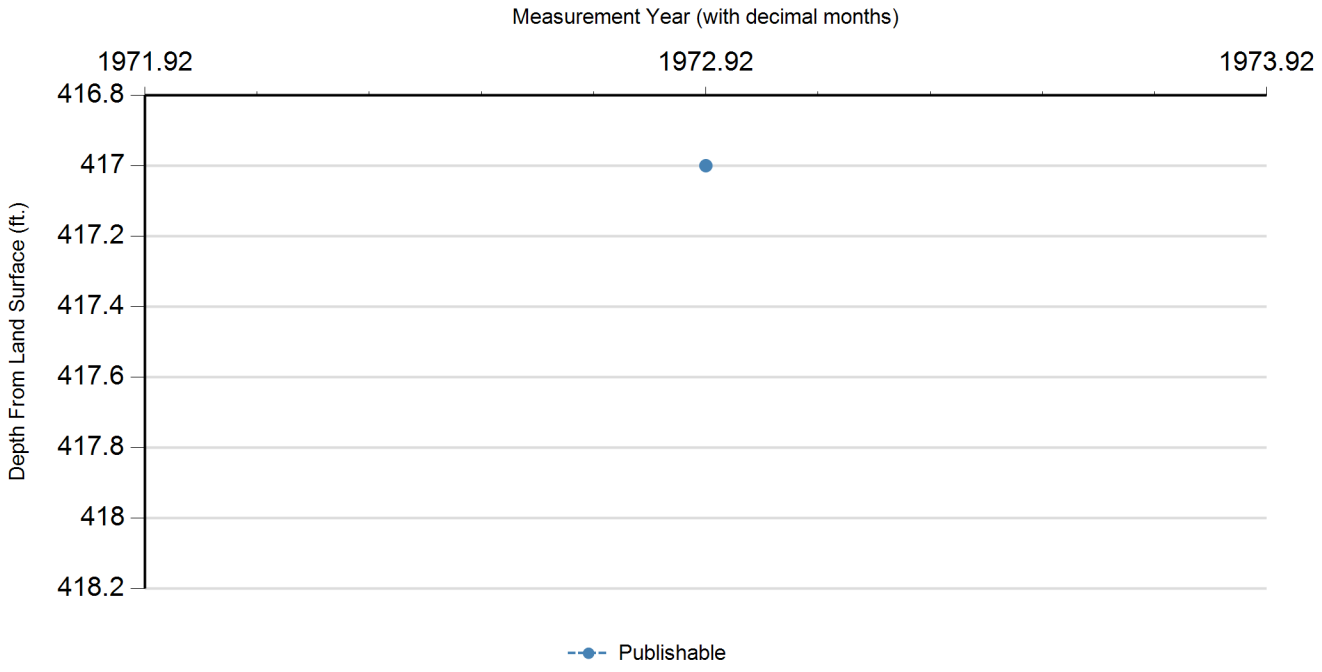
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	12/6/1972		417		-380	1	Registered Water Well Driller	Air Line		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 12/12/1972 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:** Registered Water Well Driller

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Collected from pumped well, but not filtered or preserved

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		277.31	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		338.41	mg/L	
00910	CALCIUM (MG/L)		2.7	mg/L	
00405	CARBON DIOXIDE (MG/L AS CO2)		8	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		18.4	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		1.2	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		9	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		0.11	ug/L	
00920	MAGNESIUM (MG/L)		0.6	mg/L	
01055	MANGANESE, TOTAL (UG/L AS MN)	<	0.01	ug/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0.02	mg/L as NO3	
00400	PH (STANDARD UNITS), FIELD		7.85	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		5.36		
00955	SILICA, DISSOLVED (MG/L AS SI02)		18	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		22.72		
32017	SODIUM CHLORIDE (NACL), MG/L		30.3	mg/L	
00932	SODIUM, CALCULATED, PERCENT		97	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		158.5	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		610	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		9.6	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		26	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		375	mg/L	
82079	TURBIDITY, LAB, NEPHELOMETRIC TURBIDITY UNITS, NTU	<	1	NTU	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523105

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-105

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523105
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.744167
Latitude (degrees minutes seconds)	29° 44' 39" N
Longitude (decimal degrees)	-95.236389
Longitude (degrees minutes seconds)	095° 14' 11" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	33
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1000
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	2/0/1959
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Public Supply
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	City of Galena Park Well #5
Driller	Texas Water Wells
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1010009D
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	9/26/1997
Last Update Date	9/26/1997

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

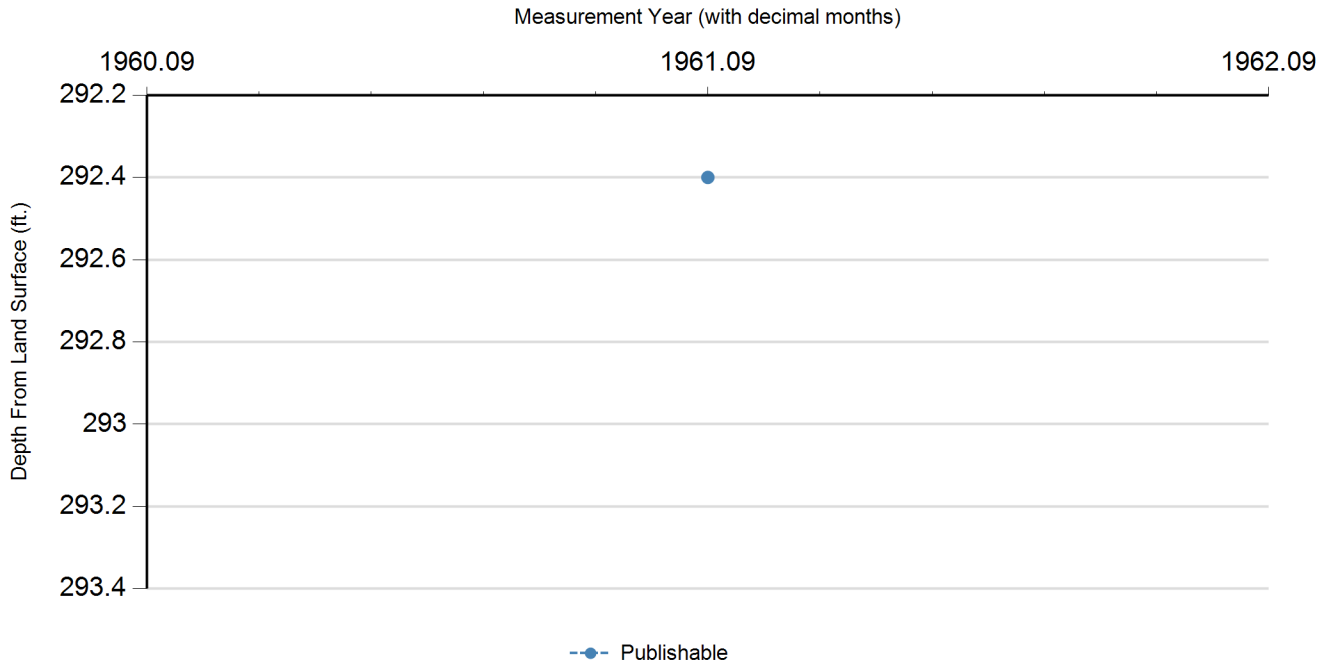
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/3/1961		292.4		-259.4	1	U.S. Geological Survey	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523123

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 23 123 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 43 06 Longitude - 95 12 53 Source of Coords - 1

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Champion Papers Driller - Layne Texas

Address _____ Tenant/Oper. _____
Date Drilled - / /1937 Depth - 1,275 ft. Source of Depth - Altitude - 29 ft. Source of Alt. -
Aquifer - 121EVGL EVANGELINE AQUIFER Well Type - W User -

WELL CONSTRUCTION Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (
Open Hole (O)
Cemented from_____to_____

Diam. (in.)	Setting(feet) From	To
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		

LIFT DATA - Pump Mfr. _____ Type - TURBINE PUMP No. Stages ____

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower - 250

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- INDUSTRIAL Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- M Quality- Y Logs- Other Data-

WATER LEVELS Date- 01/18/1937 Measurement- -56.00
Date- / / Measurement-

Recorded By _____ Date Record Collected or Updated- / /

Reporting Agency -
REMARKS -
217 ft of screen between 998 and
1251 ft. Reported yield 2870 gpm
with 116 ft drawdown when drilled.
Test hole drilled to 1317 ft.
Well A-2.

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-123

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523123
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.718333
Latitude (degrees minutes seconds)	29° 43' 06" N
Longitude (decimal degrees)	-95.214723
Longitude (degrees minutes seconds)	095° 12' 53" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	29
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1275
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1937
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Champion Papers
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	Champion Paper Mill well A-2
Other Well Number	Historical Id 1136
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	217 ft of screen between 998 and 1251 ft. Reported yield 2870 gpm with 116 ft drawdown when drilled. Test hole drilled to 1317 ft. Well A-2.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

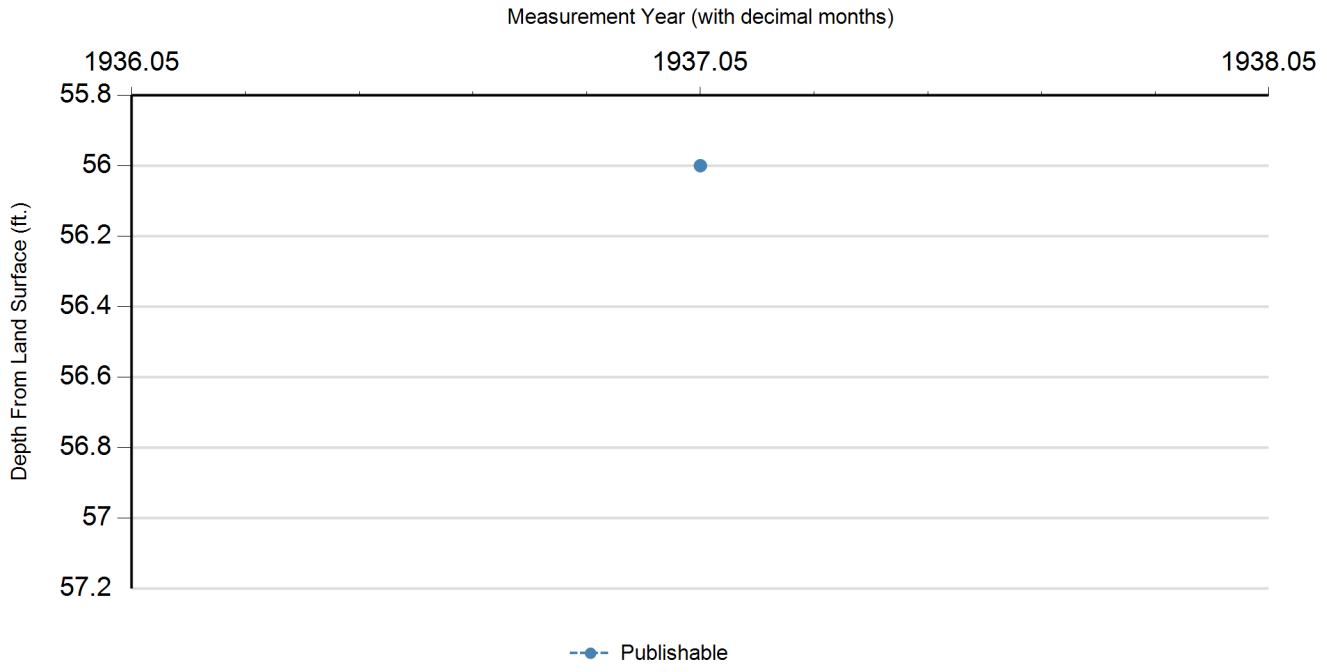
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/18/1937		56		-27	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 7/8/1939 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		224.53	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		274	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		37	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00929	SODIUM, TOTAL (MG/L AS NA)		126	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		12	mg/L as SO4	

Water Quality Analysis

Sample Date: 2/19/1941 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		241.73	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		295	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		36	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		10	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		134	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		7	mg/L as SO4	

Water Quality Analysis

Sample Date: 4/7/1971 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		291.8	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		356	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		110	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		38	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		879	MICR	

Water Quality Analysis

Sample Date: 4/4/1972 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		304.92	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		372	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		130	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		39	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		990	MICR	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523219

WRD Exp. (GW)
April 1966

Well No. J-65-23-219

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

MASTER CARD

Record by C.W. BONNET NAFTEL-52 WESSELMAN-62 Source of data FILE Date 10-15-68 Map PASADENA 1955 1:24000

State TEXAS 48 County (or town) HARRIS LJ

Latitude: 294425 N Longitude: 0951016 Sequential number: 1

Lat-long accuracy: 1 T. ___ S, R ___ W, Sec ___, ___ ¼, ___ ¼, ___ ¼

Local well number: LJ-65-23-219 Other number: NO-4L

Local use: Owner or name: ETHYL CORP.

Owner or name: ETHYL CORP. Address: PASADENA, TEXAS

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist N

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other N

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed W

DATA AVAILABLE: Well data ___ Freq. W/L meas.: 1955 — meas. by owner M Field aquifer char. ___

Hyd. lab. data: ___

Qual. water data; type: ___

Freq. sampling: ___ Pumpage inventory: yes no, period: ___

Aperture cards: ___ yes

Log data: E-LOG CC-16 E

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 1252 ft 1252 Meas. rept accuracy 3

Depth cased (first perf.): 698 ft 698 Casing type: S ; Diam. 20-12¾-10¾ in 20

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) other G

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other H

Date Drilled: 10-31-51 951 Pump intake setting: ___ ft

Driller: LAYNE-TEXAS CO. HOUSTON TEXAS (name, address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other T Deep Shallow D

Power (type): diesel, elec, nat gas, gasoline, hand, LP gas, wind; H.P. ___ 5 Trans. or meter no. ___

Descrip. MP ___ ft above below LSD, Alt. MP ___

Alt. LSD: 21 21 Accuracy (source): TOPO 5' 3

Water Level 285 ft above below MP; Ft above below LSD 285 Accuracy: REPT. D

Date meas: 12-1-54 D54 Yield: 1800 gpm 1800 Method determined ___

Drawdown: 54 ft 54 Accuracy: REPT. D Pumping period — hrs ___

QUALITY OF WATER DATA: Iron ___ ppm Sulfate ___ ppm Chloride ___ ppm Hard. ___ ppm

Sp. Conduct ___ K x 10^6 ___ Temp. ___ °F ___ Date sampled ___

Taste, color, etc. ___

PL 339
285
54

Well No. LJ-65-23-219

Well No. LJ-65-23-219

Latitude-longitude 29.44.25 S 95.10.16
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–10) Physiographic Province: COASTAL PLAIN 03 (20–21) Section: _____

F (22) Drainage Basin: _____ 51R (23–25) Subbasin: _____ (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat _____ (27)

MAJOR AQUIFER: _____ system, _____ series T (28–29) _____ aquifer, formation, group E (30–31) ✓

Lithology: _____ (32–33) Origin: _____ (34) Aquifer Thickness: _____ ft

(35–37) Length of well open to: 290 ft 290 (38–40) Depth to top of: _____ ft (41–43)

MINOR AQUIFER: _____ system, _____ series (44–45) _____ aquifer, formation, group (46–47)

Lithology: _____ (48–49) Origin: _____ (50) Aquifer Thickness: _____ ft

(51–53) Length of well open to: _____ ft (54–56) Depth to top of: _____ ft (57–59)

Intervals Screened: _____

Depth to consolidated rock: _____ ft (60–63) Source of data: _____ (64)

Depth to basement: _____ ft (65–68) Source of data: _____ (69)

Surficial material: _____ (70–71) Infiltration characteristics: _____ (72)

Coefficient Trans: _____ gpd/ft (73–75) Coefficient Storage: _____ (76–78)

Coefficient Perm: _____ gpd/ft^2; Spec cap: _____ gpm/ft; Number of geologic cards: _____ (79)

DEPTH		LENGTH	
692	—	692	20" CSG
698	—	110	12 3/4" BLANK LINER,
698-728	—	30	12 3/4" W.W. SCR,
743-753	—	10	✓
833-868	—	35	✓
893-938	—	45	✓
963-993	—	30	✓
1003-1043	—	40	✓
1050	—	2	SWAGE
1085-1095	—	10	10 3/4" W.W. SCR,
1130-1210	—	80	✓
1225-1235	—	10	✓
1235-1250	—	15	BLANK
1252	—	2	SET NIPPLE + BPV.

STATIC 2-28-52 — 258.14 +2.0 2-16-53 250 by Co
2-16-52 — 250. 12-1-54 285
12-1-54 339 PL @ 1800 gpm

P.L. 2-27-52 — 349.62

GPO 857-700

Well No. LJ-65-23-219

County Harris Lat. 29°44'25" Long. 95°10'16"

Date Feb. 27, 1952 Well No. LJ-65-23-219

Aquifer Gulf Coast sands Pre-Test Water Level 346.6

Discharge 2,070 Specific Capacity 24.7(8 hrs.)

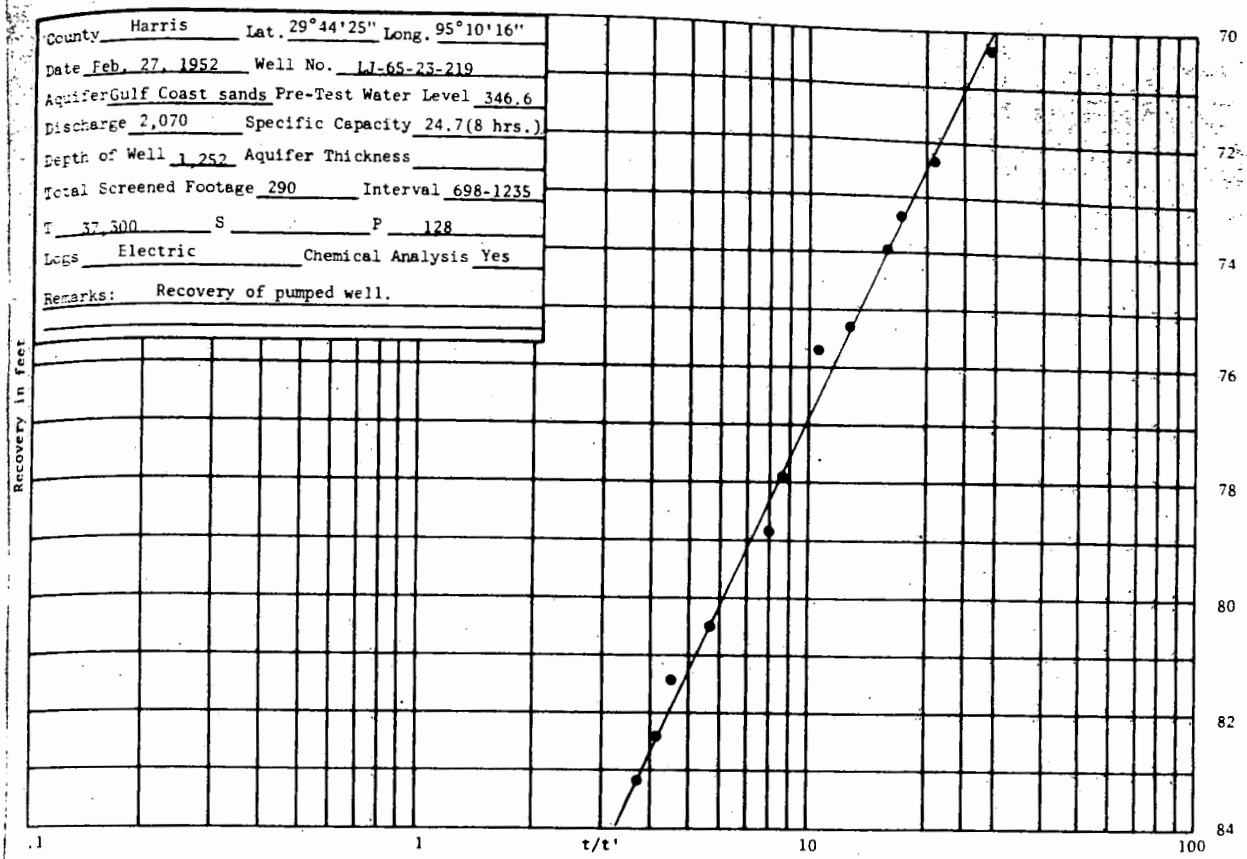
Depth of Well 1,252 Aquifer Thickness

Total Screened Footage 290 Interval 698-1235

T 37,300 S P 128

Logs Electric Chemical Analysis Yes

Remarks: Recovery of pumped well.



Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-219

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523219
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.7405556
Latitude (degrees minutes seconds)	29° 44' 26" N
Longitude (decimal degrees)	-95.1713889
Longitude (degrees minutes seconds)	095° 10' 17" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	21
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1252
Well Depth Source	Another Government Agency
Drilling Start Date	
Drilling End Date	10/31/1951
Drilling Method	Mud (Hydraulic) Rotary
Borehole Completion	Gravel Pack w/Screen

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Historical
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Albemarle Corp.
Driller	Layne Texas
Other Data Available	Aquifer Test
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	294425095101601
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	10/15/1968
Last Update Date	7/15/2023

Remarks	Reported yield 2070 GPM with 83.8 feet recovery in 1952. Specific capacity 24.7 GPM/ft. Aquifer test results in TWDB R-98. No test data in TWDB files.

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
20	Blank	Steel			0	692
12	Blank	Steel			588	698
12	Screen	Steel			698	728
12	Blank	Steel			728	743
12	Screen	Steel			743	753
12	Blank	Steel			753	833
12	Screen	Steel			833	868
12	Blank	Steel			868	893
12	Screen	Steel			893	938
12	Blank	Steel			938	963
12	Screen	Steel			963	993
12	Blank	Steel			993	1003
12	Screen	Steel			1003	1043
10	Blank	Steel			1043	1085
10	Screen	Steel			1085	1095
10	Blank	Steel			1095	1130
10	Screen	Steel			1130	1210
10	Blank	Steel			1210	1225
10	Screen	Steel			1225	1235
10	Blank	Steel			1235	1252

Well Tests - No Data

Lithology - No Data

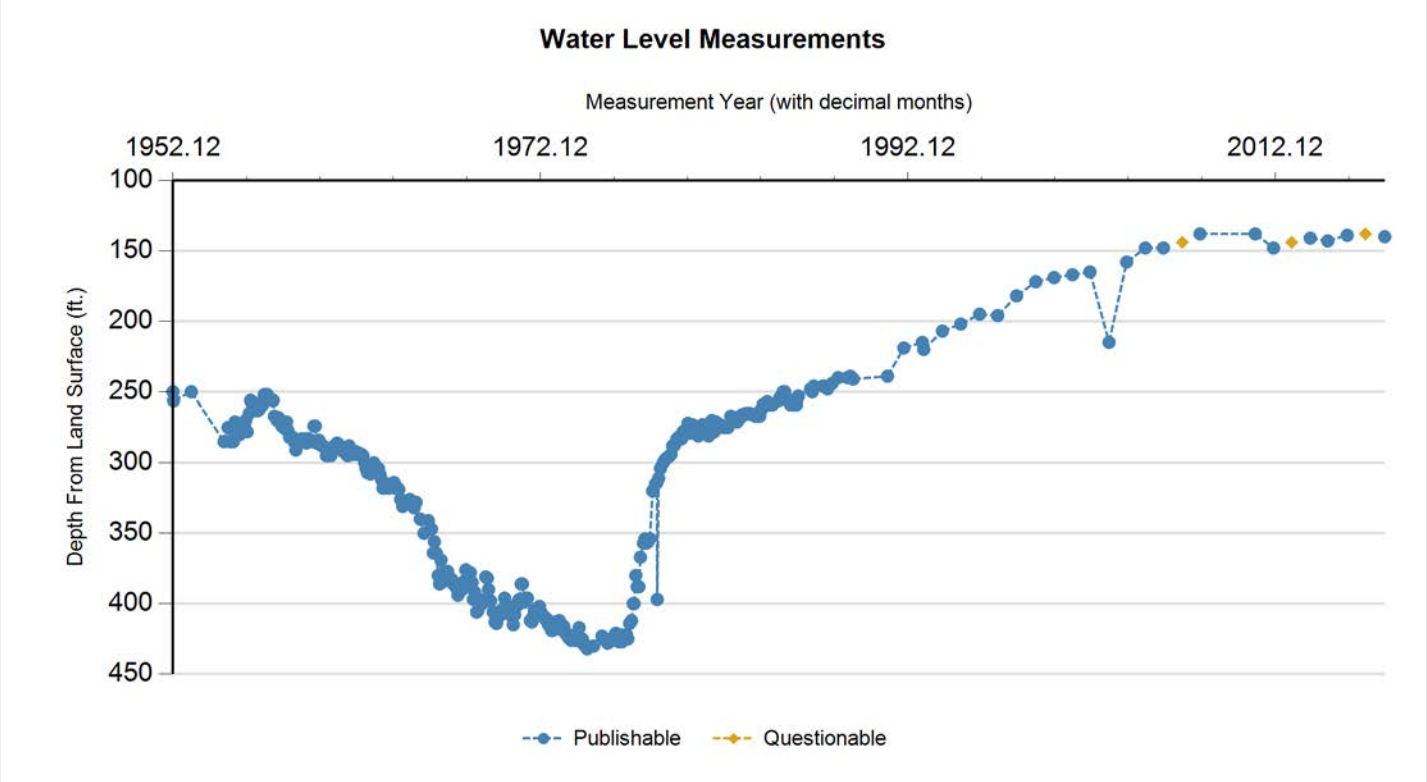
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/16/1952		250		-229	1	U.S. Geological Survey	Steel Tape		
P	2/28/1952		256.14	6.14	-235.14	1	U.S. Geological Survey	Steel Tape		
P	2/16/1953		250	(6.14)	-229	1	U.S. Geological Survey	Steel Tape		
P	12/1/1954		285	35.00	-264	1	U.S. Geological Survey	Steel Tape		
P	2/15/1955		275	(10.00)	-254	1	Other or Source of Measurement Unknown	Unknown		
P	3/30/1955		285	10.00	-264	1	U.S. Geological Survey	Steel Tape		
P	5/4/1955		285	0.00	-264	1	U.S. Geological Survey	Steel Tape		
P	6/2/1955		285	0.00	-264	1	U.S. Geological Survey	Steel Tape		
P	7/6/1955		271	(14.00)	-250	1	U.S. Geological Survey	Steel Tape		
P	8/2/1955		278	7.00	-257	1	U.S. Geological Survey	Steel Tape		
P	9/8/1955		275	(3.00)	-254	1	U.S. Geological Survey	Steel Tape		
P	10/5/1955		280	5.00	-259	1	U.S. Geological Survey	Steel Tape		
P	11/2/1955		277	(3.00)	-256	1	U.S. Geological Survey	Steel Tape		
P	12/8/1955		276	(1.00)	-255	1	U.S. Geological Survey	Steel Tape		
P	1/5/1956		273	(3.00)	-252	1	U.S. Geological Survey	Steel Tape		
P	2/1/1956		270	(3.00)	-249	1	U.S. Geological Survey	Steel Tape		
P	3/1/1956		278	8.00	-257	1	U.S. Geological Survey	Steel Tape		
P	4/12/1956		265	(13.00)	-244	1	U.S. Geological Survey	Steel Tape		
P	5/9/1956		256	(9.00)	-235	1	U.S. Geological Survey	Steel Tape		
P	6/6/1956		258	2.00	-237	1	U.S. Geological Survey	Steel Tape		
P	7/5/1956		263	5.00	-242	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	8/15/1956		258	(5.00)	-237	1	U.S. Geological Survey	Steel Tape		
P	9/6/1956		263	5.00	-242	1	U.S. Geological Survey	Steel Tape		
P	10/4/1956		263	0.00	-242	1	U.S. Geological Survey	Steel Tape		
P	11/7/1956		262	(1.00)	-241	1	U.S. Geological Survey	Steel Tape		
P	12/5/1956		260	(2.00)	-239	1	U.S. Geological Survey	Steel Tape		
P	1/3/1957		259	(1.00)	-238	1	U.S. Geological Survey	Steel Tape		
P	2/6/1957		252	(7.00)	-231	1	U.S. Geological Survey	Steel Tape		
P	3/6/1957		253	1.00	-232	1	U.S. Geological Survey	Steel Tape		
P	4/3/1957		252	(1.00)	-231	1	U.S. Geological Survey	Steel Tape		
P	5/8/1957		254	2.00	-233	1	U.S. Geological Survey	Steel Tape		
P	7/31/1957		256	2.00	-235	1	U.S. Geological Survey	Steel Tape		
P	8/27/1957		267	11.00	-246	1	U.S. Geological Survey	Steel Tape		
P	9/24/1957		268	1.00	-247	1	U.S. Geological Survey	Steel Tape		
P	10/22/1957		270	2.00	-249	1	U.S. Geological Survey	Steel Tape		
P	11/19/1957		268	(2.00)	-247	1	U.S. Geological Survey	Steel Tape		
P	12/24/1957		271	3.00	-250	1	U.S. Geological Survey	Steel Tape		
P	1/21/1958		274	3.00	-253	1	U.S. Geological Survey	Steel Tape		
P	2/25/1958		275	1.00	-254	1	U.S. Geological Survey	Steel Tape		
P	3/26/1958		276	1.00	-255	1	U.S. Geological Survey	Steel Tape		
P	4/23/1958		271	(5.00)	-250	1	U.S. Geological Survey	Steel Tape		
P	5/20/1958		277	6.00	-256	1	U.S. Geological Survey	Steel Tape		
P	6/24/1958		282	5.00	-261	1	U.S. Geological Survey	Steel Tape		
P	7/29/1958		282	0.00	-261	1	U.S. Geological Survey	Steel Tape		
P	8/27/1958		282	0.00	-261	1	U.S. Geological Survey	Steel Tape		
P	9/23/1958		285	3.00	-264	1	U.S. Geological Survey	Steel Tape		
P	10/28/1958		291	6.00	-270	1	U.S. Geological Survey	Steel Tape		
P	11/20/1958		288	(3.00)	-267	1	U.S. Geological Survey	Steel Tape		
P	12/23/1958		285	(3.00)	-264	1	U.S. Geological Survey	Steel Tape		
P	1/20/1959		285	0.00	-264	1	U.S. Geological Survey	Steel Tape		
P	2/18/1959		283	(2.00)	-262	1	U.S. Geological Survey	Steel Tape		
P	3/17/1959		283	0.00	-262	1	U.S. Geological Survey	Steel Tape		
P	4/22/1959		285	2.00	-264	1	U.S. Geological Survey	Steel Tape		
P	5/28/1959		286	1.00	-265	1	U.S. Geological Survey	Steel Tape		
P	6/24/1959		283	(3.00)	-262	1	U.S. Geological Survey	Steel Tape		
P	7/8/1959		283	0.00	-262	1	U.S. Geological Survey	Steel Tape		
P	8/20/1959		284	1.00	-263	1	U.S. Geological Survey	Steel Tape		
P	9/23/1959		285	1.00	-264	1	U.S. Geological Survey	Steel Tape		
P	10/21/1959		274	(11.00)	-253	1	U.S. Geological Survey	Steel Tape		
P	11/19/1959		274	0.00	-253	1	U.S. Geological Survey	Steel Tape		
P	12/16/1959		286	12.00	-265	1	U.S. Geological Survey	Steel Tape		
P	1/27/1960		284	(2.00)	-263	1	U.S. Geological Survey	Steel Tape		
P	2/24/1960		287	3.00	-266	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	3/23/1960		288	1.00	-267	1	U.S. Geological Survey	Steel Tape		
P	4/20/1960		288	0.00	-267	1	U.S. Geological Survey	Steel Tape		
P	5/26/1960		289	1.00	-268	1	U.S. Geological Survey	Steel Tape		
P	6/24/1960		295	6.00	-274	1	U.S. Geological Survey	Steel Tape		
P	7/19/1960		295	0.00	-274	1	U.S. Geological Survey	Steel Tape		
P	8/26/1960		294	(1.00)	-273	1	U.S. Geological Survey	Steel Tape		
P	9/22/1960		295	1.00	-274	1	U.S. Geological Survey	Steel Tape		
P	10/25/1960		291	(4.00)	-270	1	U.S. Geological Survey	Steel Tape		
P	11/29/1960		288	(3.00)	-267	1	U.S. Geological Survey	Steel Tape		
P	12/20/1960		288	0.00	-267	1	U.S. Geological Survey	Steel Tape		
P	1/24/1961		286	(2.00)	-265	1	U.S. Geological Survey	Steel Tape		
P	2/21/1961		287	1.00	-266	1	U.S. Geological Survey	Steel Tape		
P	3/20/1961		290	3.00	-269	1	U.S. Geological Survey	Steel Tape		
P	4/26/1961		290	0.00	-269	1	U.S. Geological Survey	Steel Tape		
P	5/23/1961		292	2.00	-271	1	U.S. Geological Survey	Steel Tape		
P	6/27/1961		290	(2.00)	-269	1	U.S. Geological Survey	Steel Tape		
P	7/27/1961		294	4.00	-273	1	U.S. Geological Survey	Steel Tape		
P	8/22/1961		295	1.00	-274	1	U.S. Geological Survey	Steel Tape		
P	9/21/1961		288	(7.00)	-267	1	U.S. Geological Survey	Steel Tape		
P	10/27/1961		294	6.00	-273	1	U.S. Geological Survey	Steel Tape		
P	11/22/1961		294	0.00	-273	1	U.S. Geological Survey	Steel Tape		
P	12/19/1961		293	(1.00)	-272	1	U.S. Geological Survey	Steel Tape		
P	1/17/1962		292	(1.00)	-271	1	U.S. Geological Survey	Steel Tape		
P	2/20/1962		294	2.00	-273	1	U.S. Geological Survey	Steel Tape		
P	3/23/1962		293	(1.00)	-272	1	U.S. Geological Survey	Steel Tape		
P	4/25/1962		294	1.00	-273	1	U.S. Geological Survey	Steel Tape		
P	5/23/1962		294	0.00	-273	1	U.S. Geological Survey	Steel Tape		
P	6/20/1962		295	1.00	-274	1	U.S. Geological Survey	Steel Tape		
P	7/25/1962		300	5.00	-279	1	U.S. Geological Survey	Steel Tape		
P	8/22/1962		304	4.00	-283	1	U.S. Geological Survey	Steel Tape		
P	9/21/1962		307	3.00	-286	1	U.S. Geological Survey	Steel Tape		
P	10/23/1962		304	(3.00)	-283	1	U.S. Geological Survey	Steel Tape		
P	11/21/1962		308	4.00	-287	1	U.S. Geological Survey	Steel Tape		
P	12/19/1962		301	(7.00)	-280	1	U.S. Geological Survey	Steel Tape		
P	1/22/1963		300	(1.00)	-279	1	U.S. Geological Survey	Steel Tape		
P	2/19/1963		306	6.00	-285	1	U.S. Geological Survey	Steel Tape		
P	3/20/1963		306	0.00	-285	1	U.S. Geological Survey	Steel Tape		
P	4/24/1963		304	(2.00)	-283	1	U.S. Geological Survey	Steel Tape		
P	5/21/1963		308	4.00	-287	1	U.S. Geological Survey	Steel Tape		
P	6/26/1963		312	4.00	-291	1	U.S. Geological Survey	Steel Tape		
P	7/24/1963		318	6.00	-297	1	U.S. Geological Survey	Steel Tape		
P	8/14/1963		318	0.00	-297	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/13/1963		316	(2.00)	-295	1	U.S. Geological Survey	Steel Tape		
P	10/9/1963		316	0.00	-295	1	U.S. Geological Survey	Steel Tape		
P	11/14/1963		318	2.00	-297	1	U.S. Geological Survey	Steel Tape		
P	12/27/1963		315	(3.00)	-294	1	U.S. Geological Survey	Steel Tape		
P	1/28/1964		317	2.00	-296	1	U.S. Geological Survey	Steel Tape		
P	2/28/1964		314	(3.00)	-293	1	U.S. Geological Survey	Steel Tape		
P	3/18/1964		318	4.00	-297	1	U.S. Geological Survey	Steel Tape		
P	4/8/1964		318	0.00	-297	1	U.S. Geological Survey	Steel Tape		
P	5/13/1964		318	0.00	-297	1	U.S. Geological Survey	Steel Tape		
P	6/2/1964		319	1.00	-298	1	U.S. Geological Survey	Steel Tape		
P	7/9/1964		326	7.00	-305	1	U.S. Geological Survey	Steel Tape		
P	8/20/1964		331	5.00	-310	1	U.S. Geological Survey	Steel Tape		
P	9/22/1964		328	(3.00)	-307	1	U.S. Geological Survey	Steel Tape		
P	10/8/1964		329	1.00	-308	1	U.S. Geological Survey	Steel Tape		
P	11/17/1964		327	(2.00)	-306	1	U.S. Geological Survey	Steel Tape		
P	1/7/1965		326	(1.00)	-305	1	U.S. Geological Survey	Steel Tape		
P	3/15/1965		330	4.00	-309	1	U.S. Geological Survey	Steel Tape		
P	4/2/1965		332	2.00	-311	1	U.S. Geological Survey	Steel Tape		
P	5/11/1965		328	(4.00)	-307	1	U.S. Geological Survey	Steel Tape		
P	8/3/1965		340	12.00	-319	1	U.S. Geological Survey	Steel Tape		
P	10/18/1965		350	10.00	-329	1	U.S. Geological Survey	Steel Tape		
P	1/8/1966		341	(9.00)	-320	1	Registered Water Well Driller	Unknown		
P	3/12/1966		347	6.00	-326	1	Registered Water Well Driller	Unknown		
P	4/18/1966		364	17.00	-343	1	Registered Water Well Driller	Unknown		
P	5/10/1966		356	(8.00)	-335	1	Registered Water Well Driller	Unknown		
P	6/15/1966		364	8.00	-343	1	Registered Water Well Driller	Unknown		
P	7/26/1966		380	16.00	-359	1	Registered Water Well Driller	Unknown		
P	8/23/1966		386	6.00	-365	1	Registered Water Well Driller	Unknown		
P	9/21/1966		369	(17.00)	-348	1	Registered Water Well Driller	Unknown		
P	10/31/1966		379	10.00	-358	1	Registered Water Well Driller	Unknown		
P	11/28/1966		384	5.00	-363	1	Registered Water Well Driller	Unknown		
P	12/27/1966		381	(3.00)	-360	1	Registered Water Well Driller	Unknown		
P	1/25/1967		377	(4.00)	-356	1	Registered Water Well Driller	Unknown		
P	3/1/1967		381	4.00	-360	1	Registered Water Well Driller	Unknown		
P	4/26/1967		383	2.00	-362	1	Registered Water Well Driller	Unknown		
P	5/24/1967		386	3.00	-365	1	Registered Water Well Driller	Unknown		
P	7/6/1967		388	2.00	-367	1	Registered Water Well Driller	Unknown		
P	8/23/1967		394	6.00	-373	1	Registered Water Well Driller	Unknown		
P	9/27/1967		386	(8.00)	-365	1	Registered Water Well Driller	Unknown		
P	11/16/1967		390	4.00	-369	1	Registered Water Well Driller	Unknown		
P	12/28/1967		384	(6.00)	-363	1	Registered Water Well Driller	Unknown		
P	1/24/1968		376	(8.00)	-355	1	Registered Water Well Driller	Unknown		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/29/1968		377	1.00	-356	1	Registered Water Well Driller	Unknown		
P	3/28/1968		385	8.00	-364	1	Registered Water Well Driller	Unknown		
P	4/25/1968		378	(7.00)	-357	1	Registered Water Well Driller	Unknown		
P	5/31/1968		385	7.00	-364	1	Registered Water Well Driller	Unknown		
P	6/26/1968		397	12.00	-376	1	Registered Water Well Driller	Unknown		
P	7/23/1968		392	(5.00)	-371	1	Registered Water Well Driller	Unknown		
P	8/29/1968		406	14.00	-385	1	Registered Water Well Driller	Unknown		
P	9/25/1968		405	(1.00)	-384	1	Registered Water Well Driller	Unknown		
P	10/25/1968		401	(4.00)	-380	1	Registered Water Well Driller	Unknown		
P	11/25/1968		399	(2.00)	-378	1	U.S. Geological Survey	Steel Tape		
P	11/28/1968		399	0.00	-378	1	Registered Water Well Driller	Unknown		
P	12/27/1968		400	1.00	-379	1	Registered Water Well Driller	Unknown		
P	1/31/1969		397	(3.00)	-376	1	Registered Water Well Driller	Unknown		
P	2/25/1969		381	(16.00)	-360	1	Registered Water Well Driller	Unknown		
P	3/26/1969		382	1.00	-361	1	Registered Water Well Driller	Unknown		
P	4/21/1969		390	8.00	-369	1	Registered Water Well Driller	Unknown		
P	6/2/1969		398	8.00	-377	1	Registered Water Well Driller	Unknown		
P	7/23/1969		406	8.00	-385	1	Registered Water Well Driller	Unknown		
P	8/29/1969		413	7.00	-392	1	Private Firm or Industry	Air Line		
P	9/29/1969		414	1.00	-393	1	Private Firm or Industry	Air Line		
P	10/30/1969		410	(4.00)	-389	1	Private Firm or Industry	Air Line		
P	11/26/1969		408	(2.00)	-387	1	Private Firm or Industry	Air Line		
P	12/24/1969		405	(3.00)	-384	1	Private Firm or Industry	Air Line		
P	2/2/1970		407	2.00	-386	1	Private Firm or Industry	Air Line		
P	3/5/1970		396	(11.00)	-375	1	Private Firm or Industry	Air Line		
P	3/31/1970		401	5.00	-380	1	Private Firm or Industry	Air Line		
P	4/30/1970		404	3.00	-383	1	Private Firm or Industry	Air Line		
P	5/28/1970		406	2.00	-385	1	Private Firm or Industry	Air Line		
P	6/26/1970		405	(1.00)	-384	1	Private Firm or Industry	Air Line		
P	7/30/1970		409	4.00	-388	1	Private Firm or Industry	Air Line		
P	8/28/1970		415	6.00	-394	1	Private Firm or Industry	Air Line		
P	9/24/1970		408	(7.00)	-387	1	Private Firm or Industry	Air Line		
P	10/28/1970		402	(6.00)	-381	1	Private Firm or Industry	Air Line		
P	11/25/1970		399	(3.00)	-378	1	Private Firm or Industry	Air Line		
P	12/24/1970		397	(2.00)	-376	1	Private Firm or Industry	Air Line		
P	1/28/1971		386	(11.00)	-365	1	Private Firm or Industry	Air Line		
P	2/23/1971		386	0.00	-365	1	Private Firm or Industry	Air Line		
P	3/24/1971		399	13.00	-378	1	Private Firm or Industry	Air Line		
P	4/30/1971		396	(3.00)	-375	1	Private Firm or Industry	Air Line		
P	6/3/1971		396	0.00	-375	1	Private Firm or Industry	Air Line		
P	7/30/1971		412	16.00	-391	1	Private Firm or Industry	Air Line		
P	9/3/1971		413	1.00	-392	1	Private Firm or Industry	Air Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/29/1971		409	(4.00)	-388	1	Private Firm or Industry	Air Line		
P	10/27/1971		404	(5.00)	-383	1	Private Firm or Industry	Air Line		
P	11/23/1971		405	1.00	-384	1	Private Firm or Industry	Air Line		
P	12/28/1971		403	(2.00)	-382	1	Private Firm or Industry	Air Line		
P	1/27/1972		402	(1.00)	-381	1	Private Firm or Industry	Air Line		
P	2/24/1972		406	4.00	-385	1	Private Firm or Industry	Air Line		
P	3/29/1972		409	3.00	-388	1	Private Firm or Industry	Air Line		
P	4/26/1972		409	0.00	-388	1	Private Firm or Industry	Air Line		
P	5/24/1972		411	2.00	-390	1	Private Firm or Industry	Air Line		
P	6/27/1972		411	0.00	-390	1	Private Firm or Industry	Air Line		
P	7/26/1972		415	4.00	-394	1	Private Firm or Industry	Air Line		
P	8/23/1972		415	0.00	-394	1	Private Firm or Industry	Air Line		
P	9/29/1972		419	4.00	-398	1	Private Firm or Industry	Air Line		
P	10/19/1972		419	0.00	-398	1	Private Firm or Industry	Air Line		
P	11/30/1972		413	(6.00)	-392	1	Private Firm or Industry	Air Line		
P	1/2/1973		418	5.00	-397	1	Private Firm or Industry	Air Line		
P	2/28/1973		412	(6.00)	-391	1	Private Firm or Industry	Air Line		
P	3/30/1973		415	3.00	-394	1	Private Firm or Industry	Air Line		
P	4/25/1973		418	3.00	-397	1	Private Firm or Industry	Air Line		
P	5/23/1973		416	(2.00)	-395	1	Private Firm or Industry	Air Line		
P	6/27/1973		421	5.00	-400	1	Private Firm or Industry	Air Line		
P	7/24/1973		421	0.00	-400	1	Private Firm or Industry	Air Line		
P	8/28/1973		424	3.00	-403	1	Private Firm or Industry	Air Line		
P	9/26/1973		425	1.00	-404	1	Private Firm or Industry	Air Line		
P	10/23/1973		426	1.00	-405	1	Private Firm or Industry	Air Line		
P	11/27/1973		425	(1.00)	-404	1	Private Firm or Industry	Air Line		
P	1/4/1974		426	1.00	-405	1	Private Firm or Industry	Air Line		
P	1/22/1974		426	0.00	-405	1	Private Firm or Industry	Air Line		
P	2/26/1974		421	(5.00)	-400	1	Private Firm or Industry	Air Line		
P	3/26/1974		417	(4.00)	-396	1	Private Firm or Industry	Air Line		
P	4/25/1974		425	8.00	-404	1	Private Firm or Industry	Air Line		
P	5/28/1974		425	0.00	-404	1	Private Firm or Industry	Air Line		
P	6/27/1974		429	4.00	-408	1	Private Firm or Industry	Air Line		
P	7/24/1974		429	0.00	-408	1	Private Firm or Industry	Air Line		
P	9/5/1974		432	3.00	-411	1	Private Firm or Industry	Air Line		
P	1/9/1975		430	(2.00)	-409	1	Private Firm or Industry	Air Line		
P	6/24/1975		423	(7.00)	-402	1	Private Firm or Industry	Air Line		
P	7/22/1975		424	1.00	-403	1	Private Firm or Industry	Air Line		
P	8/29/1975		426	2.00	-405	1	Private Firm or Industry	Air Line		
P	10/16/1975		428	2.00	-407	1	Private Firm or Industry	Air Line		
P	11/25/1975		427	(1.00)	-406	1	Private Firm or Industry	Air Line		
P	1/29/1976		425	(2.00)	-404	1	Private Firm or Industry	Air Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/25/1976		423	(2.00)	-402	1	Private Firm or Industry	Air Line		
P	3/23/1976		421	(2.00)	-400	1	Private Firm or Industry	Air Line		
P	5/17/1976		423	2.00	-402	1	Private Firm or Industry	Air Line		
P	5/25/1976		427	4.00	-406	1	Private Firm or Industry	Air Line		
P	6/22/1976		422	(5.00)	-401	1	Private Firm or Industry	Air Line		
P	7/29/1976		427	5.00	-406	1	Private Firm or Industry	Air Line		
P	8/24/1976		425	(2.00)	-404	1	Private Firm or Industry	Air Line		
P	9/29/1976		425	0.00	-404	1	Private Firm or Industry	Air Line		
P	10/26/1976		422	(3.00)	-401	1	Private Firm or Industry	Air Line		
P	11/23/1976		425	3.00	-404	1	Private Firm or Industry	Air Line		
P	12/29/1976		414	(11.00)	-393	1	Private Firm or Industry	Air Line		
P	1/31/1977		412	(2.00)	-391	1	Private Firm or Industry	Air Line		
P	3/4/1977		400	(12.00)	-379	1	Private Firm or Industry	Air Line		
P	3/22/1977		400	0.00	-379	1	Private Firm or Industry	Air Line		
P	4/26/1977		380	(20.00)	-359	1	Private Firm or Industry	Air Line		
P	5/24/1977		388	8.00	-367	1	Registered Water Well Driller	Unknown		
P	6/28/1977		388	0.00	-367	1	Registered Water Well Driller	Unknown		
P	7/27/1977		367	(21.00)	-346	1	Registered Water Well Driller	Unknown		
P	9/29/1977		357	(10.00)	-336	1	Registered Water Well Driller	Unknown		
P	10/28/1977		354	(3.00)	-333	1	Registered Water Well Driller	Unknown		
P	11/28/1977		357	3.00	-336	1	Registered Water Well Driller	Unknown		
P	12/30/1977		356	(1.00)	-335	1	Registered Water Well Driller	Unknown		
P	1/30/1978		354	(2.00)	-333	1	Registered Water Well Driller	Unknown		
P	3/26/1978		320	(34.00)	-299	1	Registered Water Well Driller	Unknown		
P	5/24/1978		315	(5.00)	-294	1	Registered Water Well Driller	Unknown		
P	6/21/1978		314	(1.00)	-293	1	Registered Water Well Driller	Unknown		
P	6/26/1978		397	83.00	-376	1	U.S. Geological Survey	Steel Tape		
P	7/25/1978		311	(86.00)	-290	1	Registered Water Well Driller	Unknown		
P	8/31/1978		304	(7.00)	-283	1	Registered Water Well Driller	Unknown		
P	10/25/1978		300	(4.00)	-279	1	Registered Water Well Driller	Unknown		
P	11/28/1978		298	(2.00)	-277	1	Registered Water Well Driller	Unknown		
P	12/21/1978		297	(1.00)	-276	1	Registered Water Well Driller	Unknown		
P	1/31/1979		296	(1.00)	-275	1	Registered Water Well Driller	Unknown		
P	2/27/1979		295	(1.00)	-274	1	Registered Water Well Driller	Unknown		
P	3/27/1979		294	(1.00)	-273	1	Registered Water Well Driller	Unknown		
P	4/27/1979		288	(6.00)	-267	1	Registered Water Well Driller	Unknown		
P	5/23/1979		288	0.00	-267	1	Registered Water Well Driller	Unknown		
P	6/27/1979		286	(2.00)	-265	1	Registered Water Well Driller	Unknown		
P	7/24/1979		283	(3.00)	-262	1	Registered Water Well Driller	Unknown		
P	8/29/1979		282	(1.00)	-261	1	Registered Water Well Driller	Unknown		
P	9/25/1979		281	(1.00)	-260	1	Registered Water Well Driller	Unknown		
P	10/25/1979		283	2.00	-262	1	Registered Water Well Driller	Unknown		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	11/27/1979		278	(5.00)	-257	1	Registered Water Well Driller	Unknown		
P	12/28/1979		280	2.00	-259	1	Registered Water Well Driller	Unknown		
P	1/23/1980		276	(4.00)	-255	1	Registered Water Well Driller	Unknown		
P	2/26/1980		272	(4.00)	-251	1	Registered Water Well Driller	Unknown		
P	3/27/1980		278	6.00	-257	1	Registered Water Well Driller	Unknown		
P	4/28/1980		279	1.00	-258	1	Registered Water Well Driller	Unknown		
P	5/29/1980		273	(6.00)	-252	1	Registered Water Well Driller	Unknown		
P	6/24/1980		275	2.00	-254	1	Registered Water Well Driller	Unknown		
P	7/17/1980		279	4.00	-258	1	Registered Water Well Driller	Unknown		
P	8/27/1980		276	(3.00)	-255	1	Registered Water Well Driller	Unknown		
P	9/24/1980		281	5.00	-260	1	Registered Water Well Driller	Unknown		
P	12/17/1980		273	(8.00)	-252	1	Registered Water Well Driller	Unknown		
P	1/4/1981		276	3.00	-255	1	Registered Water Well Driller	Unknown		
P	2/1/1981		275	(1.00)	-254	1	Registered Water Well Driller	Unknown		
P	3/1/1981		275	0.00	-254	1	Registered Water Well Driller	Unknown		
P	4/12/1981		281	6.00	-260	1	Registered Water Well Driller	Unknown		
P	5/8/1981		276	(5.00)	-255	1	Registered Water Well Driller	Unknown		
P	6/16/1981		270	(6.00)	-249	1	U.S. Geological Survey	Steel Tape		
P	6/20/1981		274	4.00	-253	1	U.S. Geological Survey	Steel Tape		
P	7/7/1981		274	0.00	-253	1	U.S. Geological Survey	Steel Tape		
P	8/4/1981		278	4.00	-257	1	U.S. Geological Survey	Steel Tape		
P	9/7/1981		271	(7.00)	-250	1	U.S. Geological Survey	Steel Tape		
P	10/10/1981		275	4.00	-254	1	U.S. Geological Survey	Steel Tape		
P	11/2/1981		273	(2.00)	-252	1	U.S. Geological Survey	Steel Tape		
P	12/6/1981		273	0.00	-252	1	U.S. Geological Survey	Steel Tape		
P	1/3/1982		274	1.00	-253	1	U.S. Geological Survey	Steel Tape		
P	2/7/1982		275	1.00	-254	1	U.S. Geological Survey	Steel Tape		
P	4/3/1982		275	0.00	-254	1	U.S. Geological Survey	Steel Tape		
P	5/2/1982		275	0.00	-254	1	U.S. Geological Survey	Steel Tape		
P	6/28/1982		267	(8.00)	-246	1	U.S. Geological Survey	Steel Tape		
P	8/24/1982		269	2.00	-248	1	U.S. Geological Survey	Steel Tape		
P	9/8/1982		268	(1.00)	-247	1	U.S. Geological Survey	Steel Tape		
P	10/6/1982		269	1.00	-248	1	U.S. Geological Survey	Steel Tape		
P	11/7/1982		271	2.00	-250	1	U.S. Geological Survey	Air Line		
P	12/15/1982		269	(2.00)	-248	1	U.S. Geological Survey	Air Line		
P	1/2/1983		268	(1.00)	-247	1	U.S. Geological Survey	Air Line		
P	2/6/1983		266	(2.00)	-245	1	U.S. Geological Survey	Air Line		
P	3/5/1983		266	0.00	-245	1	U.S. Geological Survey	Air Line		
P	4/3/1983		266	0.00	-245	1	U.S. Geological Survey	Air Line		
P	5/1/1983		265	(1.00)	-244	1	U.S. Geological Survey	Air Line		
P	6/26/1983		265	0.00	-244	1	U.S. Geological Survey	Air Line		
P	7/2/1983		265	0.00	-244	1	U.S. Geological Survey	Air Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/4/1983		266	1.00	-245	1	U.S. Geological Survey	Air Line		
P	10/2/1983		266	0.00	-245	1	U.S. Geological Survey	Air Line		
P	11/5/1983		267	1.00	-246	1	U.S. Geological Survey	Air Line		
P	12/4/1983		267	0.00	-246	1	U.S. Geological Survey	Air Line		
P	1/23/1984		267	0.00	-246	1	U.S. Geological Survey	Air Line		
P	2/5/1984		263	(4.00)	-242	1	U.S. Geological Survey	Air Line		
P	3/4/1984		262	(1.00)	-241	1	U.S. Geological Survey	Air Line		
P	3/31/1984		259	(3.00)	-238	1	U.S. Geological Survey	Air Line		
P	5/25/1984		258	(1.00)	-237	1	U.S. Geological Survey	Air Line		
P	6/25/1984		257	(1.00)	-236	1	U.S. Geological Survey	Air Line		
P	7/4/1984		258	1.00	-237	1	U.S. Geological Survey	Air Line		
P	8/5/1984		259	1.00	-238	1	U.S. Geological Survey	Air Line		
P	9/3/1984		259	0.00	-238	1	U.S. Geological Survey	Air Line		
P	10/7/1984		259	0.00	-238	1	U.S. Geological Survey	Air Line		
P	2/6/1985		256	(3.00)	-235	1	U.S. Geological Survey	Air Line		
P	3/3/1985		254	(2.00)	-233	1	U.S. Geological Survey	Air Line		
P	4/24/1985		251	(3.00)	-230	1	U.S. Geological Survey	Air Line		
P	5/5/1985		250	(1.00)	-229	1	U.S. Geological Survey	Air Line		
P	6/4/1985		250	0.00	-229	1	U.S. Geological Survey	Air Line		
P	9/2/1985		256	6.00	-235	1	U.S. Geological Survey	Air Line		
P	10/0/1985		259	3.00	-238	1	U.S. Geological Survey	Unknown		
P	10/1/1985		259	0.00	-238	1	U.S. Geological Survey	Air Line		
P	12/0/1985		259	0.00	-238	1	U.S. Geological Survey	Unknown		
P	12/1/1985		259	0.00	-238	1	U.S. Geological Survey	Air Line		
P	1/5/1986		257	(2.00)	-236	1	U.S. Geological Survey	Air Line		
P	2/2/1986		255	(2.00)	-234	1	U.S. Geological Survey	Air Line		
P	3/2/1986		253	(2.00)	-232	1	U.S. Geological Survey	Air Line		
P	11/3/1986		248	(5.00)	-227	1	U.S. Geological Survey	Unknown		
P	12/7/1986		250	2.00	-229	1	U.S. Geological Survey	Unknown		
P	1/4/1987		246	(4.00)	-225	1	U.S. Geological Survey	Unknown		
P	7/5/1987		246	0.00	-225	1	U.S. Geological Survey	Unknown		
P	8/2/1987		246	0.00	-225	1	U.S. Geological Survey	Unknown		
P	10/4/1987		248	2.00	-227	1	U.S. Geological Survey	Unknown		
P	1/3/1988		244	(4.00)	-223	1	U.S. Geological Survey	Unknown		
P	5/1/1988		240	(4.00)	-219	1	U.S. Geological Survey	Unknown		
P	11/5/1988		240	0.00	-219	1	U.S. Geological Survey	Unknown		
P	1/1/1989		239	(1.00)	-218	1	U.S. Geological Survey	Unknown		
P	2/26/1989		241	2.00	-220	1	U.S. Geological Survey	Unknown		
P	1/7/1991		239	(2.00)	-218	1	U.S. Geological Survey	Steel Tape		
P	12/1/1991		219	(20.00)	-198	1	U.S. Geological Survey	Steel Tape		
P	12/4/1992		215	(4.00)	-194	1	U.S. Geological Survey	Steel Tape		
P	12/31/1992		220	5.00	-199	1	U.S. Geological Survey	Steel Tape		

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-219

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/2/1994		207	(13.00)	-186	1	U.S. Geological Survey	Steel Tape		
P	1/1/1995		202	(5.00)	-181	1	U.S. Geological Survey	Air Line		
P	1/11/1996		195	(7.00)	-174	1	U.S. Geological Survey	Electric Line		
P	1/5/1997		196	1.00	-175	1	U.S. Geological Survey	Electric Line		
P	1/16/1998		182	(14.00)	-161	1	U.S. Geological Survey	Unknown		
P	2/2/1999		172	(10.00)	-151	1	U.S. Geological Survey	Recorder (Float or Transducer)		
P	2/1/2000		169	(3.00)	-148	1	U.S. Geological Survey	Unknown		
P	2/1/2001		167	(2.00)	-146	1	U.S. Geological Survey	Unknown		
P	1/14/2002		165	(2.00)	-144	1	U.S. Geological Survey	Unknown		
P	1/28/2003		215	50.00	-194	1	U.S. Geological Survey	Steel Tape		
P	1/13/2004		158	(57.00)	-137	1	U.S. Geological Survey	Steel Tape		
P	1/19/2005		148	(10.00)	-127	1	U.S. Geological Survey	Unknown		
P	1/12/2006		148	0.00	-127	1	U.S. Geological Survey	Steel Tape		
Q	1/24/2007		144	(4.00)	-123	1	U.S. Geological Survey	Other	4	
P	1/10/2008		138	(6.00)	-117	1	U.S. Geological Survey	Unknown		
P	1/12/2011		138	0.00	-117	1	Well Owner or Operator	Steel Tape		
P	1/10/2012		148	10.00	-127	1	Well Owner or Operator	Steel Tape		
Q	1/7/2013		144	(4.00)	-123	1	Well Owner or Operator	Unknown	4	
P	1/10/2014		141	(3.00)	-120	1	U.S. Geological Survey	Unknown		
P	12/27/2014		143	2.00	-122	1	U.S. Geological Survey	Unknown		
P	1/14/2016	0101	139	(4.00)	-118	1	U.S. Geological Survey	Unknown		
Q	1/11/2017	0001	138	(1.00)	-117	1	U.S. Geological Survey	Unknown	4	
P	1/30/2018		140	2.00	-119	1	U.S. Geological Survey	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable
Q	Questionable

Remark ID	Remark Description
4	Well pumped recently

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523234

Texas Water Development Board
Well Schedule

State Well Number 6523234 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294340 **Longitude** 951046 **Source of Coords** 1

Owner's Well No. _____ **Location** _____

Owner
Champion Paper

Driller
Layne Texas

Address _____ **Tenant/Oper.** _____

Date Drilled / /1937 **Depth** 1481 **Source of Depth** **Altitude** 29 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION

Const-Method blank

Casing Material blank

Completion blank

Screen Material blank

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -** 250

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** blank **Tertiary -** blank

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** Y **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1937
-201

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency

REMARKS -
275 ft of screen between 1006 and 1458 ft. Reported yield 2550 gpm when drilled. Test hole drilled to 1502 ft. Well D-2.

Aquifer - 121EVGL **ID -** 15

EVANGELINE AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-234

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523234
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.727778
Latitude (degrees minutes seconds)	29° 43' 40" N
Longitude (decimal degrees)	-95.179444
Longitude (degrees minutes seconds)	095° 10' 46" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	29
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1481
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1937
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Champion Paper
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	Champion Paper Mill well D-3
Other Well Number	Historical Id 1130
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	275 ft of screen between 1006 and 1458 ft. Reported yield 2550 gpm when drilled. Test hole drilled to 1502 ft. Well D-2.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	8/12/1937		201		-172	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 7/8/1939 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		249.11	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		304	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		38	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		14	mg/L as CACO3	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00929	SODIUM, TOTAL (MG/L AS NA)		138	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		10	mg/L as SO4	

Water Quality Analysis

Sample Date: 2/19/1941 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		260.58	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		318	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		37	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		137	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		3	mg/L as SO4	

Water Quality Analysis

Sample Date: 1/29/1942 **Sample Time:** 0000 **Sample Number:** 2 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		275.41	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		336	mg/L	
00910	CALCIUM (MG/L)		10	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		40	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		31	mg/L as CACO3	
00920	MAGNESIUM (MG/L)		1	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		4.92		
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		11.46		
00932	SODIUM, CALCULATED, PERCENT		91	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		142	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		7	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		365	mg/L	

Water Quality Analysis

Sample Date: 1/13/1943 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		304.92	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		372	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		41	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		7	mg/L as SO4	

Water Quality Analysis

Sample Date: 9/12/1943 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		282.79	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		345	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		43	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		33	mg/L as CACO3	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		661	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		4	mg/L as SO4	

Water Quality Analysis

Sample Date: 6/22/1945 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		40	mg/L	

Water Quality Analysis

Sample Date: 2/10/1947 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		46	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	

Water Quality Analysis

Sample Date: 2/11/1949 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		288.52	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		352	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		44	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		15	mg/L as CACO3	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		661	MICR	

Water Quality Analysis

Sample Date: 2/6/1950 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		342	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		45	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.4	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		661	MICR	

Water Quality Analysis

Sample Date: 3/14/1951 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		280.33	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		342	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		42	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		19	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.1	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		652	MICR	

Water Quality Analysis

Sample Date: 1/28/1952 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		358	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		45	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.3	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		659	MICR	

Water Quality Analysis

Sample Date: 2/6/1953 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		359	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		42	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.7	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		660	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		28	C	

Water Quality Analysis

Sample Date: 3/12/1954 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		355	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		43	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		12	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.9	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		661	MICR	

Water Quality Analysis

Sample Date: 2/0/1956 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		444	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		52	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.7	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		812	MICR	

Water Quality Analysis

Sample Date: 3/16/1957 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		402	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		50	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		15	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.5	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		751	MICR	

Water Quality Analysis

Sample Date: 3/21/1958 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		368	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		44	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		683	MICR	

Water Quality Analysis

Sample Date: 4/15/1959 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		348	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		45	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		15	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.3	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		680	MICR	

Water Quality Analysis

Sample Date: 3/23/1960 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		295.08	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		360	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		46	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		679	MICR	

Water Quality Analysis

Sample Date: 4/18/1961 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		296.72	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		362	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		43	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		15	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		684	MICR	

Water Quality Analysis

Sample Date: 4/20/1962 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		296.72	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		362	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		47	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		15	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.7	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		687	MICR	

Water Quality Analysis

Sample Date: 5/1/1963 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		375.41	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		458	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		59	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		17	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1140	MICR	

Water Quality Analysis

Sample Date: 3/31/1964 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		303.28	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		370	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		43	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		703	MICR	

Water Quality Analysis

Sample Date: 4/5/1965 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		378	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		46	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.4	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		698	MICR	

Water Quality Analysis

Sample Date: 4/1/1966 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		304.92	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		372	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		47	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		15	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.9	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		715	MICR	

Water Quality Analysis

Sample Date: 4/4/1967 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		304.92	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		372	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		46	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		695	MICR	

Water Quality Analysis

Sample Date: 4/5/1968 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		300	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		366	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		48	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.1	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		706	MICR	

Water Quality Analysis

Sample Date: 4/11/1969 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		298.36	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		364	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		47	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		24	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		708	MICR	

Water Quality Analysis

Sample Date: 5/8/1970 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		295.08	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		360	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		52	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		17	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		706	MICR	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523236

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 23 236 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 43 08 Longitude - 95 12 07 Source of Coords - 2

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Champion Papers Driller - Layne Texas

Address _____ Tenant/Oper. _____
Date Drilled - / /1937 Depth - 1,840 ft. Source of Depth - Altitude - 30 ft. Source of Alt. -
Aquifer - 121EVGL EVANGELINE AQUIFER Well Type - W User -

WELL CONSTRUCTION Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (
Open Hole (O)
Cemented from_____to_____

Diam. (in.)	Setting(feet) From	To

LIFT DATA - Pump Mfr. _____ Type - TURBINE PUMP No. Stages ____

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower - 250

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

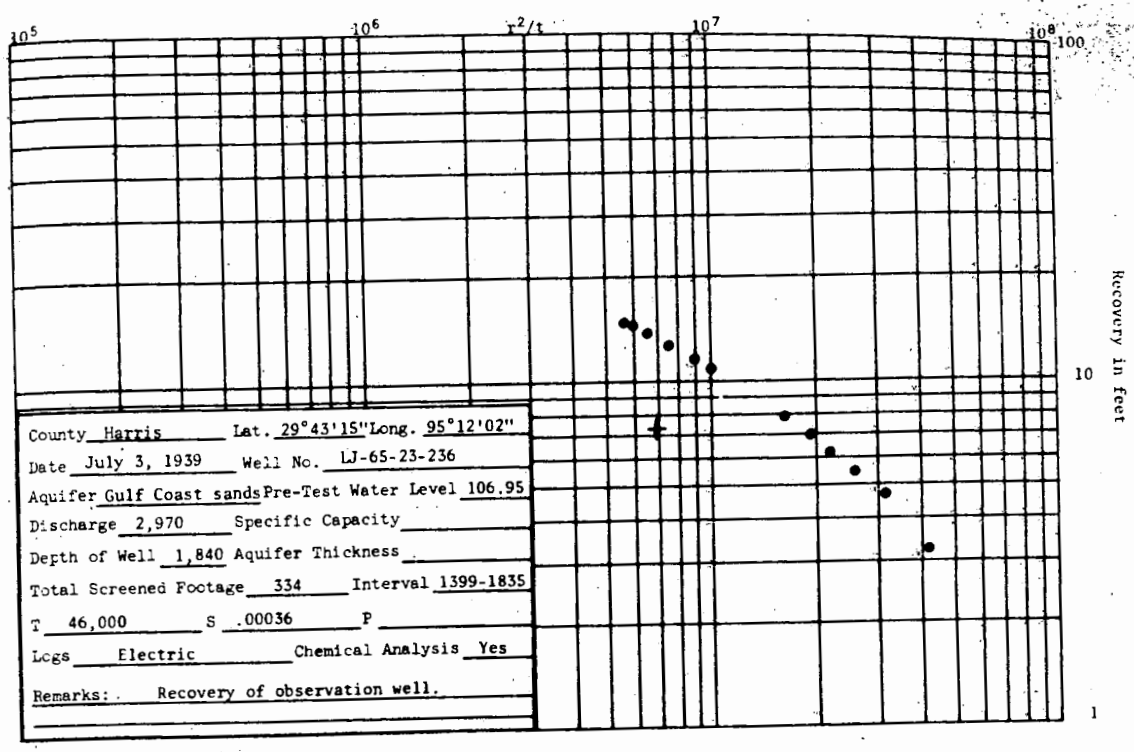
WATER USE Primary- INDUSTRIAL Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- M Quality- Y Logs- Other Data-

WATER LEVELS Date- 02/06/1937 Measurement- -70.00
Date- / / Measurement-

Recorded By _____ Date Record Collected or Updated- / /

Reporting Agency -
REMARKS -
334 ft of screen between 1399 and
1835 ft. Reported yield 3100 gpm
with 118 ft drawdown when drilled.
Well B-2.



County Harris Lat. 29°43'15" Long. 95°12'02"

Date July 3, 1939 Well No. LJ-65-23-236

Aquifer Gulf Coast sands Pre-Test Water Level 106.95

Discharge 2,970 Specific Capacity

Depth of Well 1,840 Aquifer Thickness

Total Screened Footage 334 Interval 1399-1835

T 46,000 S .00036 P

Logs Electric Chemical Analysis Yes

Remarks: Recovery of observation well.

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-236

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523236
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.718889
Latitude (degrees minutes seconds)	29° 43' 08" N
Longitude (decimal degrees)	-95.201945
Longitude (degrees minutes seconds)	095° 12' 07" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	30
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1840
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1937
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Champion Papers
Driller	Layne Texas
Other Data Available	Aquifer Test
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	Champion Paper Mill well B-2
Other Well Number	Historical Id 1132
Previous State Well Number	
Reporting Agency	
Created Date	8/4/2006
Last Update Date	8/4/2006

Remarks	Screened 334 feet between 1399 and 1835 feet. Observation well for aquifer test in TWDB R-98. No test data in TWDB files.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

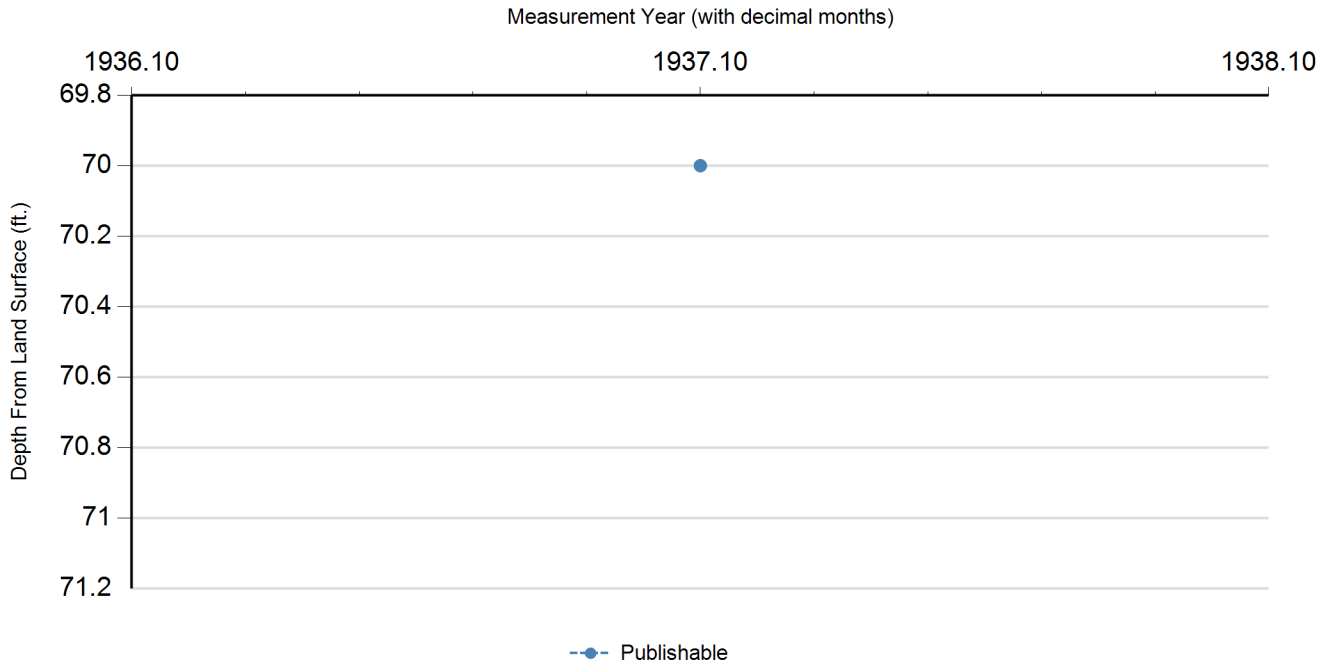
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/6/1937		70		-40	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 1/29/1942 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		332.69	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		406	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		64	mg/L	
00929	SODIUM, TOTAL (MG/L AS NA)		185	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		2	mg/L as SO4	

Water Quality Analysis

Sample Date: 1/13/1943 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		264.75	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		323	mg/L	
00910	CALCIUM (MG/L)		10	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		58	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.4	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		48	mg/L as CACO3	
00920	MAGNESIUM (MG/L)		6	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		4.3		
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		8.77		
00932	SODIUM, CALCULATED, PERCENT		86	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		142	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		8	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		383	mg/L	

Water Quality Analysis

Sample Date: 6/22/1945 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		65	mg/L	

Water Quality Analysis

Sample Date: 2/10/1947 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		72	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		21	mg/L as CACO3	

Water Quality Analysis

Sample Date: 2/11/1949 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		336.89	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		411	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		76	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		855	MICR	

Water Quality Analysis

Sample Date: 1/6/1950 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		408	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		79	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.6	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		851	MICR	

Water Quality Analysis

Sample Date: 3/14/1951 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		332.79	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		406	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		84	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		26	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		869	MICR	

Water Quality Analysis

Sample Date: 1/28/1952 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		435	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		89	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		22	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.4	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		877	MICR	

Water Quality Analysis

Sample Date: 2/6/1953 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		422	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		90	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		872	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		31	C	

Water Quality Analysis

Sample Date: 3/12/1954 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		440	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		92	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		891	MICR	

Water Quality Analysis

Sample Date: 3/7/1955 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		86	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		880	MICR	

Water Quality Analysis

Sample Date: 2/0/1956 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		404	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		52	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		15	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.7	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		758	MICR	

Water Quality Analysis

Sample Date: 3/0/1957 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		413	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		59	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.3	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		785	MICR	

Water Quality Analysis

Sample Date: 3/21/1958 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		434	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		86	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		19	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.9	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		922	MICR	

Water Quality Analysis

Sample Date: 4/15/1959 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		321.31	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		392	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		53	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		14	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		761	MICR	

Water Quality Analysis

Sample Date: 4/18/1961 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		416	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		84	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.4	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		883	MICR	

Water Quality Analysis

Sample Date: 4/20/1962 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		326.23	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		398	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		54	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		14	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		763	MICR	

Water Quality Analysis

Sample Date: 5/1/1963 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		410	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		54	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		14	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.3	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1040	MICR	

Water Quality Analysis

Sample Date: 3/31/1964 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		452	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		80	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.3	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		925	MICR	

Water Quality Analysis

Sample Date: 4/5/1965 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		374	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		69	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.3	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		769	MICR	

Water Quality Analysis

Sample Date: 4/1/1966 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		345.9	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		422	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		81	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		889	MICR	

Water Quality Analysis

Sample Date: 4/4/1967 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		352.46	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		430	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		85	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		21	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		884	MICR	

Water Quality Analysis

Sample Date: 4/5/1968 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		345.9	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		422	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		85	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.9	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		894	MICR	

Water Quality Analysis

Sample Date: 4/11/1969 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		345.9	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		422	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		91	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		24	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.9	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		903	MICR	

Water Quality Analysis

Sample Date: 5/8/1970 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		344.26	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		420	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		110	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		19	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		908	MICR	

Water Quality Analysis

Sample Date: 4/7/1971 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		344.26	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		420	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		99	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		23	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		970	MICR	

Water Quality Analysis

Sample Date: 4/6/1972 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		349.18	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		426	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		90	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		21	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		935	MICR	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523223

Texas Water Development Board
Well Schedule

State Well Number 6523223 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294338 **Longitude** 951019 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Lone Star Cement Co.

Driller
Layne Texas Co.

Address _____ **Tenant/Oper.** _____

Date Drilled / /1959 **Depth** 357 **Source of Depth** R **Altitude** 30 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION **Const-Method** **Casing Material**

Completion blank **Screen Material**

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from_____**to**_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** SUBMERSIBLE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** N **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1959
-223

Recorded By _____ **Date Record Collected or Updated -** 07/18/2003

Reporting Agency 02

REMARKS -
TWDB R178: Screen from 334 to 355ft.

Aquifer - 112CHCTL **ID -** 15
CHICOT AQUIFER,LOWER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-223

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523223
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.727222
Latitude (degrees minutes seconds)	29° 43' 38" N
Longitude (decimal degrees)	-95.171944
Longitude (degrees minutes seconds)	095° 10' 19" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CHCTL - Chicot Aquifer, Lower
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	30
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	357
Well Depth Source	Person Other than Owner
Drilling Start Date	
Drilling End Date	0/0/1959
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Submersible
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Lone Star Cement Co.
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	7/18/2003
Last Update Date	7/18/2003

Remarks	TWDB R178: Screen from 334 to 355ft.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

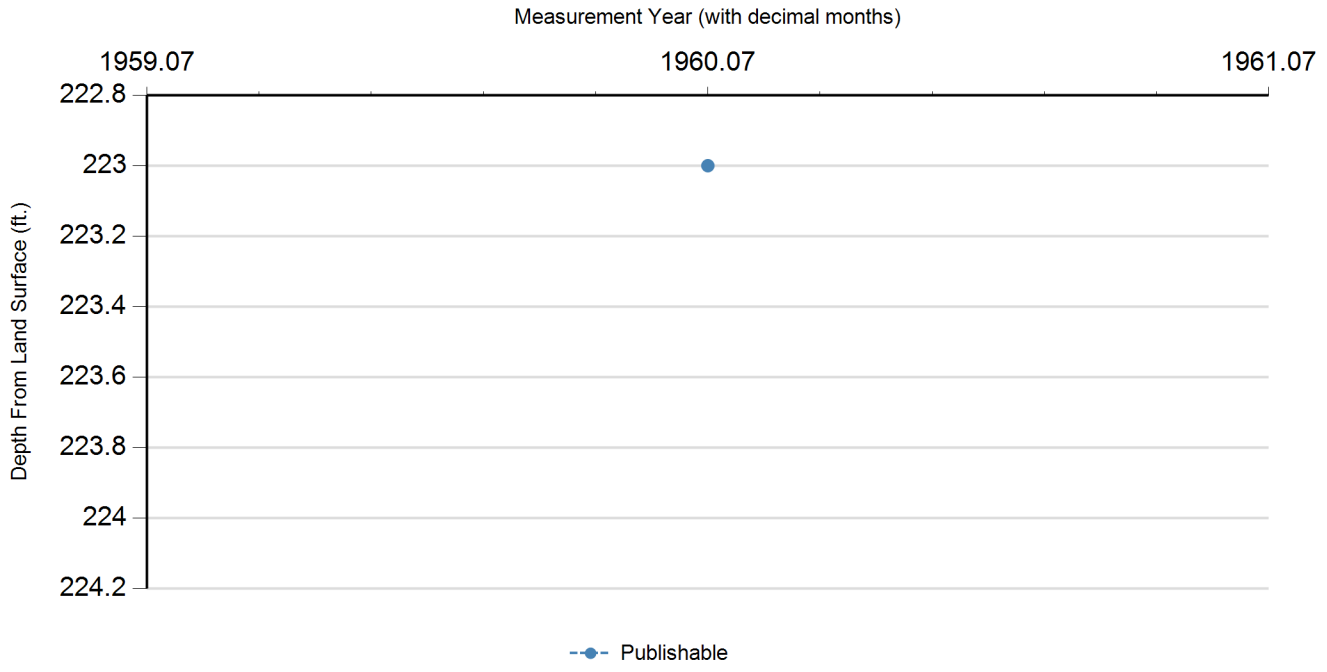
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	12/0/1959		223		-193	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523232

Texas Water Development Board
Well Schedule

State Well Number 6523232 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **Zone** 1 **Latitude** 294426 **Longitude** 951034 **Source of Coords** 2

Owner's Well No. **Location**

Owner
Phillips Chemical Co.
well #2

Driller
McMasters and
Pomeroy

Address **Tenant/Oper.**

Date Drilled / /1941 **Depth** 607 **Source of Depth** **Altitude** 14 **Source of Alt.**

Well Type W **User** 667400

WELL CONSTRUCTION **Const-Method** **Casing Material** Blank

Completion **Screen Material** Blank

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** **Type -** NONE **No. Stages**

Bowls Diam - **in.** **Setting -** **ft.** **Column Diam. -** **in.**

Motor Mfr. - **Fuel or Power -** blank **Horsepower -**

YIELD Flow- **GPM** **Pump** **GPM** **Meas.,Rept.,Est.-** **Date-**

WATER USE **Primary -** UNUSED **Secondary -** blank **Tertiary -** blank

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** Y **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1941
-90

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency

REMARKS -
90 ft of screen between 308 and
595 ft. Reported yield 435 gpm with
22 ft drawdown when drilled. Well
2.

Aquifer - 112CHCTL **ID -** 15

CHICOT
AQUIFER,LOWER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-232

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523232
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.740556
Latitude (degrees minutes seconds)	29° 44' 26" N
Longitude (decimal degrees)	-95.176111
Longitude (degrees minutes seconds)	095° 10' 34" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CHCTL - Chicot Aquifer, Lower
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	14
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	607
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1941
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Phillips Chemical Co. well #2
Driller	McMasters and Pomeroy
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	90 ft of screen between 308 and 595 ft. Reported yield 435 gpm with 22 ft drawdown when drilled. Well 2.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

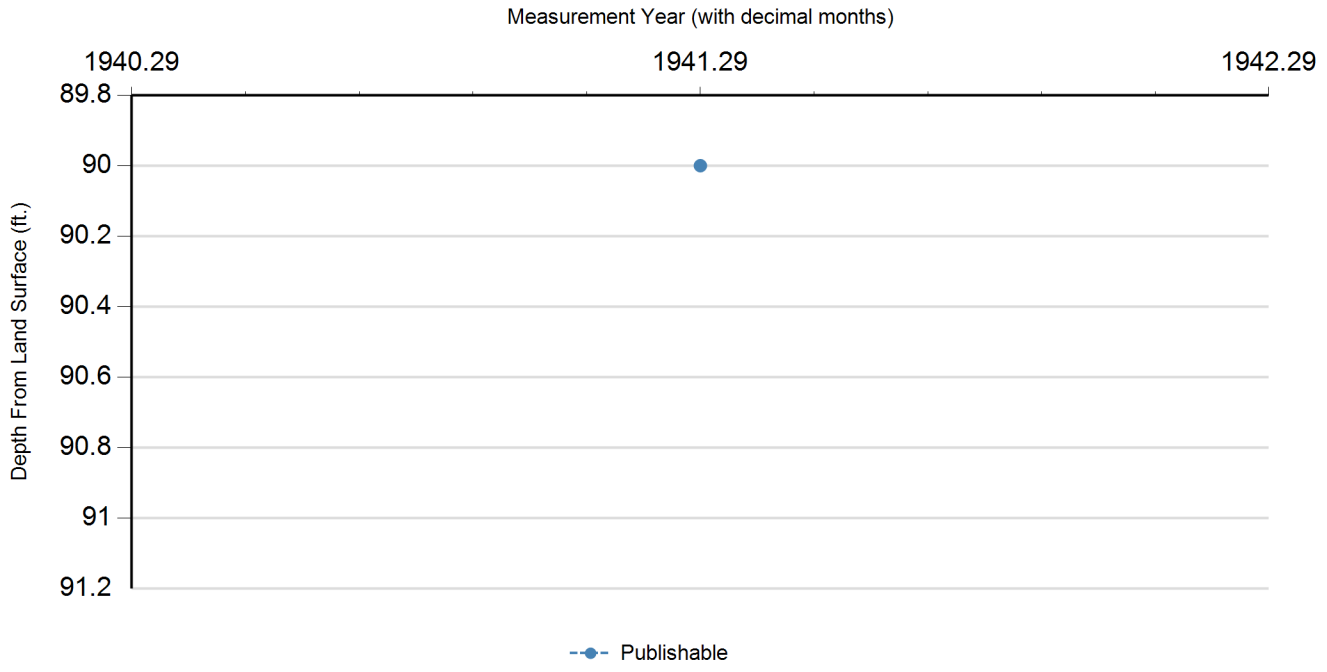
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	4/15/1941		90		-76	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 4/19/1960 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot Aquifer, Lower

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		256	mg/L	
00910	CALCIUM (MG/L)		18	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		30	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.6	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		87	mg/L as CACO 3	
01045	IRON, TOTAL (UG/L AS FE)		500	ug/L	
00920	MAGNESIUM (MG/L)		10	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.3	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		2.47		
00955	SILICA, DISSOLVED (MG/L AS SI02)		18	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		3.94		
00932	SODIUM, CALCULATED, PERCENT		67	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		84	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		17	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		303	mg/L	

Water Quality Analysis

Sample Date: 7/28/1961 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot Aquifer, Lower

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		204.92	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		250	mg/L	
00910	CALCIUM (MG/L)		27	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		31	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.5	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		86	mg/L as CACO3	
00920	MAGNESIUM (MG/L)		4	mg/L	
00400	PH (STANDARD UNITS), FIELD		7.8	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		2.42		
00955	SILICA, DISSOLVED (MG/L AS SI02)		18	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		3.9		
00932	SODIUM, CALCULATED, PERCENT		68	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		82	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		16	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		301	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523252

Texas Water Development Board
Well Schedule

State Well Number 6523252 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294314 **Longitude** 951017 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
W D Haden Co.

Driller
Lowry Water Wells

Address _____ **Tenant/Oper.** _____

Date Drilled 04/31/1967 **Depth** 521 **Source of Depth** D **Altitude** 32 **Source of Alt.** M

Well Type W **User**

WELL CONSTRUCTION **Const-Method** **Casing Material**

Screen Material

Completion blank

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** SUBMERSIBLE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -** 20

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** N **Quality -** N **Logs -** D **Other Data -**

WATER LEVELS

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency 02

REMARKS -

Aquifer - 112CHCTL **ID -** 15

CHICOT
AQUIFER,LOWER

Well Number - 6523252

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-252

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523252
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.720555
Latitude (degrees minutes seconds)	29° 43' 14" N
Longitude (decimal degrees)	-95.171389
Longitude (degrees minutes seconds)	095° 10' 17" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CHCTL - Chicot Aquifer, Lower
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	32
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	521
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	4/30/1967
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	None
Water Quality Available	No
Pump	Submersible
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	W D Haden Co.
Driller	Lowry Water Wells
Other Data Available	Drillers Log
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	1/25/1999
Last Update Date	1/25/1999

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523103

WRD Exp. (GW)
April 1966

Well No. J-65-23-103

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

MASTER CARD

Record by G.D. McAdoo W.L. Naftel 1950 Source of data File Date 1-22-68 Map 1:24 000 Pasadena 1955

State Texas 48 County (or town) Harris LJ

Latitude: 29 44 03 N (deg, min, sec) Longitude: 095 14 18 (degrees, min, sec) Sequential number: 1

Lat-long accuracy: 1 T. ___ S, R ___ W, Sec ___, ___ ¼, ___ ¼, ___ ¼

Local well number: LJ-65-23-103 Other number: #3 B & M 14200 (C-69)

Local use: Owner or name: City of Galena Park

Owner or name: GALENA PARK Address: at water tower

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist M

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other P

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed W

DATA AVAILABLE: Well data 1 Freq. W/L meas.: 1950 Annual A Field aquifer char.

Hyd. lab. data:

Qual. water data; type:

Freq. sampling: 7-28-64 Ø Pumpage inventory: yes no, period:

Aperture cards: yes

Log data: E-Log (CC-34) E

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 1201 ft 1201 Meas. Rept. Driller accuracy 3

Depth cased: (first perf.) 935 ft 935 Casing type: S; Diam. 18-10½ in 18

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) other G

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other H

Date Drilled: 9-14-49 949 Pump intake setting: ft

Driller: Layne-Texas Co. (name), Houston, Texas (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (X) rot, (S) submerg, (T) turb, (Z) other T Deep Shallow D

Power (type): diesel, elec, nat gas, gasoline, hand, LP gas, wind; H.P. ? 5 Trans. or meter no.

Descrip. MP ? ft above below LSD, Alt. MP

Alt. LSD: 28 ~~34~~ 34 Accuracy: (source) Topo 5' 3

Water Level 244 ft above below MP; Ft above below LSD 244 Accuracy: Rept. driller D

Date meas: 9-14-49 949 Yield: 1012 gpm 1012 Method determined

Drawdown: 42 ft 42 Accuracy: 1949 Rept 3 Pumping period — hrs

QUALITY OF WATER DATA: Iron ppm Sulfate ppm Chloride ppm Hard. ppm

Sp. Conduct K x 10⁶ Temp. °F Date sampled

Taste, color, etc.

PL 286 244 42

Well No. LJ-65-23-103

Well No. LJ-65-23-103

Latitude-longitude 29 (d), 44 (m), 03 (s) N S 095 (d), 14 (m), 18.1 (s)

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) Physiographic Province: Coastal Plain 0 3 (20–21) Section: West

G.C.P E (22) Drainage Basin: 5 1 R (23–25) Subbasin: (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat (27)

MAJOR AQUIFER: system, series T (28–29) aquifer, formation, group E (30–31)

Lithology: (32–33) Origin: (34) Aquifer Thickness: ft

(35–37) Length of well open to: 157 ft 1 5 7 (38–40) Depth to top of: ft (41–43)

MINOR AQUIFER: system, series (44–45) aquifer, formation, group (46–47)

Lithology: (48–49) Origin: (50) Aquifer Thickness: ft

(51–53) Length of well open to: ft (54–56) Depth to top of: ft (57–59)

Intervals Screened: 935-967; 1007-1070; 1103-1165.
32 63 62

Depth to consolidated rock: ft (60–63) Source of data: (64)

Depth to basement: ft (65–68) Source of data: (69)

Surficial material: (70–71) Infiltration characteristics: (72)

Coefficient Trans: gpd/ft (73–75) Coefficient Storage: (76–78)

Coefficient Perm: gpd/ft^2; Spec cap: gpm/ft; Number of geologic cards: (79)

Pump test 9-14-49.
S/L: 244' P/L: 286 @ 1012 GPM

Recovery
5 min. - 247.
10 " - 247.
15 " - 246.
20 " - 245.
25 " - 245.
30 " - 245.

Well No. LJ-65-23-103

GPO 857-700

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-103

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523103
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.7344444
Latitude (degrees minutes seconds)	29° 44' 04" N
Longitude (decimal degrees)	-95.2386111
Longitude (degrees minutes seconds)	095° 14' 19" W
Coordinate Source	+/- 1 Second
Aquifer Code	112CHCT - Chicot Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	Provided by U.S. Geological Survey
Land Surface Elevation (feet above sea level)	34
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1201
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	0/0/1949
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Public Supply
Water Level Observation	USGS Current Site Visit
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	City of Galena Park Well #3
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	294403095141801
Texas Commission on Environmental Quality Source Id	G1010009C
Groundwater Conservation District Well Number	
Owner Well Number	3
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	9/26/1997
Last Update Date	11/7/2022

Remarks	157 ft of screen between 935 and 1165 ft. Reported yield 1012 gpm with 42 ft drawdown when drilled. Well 3. GWAquifer updated with information from USGS. 11/7/22

Casing - No Data

Well Tests - No Data

Lithology - No Data

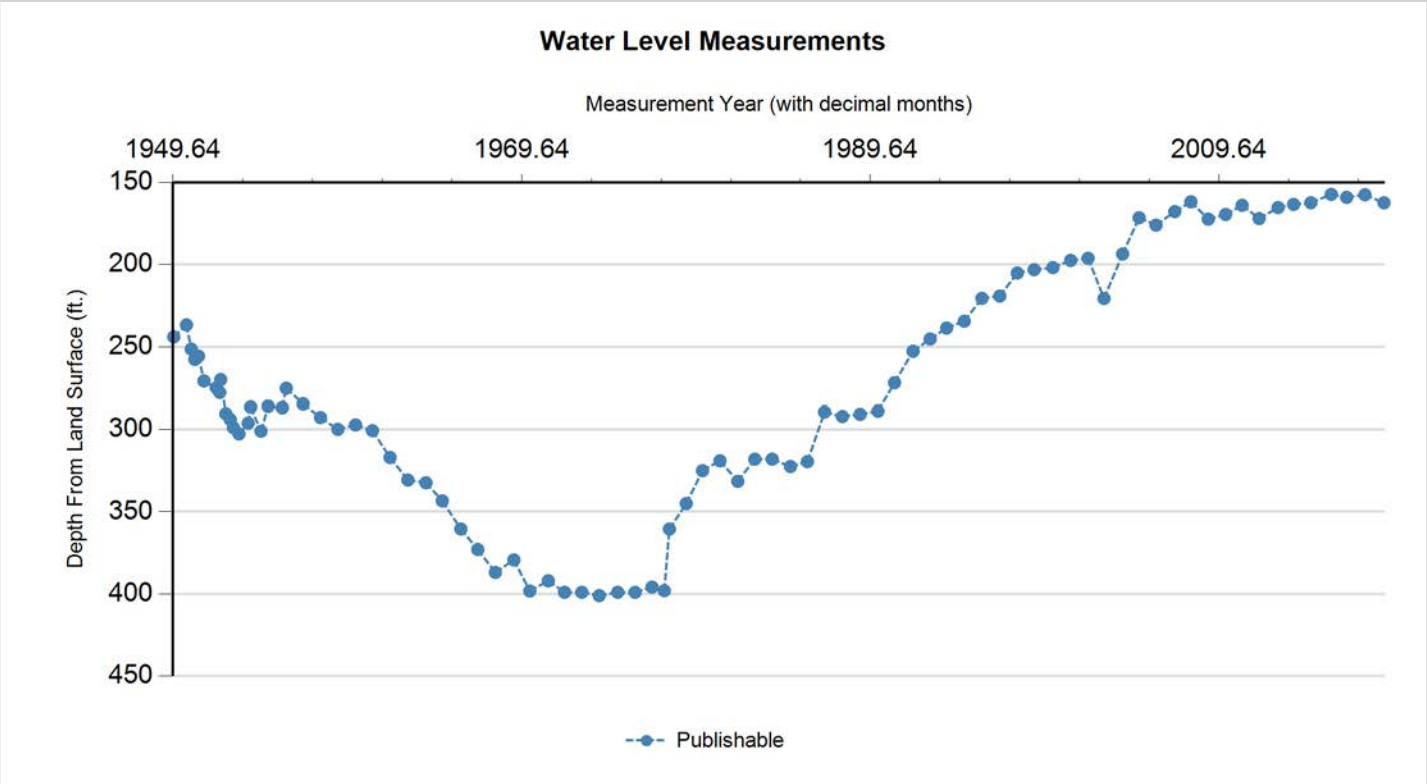
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/14/1949		244		-210	1	U.S. Geological Survey	Steel Tape		
P	6/6/1950		236.7	(7.30)	-202.7	1	Other or Source of Measurement Unknown	Unknown		
P	9/15/1950		251.44	14.74	-217.44	1	U.S. Geological Survey	Steel Tape		
P	12/1/1950		257.73	6.29	-223.73	1	U.S. Geological Survey	Steel Tape		
P	2/13/1951		255.75	(1.98)	-221.75	1	U.S. Geological Survey	Steel Tape		
P	6/7/1951		270.81	15.06	-236.81	1	U.S. Geological Survey	Steel Tape		
P	2/19/1952		274.93	4.12	-240.93	1	U.S. Geological Survey	Steel Tape		
P	5/2/1952		277.75	2.82	-243.75	1	U.S. Geological Survey	Steel Tape		
P	5/21/1952		269.96	(7.79)	-235.96	1	U.S. Geological Survey	Steel Tape		
P	9/9/1952		290.46	20.50	-256.46	1	U.S. Geological Survey	Steel Tape		
P	12/12/1952		293.87	3.41	-259.87	1	U.S. Geological Survey	Steel Tape		
P	2/13/1953		298.89	5.02	-264.89	1	U.S. Geological Survey	Steel Tape		
P	6/9/1953		302.7	3.81	-268.7	1	U.S. Geological Survey	Steel Tape		
P	12/22/1953		296.13	(6.57)	-262.13	1	U.S. Geological Survey	Steel Tape		
P	2/9/1954		286.47	(9.66)	-252.47	1	U.S. Geological Survey	Steel Tape		
P	9/16/1954		301	14.53	-267	1	U.S. Geological Survey	Steel Tape		
P	2/10/1955		285.95	(15.05)	-251.95	1	U.S. Geological Survey	Steel Tape		
P	12/6/1955		286.9	0.95	-252.9	1	U.S. Geological Survey	Steel Tape		
P	2/23/1956		275.2	(11.70)	-241.2	1	U.S. Geological Survey	Steel Tape		
P	2/11/1957		284.55	9.35	-250.55	1	U.S. Geological Survey	Steel Tape		
P	2/11/1958		292.75	8.20	-258.75	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/9/1959		299.89	7.14	-265.89	1	U.S. Geological Survey	Steel Tape		
P	2/15/1960		297.2	(2.69)	-263.2	1	U.S. Geological Survey	Steel Tape		
P	2/3/1961		300.7	3.50	-266.7	1	U.S. Geological Survey	Steel Tape		
P	2/6/1962		317	16.30	-283	1	U.S. Geological Survey	Steel Tape		
P	2/15/1963		330.73	13.73	-296.73	1	U.S. Geological Survey	Steel Tape		
P	2/28/1964		332.36	1.63	-298.36	1	U.S. Geological Survey	Steel Tape		
P	2/5/1965		343.4	11.04	-309.4	1	U.S. Geological Survey	Steel Tape		
P	2/28/1966		360.48	17.08	-326.48	1	U.S. Geological Survey	Steel Tape		
P	2/17/1967		372.95	12.47	-338.95	1	U.S. Geological Survey	Steel Tape		
P	2/21/1968		386.9	13.95	-352.9	1	U.S. Geological Survey	Steel Tape		
P	3/13/1969		379.3	(7.60)	-345.3	1	U.S. Geological Survey	Steel Tape		
P	2/12/1970		398.2	18.90	-364.2	1	U.S. Geological Survey	Steel Tape		
P	3/3/1971		392	(6.20)	-358	1	U.S. Geological Survey	Air Line		
P	2/8/1972		399	7.00	-365	1	U.S. Geological Survey	Air Line		
P	2/5/1973		399	0.00	-365	1	U.S. Geological Survey	Air Line		
P	2/5/1974		401	2.00	-367	1	U.S. Geological Survey	Air Line		
P	2/26/1975		399	(2.00)	-365	1	U.S. Geological Survey	Air Line		
P	2/26/1976		399	0.00	-365	1	U.S. Geological Survey	Air Line		
P	2/16/1977		395.84	(3.16)	-361.84	1	U.S. Geological Survey	Steel Tape		
P	11/2/1977		398	2.16	-364	1	U.S. Geological Survey	Steel Tape		
P	2/14/1978		360.5	(37.50)	-326.5	1	U.S. Geological Survey	Steel Tape		
P	1/31/1979		345	(15.50)	-311	1	U.S. Geological Survey	Air Line		
P	1/7/1980		325	(20.00)	-291	1	U.S. Geological Survey	Air Line		
P	1/7/1981		319	(6.00)	-285	1	U.S. Geological Survey	Air Line		
P	1/15/1982		331.5	12.50	-297.5	1	U.S. Geological Survey	Steel Tape		
P	1/7/1983		318	(13.50)	-284	1	U.S. Geological Survey	Air Line		
P	1/5/1984		318	0.00	-284	1	U.S. Geological Survey	Air Line		
P	1/23/1985		322.5	4.50	-288.5	1	U.S. Geological Survey	Steel Tape		
P	1/13/1986		319.5	(3.00)	-285.5	1	U.S. Geological Survey	Steel Tape		
P	1/6/1987		289.4	(30.10)	-255.4	1	U.S. Geological Survey	Unknown		
P	1/14/1988		292.1	2.70	-258.1	1	U.S. Geological Survey	Unknown		
P	1/20/1989		290.8	(1.30)	-256.8	1	U.S. Geological Survey	Unknown		
P	1/29/1990		288.9	(1.90)	-254.9	1	U.S. Geological Survey	Unknown		
P	1/11/1991		271.86	(17.04)	-237.86	1	U.S. Geological Survey	Steel Tape		
P	2/4/1992		252.73	(19.13)	-218.73	1	U.S. Geological Survey	Steel Tape		
P	1/26/1993		245.32	(7.41)	-211.32	1	U.S. Geological Survey	Steel Tape		
P	1/6/1994		238.65	(6.67)	-204.65	1	U.S. Geological Survey	Steel Tape		
P	1/11/1995		234.48	(4.17)	-200.48	1	U.S. Geological Survey	Steel Tape		
P	1/15/1996		220.56	(13.92)	-186.56	1	U.S. Geological Survey	Steel Tape		
P	1/24/1997		219.17	(1.39)	-185.17	1	U.S. Geological Survey	Steel Tape		
P	1/26/1998		205.16	(14.01)	-171.16	1	U.S. Geological Survey	Steel Tape		
P	1/14/1999		203.13	(2.03)	-169.13	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/11/2000		201.88	(1.25)	-167.88	1	U.S. Geological Survey	Steel Tape		
P	2/19/2001		197.47	(4.41)	-163.47	1	U.S. Geological Survey	Steel Tape		
P	2/17/2002		196.17	(1.30)	-162.17	1	U.S. Geological Survey	Steel Tape		
P	1/16/2003		220.65	24.48	-186.65	1	U.S. Geological Survey	Steel Tape		
P	2/11/2004		193.59	(27.06)	-159.59	1	U.S. Geological Survey	Steel Tape		
P	1/20/2005		171.55	(22.04)	-137.55	1	U.S. Geological Survey	Steel Tape		
P	1/10/2006		176.05	4.50	-142.05	1	U.S. Geological Survey	Steel Tape		
P	2/7/2007		167.8	(8.25)	-133.8	1	U.S. Geological Survey	Steel Tape		
P	1/10/2008		161.85	(5.95)	-127.85	1	U.S. Geological Survey	Steel Tape		
P	1/8/2009		172.39	10.54	-138.39	1	U.S. Geological Survey	Steel Tape		
P	1/6/2010		169.56	(2.83)	-135.56	1	U.S. Geological Survey	Steel Tape		
P	12/22/2010		163.99	(5.57)	-129.99	1	U.S. Geological Survey	Steel Tape		
P	12/13/2011		172.03	8.04	-138.03	1	U.S. Geological Survey	Steel Tape		
P	1/10/2013		165.34	(6.69)	-131.34	1	U.S. Geological Survey	Steel Tape		
P	12/5/2013		163.43	(1.91)	-129.43	1	U.S. Geological Survey	Steel Tape		
P	12/1/2014		162.42	(1.01)	-128.42	1	U.S. Geological Survey	Steel Tape		
P	1/27/2016	1103	157.35	(5.07)	-123.35	1	U.S. Geological Survey	Steel Tape		
P	12/21/2016	0930	159.13	1.78	-125.13	1	U.S. Geological Survey	Steel Tape		
P	1/3/2018	1119	157.56	(1.57)	-123.56	1	U.S. Geological Survey	Steel Tape		
P	2/6/2019	8190	162.46	4.90	-128.46	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 7/28/1964 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		211.48	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		258	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)		200	ug/L	
00910	CALCIUM (MG/L)		11	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		27	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.6	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		40	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		500	ug/L	
00920	MAGNESIUM (MG/L)		3	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00400	PH (STANDARD UNITS), FIELD		7.6	SU	
00937	POTASSIUM, TOTAL (MG/L AS K)		1.6	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		3.43		
00955	SILICA, DISSOLVED (MG/L AS SI02)		16	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		6.83		
00932	SODIUM, CALCULATED, PERCENT		83	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		99	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		501	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		10	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		26	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		295	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523136

WRD Exp. (GW)
April 1966

Well No. LJ-65-23-136

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

MASTER CARD

Record by: C.W. BONNET / ROSE & GUYTON — Source of data: FILE — Date: 9-3-68 — Map: PASADENA 1955 1:24000

State: TEXAS 7-22-41 — 48 — County (or town): HARRIS — LJ

Latitude: 29 43 26 N (deg, min, sec) — Longitude: 095 13 39 (degrees, min, sec) — Sequential number: 1

Lat-long accuracy: T. ___ S, R ___ W, Sec ___, ___ ¼, ___ ¼, ___ ¼

Local well number: LJ-65-23-136 — Other number: 1141 B & M — #4

Local use: — Owner or name: Houston Lighting & Power Co.

Owner or name: H L & P Co — Address: Deep Water Plt. Houston, Texas

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist — N

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other — N

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed — W

DATA AVAILABLE: Well data — Freq. W/L meas.: — Ø — Field aquifer char.

Hyd. lab. data:

Qual. water data; type:

Freq. sampling: — Pumpage inventory: yes no, period:

Aperture cards: yes

Log data:

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD — Depth well: 809 ft — 809 — Meas. rept — OWNER accuracy — 6

Depth cased (first perf.): 656 ft — 656 — Casing type: S; Diam. 16-9⅝ in — 16

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) other — S

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other — H

Date Drilled: 1941 — 941 — Pump intake setting: ___ ft

Driller: LAYNE-TEXAS CO. (name) — HOUSTON, TEXAS (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other — T — Deep Shallow — D

Power (type): diesel, elec, nat gas, gasoline, hand, LP gas, wind; H.P. 50 — V — Trans. or meter no.

Descrip. MP ___ ft above below LSD. Alt. MP

Alt. LSD: 17 — 17 — Accuracy (source): TOPO 5' — 3

Water Level: 113 ft above below MP; above below LSD — 113 — Accuracy: rept — G

Date meas: 2-41 — 241 — Yield: 555 gpm — 555 — Method determined

Drawdown: 61 ft — 61 — Accuracy: REPT. W.D. — 6 — Pumping period — hrs

QUALITY OF WATER DATA: Iron ___ ppm — Sulfate ___ ppm — Chloride ___ ppm — Hard. ___ ppm

Sp. Conduct ___ K x 10⁶ — Temp. ___ °F — Date sampled

Taste, color, etc.

Well No. LJ-65-23-136

Well No. LJ-65-23-136

Latitude-longitude 29 43 26 95 13 39
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) Physiographic Province: COASTAL PLAIN 0 3 (20–21) Section: _____

F (22) Drainage Basin: _____ 5 1 R (23–25) Subbasin: _____ (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat _____ (27)

MAJOR AQUIFER: _____ system, _____ series T (28–29) _____ aquifer, formation, group E (30–31)

Lithology: _____ (32–33) Origin: _____ (34) Aquifer Thickness: _____ ft

(35–37) Length of well open to: 68 ft 6 8 (38–40) Depth to top of: _____ ft (41–43)

MINOR AQUIFER: _____ system, _____ series (44–45) _____ aquifer, formation, group (46–47)

Lithology: _____ (48–49) Origin: _____ (50) Aquifer Thickness: _____ ft

(51–53) Length of well open to: _____ ft (54–56) Depth to top of: _____ ft (57–59)

* Intervals Screened: _____

Depth to consolidated rock: _____ ft (60–63) Source of data: _____ (64)

Depth to basement: _____ ft (65–68) Source of data: _____ (69)

Surficial material: _____ (70–71) Infiltration characteristics: _____ (72)

Coefficient Trans: _____ gpd/ft (73–75) Coefficient Storage: _____ (76–78)

Coefficient Perm: _____ gpd/ft^2; Spec cap: _____ gpm/ft; Number of geologic cards: _____ (79)

* 656 - 670' - 14
698 - 730 - 32
762 - 768 - 06
789 - 805 - 16

491' - 16" CSG.
318' - 9 5/8 CSG.

W/L - 371 May - 1971

Well No. LJ-65-23-136

GPO 857-700

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-136

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523136
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.7241667
Latitude (degrees minutes seconds)	29° 43' 27" N
Longitude (decimal degrees)	-95.2277778
Longitude (degrees minutes seconds)	095° 13' 40" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	17
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	809
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1941
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Historical
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Houston Light. & Power Deepwater Plant
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	294326095133901
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	2/13/1997
Last Update Date	5/7/2021

Remarks	68 ft of screen between 656 and 805 ft. Reported yield 555 gpm with 61 ft drawdown when drilled. Well 4

Casing - No Data

Well Tests - No Data

Lithology - No Data

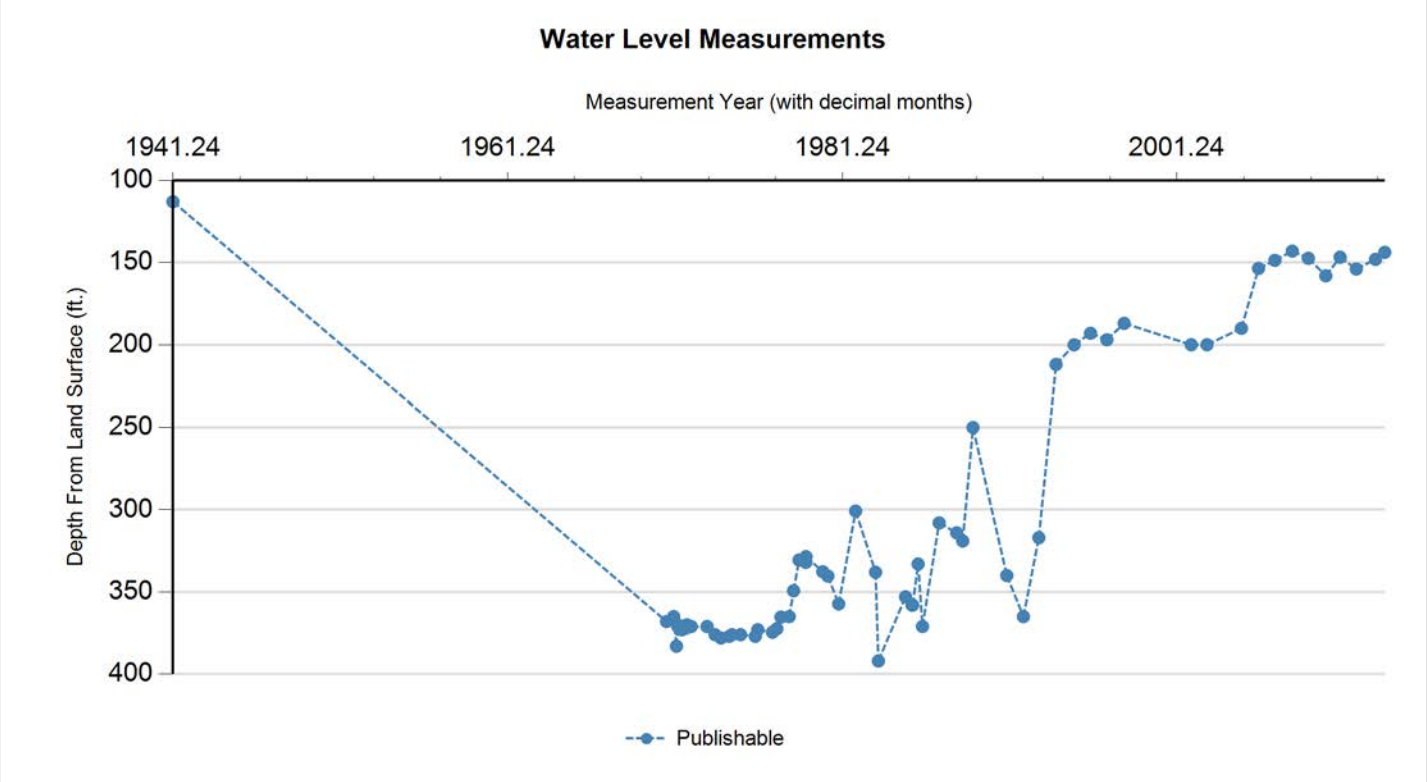
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/0/1941		113		-96	1	Private Firm or Industry	Unknown		
P	9/30/1970		368	255.00	-351	1	Private Firm or Industry	Air Line		
P	1/0/1971		365	(3.00)	-348	1	Private Firm or Industry	Air Line		
P	3/0/1971		383	18.00	-366	1	Private Firm or Industry	Air Line		
P	4/0/1971		370	(13.00)	-353	1	Private Firm or Industry	Air Line		
P	5/27/1971		371	1.00	-354	1	Private Firm or Industry	Air Line		
P	7/0/1971		373	2.00	-356	1	Private Firm or Industry	Air Line		
P	10/0/1971		372	(1.00)	-355	1	Private Firm or Industry	Air Line		
P	11/18/1971		371	(1.00)	-354	1	Private Firm or Industry	Air Line		
P	12/17/1971		370	(1.00)	-353	1	Private Firm or Industry	Air Line		
P	3/16/1972		371	1.00	-354	1	Private Firm or Industry	Air Line		
P	2/27/1973		371	0.00	-354	1	Private Firm or Industry	Air Line		
P	8/21/1973		376	5.00	-359	1	Private Firm or Industry	Air Line		
P	11/0/1973		378	2.00	-361	1	Private Firm or Industry	Air Line		
P	5/0/1974		377	(1.00)	-360	1	Private Firm or Industry	Air Line		
P	7/0/1974		376	(1.00)	-359	1	Private Firm or Industry	Air Line		
P	1/0/1975		376	0.00	-359	1	Private Firm or Industry	Air Line		
P	1/14/1976		377	1.00	-360	1	U.S. Geological Survey	Steel Tape		
P	3/9/1976		373	(4.00)	-356	1	Private Firm or Industry	Unknown		
P	12/0/1976		374.5	1.50	-357.5	1	Private Firm or Industry	Unknown		
P	3/0/1977		372.4	(2.10)	-355.4	1	Private Firm or Industry	Unknown		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	6/0/1977		365.3	(7.10)	-348.3	1	Private Firm or Industry	Unknown		
P	12/0/1977		365	(0.30)	-348	1	Private Firm or Industry	Unknown		
P	3/0/1978		349.3	(15.70)	-332.3	1	Private Firm or Industry	Unknown		
P	7/0/1978		330.6	(18.70)	-313.6	1	Private Firm or Industry	Unknown		
P	12/0/1978		332	1.40	-315	1	Private Firm or Industry	Unknown		
P	1/26/1979		328.5	(3.50)	-311.5	1	Private Firm or Industry	Unknown		
P	1/25/1980		337.7	9.20	-320.7	1	U.S. Geological Survey	Steel Tape		
P	5/16/1980		340.3	2.60	-323.3	1	U.S. Geological Survey	Steel Tape		
P	1/8/1981		357.3	17.00	-340.3	1	U.S. Geological Survey	Steel Tape		
P	1/12/1982		300.8	(56.50)	-283.8	1	U.S. Geological Survey	Steel Tape		
P	3/22/1983		338	37.20	-321	1	U.S. Geological Survey	Air Line		
P	5/23/1983		392	54.00	-375	1	U.S. Geological Survey	Unknown		
P	1/5/1985		353	(39.00)	-336	1	U.S. Geological Survey	Air Line		
P	5/29/1985		358	5.00	-341	1	U.S. Geological Survey	Air Line		
P	6/10/1985		358	0.00	-341	1	U.S. Geological Survey	Air Line		
P	10/10/1985		333	(25.00)	-316	1	U.S. Geological Survey	Air Line		
P	1/10/1986		371	38.00	-354	1	U.S. Geological Survey	Air Line		
P	1/9/1987		308	(63.00)	-291	1	U.S. Geological Survey	Unknown		
P	1/25/1988		314	6.00	-297	1	U.S. Geological Survey	Unknown		
P	6/7/1988		319	5.00	-302	1	U.S. Geological Survey	Unknown		
P	1/17/1989		250	(69.00)	-233	1	U.S. Geological Survey	Unknown		
P	1/24/1991		340	90.00	-323	1	U.S. Geological Survey	Steel Tape		
P	1/22/1992		365	25.00	-348	1	U.S. Geological Survey	Steel Tape		
P	12/28/1992		317	(48.00)	-300	1	U.S. Geological Survey	Steel Tape		
P	1/3/1994		212	(105.00)	-195	1	U.S. Geological Survey	Steel Tape		
P	1/31/1995		200.09	(11.91)	-183.09	1	U.S. Geological Survey	Steel Tape		
P	1/25/1996		193.04	(7.05)	-176.04	1	U.S. Geological Survey	Steel Tape		
P	1/16/1997		197	3.96	-180	1	U.S. Geological Survey	Electric Line		
P	1/28/1998		187	(10.00)	-170	1	U.S. Geological Survey	Unknown		
P	1/31/2002		200	13.00	-183	1	U.S. Geological Survey	Unknown		
P	1/9/2003		200	0.00	-183	1	U.S. Geological Survey	Steel Tape		
P	1/31/2005		190	(10.00)	-173	1	U.S. Geological Survey	Unknown		
P	2/8/2006		153.58	(36.42)	-136.58	1	U.S. Geological Survey	Steel Tape		
P	1/31/2007		148.68	(4.90)	-131.68	1	U.S. Geological Survey	Steel Tape		
P	2/14/2008		143.07	(5.61)	-126.07	1	U.S. Geological Survey	Steel Tape		
P	1/30/2009		147.43	4.36	-130.43	1	U.S. Geological Survey	Steel Tape		
P	2/15/2010		158.1	10.67	-141.1	1	U.S. Geological Survey	Steel Tape		
P	12/28/2010		146.77	(11.33)	-129.77	1	U.S. Geological Survey	Steel Tape		
P	12/16/2011		153.97	7.20	-136.97	1	U.S. Geological Survey	Steel Tape		
P	2/4/2013		148.08	(5.89)	-131.08	1	U.S. Geological Survey	Steel Tape		
P	8/27/2013		143.77	(4.31)	-126.77	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523137

Texas Water Development Board
Well Schedule

State Well Number 6523137 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **Zone** 1 **Latitude** 294327 **Longitude** 951330 **Source of Coords** 1

Owner's Well No. _____ **Location** _____

Owner
Houston Light.&Power
Deepwater Plant

Driller
Souther Well Drlg.

Address _____ **Tenant/Oper.** _____

Date Drilled / /1923 **Depth** 826 **Source of Depth** **Altitude** 17 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION

Const-Method

Casing Material Blank

Screen Material Blank

Completion

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from_____**to**_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** NONE **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** blank **Horsepower -**

YIELD Flow- _____**GPM** **Pump** _____**GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** UNUSED **Secondary -** blank **Tertiary -** blank

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** Y **Logs -** **Other Data -**

WATER LEVELS
2 measurements
1936 to 1941
MIN -120 MAX -58

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency

REMARKS -
121 ft of screen between 630 and
805 ft. Well destroyed. Well 1.

Aquifer - 121EVGL **ID -** 15

EVANGELINE
AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-137

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523137
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.724167
Latitude (degrees minutes seconds)	29° 43' 27" N
Longitude (decimal degrees)	-95.225
Longitude (degrees minutes seconds)	095° 13' 30" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	17
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	826
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1923
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Plugged or Destroyed
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Houston Light.&Power Deepwater Plant
Driller	Souther Well Drlg.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	121 ft of screen between 630 and 805 ft. Well destroyed. Well 1.

Casing - No Data

Well Tests - No Data

Lithology - No Data

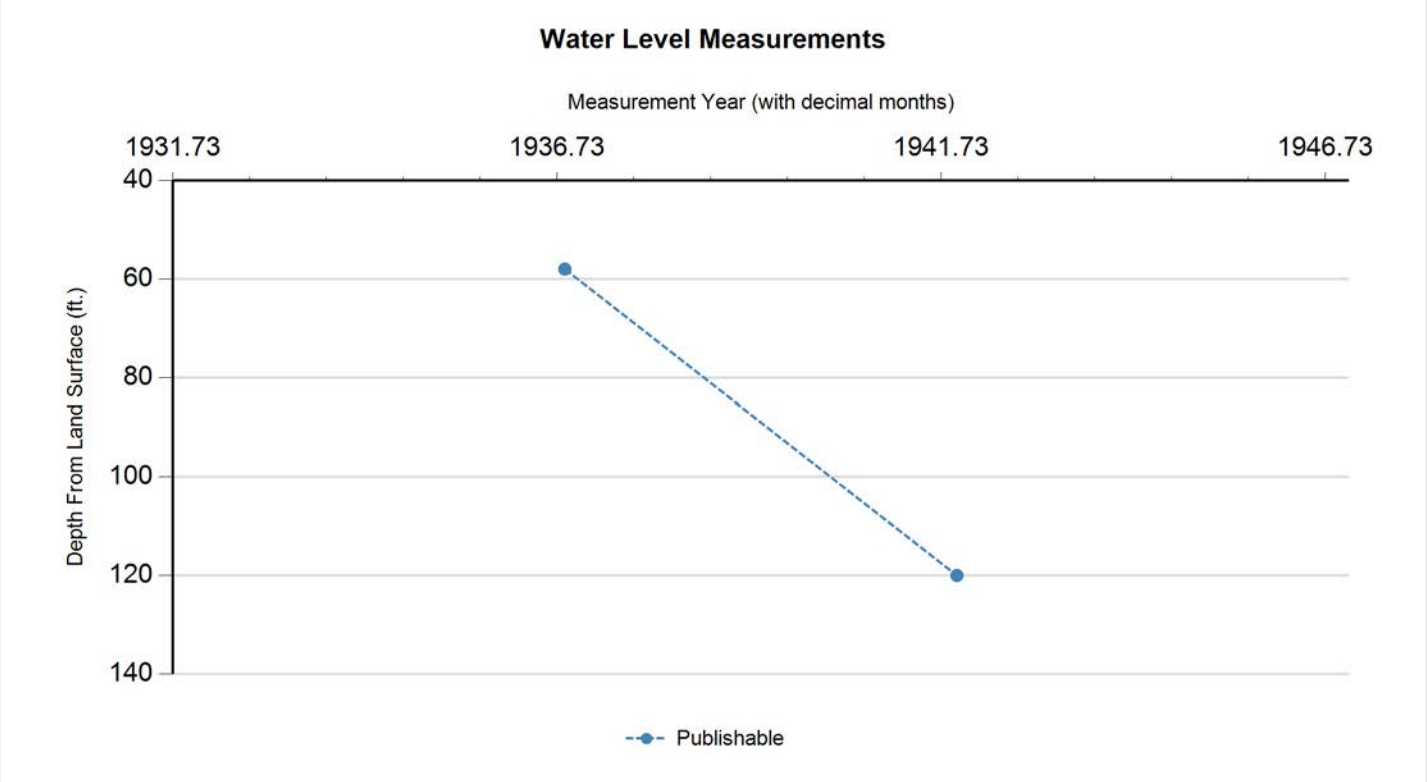
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	11/4/1936		58		-41	1	U.S. Geological Survey	Steel Tape		
P	12/11/1941		120	62.00	-103	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 1/18/1939 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		191.8	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		234	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		31	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		74	mg/L as CACO3	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0.2	mg/L as NO3	
00929	SODIUM, TOTAL (MG/L AS NA)		82	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		16	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		268	mg/L	

Water Quality Analysis

Sample Date: 8/5/1939 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		191.8	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		234	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		31	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		82	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		79	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		17	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		268	mg/L	

Water Quality Analysis

Sample Date: 5/21/1940 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		193.44	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		236	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		30	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		82	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		78	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		15	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		266	mg/L	

Water Quality Analysis

Sample Date: 2/19/1941 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		193.39	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		236	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		39	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		84	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		77	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		16	mg/L as SO4	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523207

Texas Water Development Board
Well Schedule

State Well Number 6523207 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294451 **Longitude** 951145 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Armco Steel Corp.
well #3

Driller
Layne Texas Co.

Address _____ **Tenant/Oper.** _____

Date Drilled / /1943 **Depth** 1255 **Source of Depth** R **Altitude** 30 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION **Const-Method** **Casing Material**

Completion blank **Screen Material**

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** N **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1951
-254

Recorded By _____ **Date Record Collected or Updated -** 07/18/2003

Reporting Agency 02

REMARKS -
TWDB R178: 190ft. of screen between
778 and 1,252ft.
Yield 1,266 gpm with 64ft. drawdown
Jan. 11, 1951.

Aquifer - 121EVGL **ID -** 15

EVANGELINE
AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-207

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523207
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.7475
Latitude (degrees minutes seconds)	29° 44' 51" N
Longitude (decimal degrees)	-95.195834
Longitude (degrees minutes seconds)	095° 11' 45" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	30
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1255
Well Depth Source	Person Other than Owner
Drilling Start Date	
Drilling End Date	0/0/1943
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Armco Steel Corp. well #3
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	7/18/2003
Last Update Date	7/18/2003

Remarks	TWDB R178: 190ft. of screen between 778 and 1,252ft. Yield 1,266 gpm with 64ft. drawdown Jan. 11, 1951.

Casing - No Data

Well Tests - No Data

Lithology - No Data

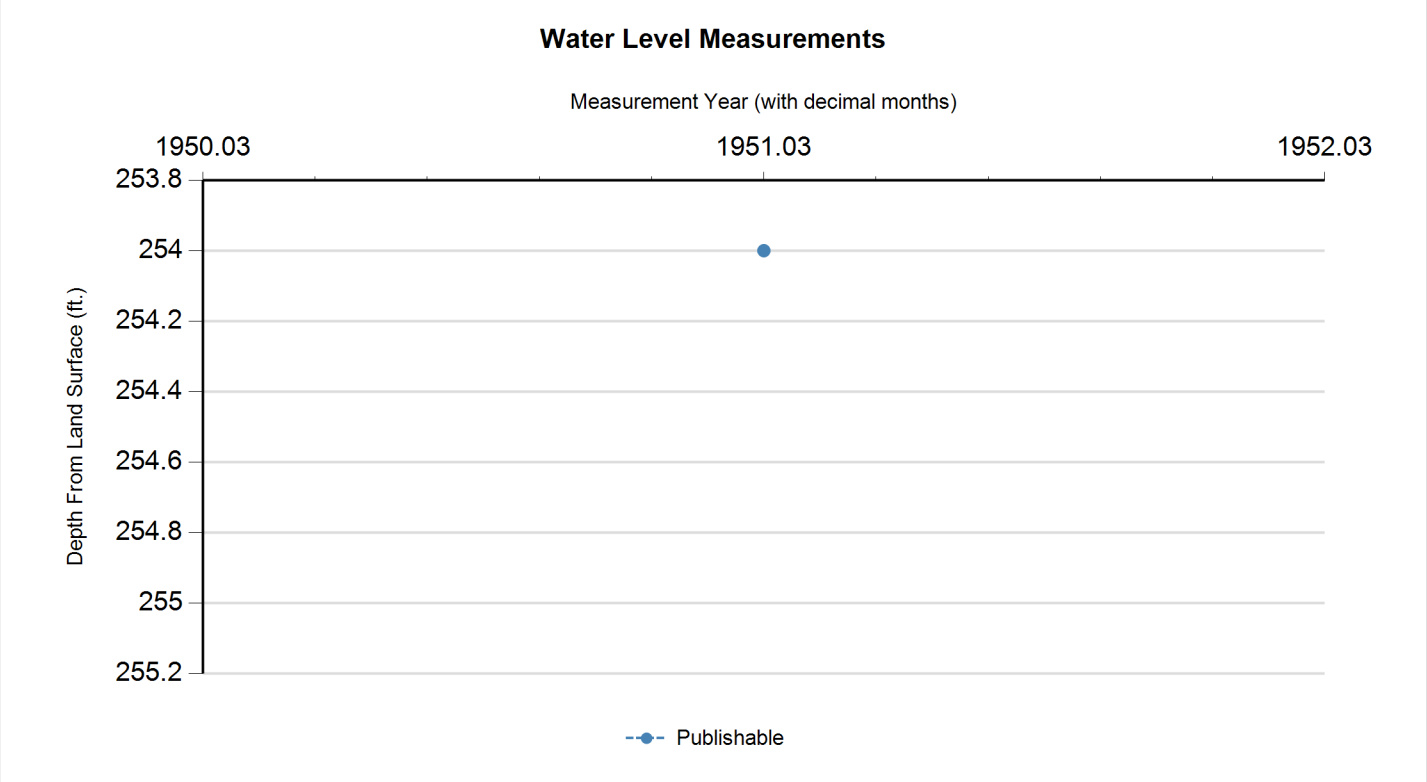
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/11/1951		254		-224	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523225

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 23 225 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 44 24 Longitude - 95 11 33 Source of Coords - 2

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Mobil Mining & Mineral Co. Driller - Layne Texas

Address _____ Tenant/Oper. _____
Date Drilled - / /1962 Depth - 1,377 ft. Source of Depth - D Altitude - 15 ft. Source of Alt. - M
Aquifer - 121EVGL EVANGELINE AQUIFER Well Type - W User - 651950

WELL CONSTRUCTION
Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (
Open Hole (O)
Cemented from_____to_____

	Diam. (in.)	Setting(feet) From	To
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			

LIFT DATA - Pump Mfr. _____ Type - TURBINE PUMP No. Stages ____
Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.
Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower - 75
YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____
PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM
Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft
QUALITY (Remarks- _____
WATER USE Primary- INDUSTRIAL Secondary- _____ Tertiary- _____
OTHER DATA AVAILAIBLE Water Levels- M Quality- Y Logs- Other Data-
WATER LEVELS Date- 03/08/1962 Measurement- -327.00
Date- / / Measurement-
Recorded By _____ Date Record Collected or Updated- / /

Reporting Agency - UNITED STATES GEOLOGICAL SURVEY
REMARKS -
140 ft of screen between 942 and
1357 ft. Reported yield 771 gpm
with 42 ft drawdown when drilled.
Well 6.

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-225

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523225
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.740278
Latitude (degrees minutes seconds)	29° 44' 25" N
Longitude (decimal degrees)	-95.192778
Longitude (degrees minutes seconds)	095° 11' 34" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	15
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1377
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	0/0/1962
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Mobil Mining & Mineral Co.
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1010936D
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	10/2/1997
Last Update Date	10/2/1997

Remarks	140 ft of screen between 942 and 1357 ft. Reported yield 771 gpm with 42 ft drawdown when drilled. Well 6.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	3/8/1962		327		-312	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 3/3/1962 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		332	mg/L	
00910	CALCIUM (MG/L)		5	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		38	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		22	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		2	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.4	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		5.02		
00955	SILICA, DISSOLVED (MG/L AS SI02)		14	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		13.38		
00932	SODIUM, CALCULATED, PERCENT		93	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		140	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		605	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		0	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		27	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		362	mg/L	

Water Quality Analysis

Sample Date: 1/19/1971 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		262.3	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		320	mg/L	
00910	CALCIUM (MG/L)		7	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		36	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.9	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		22	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		0	ug/L	
00920	MAGNESIUM (MG/L)		1	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00400	PH (STANDARD UNITS), FIELD		7.8	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		4.81		
00955	SILICA, DISSOLVED (MG/L AS SI02)		12	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		13.11		
00932	SODIUM, CALCULATED, PERCENT		93	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		140	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		602	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		10	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		28	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		364	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523226

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 23 226 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 44 21 Longitude - 95 11 45 Source of Coords - 2

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Mobil Mining & Mineral Co. Driller - Layne Texas

Address _____ Tenant/Oper. _____
Date Drilled - / /1958 Depth - 1,112 ft. Source of Depth - D Altitude - 15 ft. Source of Alt. - M
Aquifer - 121EVGL EVANGELINE AQUIFER Well Type - W User - 651950

WELL CONSTRUCTION
Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (
Open Hole (O)
Cemented from_____to_____

Diam. (in.)	Setting(feet) From	To

LIFT DATA - Pump Mfr. _____ Type - TURBINE PUMP No. Stages ____
Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.
Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower - 150
YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____
PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM
Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft
QUALITY (Remarks- _____
WATER USE Primary- INDUSTRIAL Secondary- _____ Tertiary- _____
OTHER DATA AVAILAIBLE Water Levels- M Quality- Y Logs- Other Data-
WATER LEVELS Date- 08/01/1958 Measurement- -315.00
Date- / / Measurement-
Recorded By _____ Date Record Collected or Updated- / /

Reporting Agency - UNITED STATES GEOLOGICAL SURVEY
REMARKS -
140 ft of screen between 755 and
1100 ft. Reported yield 768 gpm
with 41 ft drawdown when drilled.
Well 4.

Aquifer - 121EVGL
Well No. - 65 23 226

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-226

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523226
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.739445
Latitude (degrees minutes seconds)	29° 44' 22" N
Longitude (decimal degrees)	-95.196111
Longitude (degrees minutes seconds)	095° 11' 46" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	15
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1112
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	0/0/1958
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Mobil Mining & Mineral Co.
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1010936B
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	10/2/1997
Last Update Date	10/2/1997

Remarks	140 ft of screen between 755 and 1100 ft. Reported yield 768 gpm with 41 ft drawdown when drilled. Well 4.

Casing - No Data

Well Tests - No Data

Lithology - No Data

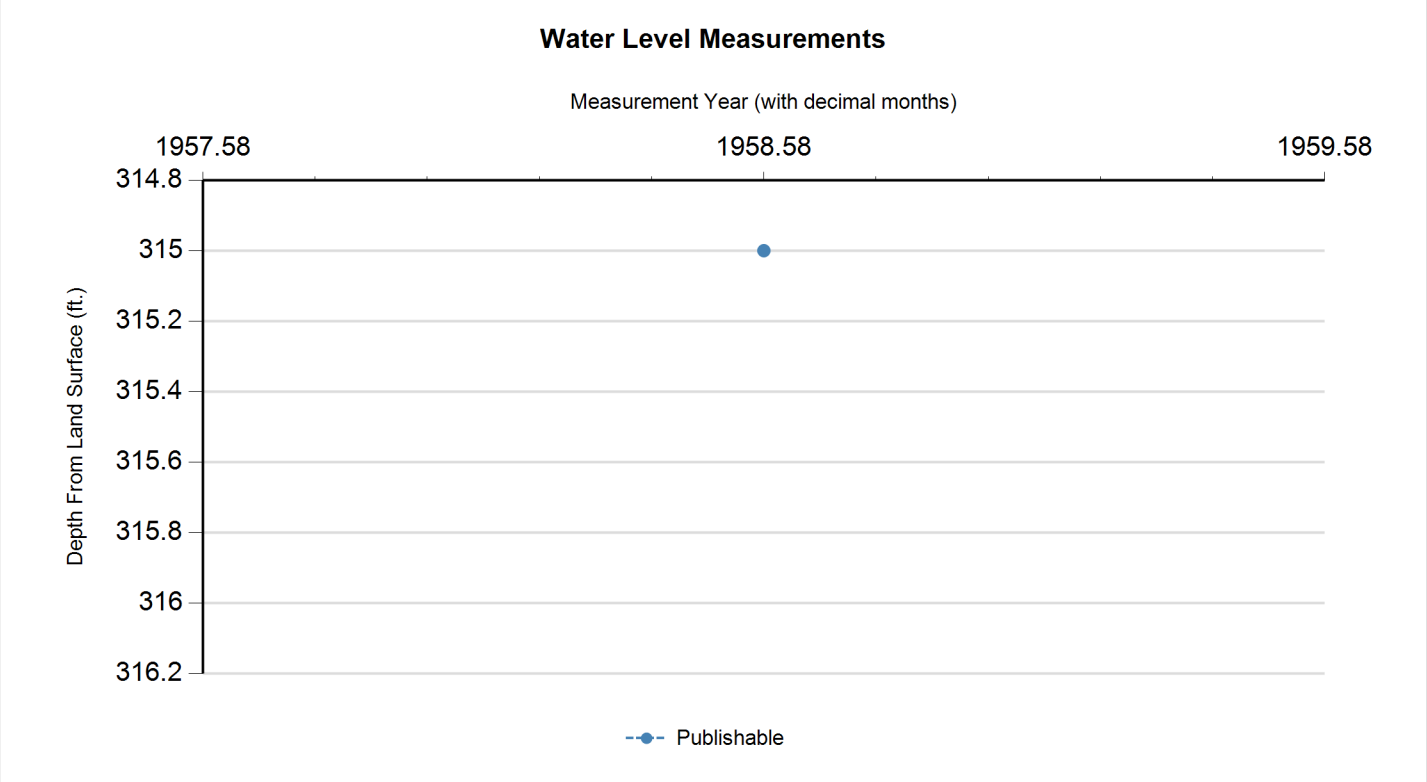
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	8/1/1958		315		-300	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 1/19/1971 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		213.11	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		260	mg/L	
00910	CALCIUM (MG/L)		12	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		32	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.4	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		45	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		0	ug/L	
00920	MAGNESIUM (MG/L)		4	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00400	PH (STANDARD UNITS), FIELD		7.8	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		3.33		
00955	SILICA, DISSOLVED (MG/L AS SI02)		13	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		6.39		
00932	SODIUM, CALCULATED, PERCENT		82	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		100	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		508	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		10	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		27	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		299	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523249

TEXAS DEPARTMENT OF WATER RESOURCES

WELL SCHEDULE

Aquifer(s) Evangeline Project No. _____ State Well No. 65-23-249

Field No./Owner's Well No. 1 County Harris

1. Location: ___ ¼, ___ ¼, Section ___, Block ___, Survey _____, Lat. _____, Long. _____

2. Owner: Premier Petrochemical Co. Address: _____

Tenant (other): _____ Address: _____

Driller: Layne Texas Address: _____

3. Land Surface Elevation: 30 ft. above msl determined by _____

4. Drilled: 5-24 19 63; Dug, Cable Tool, Rotary, Air, _____

5. Depth: Rept. 930 ft. Meas. _____ ft.

6. Borehole Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfr. _____ Type T

No. Stages _____, Bowls Diam. ___ in., Setting _____ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Mfr. _____ Fuel E HP. ___

9. Yield: Flow ___ gpm, Pump ___ gpm, Meas., Rept., Est. ___ Date ___

10. Performance Test: Date 6/63 Length of Test ___ Made by L-T

Static Level 337 ft. Pumping Level ___ ft. Drawdown 35 ft.

Production 329 gpm Specific Capacity _____ gpm/ft.

11. Quality: (Remarks on taste, odor, color, etc.) _____

Analyses

Date _____ Laboratory _____ TDS ___ Sp Cond ___

Date _____ Laboratory _____ TDS ___ Sp Cond ___

12. Other data available (as circled): Pumping Test, Power & Yield Test, Drillers Log, Formation Samples, Geophysical Log(s) Q 1727 (type)

CASING, BLANK PIPE & WELL SCREEN Cemented From 0 ft. to 810 ft.			
Diam. (in.)	Type	Setting (feet) from	to
10	Steel	0	810
6			930

13. Water Level(s): ___ ft. rept. meas. ___ 19__ above below _____ which is ___ ft. above below Land Surface

_____ ft. rept. meas. ___ 19__ above below _____ which is ___ ft. above below Land Surface

14. Use: Dom., Stock, Public Supply, Ind., Irr., Observation, Other (Test Hole, Oil Test, etc.) _____

15. Recorded by: _____ Source of data: _____ Date: _____

16. Remarks: _____

17. Location or Sketch:

Q 1727

W/L Obs. Well ___ W/Q Obs. Well ___

State Well No. 65-23-249

TDWR-0308

FORM NO. 28

MdP 102 (2)

65-23-2F

LAYNE TEXAS COMPANY

HOUSTON - DALLAS

WELL LOG

REPORT NO. 6394
S. O. 2410-63 db
PAGE 1 OF 1
FILE NO. 2780
DATE 5/27/63

CUSTOMER LOCATION	WELL DATA
FOR PRENIER PETROCHEMICAL COMPANY	NAME WELL — WELL NO. 1
LOCATION WELL PASADENA	ELEVATION — DATUM
	RT — C — GR
SURVEY — FIELD	TEST HOLE SIZE 7-7/8" — TD 925'
	DATE STARTED DRILLING 5-22-63
	DATE FINISHED DRILLING 5-24-63
COUNTY HARRIS — STATE TEXAS	DRILLER W. PATTON — RIG NO. 125
	TYPE MUD NATURAL — NO. SACKS
OTHER LAND MARKS	ELECTRIC LOG YES — TYPE WIDCO
	SURVEY EASTMAN — TYPE SINGLE-SHOT
	OTHER

DEPTH STRATA	EACH STRATUM	DESCRIPTION FORMATION	SAMPLES DEPTH	TYPE	NUMBER
	15	SOIL & CLAY			
31	16	SAND			
67	36	CLAY			
98	31	RED SAND			
149	51	CLAY			
190	41	SANDY CLAY & SAND			
210	20	CLAY			
243	33	SANDY CLAY			
259	16	SAND			
292	33	SHALE			
309	17	FINE BROWN SAND			
321	12	SHALE			
330	9	SAND			
345	15	SHALE			
384	39	SAND & STREAKS OF SHALE			
407	23	SHALE			
461	54	STREAKS SAND & SHALE			
492	31	SANDY SHALE & SAND			
501	9	SAND			
513	12	SHALE			
541	28	SAND			
612	71	SHALE			
640	28	SHALE & STREAKS OF SAND			
678	38	SAND & STREAKS OF SHALE			
689	9	SAND & ROCK LAYERS			
702	15	SAND			
712	10	SHALE			
731	19	SAND & STREAKS OF SHALE			
752	21	SAND			
776	24	SHALE & SAND STREAKS			
812	36	SAND & STREAKS OF SHALE			
829	17	SHALE & SAND			
836	7	SHALE			
854	18	SAND			
868	14	SHALE			
925	57	SAND & STREAKS OF SHALE			

TOTAL DEPTH 925 FT.

G-1727

65-23-249

FORM NO. 9202

LAYNE TEXAS COMPANY

HOUSTON -:- DALLAS

MATERIAL SETTING

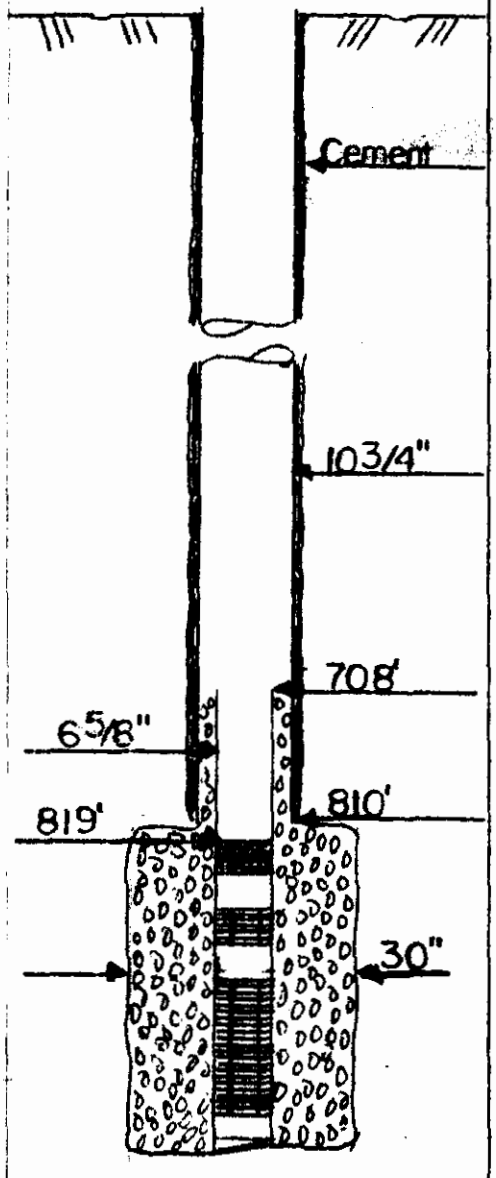
REPORT NO. 6395
S. O. 2410-63
PAGE 1 OF 1
FILE NO. 2780
DATE 6/13/63

CUSTOMER LOCATION	WELL DATA
FOR PREMIER PETROCHEMICAL COMPANY	NAME WELL — WELL NO. 1
LOCATION WELL PASADENA	ELEVATION — DATUM
SURVEY — FIELD	TYPE WELL GRAVEL-WALL
COUNTY HARRIS — STATE TEXAS	SURFACE CASING CEMENTED YES — NO. SACKS 234
OTHER LAND MARKS	SIZE HOLE UNDERREAMED 26" — DEPTH 930'
	GRAVEL TYPE 112,113 — NO. CU. YDS. 27
	TYPE SCREEN S.S. W.W. BARLUG — GAGE .045"
	DRILLER WARREN PATTON — RIG NO. 125
	OTHER P.B. HEFFERNAN

DEPTH	LENGTH	SIZE, KIND, WEIGHT MATERIAL
+3'		10-3/4" O.D. SURFACE CASING 3' ABOVE GROUND
0		SURFACE
708'		TOP OF 6-5/8" O.D. LINER
810'	812'	10-3/4" O.D. SURFACE CASING 31.20#
819'	111'	6-5/8" O.D. BLANK LINER 18.97#
829'	10'	6-5/8" O.D. S.S. W.W. BARLUG SCREEN, .045" GA.
845'	16'	6-5/8" O.D. BLANK PIPE
855'	10'	6-5/8" O.D. S.S. W.W. BARLUG SCREEN, .045" GA.
870'	15'	6-5/8" O.D. BLANK PIPE
920'	50'	6-5/8" O.D. S.S. W.W. BARLUG SCREEN, .045" GA.
928'	8'	6-5/8" O.D. BLANK PIPE
930'	2'	6-5/8" O.D. SET NIPPLE, WOOD WASH PLUG AND B.P. VALVE

TOTAL DEPTH 930 FEET

SKETCH



Attach: 3 Pages 5-27-63

TD 930'

65-23-249

LAYNE TEXAS COMPANY

HOUSTON -:- DALLAS

WATER WELL TEST

6396
2410-63
1 OF 1
2780
6/13/63

CUSTOMER LOCATION

TEST FOR: PREMIER PETROCHEMICAL COMPANY

LOCATION OF WELL: PASADENA

SURVEY: FIELD:

COUNTY: HARRIS STATE: TEXAS

DESCRIPTION OF LAND MARKS:

OK

WELL DATA

NAME WELL: SAME WELL NO: 1

LOCATION: DATUM:

WELL SIZE: 10-3/4" x 6-5/8" x 26" UR

TOTAL DEPTH: 930' SCREEN: 819'

GRAVEL WELL: YES

SS WW BAR-LUG .045"

77° F

CLEAR-NO ODOR

WATER MEASURING DEVICE

6"x4" 4'

0

338.50 337.50
338.50 337.50
338 337
S.L. BEFORE START 331 FT.

TEST PUMP DATA

410'
410' 1/4"
RK 10" 10
10' 0

6/7/63 - STARTED TEST AT 1:00 P.M.

2:00 PM	42	368	23½	307	W.P.	
3:00	40	370	27-½	332		
4:00	39½	370½	27½	332		
5:00	40	370	27½	332		
6:00	39½	370½	27½	332		
7:00	39	371	27½	332		
8:00	39	371	27½	332	SRS	
9:00	39	371	27½	332		
10:00	39	371	27½	332		
11:00	39	371	27½	332		
12:00 M	39	371	27½	332		6/8/63
1:00AM	39	371	27½	332		
2:00	39	371	27½	332	BEW	
3:00	39	371	27½	332		
4:00	39	371	27½	332		
5:00	39	371	27½	332		
6:00	38	372	29	340	SRS	
7:00	38	372	29	340		
8:00	38	372	28	335	WP	
9:00	38	372	28	335		
10:00	38½	371½	27½	332		
11:00	38½	371½	27½	332		
12:00 N	38½	371½	26½	326		
1:00 PM	38½	371½	27	329		

WARREN PATTON

65-23-249

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-249

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523249
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.721944
Latitude (degrees minutes seconds)	29° 43' 19" N
Longitude (decimal degrees)	-95.201112
Longitude (degrees minutes seconds)	095° 12' 04" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	30
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	930
Well Depth Source	Person Other than Owner
Drilling Start Date	
Drilling End Date	0/0/1963
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Premier Petroleum Co.
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	7/18/2003
Last Update Date	7/18/2003

Remarks	TWDB R178: 70ft. of screen between 819 and 920ft. Yield 329 gpm with 35ft. drawdown when drilled.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	5/0/1963		337		-307	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523250

TEXAS DEPARTMENT OF WATER RESOURCES

WELL SCHEDULE

Aquifer(s) Evangeline Project No. _____ State Well No. 65-23-250

Field No./Owner's Well No. 7 County HARRIS

1. Location: ___ ¼, ___ ¼, Section ___, Block ___, Survey _____, Lat. _____, Long. _____

2. Owner: Olin Corp Address: _____

Tenant (other): _____ Address: _____

Driller: Layne Texas Address: _____

3. Land Surface Elevation: 16 ft. above msl determined by _____

4. Drilled: 1-7 19 65; Dug, Cable Tool, Rotary, Air, _____

5. Depth: Rept. 1325 ft. Meas. _____ ft.

6. Borehole Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfr. _____ Type T

No. Stages _____, Bowls Diam. ___ in., Setting _____ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Mfr. _____ Fuel E HP. 250

9. Yield: Flow ___ gpm, Pump ___ gpm, Meas., Rept., Est. ___ Date ___

10. Performance Test: Date 2/9/65 Length of Test ___ Made by L-T

Static Level 379 ft. Pumping Level ___ ft. Drawdown 62 ft.

Production 1200 gpm Specific Capacity _____ gpm/ft.

11. Quality: (Remarks on taste, odor, color, etc.) _____

Analyses

Date _____ Laboratory _____ TDS ___ Sp Cond ___

Date _____ Laboratory _____ TDS ___ Sp Cond ___

12. Other data available (as circled): Pumping Test, Power & Yield Test, Drillers Log, Formation Samples, Geophysical Log(s) Q1728 (type)

13. Water Level(s): _____ ft. rept. meas. _____ 19__ above below _____ which is ___ ft. above below Land Surface

_____ ft. rept. meas. _____ 19__ above below _____ which is ___ ft. above below Land Surface

14. Use: Dom., Stock, Public Supply, Ind., Irr., Observation, Other (Test Hole, Oil Test, etc.) _____

15. Recorded by: _____ Source of data: _____ Date: _____

16. Remarks: _____

17. Location or Sketch:

CASING, BLANK PIPE & WELL SCREEN Cemented From ___ ft. to ___ ft.			
Diam. (in.)	Type	Setting (feet) from	to
16			1025
10			1325

Q1728

W/L Obs. Well ___ W/Q Obs. Well ___

State Well No. 65 23-250

TDWR-0308

State

65-23-2F

FORM N 28

LAYNE TEXAS COMPANY,

HOUSTON -:- DALLAS

WELL LOG

REPORT NO 6943 d6
S O 2041-64
PAGE 1 OF 2
FILE NO 2966
DATE 2/9/65

CUSTOMER LOCATION	WELL DATA
FOR OLIN MATHIESON CHEMICAL CORPORATION	NAME WELL — WELL NO. 7
LOCATION WELL PASADENA	ELEVATION — DATUM
	RT — C — GR
SURVEY — FIELD	TEST HOLE SIZE 12-1/4" — TD 1415'
	DATE STARTED DRILLING 1-5-65
	DATE FINISHED DRILLING 1-7-65
COUNTY HARRIS — STATE TEXAS	DRILLER LUTHRINGER — RIG NO 4
	TYPE MUD AQUAGEL — NO. SACKS 48
OTHER LAND MARKS WEST & SOUTH OF PLANT SITE	ELECTRIC LOG YES — TYPE WIDCO
	SURVEY EASTMAN — TYPE SINGLE-SHOT
	OTHER

OK

DEPTH STRATA	EACH STRATUM	DESCRIPTION FORMATION	SAMPLES DEPTH	TYPE	NUMBER
0		SURFACE			
34	34	22" SURFACE CASING (NO DESCRIPTION)			
44	10	CLAY			
62	18	SAND & SANDY CLAY			
97	35	CLAY			
119	22	SAND & SANDY CLAY			
124	5	CLAY			
170	46	CLAY & SANDY CLAY			
230	60	SANDY CLAY & CLAY STREAKS			
247	17	SAND			
290	43	CLAY			
330	40	SAND & SANDY CLAY			
340	10	SAND			
354	14	SANDY CLAY			
383	29	CLAY			
392	9	SAND & CLAY STREAKS			
400	8	CLAY			
410	10	SAND & CLAY STREAKS			
445	35	SANDY CLAY			
530	85	RED & GRAY CLAY			
551	21	CLAY & SAND (BROKEN)			
570	19	CLAY			
600	30	SAND & CLAY (BROKEN)			
651	51	CLAY & STREAKS OF SAND			
676	25	CLAY			
692	16	SANDY CLAY			
740	48	CLAY			
747	7	SANDY CLAY			
768	19	CLAY			
790	22	SAND & CLAY			
913	123	CLAY			
917	4	SAND			
925	8	CLAY			
960	35	SANDY CLAY & CLAY LAYERS			
991	31	CLAY			
996	5	SANDY LIME & CLAY			
1007	11	SANDY CLAY			
1019	12	CLAY & LIME STREAKS			
1038	19	SANDY CLAY			

Q-1728

65-23-250

FORM N 20

LAYNE TEXAS COMPANY,

HOUSTON -:- DALLAS

WELL LOG

REPORT NO 6943
S O 2041-64
PAGE 2 OF 2
FILE NO 2966
DATE 2/9/65

CUSTOMER LOCATION	WELL DATA
FOR OLIN MATHIESON CHEMICAL CORPORATION	NAME WELL WELL NO. 7
LOCATION WELL PASADENA	ELEVATION DATUM
	RT C GR
	TEST HOLE SIZE 12-1/4" TD 1415'
SURVEY FIELD	DATE STARTED DRILLING 1-5-65
	DATE FINISHED DRILLING 1-7-65
COUNTY HARRIS STATE TEXAS	DRILLER LUTHRINGER RIG NO. 4
	TYPE MUD AQUAGEL NO. SACKS 48
OTHER LAND MARKS WEST & SOUTH OF PLANT SITE	ELECTRIC LOG YES TYPE WIDCO
	SURVE EASTMAN TYPE SINGLE-SHOT
	OTHER

DEPTH STRATA	EACH STRATUM	DESCRIPTION FORMATION	SAMPLES DEPTH	TYPE	NUMBER
1038					
1056	18	SAND & CLAY BREAKS			
1067	11	SANDY CLAY			
1090	23	SAND & FINE GRAVEL			
1117	27	SAND, GRAVEL & SANDY CLAY			
1128	11	SANDY CLAY			
1140	12	SAND & CLAY STREAKS			
1144	4	HARD SAND			
1181	37	SAND			
1182	1	SAND ROCK			
1183	1	SANDY CLAY			
1185	2	SAND ROCK			
1196	11	SANDY CLAY			
1211	15	SAND			
1215	4	SANDY CLAY			
1266	51	CLAY & STREAKS OF SANDY CLAY			
1267	1	ROCK			
1290	23	SAND & SANDY CLAY			
1291	1	ROCK			
1314	23	SAND & CLAY (BROKEN)			
1363	49	CLAY			
1397	34	SAND & CLAY STREAKS			
1415	18	CLAY			

TOTAL DEPTH 1415 FT.

65-23-250

FORM NO. 1202

LAYNE TEXAS COMPANY

HOUSTON -:- DALLAS

MATERIAL SETTING

REPORT NO. 6944
S. O. 2041-64
PAGE 1 OF 1
FILE NO. 2966
DATE 2/9/65

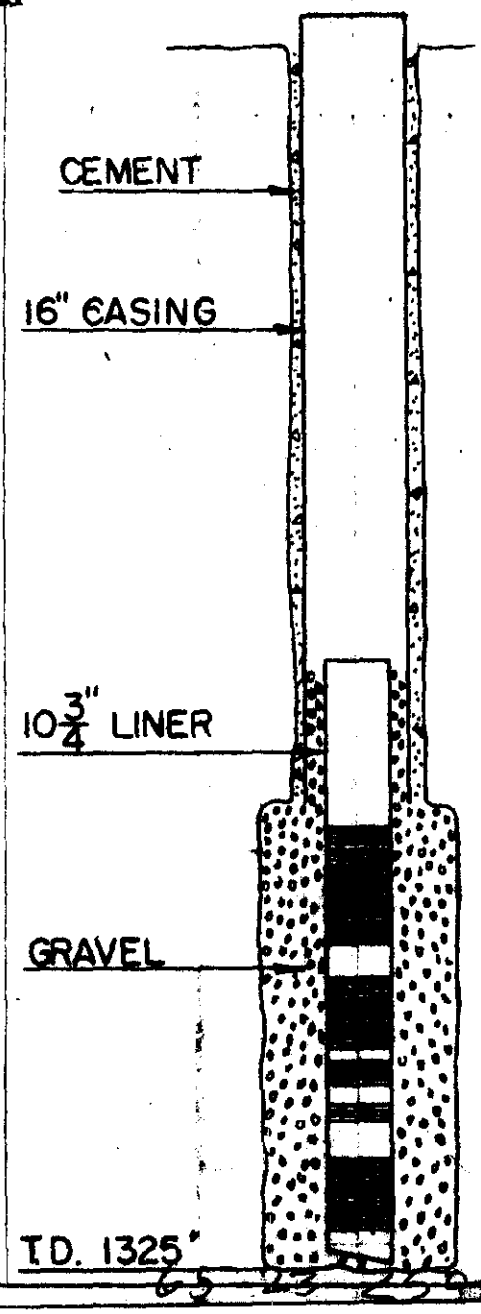
CUSTOMER LOCATION	WELL DATA
FOR Olin Mathieson Chemical Company	NAME WELL WELL NO. 7
LOCATION WELL Pasadena, west and south of plant site	ELEVATION DATUM
SURVEY FIELD	TYPE WELL Gravel-wall
COUNTY Harris STATE Texas	SURFACE CASING CEMENTED 1025 NO. SACKS 465+8% Gel
OTHER LAND MARKS	SIZE HOLE UNDERREAMED 30" DEPTH 1325'
	GRAVEL TYPE 112-13- NO. CU. YDS. 165 & 131
	TYPE SCREEN SS W.O.P. W.W. GAGE .045 & .040"
	DRILLER Luthringer RIG NO. 4
	OTHER E.A. Dykes & C. Brewer

DEPTH	LENGTH	SIZE, KIND, WEIGHT MATERIAL
+2'		16" O.D. casing 2' above ground
0		Surface
924.15'		10-3/4" O.D. top of lap
1027'	1025'	16" O.D. blank pipe 62.6#
1039.77'	12.77'	10-3/4" O.D. blank pipe 32#
1114.79'	75.02'	10-3/4" O.D. S.S. W.W. W.O.P. screen .045" ga.
1134.85'	20.06'	10-3/4" O.D. blank
1184.82'	49.97'	10-3/4"OD S.S. W.W. W.O.P. screen .045" ga.
1194.82'	10.00'	10-3/4" O.D. blank
1210.32'	15.50'	10-3/4"OD S.S. W.W. W.O.P. screen .040" ga.
1224.83'	14.51'	10-3/4" O.D. blank
1234.83'	10.00'	10-3/4"OD S.S. W.W. W.O.P. screen .040" ga.
1259.87'	25.04'	10-3/4" O.D. blank
1309.90'	50.03'	10-3/4"OD S.S. W.W. W.O.P. screen .040" ga.
1322.90'	13.00'	10-3/4" O.D. blank
1325.00'	2.10'	10-3/4" O.D. back pressure valve

Total depth 1325 ft.

742' of 1-1/4" air line, Sch. 80 black buttweld two feet above surface.

SKETCH



6945
2041-64
1 OF 1
2966
2/9/65

HAYNE TEXAS CORPORATION
HOUSTON
WATER WELL

CUSTOMER LOCATION

TEST FOR OLIN MATHIESON CHEMICAL CORPORATION

PASADENA

SURVEY FIELD

COUNTY HARRIS STATE TEXAS

DESCRIPTION OF LAND MARKS WEST AND SOUTH OF PLANT

SAME 7

16" 10-3/4" 30"

1325.00' 1114.79'

YES

SS WW-W.O.P. .045" & .040"

WATER MEASURING DEVICE

ORIFICE SIZE 10"x7"

OTHER

TEST PUMP DATA

460'

460' 1/4"

10" 10

SAND CONTENT OZ. PER GALLON

ACTIVE STATIC HEAD AFTER 15 MINUTES PUMP

5 MIN	386 FT	20 MIN	390 FT
10 MIN	393 FT	25 MIN	389 FT
15 MIN	391 FT	30 MIN	388 FT

S.L. BEFORE START OF TEST 379 FT.

1/22/65 - STARTED PUMP AT 9:00 A.M.				1209
10:00 AM	28	432	33.5	1209
11:00	24	436	33	1200
12:00 N	22	438	33	1200
1:00 PM	22	438	33.5	1209
2:00	21	439	33	1200
3:00	20	440	33.5	1209
4:00	19	441	33	1200
5:00	19	441	33	1200

BILL WALDEN

L. S. LUTHRINGER

FORM NO. 25

65-23-250

MICROBIOLOGY SERVICE LABORATORIES

water technologists . . chemists . . microbiologists

27 January 1965

To: Layne Texas Company
P. O. Box 9098
Houston, Texas 77011

SO 2041-64

Sample marked: Well No. 7, Olin Mathieson Chem. Corp. Taken after 7-3/4 hours pumping. Screened: 1040-1310'. Water clear, no sand.
L. S. Luthringer

Rec'd: 1-26-65. Very slight turbidity. Sample for analysis lifted from top after turbidity had settled.

WATER ANALYSIS

results in parts per million (mg/1) except as noted

Dissolved Residue at 105°C		359	*Conductance, micromhos/cm, 25°C*		614
Total Dissolved Solids, actual†		530	Color, units		0
Total Dissolved Solids, calc.		535	*Turbidity, units*		N D
Silica	SiO_2	13	As Calcium Carbonate, $CaCO_3$:		
Iron and Aluminum Oxides	R_2O_3	0	Phenolphthalein Alkalinity		0
Calcium	Ca	5	Total Alkalinity		276
Magnesium	Mg	2	Total Hardness		19
Sodium (diff.) Na + K as	Na	142	Free Carbon Dioxide	CO_2	5
Carbonate	CO_3	0	pH . . . 7.98		
Bicarbonate	HCO_3	337	**HYPOTHETICAL COMBINATIONS**		
Sulfate	SO_4	0	Calcium Bicarbonate		20
			Magnesium Bicarbonate		10
Chloride	Cl	36	Sodium Bicarbonate		432
			Sodium Chloride		60
Total Iron	Fe	0.09	$SiO_2 + R_2O_3$		13
			Total Dissolved Solids, calc.		535

†Total Dissolved Solids, actual = Dissolved Residue + 50.8% of bicarbonate (HCO_3) ion

Microbiology Service Laboratories

By: Edna Wood
Edna Wood

4798

65-23-250

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-250

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523250
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.736945
Latitude (degrees minutes seconds)	29° 44' 13" N
Longitude (decimal degrees)	-95.196389
Longitude (degrees minutes seconds)	095° 11' 47" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	15
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1325
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	0/0/1965
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Mobil Mining & Mineral Co.
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1010936C
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	10/2/1997
Last Update Date	10/2/1997

Remarks	201 ft of screen between 1039 and 1309 ft. Reported yield 1200 gpm with 62 ft drawdown when drilled. Well 7.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/9/1965		379		-364	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 1/19/1971 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		242.62	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		296	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)		200	ug/L	
00910	CALCIUM (MG/L)		5	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		34	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.9	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		19	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		0	ug/L	
00920	MAGNESIUM (MG/L)		1	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00937	POTASSIUM, TOTAL (MG/L AS K)		1	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		4.51		
00955	SILICA, DISSOLVED (MG/L AS SI02)		17	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		13.88		
00932	SODIUM, CALCULATED, PERCENT		94	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		130	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		562	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		6	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		28	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		340	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523318

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-318

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523318
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.749167
Latitude (degrees minutes seconds)	29° 44' 57" N
Longitude (decimal degrees)	-95.163889
Longitude (degrees minutes seconds)	095° 09' 50" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	19
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	888
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1967
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Port of Houston Authority
Driller	Texas Water Wells
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	80 ft of screen between 723 and 888 ft. Reported yield 130 gpm with 53 ft drawdown when drilled.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/0/1967		359		-340	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 5/22/1968 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		249.18	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		304	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)		200	ug/L	
00910	CALCIUM (MG/L)		7	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		34	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.1	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		24	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		400	ug/L	
00920	MAGNESIUM (MG/L)		2	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00400	PH (STANDARD UNITS), FIELD		8.1	SU	
00937	POTASSIUM, TOTAL (MG/L AS K)		0.9	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		4.46		
00955	SILICA, DISSOLVED (MG/L AS SI02)		12	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		10.98		
00932	SODIUM, CALCULATED, PERCENT		91	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		128	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		588	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		7	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		24	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		340	mg/L	

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WATER WELL NO. 6523110

Texas Water Development Board
Well Schedule

State Well Number 6523110 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **Zone** 1 **Latitude** 294318 **Longitude** 951241 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Crown Central Petro.Co

Driller
Layne Texas

Address _____ **Tenant/Oper.** _____

Date Drilled / /1969 **Depth** 1827 **Source of Depth** **Altitude** 25 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION

Const-Method

Completion

Casing Material Blank

Screen Material Blank

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from_____**to**_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -** 500

YIELD Flow- _____**GPM** **Pump** _____**GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** blank **Tertiary -** blank

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** Y **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1969
-357

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency

REMARKS -
275 ft of screen between 1368 and 1806 ft. Reported yield 2060 gpm with 87 ft drawdown when drilled. Test hole drilled to 2200 ft. Well 10.

Aquifer - 121EVGL **ID -** 15

EVANGELINE AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-110

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523110
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.721667
Latitude (degrees minutes seconds)	29° 43' 18" N
Longitude (decimal degrees)	-95.211389
Longitude (degrees minutes seconds)	095° 12' 41" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	25
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1827
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1969
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Crown Central Petro.Co
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	275 ft of screen between 1368 and 1806 ft. Reported yield 2060 gpm with 87 ft drawdown when drilled. Test hole drilled to 2200 ft. Well 10.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	4/24/1969		357		-332	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 4/24/1969 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		412	mg/L	
00910	CALCIUM (MG/L)		4	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		50	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		15	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		1	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.4	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		6.47		
00955	SILICA, DISSOLVED (MG/L AS SI02)		14	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		20.97		
00932	SODIUM, CALCULATED, PERCENT		96	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		181	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		652	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		1	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		453	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523120

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 23 120 Previous Well Number - County - Harris 201
River Basin - San Jacinto-Brazos Rivers - 11 Zone - 1Latitude - 29 42 47 Longitude - 95 13 19 Source of Coords - 2

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - City of Pasadena
#2

Driller - McMasters & Pomeroy

Address _____ Tenant/Oper. _____
Date Drilled - / /1935 Depth - 834 ft. Source of Depth - D Altitude - 27 ft. Source of Alt. - M
Aquifer - 121EVGL EVANGELINE AQUIFER Well Type - W User - 651900

WELL CONSTRUCTION
Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

| Casing or Blank Pipe (C)
| Well Screen or Slotted Zone (
| Open Hole (O)
| Cemented from_____to_____
| Diam. (in.) Setting(feet) From To

LIFT DATA - Pump Mfr. _____ Type - NONE No. Stages ____

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - Horsepower -

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- UNUSED Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- M Quality- N Logs- Other Data-

WATER LEVELS Date- 08/19/1937 Measurement- -109.80
Date- 03/15/1941 Measurement- -125.50

Recorded By _____ Date Record Collected or Updated- / /

Reporting Agency - UNITED STATES GEOLOGICAL SURVEY
REMARKS -

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-120

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523120
County	Harris
River Basin	San Jacinto-Brazos
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.7130556
Latitude (degrees minutes seconds)	29° 42' 47" N
Longitude (decimal degrees)	-95.2219444
Longitude (degrees minutes seconds)	095° 13' 19" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	27
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	834
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	0/0/1935
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	City of Pasadena
Driller	McMasters & Pomeroy
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	2
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	1/25/1999
Last Update Date	4/17/2018

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

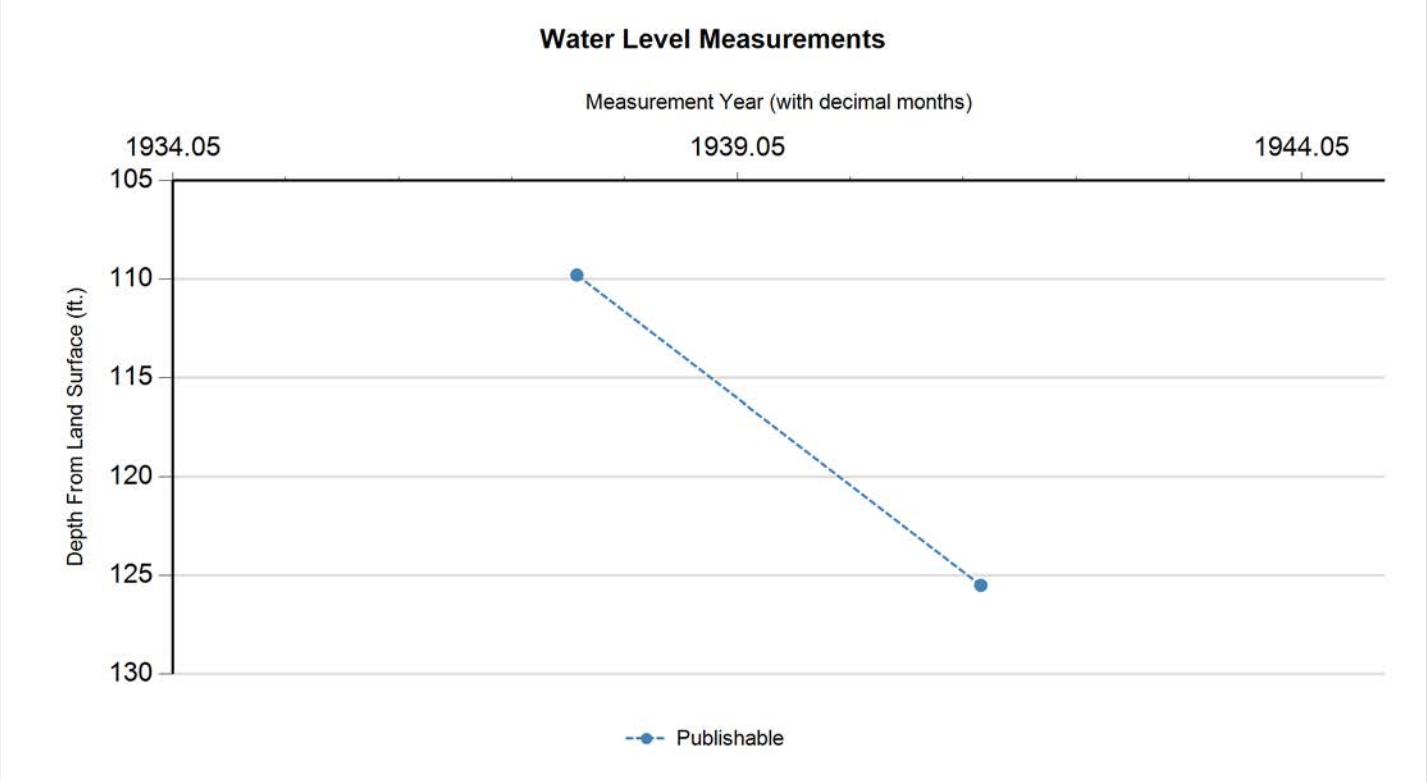
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	8/19/1937		109.8		-82.8	1	U.S. Geological Survey	Steel Tape		
P	3/15/1941		125.5	15.70	-98.5	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 652122

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 23 122 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 43 09 Longitude - 95 12 53 Source of Coords - 1

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Champion Papers Driller - Layne Texas

Address _____ Tenant/Oper. _____
Date Drilled - / /1937 Depth - 974 ft. Source of Depth - Altitude - 31 ft. Source of Alt. -
Aquifer - 121EVGL EVANGELINE AQUIFER Well Type - W User -

WELL CONSTRUCTION Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

| Casing or Blank Pipe (C)
| Well Screen or Slotted Zone (
| Open Hole (O)
| Cemented from_____to_____
| Diam. (in.) Setting(feet) From To

LIFT DATA - Pump Mfr. _____ Type - TURBINE PUMP No. Stages ____

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower - 150

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- INDUSTRIAL Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- M Quality- Y Logs- Other Data- A

WATER LEVELS Date- 01/26/1937 Measurement- -63.00
Date- / / Measurement-

Recorded By _____ Date Record Collected or Updated- / /

Reporting Agency -
REMARKS -
219 ft of screen between 642 and
970 ft. Reported yield 1730 gpm
with 72 ft drawdown when drilled.
test hole drilled to 978 ft.
Well A-1. Aquifer test data in
TWDB R-98.

County Harris Lat. 29°43'11" Long. 95°12'52"

Date July 3, 1939 Well No. LJ-65-23-122

Aquifer Gulf Coast sands Pre-Test Water Level 166.0

Discharge 1,520 Specific Capacity

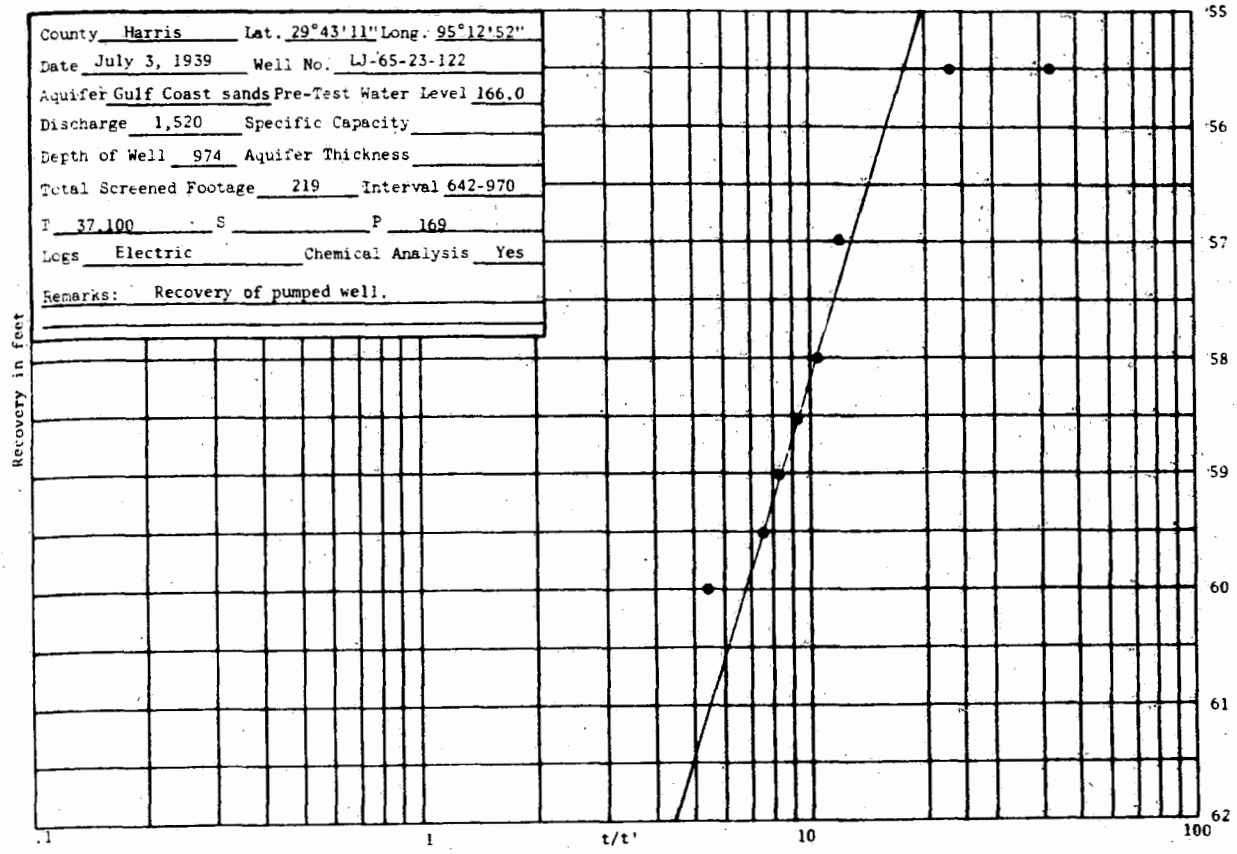
Depth of Well 974 Aquifer Thickness

Total Screened Footage 219 Interval 642-970

T 37,100 S P 169

Logs Electric Chemical Analysis Yes

Remarks: Recovery of pumped well.



Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-122

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523122
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.719167
Latitude (degrees minutes seconds)	29° 43' 09" N
Longitude (decimal degrees)	-95.214723
Longitude (degrees minutes seconds)	095° 12' 53" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	31
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	974
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1937
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Champion Papers
Driller	Layne Texas
Other Data Available	Aquifer Test
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	Champion Paper Mill well A-1
Other Well Number	Historical Id 1135
Previous State Well Number	
Reporting Agency	
Created Date	8/4/2006
Last Update Date	8/4/2006

Remarks	Screened 219 feet between 642 and 970 feet. Reported yield 1520 GPM in 1939. Aquifer test results in TWDB R-98. No test data in TWDB files.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/26/1937		63		-32	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 2/19/1941 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		204.04	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		249	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		31	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		62	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		91	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		12	mg/L as SO4	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523203

Texas Water Development Board
Well Schedule

State Well Number 6523203 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **Zone** 1 **Latitude** 294316 **Longitude** 951224 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Crown Central Pet. Co.
well #8

Driller
McMasters & Pomeroy

Address _____ **Tenant/Oper.** _____

Date Drilled / /1944 **Depth** 1262 **Source of Depth** R **Altitude** 31 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION **Const-Method** **Casing Material**

Completion **Screen Material**

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from_____**to**_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- _____**GPM** **Pump** _____**GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** N **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1950
-272

Recorded By _____ **Date Record Collected or Updated -** 07/18/2003

Reporting Agency 02

REMARKS -
TWDB R178: 175ft. of screen between
680 and 1,256ft.

Aquifer - 121EVGL **ID -** 15

EVANGELINE
AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-203

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523203
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.721111
Latitude (degrees minutes seconds)	29° 43' 16" N
Longitude (decimal degrees)	-95.206667
Longitude (degrees minutes seconds)	095° 12' 24" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	31
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1262
Well Depth Source	Person Other than Owner
Drilling Start Date	
Drilling End Date	0/0/1944
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Crown Central Pet. Co. well #8
Driller	McMasters & Pomeroy
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	7/18/2003
Last Update Date	7/18/2003

Remarks	TWDB R178: 175ft. of screen between 680 and 1,256ft.

Casing - No Data

Well Tests - No Data

Lithology - No Data

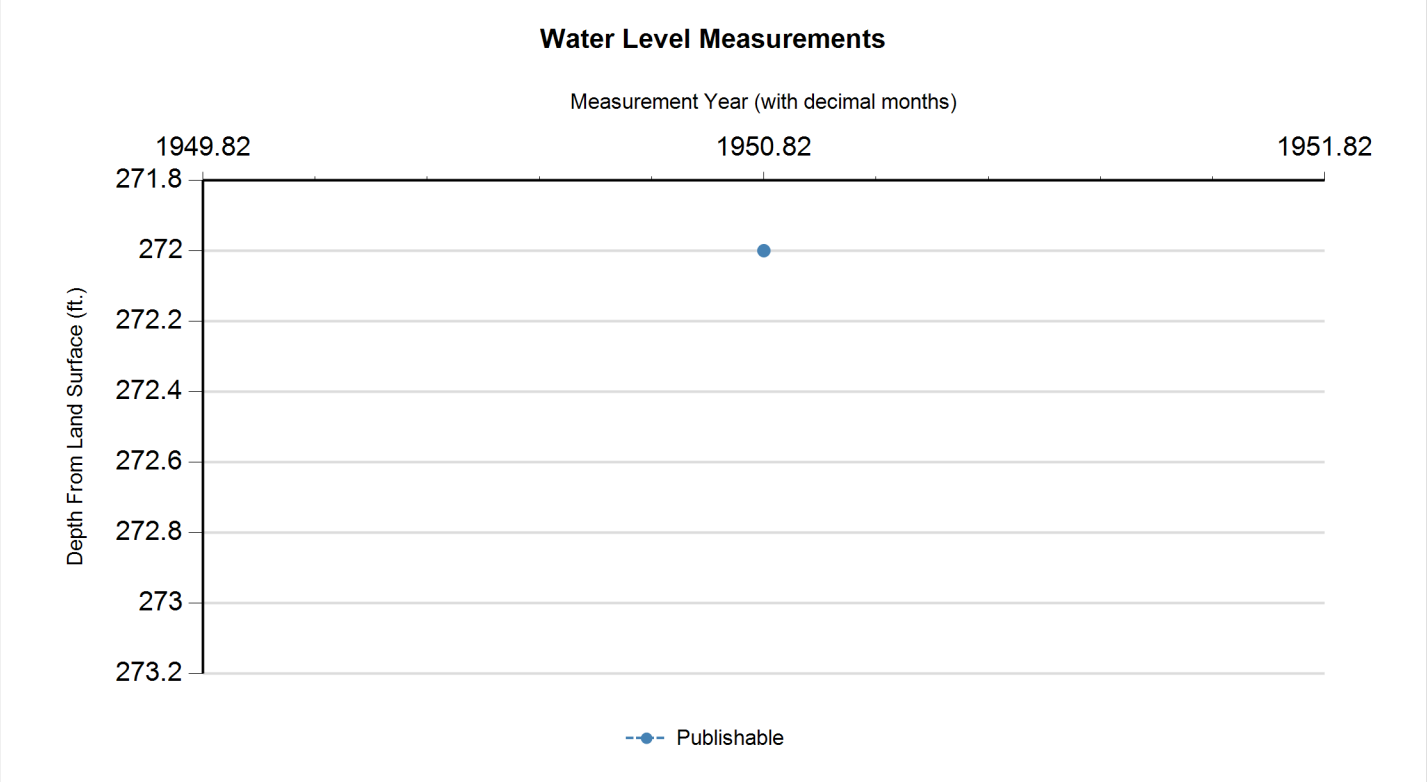
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/0/1950		272		-241	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523215

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 23 215 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 44 10 Longitude - 95 10 51 Source of Coords - 1

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Phillips 66 Co.
Houston Chemical

Driller - Layne Texas

Address _____ Tenant/Oper. _____
Date Drilled - 08/15/1952 Depth - 1,220 ft. Source of Depth - D Altitude - 25 ft. Source of Alt. - M
Aquifer - 121EVGL EVANGELINE AQUIFER Well Type - W User - 667400

WELL CONSTRUCTION
Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

| Casing or Blank Pipe (C)
| Well Screen or Slotted Zone (
| Open Hole (O)
| Cemented from_____to_____

Diam. (in.)	Setting(feet) From	To
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		

LIFT DATA - Pump Mfr. _____ Type - TURBINE PUMP No. Stages ____

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower -

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- INDUSTRIAL Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- C Quality- Y Logs- Other Data-

WATER LEVELS Date- 09/15/1970 Measurement- -388.00
Date- 02/01/2000 Measurement- -188.00

Recorded By _____ Date Record Collected or Updated- 08/22/1996

Reporting Agency - UNITED STATES GEOLOGICAL SURVEY
REMARKS -
210 ft of screen between 730 and
1200 ft. Reported yield 1500 gpm
with 30 ft drawdown Sept.1970.
Well 6.

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-215

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523215
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.736389
Latitude (degrees minutes seconds)	29° 44' 11" N
Longitude (decimal degrees)	-95.181111
Longitude (degrees minutes seconds)	095° 10' 52" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	25
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1220
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	8/15/1952
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Historical
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Phillips 66 Co. Houston Chemical
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1010312B
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	8/22/1996
Last Update Date	10/2/1997

Remarks	210 ft of screen between 730 and 1200 ft. Reported yield 1500 gpm with 30 ft drawdown Sept.1970. Well 6.

Casing - No Data

Well Tests - No Data

Lithology - No Data

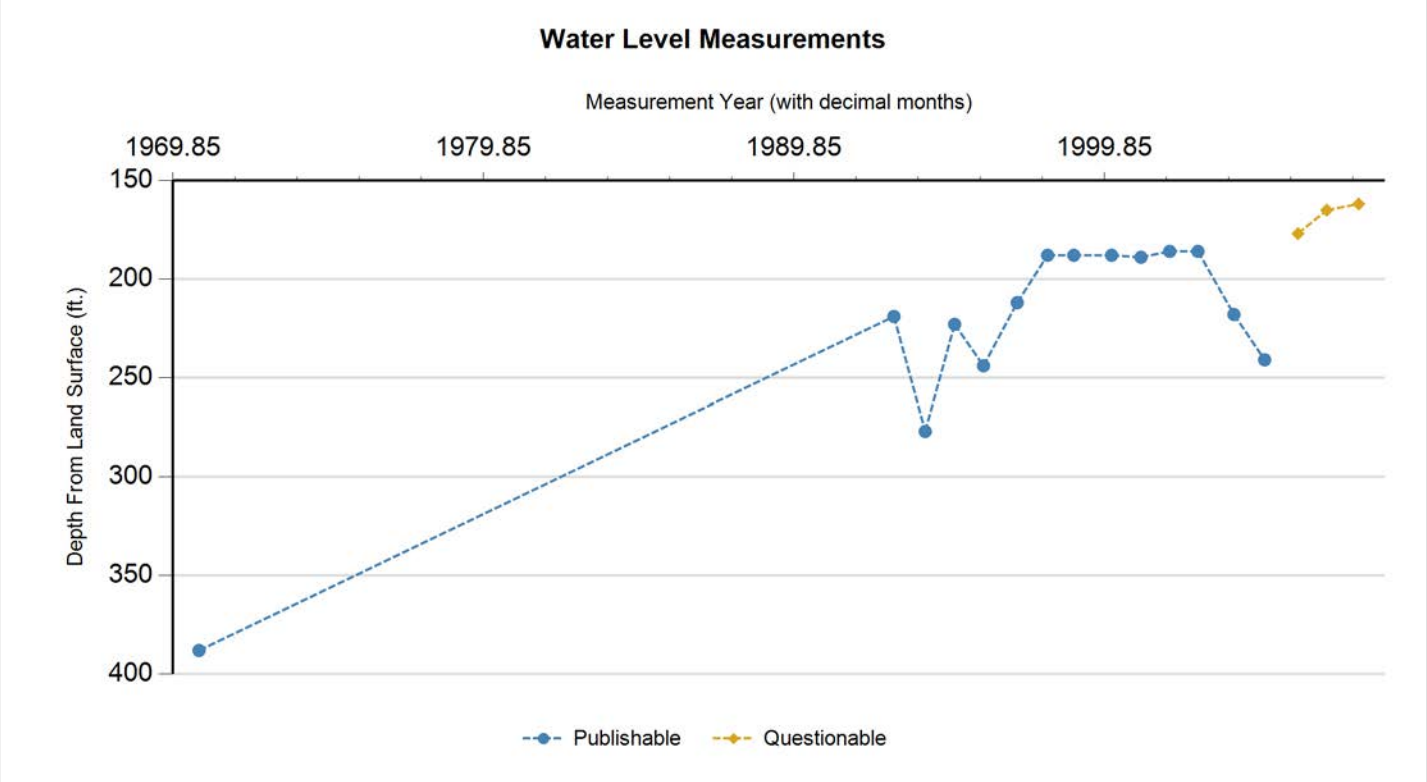
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/15/1970		388		-363	1	U.S. Geological Survey	Steel Tape		
P	1/27/1993		219	(169.00)	-194	1	U.S. Geological Survey	Air Line		
P	1/30/1994		277	58.00	-252	1	U.S. Geological Survey	Air Line		
P	1/10/1995		223	(54.00)	-198	1	U.S. Geological Survey	Air Line		
P	12/20/1995		244	21.00	-219	1	U.S. Geological Survey	Air Line		
P	1/16/1997		212	(32.00)	-187	1	U.S. Geological Survey	Air Line		
P	1/8/1998		188	(24.00)	-163	1	U.S. Geological Survey	Air Line		
P	11/16/1998		188	0.00	-163	1	U.S. Geological Survey	Air Line		
P	2/1/2000		188	0.00	-163	1	U.S. Geological Survey	Unknown		
P	1/10/2001		189	1.00	-164	1	U.S. Geological Survey	Unknown		
P	12/18/2001		186	(3.00)	-161	1	U.S. Geological Survey	Unknown		
P	11/15/2002		186	0.00	-161	1	U.S. Geological Survey	Steel Tape		
P	1/8/2004		218	32.00	-193	1	U.S. Geological Survey	Steel Tape		
P	1/4/2005		241	23.00	-216	1	U.S. Geological Survey	Unknown		
Q	1/31/2006		177	(64.00)	-152	1	U.S. Geological Survey	Steel Tape	4	
Q	1/4/2007		165.1	(11.90)	-140.1	1	U.S. Geological Survey	Other	4	
Q	1/14/2008		162	(3.10)	-137	1	U.S. Geological Survey	Unknown	4	

Code Descriptions

Status Code	Status Description
P	Publishable
Q	Questionable

Remark ID	Remark Description
4	Well pumped recently

Water Quality Analysis

Sample Date: 4/7/1971 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		195.08	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		238	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		26	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		84	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		512	MICR	

Water Quality Analysis

Sample Date: 5/26/1977 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		196.72	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		240	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		33	mg/L	
00400	PH (STANDARD UNITS), FIELD		7.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		509	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		7	mg/L as SO4	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523244

Texas Water Development Board
Well Schedule

State Well Number 6523244 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294432 **Longitude** 951209 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
American Petroleum Co.
well #2

Driller
McMasters & Pomeroy

Address _____ **Tenant/Oper.** _____

Date Drilled / /1931 **Depth** 707 **Source of Depth** R **Altitude** 20 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION **Const-Method** **Casing Material**

Completion blank **Screen Material**

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from_____**to**_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** NONE **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** **Horsepower -**

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** UNUSED **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** N **Logs -** **Other Data -**

WATER LEVELS 3 measurements
1931 to 1940
MIN -93 MAX -37

Recorded By _____ **Date Record Collected or Updated -** 07/18/2003

Reporting Agency 02

REMARKS -
TWDB R178: Screen from 647 to 707ft.
Yield 321 gpm with 55ft. drawdown when drilled.

Aquifer - 121EVGL **ID -** 15

EVANGELINE AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-244

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523244
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.742222
Latitude (degrees minutes seconds)	29° 44' 32" N
Longitude (decimal degrees)	-95.202501
Longitude (degrees minutes seconds)	095° 12' 09" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	20
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	707
Well Depth Source	Person Other than Owner
Drilling Start Date	
Drilling End Date	0/0/1931
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	American Petroleum Co. well #2
Driller	McMasters & Pomeroy
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	7/18/2003
Last Update Date	7/18/2003

Remarks	TWDB R178: Screen from 647 to 707ft. Yield 321 gpm with 55ft. drawdown when drilled.

Casing - No Data

Well Tests - No Data

Lithology - No Data

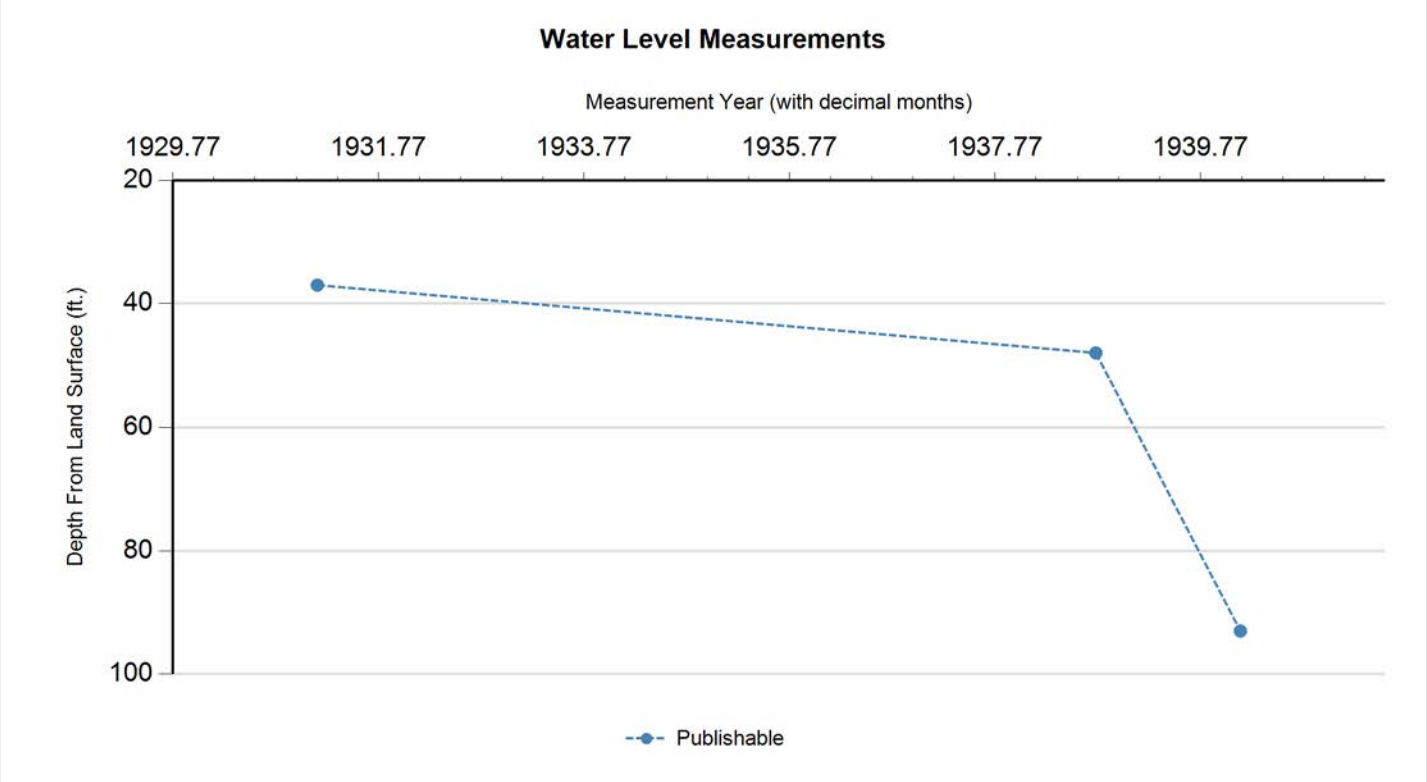
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	3/4/1931		37		-17	1	U.S. Geological Survey	Steel Tape		
P	10/4/1938		48	11.00	-28	1	U.S. Geological Survey	Steel Tape		
P	2/27/1940		93	45.00	-73	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523246

TEXAS DEPARTMENT OF WATER RESOURCES

WELL SCHEDULE

Aquifer(s) Evangeline Project No. _____ State Well No. 65-23-246

Field No./Owner's Well No. 2 County Harris

1. Location: ___ ¼, ___ ¼, Section ___, Block ___, Survey _____, Lat. _____, Long. _____

2. Owner: Air Products & Chemicals, Inc. Address: _____

Tenant (other): _____ Address: _____

Driller: Layne Texas Address: _____

3. Land Surface Elevation: 28 ft. above msl determined by TOPO

4. Drilled: 12-21 19 72; Dug, Cable Tool, (Rotary), Air, ___

5. Depth: Rept. 1300 ft. Meas. _____ ft.

6. Borehole Completion: Open Hole, Straight Wall, (Underreamed, Gravel Packed)

7. Pump: Mfr. _____ Type T

No. Stages ___, Bowls Diam. ___ in., Setting _____ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Mfr. _____ Fuel E HP. ___

9. Yield: Flow ___ gpm, Pump ___ gpm, Meas., Rept., Est. ___ Date ___

10. Performance Test: Date 2/2/73 Length of Test 12 hr Made by LT

Static Level 415 ft. Pumping Level 477 ft. Drawdown 62 ft.

Production 1266 gpm Specific Capacity _____ gpm/ft.

11. Quality: (Remarks on taste, odor, color, etc.) _____

Analyses

Date _____ Laboratory _____ TDS ___ Sp Cond ___

Date _____ Laboratory _____ TDS ___ Sp Cond ___

12. Other data available (as circled): Pumping Test, Power & Yield Test, (Drillers Log),

Formation Samples, (Geophysical Log(s)) Q 1757 (type)

13. Water Level(s): ___ ft. rept. meas. _____ 19__ above below _____ which is ___ ft. above below Land Surface

_____ ft. rept. meas. _____ 19__ above below _____ which is ___ ft. above below Land Surface

14. Use: Dom., Stock, Public Supply, (Ind.) Irr., Observation, Other (Test Hole, Oil Test, etc.) _____

15. Recorded by: _____ Source of data: _____ Date: _____

16. Remarks: _____

17. Location or Sketch:

CASING, BLANK PIPE & WELL SCREEN Cemented From 0 ft. to 902 ft.			
Diam. (in.)	Type	Setting (feet) from	to
16	Steel	0	902
10			1300

Q 1757

W/L Obs. Well ___ W/Q Obs. Well ___

State Well No. 65 23-246

TDWR-0308

nd original copy by
rtified mail to the
xas Water Development Board
O. Box 12386
stin, Texas 78711

State of Texas

WATER WELL REPORT

For TWDB use only
Well No. [illegible]
Located on map [illegible]
Received: [illegible]

)OWNER:
Person having well drilled Air Products & Chemical Co (Name) Address 1438 Jackson Rd (Street or RFD) Pasadena Tex (City) (State)

Landowner _____ (Name) Address _____ (Street or RFD) (City) (State)

)LOCATION OF WELL:
County Harris, _____ miles in _____ (N.E., S.W., etc.) direction from _____ (Town)

Locate by sketch map showing landmarks, roads, creeks, hiway number, etc.*

See attached map North

(Use reverse side if necessary)

or

Give legal location with distances and directions from adjacent sections or survey lines.

Labor _____ League _____

Block _____ Survey _____

Abstract No. _____

(NW¼ NE¼ SW¼ SE¼) of Section _____

)TYPE OF WORK (Check):
New Well Deepening
Reconditioning Plugging

4)PROPOSED USE (Check):
Domestic Industrial Municipal
Irrigation Test Well Other

5)TYPE OF WELL (Check):
Rotary Driven Dug
Cable Jetted Bored

)WELL LOG:
Diameter of hole _____ in. Depth drilled _____ ft. Depth of completed well _____ ft. Date drilled _____

All measurements made from _____ ft. above ground level.

From (ft.)	To (ft.)	Description and color of formation material
		See attached Completion report

(Use reverse side if necessary)

9) Casing:
Type: Old New Steel Plastic Other

Cemented from _____ ft. to _____ ft.

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Gage

10) SCREEN:
Type _____

Perforated Slotted

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Slot Size

7) COMPLETION (Check):
Straight wall Gravel packed Other
Under reamed Open Hole

8) WATER LEVEL:
Static level _____ ft. below land surface Date _____
Artesian pressure _____ lbs. per square inch Date _____
Depth to pump bowls, cylinder, jet, etc., _____ ft. below land surface.

11) WELL TESTS:
Was a pump test made? Yes No If yes, by whom?
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.
Bailer test _____ gpm with _____ ft. drawdown after _____ hrs.
Artesian flow _____ gpm
Temperature of water _____

12) WATER QUALITY:
Was a chemical analysis made? Yes No
Did any strata contain undesirable water? Yes No
Type of water? _____ depth of strata _____

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Gaston L Alciatore (Type or Print) Water Well Drillers Registration No. 1201

ADDRESS P O Box 5469 (Street or RFD) Houston 77011 (City) (State)

GASTON L GAS ALCIATORE

(Signed) _____ (Water Well Driller) Layne Texas Co (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

*Additional instructions on reverse side.

Q-1757

TWDBE-GW-53

65-23-246

Stat

FORM NO. 88

65-23-2J

LAYNE T[illegible]AS COMPANY,

HOUSTON -:- DALLAS

WELL LOG

REPORT NO [illegible]978
S. O. 110[illegible]317
PAGE 1 of 2
FILE NO. 3627
DATE 1/2/73

CUSTOMER LOCATION

FOR Air Products & Chemicals, Inc.

LOCATION WELL Jackson Road & F.M. 225

SURVEY FIELD

COUNTY Harris STATE Texas

OTHER LAND MARKS

WELL DATA

NAME WELL WELL NO. 2

ELEVATION DATUM

RT C GR

TEST HOLE SIZE 9-7/8" TD 1300'

DATE STARTED DRILLING 12-16-72

DATE FINISHED DRILLING 12-21-72

DRILLER F.R. Wall RIG NO. 2

TYPE MUD Gel NO. SACKS 15

ELECTRIC LOG Yes TYPE Schlumberger

SURVEY Eastman TYPE Single shot

OTHER

DEPTH STRATA	EACH STRATUM	DESCRIPTION FORMATION	SAMPLES DEPTH	TYPE	NUMBER
0		Surface			
60	60	Clay			
75	15	Sandy clay			
104	29	Sand & shale streaks			
140	36	Shale			
180	40	Sandy shale			
230	50	Shale			
254	24	Sand & sandy shale			
298	44	Shale			
351	53	Sand & streaks of shale			
362	11	Shale			
394	32	Sandy shale			
461	67	Sand			
490	29	Shale			
520	30	Sand & shale streaks			
576	56	Shale & sand streaks			
593	17	Sand & sandy shale			
624	31	Shale			
631	7	Sand			
658	27	Shale			
722	64	Sand & shale breaks			
741	19	Shale			
763	22	Sand			
773	10	Shale			
794	21	Sand & sandy shale			
805	11	Sandy shale			
815	10	Sand			
850	35	Shale			
890	40	Shale & sand streaks			
915	25	Shale			
940	25	Sand			
959	19	Sandy shale			
1002	43	Sand & shale streaks			
1011	9	Shale			
1027	16	Sand			
1042	15	Sand & sandy shale			
1062	20	Sand			
1074	12	Sand & sandy shale			
1105	31	Sandy shale			

65-23-246

FORM NO. 25

LAYNE T[illegible]AS COMPANY,

HOUSTON -:- DALLAS

WELL LOG

REPORT NO. [illegible]978
S. O. 110[illegible]17
PAGE 2 of 4
FILE NO. 3627
DATE 1/2/73

CUSTOMER LOCATION	WELL DATA
FOR Air Products & Chemicals, Inc.	NAME WELL / WELL NO. 2
LOCATION WELL Jackson Road & F.M. 225	ELEVATION / DATUM
SURVEY / FIELD	RT / C / GR
COUNTY Harris / STATE Texas	TEST HOLE SIZE 9-7/8" / TD 1300'
OTHER LAND MARKS	DATE STARTED DRILLING 12-16-72
	DATE FINISHED DRILLING 12-21-72
	DRILLER F. R. Wall / RIG NO. 2
	TYPE MUD Gel / NO. SACKS 15
	ELECTRIC LOG Yes / TYPE Schlumberger
	SURVEY Eastman / TYPE Single shot
	OTHER

DEPTH STRATA	EACH STRATUM	DESCRIPTION FORMATION	SAMPLES DEPTH	TYPE	NUMBER
1105					
1145	40	Sand			
1179	34	Sandy shale			
1185	6	Sand			
1201	16	Shale			
1234	33	Sand			
1247	13	Shale			
1275	28	Sandy shale			
1282	7	Sand			
1300	18	Shale			
Total depth 1300 ft.					

65-23-246

FORM NO. 1202 - 1M - 8-61 - B&L

THE LAYNE TEXAS COMPANY, LTD.

HOUSTON -:- DALLAS

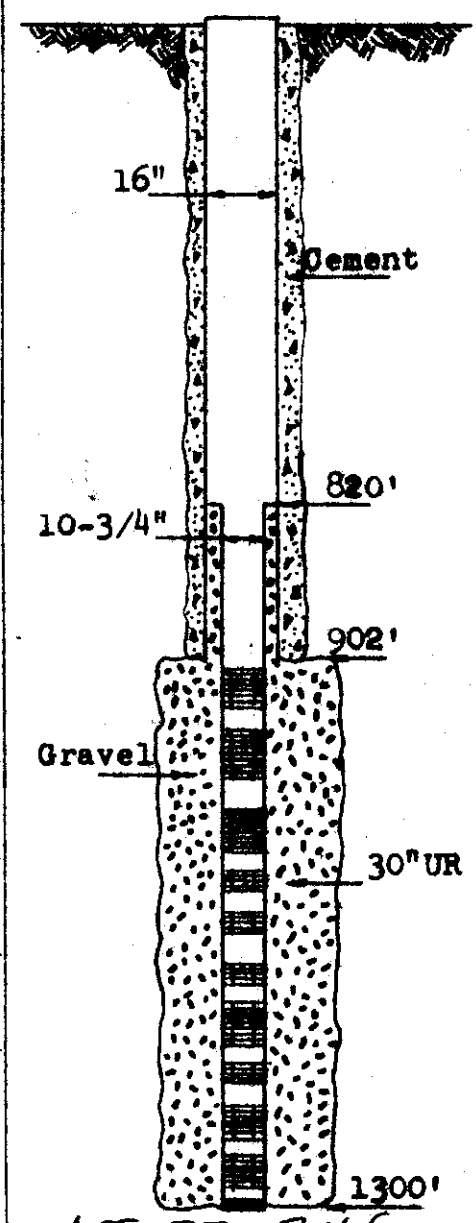
REPORT NO. 8979
S. O. 1104-2317
PAGE 1 OF 1
FILE NO. 3627
DATE 2/12/73

MATERIAL SETTING

CUSTOMER LOCATION	WELL DATA
FOR Air Products & Chemicals, Inc.	NAME WELL — WELL NO. 2
LOCATION WELL Jack Rd. & F.M. 225	ELEVATION — DATUM
SURVEY — FIELD	TYPE WELL Gravel-wall
COUNTY Harris — STATE Texas	SURFACE CASING CEMENTED Yes — NO. SACKS 350+8% Gel
OTHER LAND MARKS	SIZE HOLE UNDERREAMED 30" — DEPTH 902-1300'
	GRAVEL TYPE 112-113- 165-121 — NO. CU. YDS. 140
	TYPE SCREEN SS WW Ribbed — GAGE .045"
	DRILLER F.R. Wall — RIG NO. 2
	OTHER Mr. Tesch

DEPTH	LENGTH	SIZE, KIND, WEIGHT MATERIAL
+2'		16" O.D. surface casing 62.58#
0		Surface
820'	820'	Top of 10-3/4" O.D. liner
902'	904'	16" O.D. surface casing 62.58#
914'	94'	10-3/4" O.D. blank liner 31.20#
944'	30'	10-3/4" OD S.S. W.W. ribbed screen .045" ga.
960'	16'	10-3/4" O.D. blank liner 31.20#
995'	35'	10-3/4" O.D. S.S. W.W. ribbed screen .045" ga.
1015'	20'	10-3/4" O.D. blank liner 31.20#
1045'	30'	10-3/4" O.D. S.S. W.W. ribbed screen .045" ga.
1055'	10'	10-3/4" O.D. blank liner 31.20#
1065'	10'	10-3/4" O.D. S.S. W.W. ribbed screen .045" ga.
1080'	15'	10-3/4" O.D. blank liner 31.20#
1090'	10'	10-3/4" O.D. S.S. W.W. ribbed screen .045" ga.
1115'	25'	10-3/4" O.D. blank liner 31.20#
1125'	10'	10-3/4" O.D. S.S. W.W. ribbed screen .045" ga.
1135'	10'	10-3/4" O.D. blank liner 31.20#
1170'	35'	10-3/4" O.D. S.S. W.W. ribbed screen .045" ga.
1180'	10'	10-3/4" O.D. blank liner 31.20#
1190'	10'	10-3/4" O.D. S.S. W.W. ribbed screen .045" ga.
1215'	25'	10-3/4" O.D. blank liner 31.20#
1250'	35'	10-3/4" O.D. S.S. W.W. ribbed screen .045" ga.
1260'	10'	10-3/4" O.D. blank liner 31.20#
1285'	25'	10-3/4" O.D. S.S. W.W. ribbed screen .045" ga.
1298'	13'	10-3/4" O.D. blank liner 31.20#
1300'	2'	10-3/4" O.D. set nipple & back pressure valve

SKETCH



65-23-246

REPORT NO. 8980
S. O. 1104-2317
PAGE 1 of
FILE NO. 3627
DATE 2/12/73

LAYNE TEXAS COMPANY

HOUSTON -:- DALLAS

WATER WELL TEST

CUSTOMER LOCATION

TEST FOR Air Products & Chemicals Co.

LOCATION OF WELL Jackson Rd. & F.M. 225

SURVEY FIELD

COUNTY Harris STATE Texas

DESCRIPTION OF LAND MARKS

WELL DATA

NAME WELL WELL NO. 2

ELEVATION DATUM

WELL SIZE 16" x10-3/4" x 30"UR

TOTAL DEPTH 1300' TOP SCREEN 914-944'

GRAVEL WELL Yes STRAIGHT WELL

TYPE SCREEN S.S. W.W. Ribbed GAGE .045"

TEMPERATURE OF WATER

WATER CONDITION Clear

WATER MEASURING DEVICE

ORIFICE SIZE 10"x7" LENGTH 25'

OTHER

TEST PUMP DATA

DEPTH SETTING TOP OF BOWL 610'

LENGTH AIR LINE 610' SIZE 1/4"

TYPE BOWL NO. STAGES

LENGTH BOWL SUCTION LT.

SAND CONTENT 0 OZ. PER 100 GAL.

ACTIVE STATIC HEAD AFTER PUMP STOPPED

5 MIN. 421 FT. 60 MIN. 418 FT.

10 MIN. 420 FT. 90 MIN. 417 FT.

15 MIN. 419 FT. 30 MIN. 417 FT.

S.L. before start- 415 ft.

WATER SAMPLE TAKEN Yes NO. SAMPLES 1

BACTERIOLOGICAL SAMPLE TAKEN

DRAWDOWN SPECIFIC CAPACITY

DATE HOUR	AIR LINE GAGE	PUMPING LEVEL	DISCH. PRESS.	HEAD ON ORIFICE INCHES	GPM	RPM	OPERATOR	REMARKS
2/2/73	- Started test at 10:00 A.M.							
10:30AM	136	474		37.5	1274			
11:00	136	474		37	1266			
11:30	136	474		37	1266			
12:00 N	135	475		37.5	1274			
12:30 PM	135	475		37.5	1274			
1:00	135	475		37	1266			
1:30	135	475		37	1266			
2:00	135	475		37	1266			
2:30	135	475		37	1266			
3:00	135	475		37	1266			
3:30	135	475		37	1266			
4:00	135	475		37	1266			
4:30	135	475		37	1266			
5:00	134	476		37	1266			
5:30	134	476		37	1266			
6:00	134	476		37	1266			
6:30	134	476		37	1266			
7:00	134	476		37.5	1274			
7:30	134	476		37	1266			
8:00	134	476		37	1266			
8:30	134	476		37	1266			
9:00	134	476		37	1266			
9:30	133	477		37	1266			
10:00	133	477		37	1266			

OBSERVERS

FOR OWNER

F. R. Wall
FOR LAYNE TEXAS CO.

FORM NO. 55

65-23-246

EDNA WOOD LABORATORIES INC.

WATER TECHNOLOGISTS . . CHEMISTS . . MICROBIOLOGISTS

7 February 1973

To: Layne Texas Company
Houston, Texas

SO #1104-2317

Sample marked: Well No. 2, Air Products and Chemical Incorporated
Taken: 2-3-73 after 12 hours pumping at 1266 gpm.
Static Head: 410' 10 min. 420' 30 min. recovery 417'
Pumping Level: 477' Screened: 900-1284' 30 inch undereamed hole.

Received: 2-5-73

WATER ANALYSIS

results in parts per million (mg/l) except as noted

Dissolved Residue at 350°C		369	Conductance, micromhos/cm, 25°C		620
Total Dissolved Solids, actual†		533	Color, units		0
Total Dissolved Solids, calc.		539	Turbidity, units		0
Silica	SiO_2	15	As Calcium Carbonate, $CaCO_3$:		
Calcium	Ca	3	Phenolphthalein Alkalinity		0
Magnesium	Mg	1	Total Alkalinity		266
Sodium (diff.) Na + K as	Na	148	Total Hardness		10
Carbonate	CO_3	0	Free Carbon Dioxide	CO_2	5
Bicarbonate	HCO_3	322	pH . . . 7.99		
Sulfate	SO_4	7	HYPOTHETICAL COMBINATIONS		
Chloride	Cl	41	Calcium Bicarbonate		12
Total Fluoride	F	1.0	Magnesium Bicarbonate		4
Total Nitrate	NO_3	0.9	Sodium Bicarbonate		427
Total Manganese	Mn	< 0.02	Sodium Sulfate		10
Total Iron	Fe	0.07	Sodium Chloride		68
Iron, filtered sample	Fe		Sodium Fluoride		2
			Sodium Nitrate		1
			Silica		15
			Total Dissolved Solids, Calc.		539

†Total Dissolved Solids, actual = Dissolved Residue + 50.8% of bicarbonate (HCO_3) ion

EDNA WOOD LABORATORIES, INC.

By: Edna Wood

2306
adp

65-23-246

Tel: (713) 747-7271 • P. O. BOX 14177 • 4620 OLD SPANISH TRAIL • HOUSTON, TEXAS 77081

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-246

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523246
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.717222
Latitude (degrees minutes seconds)	29° 43' 02" N
Longitude (decimal degrees)	-95.189722
Longitude (degrees minutes seconds)	095° 11' 23" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	37
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1300
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	12/21/1972
Drilling Method	Mud (Hydraulic) Rotary
Borehole Completion	Gravel Pack w/Screen

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Air Products & Chemicals, Inc.
Driller	Layne-Texas Co.
Other Data Available	Drillers Log; Specific Capacity
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	Texas Water Development Board
Created Date	5/18/1999
Last Update Date	10/14/2014

Remarks	Owners well #2. Measured yield 1266 GPM with 62 feet drawdown after pumping 12 hours in 1973. Pumping level 477 feet. Specific capacity 20.42 GPM/ft. Cemented from 0 to 902 feet. Gravel packed and under- reamed from 902 to 1300 feet. Pump set at 610 feet. Well originally drilled to 1300 feet.

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
16	Blank	Steel			0	902
11	Blank	Steel			820	914
11	Screen	Stainless Steel			914	944
11	Blank	Steel			944	960
11	Screen	Stainless Steel			960	995
11	Blank	Steel			995	1015
11	Screen	Stainless Steel			1015	1045
11	Blank	Steel			1045	1055
11	Screen	Stainless Steel			1055	1065
11	Blank	Steel			1065	1080
11	Screen	Stainless Steel			1080	1090
11	Blank	Steel			1090	1115
11	Screen	Stainless Steel			1115	1125
11	Blank	Steel			1125	1135
11	Screen	Stainless Steel			1135	1170
11	Blank	Steel			1170	1180
11	Screen	Stainless Steel			1180	1190
11	Blank	Steel			1190	1215
11	Screen	Stainless Steel			1215	1250
11	Blank	Steel			1250	1260
11	Screen	Stainless Steel			1260	1285
11	Blank	Steel			1285	1300

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/2/1973		415		-378	1	Registered Water Well Driller	Air Line		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 2/3/1973 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:** Registered Water Well Driller

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: Edna Wood Lab **Reliability:** Collected from pumped well, but not filtered or preserved

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		263.93	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		322.08	mg/L	
00910	CALCIUM (MG/L)		3	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		41	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		1	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		12	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		1	mg/L	
01055	MANGANESE, TOTAL (UG/L AS MN)		0	ug/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0.2	mg/L as NO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		5.04		
00955	SILICA, DISSOLVED (MG/L AS SI02)		15	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		19.16		
00932	SODIUM, CALCULATED, PERCENT		97	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		150	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		620	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		7	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		377	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523247

WRD Exp. (GW)
April 1966

Well No. J-65-23-247

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

MASTER CARD

Record by G.D. McAdoo A.A. Rose 1942 Source of data File Date 1-22-68 Map Pasadena 1:24000 1965

State Texas 48 County (or town) Harris LJ

Latitude: 29 43 10 N (deg min sec) Longitude: 095 12 16 (degrees min sec) Sequential number: 1

Lat-long accuracy: 1 T. S, R W, Sec , , , B & M

Local well number: LJ-65-23-247 Other number: 1182

Local use: Owner or name: Port Terminal RR.

Owner or name: PORT TERMINAL RR. Address: Pasadena, Texas

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist — N

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Mnd, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other — U

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed — U

DATA AVAILABLE: Well data 8 Freq. W/L meas.: 1939 - - Quarterly Q Field aquifer char.

Hyd. lab. data:

Qual. water data; type:

Freq. sampling: Pumpage inventory: yes no, period:

Aperture cards: yes

Log data: Eclipse Gamma, Gamma-Gamma, Temp. Neutron CCBO

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 715 ? ft 715 Meas. rept. accuracy 6

Depth cased (first perf.) 675 ft 675 Casing type: S ; Diam. 8 in 8

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) other — S

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other — H

Date Drilled: Feb 1929 929 Pump intake setting: ft

Driller: McMasters & Pomeroy (name), Pasadena, Texas. (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other — N Deep Shallow

Power (type): diesel, elec, gas, gasoline, hand, gas, wind; H.P. N Trans. or meter no.

Descrip. MP ft above below LSD, Alt. MP

Alt. LSD: 33 33 Accuracy (source): Topo. 5' — 3

Water Level 108.00 ft above below MP; Ft above below LSD 108 Accuracy: rept — G

Date meas: 7-1-39 739 Yield: — gpm Method determined

Drawdown: ft Accuracy: Pumping period hrs

QUALITY OF WATER DATA: Iron ppm Sulfate ppm Chloride ppm Hard. ppm

Sp. Conduct K x 10^6 Temp. °F Date sampled

Taste, color, etc.

Well No. LJ-65-23-247

Well No. LJ-651 3-247

Latitude-longitude 29 (d), 43 (m), 10 (s) N 095 (d), 12 (m), 16.1 (s)

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) Physiographic Province: Coastal Plain (20–21) 03 Section: West

G.C.P (22) F Drainage Basin: (23–25) 51 R Subbasin: (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat (27)

MAJOR AQUIFER: system, series (28–29) T aquifer, formation, group (30–31) E

Lithology: (32–33) Origin: (34) Aquifer Thickness: ft

(35–37) Length of well open to: 40 ft (38–40) 40 Depth to top of: ft (41–43)

MINOR AQUIFER: system, series (44–45) aquifer, formation, group (46–47)

Lithology: (48–49) Origin: (50) Aquifer Thickness: ft

(51–53) Length of well open to: ft (54–56) Depth to top of: ft (57–59)

Intervals Screened: 675-715.

Depth to consolidated rock: ft (60–63) Source of data: (64)

Depth to basement: ft (65–68) Source of data: (69)

Surficial material: (70–71) Infiltration characteristics: (72)

Coefficient Trans: gpd/ft (73–75) Coefficient Storage: (76–78)

Coefficient Perm: gpd/ft^2; Spec cap: gpm/ft; Number of geologic cards: (79)

Unable to log beyond 492'. 1975
Possibly blocked on t.d.
Obstruction at 264' but sonde will pass

Well No. LJ-65-23-247

GPO 857-700

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-247

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523247
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.719722
Latitude (degrees minutes seconds)	29° 43' 11" N
Longitude (decimal degrees)	-95.204723
Longitude (degrees minutes seconds)	095° 12' 17" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CEVG - Chicot and Evangeline Aquifers
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	33
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	715
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1929
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	Historical
Water Quality Available	No
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Port Terminal Railroad
Driller	McMasters and Pomeroy
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	2/4/1999
Last Update Date	2/4/1999

Remarks	Screen from 675 to 715 ft.

Casing - No Data

Well Tests - No Data

Lithology - No Data

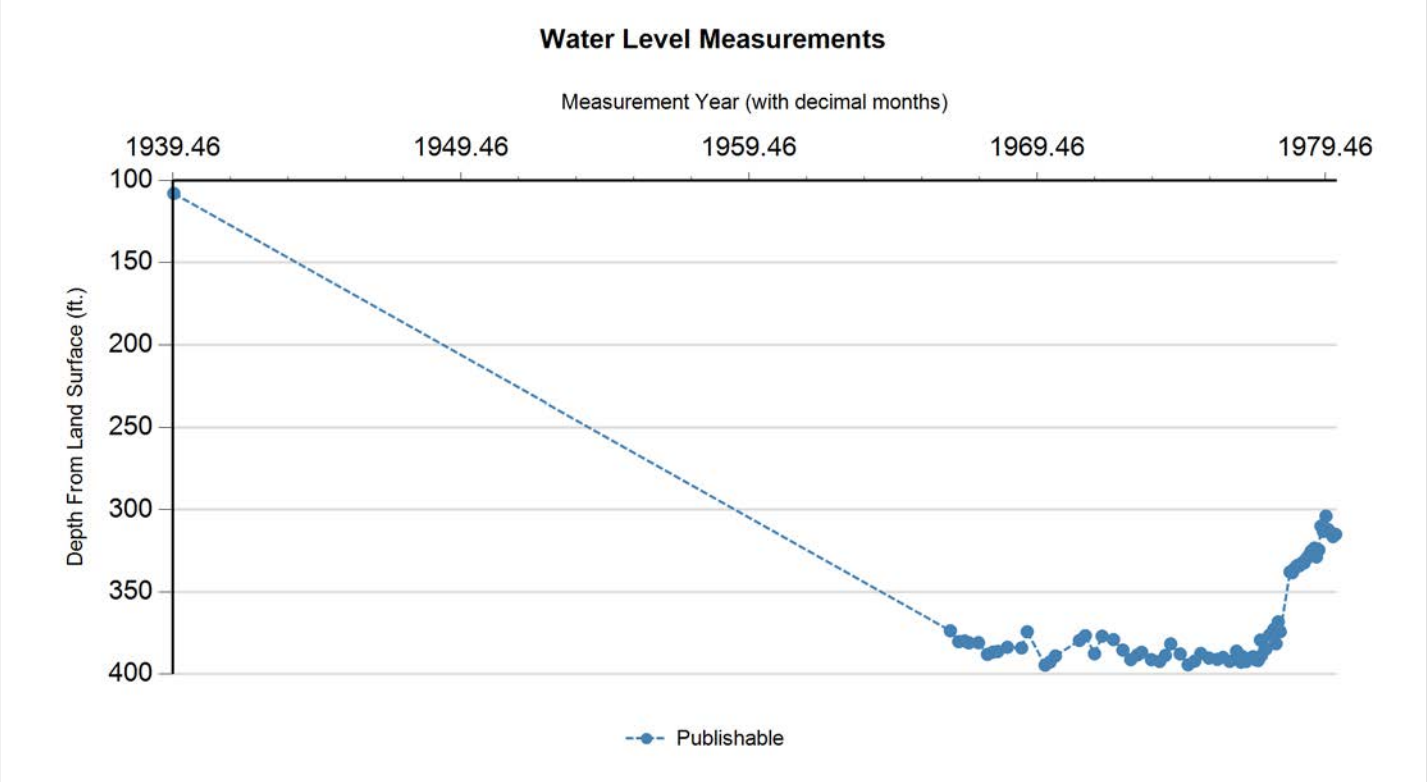
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	7/1/1939		108		-75	1	Other or Source of Measurement Unknown	Unknown		
P	6/14/1966		373.62	265.62	-340.62	1	U.S. Geological Survey	Steel Tape		
P	9/29/1966		380.19	6.57	-347.19	1	U.S. Geological Survey	Steel Tape		
P	12/13/1966		379.79	(0.40)	-346.79	1	U.S. Geological Survey	Steel Tape		
P	2/3/1967		380.95	1.16	-347.95	1	U.S. Geological Survey	Steel Tape		
P	6/5/1967		380.86	(0.09)	-347.86	1	U.S. Geological Survey	Steel Tape		
P	9/28/1967		387.97	7.11	-354.97	1	U.S. Geological Survey	Steel Tape		
P	12/6/1967		386.63	(1.34)	-353.63	1	U.S. Geological Survey	Steel Tape		
P	2/5/1968		386.19	(0.44)	-353.19	1	U.S. Geological Survey	Steel Tape		
P	6/6/1968		383.64	(2.55)	-350.64	1	U.S. Geological Survey	Steel Tape		
P	12/6/1968		384.04	0.40	-351.04	1	U.S. Geological Survey	Steel Tape		
P	2/12/1969		374.2	(9.84)	-341.2	1	U.S. Geological Survey	Steel Tape		
P	9/29/1969		394.53	20.33	-361.53	1	U.S. Geological Survey	Steel Tape		
P	12/2/1969		392.56	(1.97)	-359.56	1	U.S. Geological Survey	Steel Tape		
P	2/4/1970		388.94	(3.62)	-355.94	1	U.S. Geological Survey	Steel Tape		
P	12/9/1970		379.5	(9.44)	-346.5	1	U.S. Geological Survey	Steel Tape		
P	2/18/1971		376.63	(2.87)	-343.63	1	U.S. Geological Survey	Steel Tape		
P	6/15/1971		387.61	10.98	-354.61	1	U.S. Geological Survey	Steel Tape		
P	9/21/1971		376.9	(10.71)	-343.9	1	U.S. Geological Survey	Steel Tape		
P	2/10/1972		378.99	2.09	-345.99	1	U.S. Geological Survey	Steel Tape		
P	6/9/1972		385.37	6.38	-352.37	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/19/1972		391.18	5.81	-358.18	1	U.S. Geological Survey	Steel Tape		
P	12/13/1972		388.33	(2.85)	-355.33	1	U.S. Geological Survey	Steel Tape		
P	2/2/1973		386.72	(1.61)	-353.72	1	U.S. Geological Survey	Steel Tape		
P	6/6/1973		391.19	4.47	-358.19	1	U.S. Geological Survey	Steel Tape		
P	9/20/1973		392.27	1.08	-359.27	1	U.S. Geological Survey	Steel Tape		
P	12/3/1973		388.59	(3.68)	-355.59	1	U.S. Geological Survey	Steel Tape		
P	2/5/1974		381.61	(6.98)	-348.61	1	U.S. Geological Survey	Steel Tape		
P	6/5/1974		387.75	6.14	-354.75	1	U.S. Geological Survey	Steel Tape		
P	9/16/1974		394.29	6.54	-361.29	1	U.S. Geological Survey	Steel Tape		
P	12/10/1974		392.05	(2.24)	-359.05	1	U.S. Geological Survey	Steel Tape		
P	2/21/1975		387.4	(4.65)	-354.4	1	U.S. Geological Survey	Steel Tape		
P	6/5/1975		390.21	2.81	-357.21	1	U.S. Geological Survey	Steel Tape		
P	9/22/1975		391.01	0.80	-358.01	1	U.S. Geological Survey	Steel Tape		
P	12/3/1975		389.82	(1.19)	-356.82	1	U.S. Geological Survey	Steel Tape		
P	2/23/1976		392.2	2.38	-359.2	1	U.S. Geological Survey	Steel Tape		
P	5/19/1976		386.02	(6.18)	-353.02	1	U.S. Geological Survey	Steel Tape		
P	6/10/1976		387.39	1.37	-354.39	1	U.S. Geological Survey	Steel Tape		
P	7/14/1976		392.74	5.35	-359.74	1	U.S. Geological Survey	Steel Tape		
P	8/10/1976		389.47	(3.27)	-356.47	1	U.S. Geological Survey	Steel Tape		
P	9/2/1976		390.85	1.38	-357.85	1	U.S. Geological Survey	Steel Tape		
P	9/21/1976		392.26	1.41	-359.26	1	U.S. Geological Survey	Steel Tape		
P	12/16/1976		389.42	(2.84)	-356.42	1	U.S. Geological Survey	Steel Tape		
P	1/18/1977		391.19	1.77	-358.19	1	U.S. Geological Survey	Steel Tape		
P	2/18/1977		391.72	0.53	-358.72	1	U.S. Geological Survey	Steel Tape		
P	3/17/1977		379.25	(12.47)	-346.25	1	U.S. Geological Survey	Steel Tape		
P	3/29/1977		388.66	9.41	-355.66	1	U.S. Geological Survey	Steel Tape		
P	5/26/1977		384.68	(3.98)	-351.68	1	U.S. Geological Survey	Steel Tape		
P	7/14/1977		376.16	(8.52)	-343.16	1	U.S. Geological Survey	Steel Tape		
P	9/7/1977		372.63	(3.53)	-339.63	1	U.S. Geological Survey	Steel Tape		
P	10/5/1977		381.5	8.87	-348.5	1	U.S. Geological Survey	Steel Tape		
P	11/3/1977		368.21	(13.29)	-335.21	1	U.S. Geological Survey	Steel Tape		
P	11/28/1977		374.17	5.96	-341.17	1	U.S. Geological Survey	Steel Tape		
P	3/27/1978		337.8	(36.37)	-304.8	1	U.S. Geological Survey	Steel Tape		
P	4/26/1978		338.27	0.47	-305.27	1	U.S. Geological Survey	Steel Tape		
P	5/22/1978		335.99	(2.28)	-302.99	1	U.S. Geological Survey	Steel Tape		
P	6/22/1978		334.12	(1.87)	-301.12	1	U.S. Geological Survey	Steel Tape		
P	7/26/1978		333.99	(0.13)	-300.99	1	U.S. Geological Survey	Steel Tape		
P	8/28/1978		332.33	(1.66)	-299.33	1	U.S. Geological Survey	Steel Tape		
P	9/25/1978		332.34	0.01	-299.34	1	U.S. Geological Survey	Steel Tape		
P	10/25/1978		329.72	(2.62)	-296.72	1	U.S. Geological Survey	Steel Tape		
P	11/28/1978		327.61	(2.11)	-294.61	1	U.S. Geological Survey	Steel Tape		
P	12/26/1978		325.1	(2.51)	-292.1	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/31/1979		323.33	(1.77)	-290.33	1	U.S. Geological Survey	Steel Tape		
P	2/26/1979		328.7	5.37	-295.7	1	U.S. Geological Survey	Steel Tape		
P	3/26/1979		324.45	(4.25)	-291.45	1	U.S. Geological Survey	Steel Tape		
P	4/23/1979		309.98	(14.47)	-276.98	1	U.S. Geological Survey	Steel Tape		
P	5/23/1979		313.13	3.15	-280.13	1	U.S. Geological Survey	Steel Tape		
P	6/27/1979		303.86	(9.27)	-270.86	1	U.S. Geological Survey	Steel Tape		
P	7/24/1979		312.03	8.17	-279.03	1	U.S. Geological Survey	Steel Tape		
P	8/28/1979		313.8	1.77	-280.8	1	U.S. Geological Survey	Steel Tape		
P	9/26/1979		316.34	2.54	-283.34	1	U.S. Geological Survey	Steel Tape		
P	10/30/1979		314.99	(1.35)	-281.99	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523221

WRD Exp. (GW)
April 1966

Well No. J-65-23-221

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

MASTER CARD

1124000

Record by C.W. BONNET / T. R. FLUELLEN 7-27-51 Source of data FILE Date 10-16-68 Map PASADENA 1955

State TEXAS [48] County (or town) HARRIS [LJ]

Latitude: 294424 N S Longitude: 095104 E Sequential number: [1]

Lat-long accuracy: [1] T. ____ N S, R ____ E W, Sec ____, ____ k, ____ k, ____ k

Local well number: LJ-65-23-221 Other number: B & M NO. 2L

Local use: ____ Owner or name: ETHYL CORP. 2-L

Owner or name: ETHYL CORP. Address: PASADENA, TEXAS

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist [N]

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other [N]

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed [W]

DATA AVAILABLE: Well data [ ] Freq. W/L meas.: 1951 — meas. by owner [M] Field aquifer char. [ ]

Hyd. lab. data: [ ]

Qual. water data; type: [ ]

Freq. sampling: [ ] Pumpage inventory: yes no, period: [ ]

Aperture cards: yes [ ]

Log data: E-LOG CC-18 [E]

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 1740 ft [1740] Meas. reg accuracy FILES [3]

Depth cased (first perf.): 1070 ft [1070] Casing type: S; Diam. 20-12-10 in [20]

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) other [G]

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other [H]

Date Drilled: 7-51 [951] Pump intake setting: ____ ft [ ]

Driller: LAYNE-TEXAS CO. (name) HOUSTON, TEXAS (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other [T] Deep Shallow [D]

Power (type): diesel, elec, nat gas, gasoline, hand, LP gas, wind; H.P. ____ [5] Trans. or meter no. ____

Descrip. MP ____ +2.0 ft above below LSD, Alt. MP 20.85

Alt. LSD: 18.85 [19] Accuracy (source): rept Inst. level [2]

Water Level -239 ft above below MP; Ft above below LSD [239] Accuracy: rept [D]

Date meas: 8-22-51 [851] Yield: 2000 gpm [2000] Method determined [ ]

Drawdown: 80 ft [80] Accuracy: WD, rept [3] Pumping period 5 hrs [5]

QUALITY OF WATER DATA: Iron ____ ppm Sulfate ____ ppm Chloride ____ ppm Hard. ____ ppm

Sp. Conduct ____ K x 10^6 Temp. ____ °F Date sampled ____

Taste, color, etc.

Well No. LJ-65-23-221

QL 319' 23 3/4"

Well No. LJ-65-23-221

Latitude-longitude 29.44.24 (S) 95.10.04
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) Physiographic Province: COASTAL PLAIN 03 (20–21) Section: _____

F (22) Drainage Basin: _____ 51R (23–25) Subbasin: _____ (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat _____ (27)

MAJOR AQUIFER: _____ system, _____ series T (28–29) _____ aquifer, formation, group E (30–31)

Lithology: _____ (32–33) Origin: _____ (34) Aquifer Thickness: _____ ft

(35–37) Length of well open to: 290 ft 290 (38–40) Depth to top of: _____ ft (41–43)

MINOR AQUIFER: _____ system, _____ series (44–45) _____ aquifer, formation, group (46–47)

Lithology: _____ (48–49) Origin: _____ (50) Aquifer Thickness: _____ ft

(51–53) Length of well open to: _____ ft (54–56) Depth to top of: _____ ft (57–59)

* Intervals Screened: _____

Depth to consolidated rock: _____ ft (60–63) Source of data: _____ (64)

Depth to basement: _____ ft (65–68) Source of data: _____ (69)

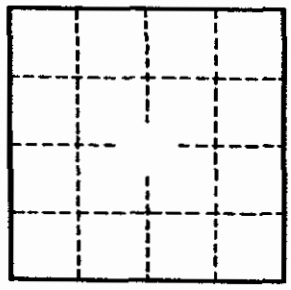
Surficial material: _____ (70–71) Infiltration characteristics: _____ (72)

Coefficient Trans: _____ gpd/ft (73–75) Coefficient Storage: _____ (76–78)

Coefficient Perm: _____ gpd/ft^2; Spec cap: _____ gpm/ft; Number of geologic cards: _____ (79)

* 1070 - 1080
1100 - 1130
1155 - 1200
1245 - 1265
1335 - 1345
1400 - 1475
1535 - 1565
1650 - 1720

0 - 1050 = 20" csg
? - 1500 = 12" csg
? - 1740 = 10" csg.



2-26-52 238.70 +2.0 static 42 off ✓
2-28-52 333.87 PL +2.0 ✓
9-5-52 258.40 +2.0 off 5 days - 4-6 on ✓
2-16-53 256 by Co.
12-1-54 259 do.
12-1-54 314 PL @ 1800 gpm

Well No. LJ-65-23-221

GPO 857-700

County Harris Lat. 29°44'24" Long. 95°10'04"

Date Feb. 28, 1952 Well No. LJ-65-23-221

Aquifer Gulf Coast sands Pre-Test Water Level 333.87

Discharge 2,540 Specific Capacity 27.0(8 hrs.)

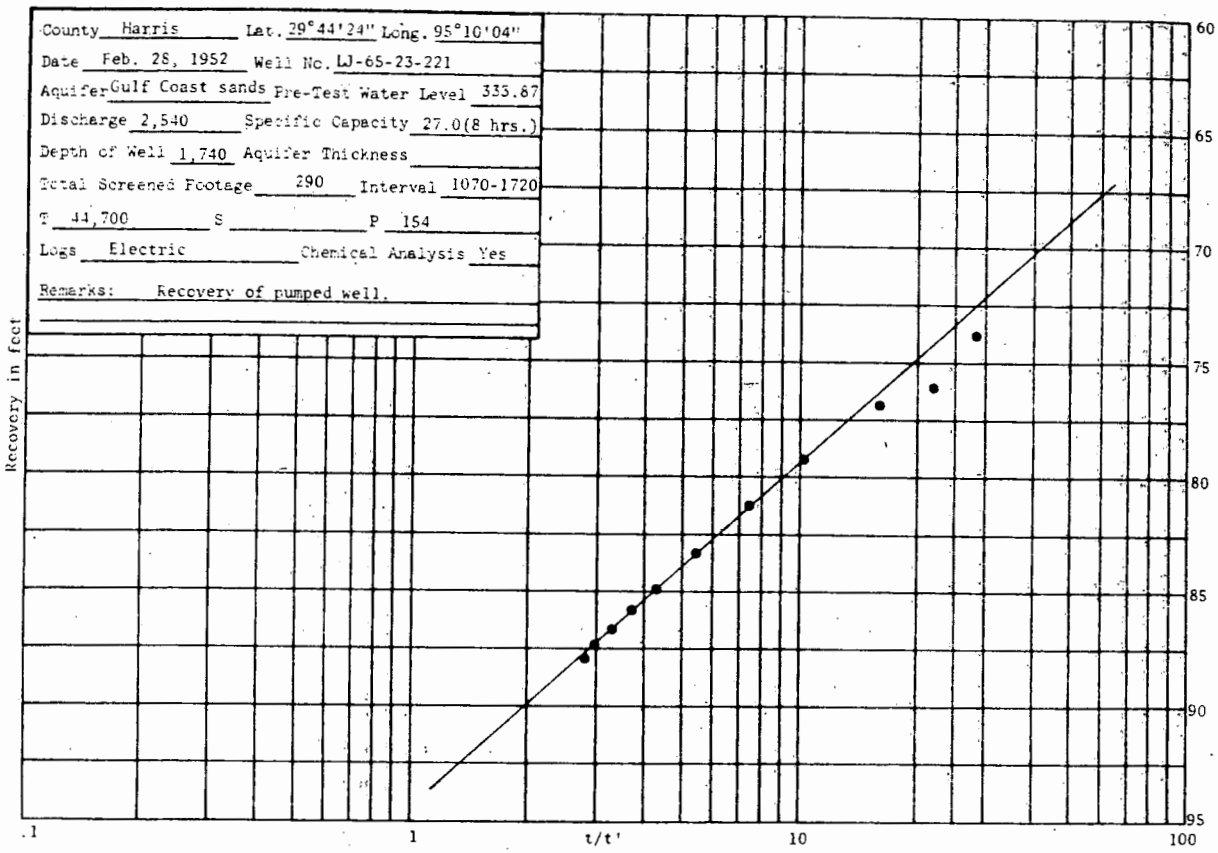
Depth of Well 1,740 Aquifer Thickness

Total Screened Footage 290 Interval 1070-1720

T 44,700 S P 154

Logs Electric Chemical Analysis Yes

Remarks: Recovery of pumped well.



Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-221

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523221
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.7402778
Latitude (degrees minutes seconds)	29° 44' 25" N
Longitude (decimal degrees)	-95.1680556
Longitude (degrees minutes seconds)	095° 10' 05" W
Coordinate Source	+/- 1 Second
Aquifer Code	112CEVG - Chicot and Evangeline Aquifers
Aquifer	Gulf Coast
Aquifer Pick Method	Provided by U.S. Geological Survey
Land Surface Elevation (feet above sea level)	19
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1740
Well Depth Source	Another Government Agency
Drilling Start Date	
Drilling End Date	7/0/1951
Drilling Method	Mud (Hydraulic) Rotary
Borehole Completion	Gravel Pack w/Screen

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Historical
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Ethyl Corp.
Driller	Layne Texas
Other Data Available	Aquifer Test
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	294424095100401
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	10/16/1968
Last Update Date	7/15/2023

Remarks	Reported yield 2540 GPM with 94 feet recovery in 1952. Specific capacity 27 GPM/ft. Aquifer test results in TWDB R-98. No test data in TWDB files. GW Aquifer updated with information provided by USGS. 11/4/2022

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
20	Blank	Steel			0	1050
12	Blank	Steel			1050	1070
12	Screen	Steel			1070	1080
12	Blank	Steel			1080	1100
12	Screen	Steel			1100	1130
12	Blank	Steel			1130	1155
12	Screen	Steel			1155	1200
12	Blank	Steel			1200	1245
12	Screen	Steel			1245	1265
12	Blank	Steel			1265	1335
12	Screen	Steel			1335	1345
12	Blank	Steel			1345	1400
12	Screen	Steel			1400	1475
12	Blank	Steel			1475	1500
10	Blank	Steel			1500	1525
10	Screen	Steel			1525	1565
10	Blank	Steel			1565	1650
10	Screen	Steel			1650	1720
10	Blank	Steel			1720	1740

Well Tests - No Data

Lithology - No Data

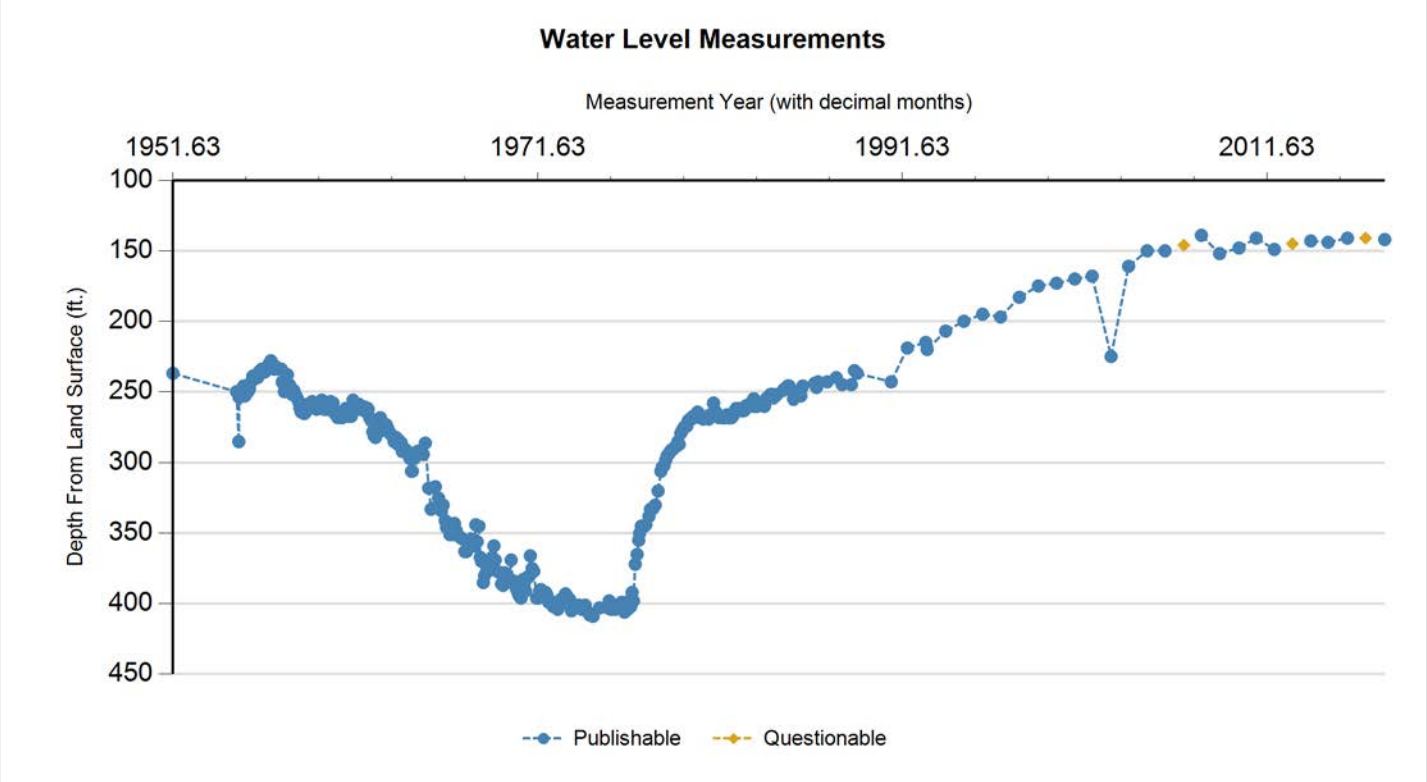
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	8/22/1951		237		-218	1	Other or Source of Measurement Unknown	Unknown		
P	2/15/1955		250	13.00	-231	1	U.S. Geological Survey	Steel Tape		
P	3/30/1955		285	35.00	-266	1	U.S. Geological Survey	Steel Tape		
P	4/6/1955		254	(31.00)	-235	1	U.S. Geological Survey	Steel Tape		
P	5/25/1955		253	(1.00)	-234	1	U.S. Geological Survey	Steel Tape		
P	6/15/1955		252	(1.00)	-233	1	U.S. Geological Survey	Steel Tape		
P	7/6/1955		246	(6.00)	-227	1	U.S. Geological Survey	Steel Tape		
P	8/2/1955		253	7.00	-234	1	U.S. Geological Survey	Steel Tape		
P	9/8/1955		247	(6.00)	-228	1	U.S. Geological Survey	Steel Tape		
P	10/5/1955		250	3.00	-231	1	U.S. Geological Survey	Steel Tape		
P	11/2/1955		248	(2.00)	-229	1	U.S. Geological Survey	Steel Tape		
P	12/8/1955		243	(5.00)	-224	1	U.S. Geological Survey	Steel Tape		
P	1/5/1956		239	(4.00)	-220	1	U.S. Geological Survey	Steel Tape		
P	2/1/1956		241	2.00	-222	1	U.S. Geological Survey	Steel Tape		
P	3/1/1956		240	(1.00)	-221	1	U.S. Geological Survey	Steel Tape		
P	4/12/1956		240	0.00	-221	1	U.S. Geological Survey	Steel Tape		
P	5/9/1956		236	(4.00)	-217	1	U.S. Geological Survey	Steel Tape		
P	6/6/1956		235	(1.00)	-216	1	U.S. Geological Survey	Steel Tape		
P	7/5/1956		234	(1.00)	-215	1	U.S. Geological Survey	Steel Tape		
P	8/15/1956		236	2.00	-217	1	U.S. Geological Survey	Steel Tape		
P	9/6/1956		236	0.00	-217	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	10/4/1956		234	(2.00)	-215	1	U.S. Geological Survey	Steel Tape		
P	11/7/1956		232	(2.00)	-213	1	U.S. Geological Survey	Steel Tape		
P	12/5/1956		230	(2.00)	-211	1	U.S. Geological Survey	Steel Tape		
P	1/3/1957		228	(2.00)	-209	1	U.S. Geological Survey	Steel Tape		
P	2/6/1957		233	5.00	-214	1	U.S. Geological Survey	Steel Tape		
P	3/6/1957		234	1.00	-215	1	U.S. Geological Survey	Steel Tape		
P	4/3/1957		232	(2.00)	-213	1	U.S. Geological Survey	Steel Tape		
P	5/8/1957		234	2.00	-215	1	U.S. Geological Survey	Steel Tape		
P	7/31/1957		234	0.00	-215	1	U.S. Geological Survey	Steel Tape		
P	8/20/1957		243	9.00	-224	1	U.S. Geological Survey	Steel Tape		
P	9/4/1957		244	1.00	-225	1	U.S. Geological Survey	Steel Tape		
P	10/1/1957		250	6.00	-231	1	U.S. Geological Survey	Steel Tape		
P	11/13/1957		243	(7.00)	-224	1	U.S. Geological Survey	Steel Tape		
P	12/3/1957		238	(5.00)	-219	1	U.S. Geological Survey	Steel Tape		
P	1/6/1958		245	7.00	-226	1	U.S. Geological Survey	Steel Tape		
P	2/4/1958		249	4.00	-230	1	U.S. Geological Survey	Steel Tape		
P	3/4/1958		252	3.00	-233	1	U.S. Geological Survey	Steel Tape		
P	4/4/1958		249	(3.00)	-230	1	U.S. Geological Survey	Steel Tape		
P	5/6/1958		252	3.00	-233	1	U.S. Geological Survey	Steel Tape		
P	6/3/1958		254	2.00	-235	1	U.S. Geological Survey	Steel Tape		
P	7/1/1958		256	2.00	-237	1	U.S. Geological Survey	Steel Tape		
P	8/5/1958		261	5.00	-242	1	U.S. Geological Survey	Steel Tape		
P	9/3/1958		264	3.00	-245	1	U.S. Geological Survey	Steel Tape		
P	10/28/1958		265	1.00	-246	1	U.S. Geological Survey	Steel Tape		
P	11/11/1958		265	0.00	-246	1	U.S. Geological Survey	Steel Tape		
P	12/2/1958		264	(1.00)	-245	1	U.S. Geological Survey	Steel Tape		
P	1/6/1959		259	(5.00)	-240	1	U.S. Geological Survey	Steel Tape		
P	2/3/1959		260	1.00	-241	1	U.S. Geological Survey	Steel Tape		
P	3/3/1959		260	0.00	-241	1	U.S. Geological Survey	Steel Tape		
P	4/8/1959		257	(3.00)	-238	1	U.S. Geological Survey	Steel Tape		
P	5/5/1959		259	2.00	-240	1	U.S. Geological Survey	Steel Tape		
P	6/3/1959		259	0.00	-240	1	U.S. Geological Survey	Steel Tape		
P	7/8/1959		262	3.00	-243	1	U.S. Geological Survey	Steel Tape		
P	8/13/1959		259	(3.00)	-240	1	U.S. Geological Survey	Steel Tape		
P	9/2/1959		260	1.00	-241	1	U.S. Geological Survey	Steel Tape		
P	10/21/1959		256	(4.00)	-237	1	U.S. Geological Survey	Steel Tape		
P	11/4/1959		259	3.00	-240	1	U.S. Geological Survey	Steel Tape		
P	12/2/1959		262	3.00	-243	1	U.S. Geological Survey	Steel Tape		
P	1/6/1960		262	0.00	-243	1	U.S. Geological Survey	Steel Tape		
P	2/3/1960		262	0.00	-243	1	U.S. Geological Survey	Steel Tape		
P	3/2/1960		262	0.00	-243	1	U.S. Geological Survey	Steel Tape		
P	4/13/1960		257	(5.00)	-238	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	5/4/1960		260	3.00	-241	1	U.S. Geological Survey	Steel Tape		
P	6/1/1960		258	(2.00)	-239	1	U.S. Geological Survey	Steel Tape		
P	7/6/1960		265	7.00	-246	1	U.S. Geological Survey	Steel Tape		
P	8/2/1960		264	(1.00)	-245	1	U.S. Geological Survey	Steel Tape		
P	9/7/1960		268	4.00	-249	1	U.S. Geological Survey	Steel Tape		
P	10/4/1960		267	(1.00)	-248	1	U.S. Geological Survey	Steel Tape		
P	11/1/1960		265	(2.00)	-246	1	U.S. Geological Survey	Steel Tape		
P	12/7/1960		268	3.00	-249	1	U.S. Geological Survey	Steel Tape		
P	1/5/1961		266	(2.00)	-247	1	U.S. Geological Survey	Steel Tape		
P	2/2/1961		262	(4.00)	-243	1	U.S. Geological Survey	Steel Tape		
P	3/7/1961		262	0.00	-243	1	U.S. Geological Survey	Steel Tape		
P	4/5/1961		267	5.00	-248	1	U.S. Geological Survey	Steel Tape		
P	5/2/1961		266	(1.00)	-247	1	U.S. Geological Survey	Steel Tape		
P	6/1/1961		267	1.00	-248	1	U.S. Geological Survey	Steel Tape		
P	7/5/1961		256	(11.00)	-237	1	U.S. Geological Survey	Steel Tape		
P	8/2/1961		263	7.00	-244	1	U.S. Geological Survey	Steel Tape		
P	9/6/1961		261	(2.00)	-242	1	U.S. Geological Survey	Steel Tape		
P	10/3/1961		262	1.00	-243	1	U.S. Geological Survey	Steel Tape		
P	11/7/1961		259	(3.00)	-240	1	U.S. Geological Survey	Steel Tape		
P	12/6/1961		260	1.00	-241	1	U.S. Geological Survey	Steel Tape		
P	1/5/1962		261	1.00	-242	1	U.S. Geological Survey	Steel Tape		
P	2/7/1962		263	2.00	-244	1	U.S. Geological Survey	Steel Tape		
P	3/6/1962		261	(2.00)	-242	1	U.S. Geological Survey	Steel Tape		
P	4/4/1962		262	1.00	-243	1	U.S. Geological Survey	Steel Tape		
P	5/3/1962		262	0.00	-243	1	U.S. Geological Survey	Steel Tape		
P	6/6/1962		268	6.00	-249	1	U.S. Geological Survey	Steel Tape		
P	7/3/1962		270	2.00	-251	1	U.S. Geological Survey	Steel Tape		
P	8/7/1962		278	8.00	-259	1	U.S. Geological Survey	Steel Tape		
P	9/5/1962		281	3.00	-262	1	U.S. Geological Survey	Steel Tape		
P	10/2/1962		282	1.00	-263	1	U.S. Geological Survey	Steel Tape		
P	11/6/1962		274	(8.00)	-255	1	U.S. Geological Survey	Steel Tape		
P	12/5/1962		273	(1.00)	-254	1	U.S. Geological Survey	Steel Tape		
P	1/2/1963		268	(5.00)	-249	1	U.S. Geological Survey	Steel Tape		
P	2/7/1963		272	4.00	-253	1	U.S. Geological Survey	Steel Tape		
P	3/7/1963		277	5.00	-258	1	U.S. Geological Survey	Steel Tape		
P	4/2/1963		275	(2.00)	-256	1	U.S. Geological Survey	Steel Tape		
P	5/1/1963		273	(2.00)	-254	1	U.S. Geological Survey	Steel Tape		
P	6/5/1963		276	3.00	-257	1	U.S. Geological Survey	Steel Tape		
P	7/2/1963		278	2.00	-259	1	U.S. Geological Survey	Steel Tape		
P	8/7/1963		280	2.00	-261	1	U.S. Geological Survey	Steel Tape		
P	9/13/1963		281	1.00	-262	1	U.S. Geological Survey	Steel Tape		
P	10/9/1963		285	4.00	-266	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	11/14/1963		282	(3.00)	-263	1	U.S. Geological Survey	Steel Tape		
P	12/27/1963		287	5.00	-268	1	U.S. Geological Survey	Steel Tape		
P	1/7/1964		284	(3.00)	-265	1	U.S. Geological Survey	Steel Tape		
P	2/28/1964		286	2.00	-267	1	U.S. Geological Survey	Steel Tape		
P	3/18/1964		292	6.00	-273	1	U.S. Geological Survey	Steel Tape		
P	4/8/1964		291	(1.00)	-272	1	U.S. Geological Survey	Steel Tape		
P	5/13/1964		292	1.00	-273	1	U.S. Geological Survey	Steel Tape		
P	6/2/1964		291	(1.00)	-272	1	U.S. Geological Survey	Steel Tape		
P	7/9/1964		293	2.00	-274	1	U.S. Geological Survey	Steel Tape		
P	8/20/1964		297	4.00	-278	1	U.S. Geological Survey	Steel Tape		
P	9/22/1964		306	9.00	-287	1	U.S. Geological Survey	Steel Tape		
P	10/8/1964		306	0.00	-287	1	U.S. Geological Survey	Steel Tape		
P	11/17/1964		297	(9.00)	-278	1	U.S. Geological Survey	Steel Tape		
P	1/7/1965		292	(5.00)	-273	1	U.S. Geological Survey	Steel Tape		
P	3/15/1965		292	0.00	-273	1	U.S. Geological Survey	Steel Tape		
P	4/2/1965		291	(1.00)	-272	1	U.S. Geological Survey	Steel Tape		
P	5/11/1965		294	3.00	-275	1	U.S. Geological Survey	Steel Tape		
P	6/23/1965		286	(8.00)	-267	1	U.S. Geological Survey	Steel Tape		
P	9/1/1965		318	32.00	-299	1	U.S. Geological Survey	Steel Tape		
P	10/18/1965		333	15.00	-314	1	U.S. Geological Survey	Steel Tape		
P	1/8/1966		317	(16.00)	-298	1	Registered Water Well Driller	Unknown		
P	3/12/1966		325	8.00	-306	1	Registered Water Well Driller	Unknown		
P	4/18/1966		330	5.00	-311	1	Registered Water Well Driller	Unknown		
P	5/10/1966		334	4.00	-315	1	Registered Water Well Driller	Unknown		
P	6/15/1966		330	(4.00)	-311	1	Registered Water Well Driller	Unknown		
P	7/26/1966		341	11.00	-322	1	Registered Water Well Driller	Unknown		
P	8/23/1966		346	5.00	-327	1	Registered Water Well Driller	Unknown		
P	9/21/1966		346	0.00	-327	1	Registered Water Well Driller	Unknown		
P	10/31/1966		351	5.00	-332	1	Registered Water Well Driller	Unknown		
P	11/28/1966		350	(1.00)	-331	1	Registered Water Well Driller	Unknown		
P	12/27/1966		351	1.00	-332	1	Registered Water Well Driller	Unknown		
P	1/25/1967		343	(8.00)	-324	1	Registered Water Well Driller	Unknown		
P	3/1/1967		348	5.00	-329	1	Registered Water Well Driller	Unknown		
P	4/26/1967		352	4.00	-333	1	Registered Water Well Driller	Unknown		
P	5/24/1967		353	1.00	-334	1	Registered Water Well Driller	Unknown		
P	7/6/1967		354	1.00	-335	1	Registered Water Well Driller	Unknown		
P	8/23/1967		363	9.00	-344	1	Registered Water Well Driller	Unknown		
P	9/27/1967		363	0.00	-344	1	Registered Water Well Driller	Unknown		
P	11/16/1967		358	(5.00)	-339	1	Registered Water Well Driller	Unknown		
P	12/28/1967		354	(4.00)	-335	1	Registered Water Well Driller	Unknown		
P	1/24/1968		358	4.00	-339	1	Registered Water Well Driller	Unknown		
P	2/29/1968		359	1.00	-340	1	Registered Water Well Driller	Unknown		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	3/28/1968		344	(15.00)	-325	1	Registered Water Well Driller	Unknown		
P	4/25/1968		356	12.00	-337	1	Registered Water Well Driller	Unknown		
P	5/31/1968		345	(11.00)	-326	1	Registered Water Well Driller	Unknown		
P	6/26/1968		367	22.00	-348	1	Registered Water Well Driller	Unknown		
P	7/23/1968		370	3.00	-351	1	Registered Water Well Driller	Unknown		
P	8/29/1968		385	15.00	-366	1	Registered Water Well Driller	Unknown		
P	9/25/1968		380	(5.00)	-361	1	Registered Water Well Driller	Unknown		
P	10/25/1968		378	(2.00)	-359	1	Registered Water Well Driller	Unknown		
P	11/28/1968		377	(1.00)	-358	1	Registered Water Well Driller	Unknown		
P	12/27/1968		374	(3.00)	-355	1	Registered Water Well Driller	Unknown		
P	1/31/1969		369	(5.00)	-350	1	Registered Water Well Driller	Unknown		
P	2/25/1969		367	(2.00)	-348	1	Registered Water Well Driller	Unknown		
P	3/26/1969		359	(8.00)	-340	1	Registered Water Well Driller	Unknown		
P	4/21/1969		369	10.00	-350	1	Registered Water Well Driller	Unknown		
P	6/2/1969		377	8.00	-358	1	Registered Water Well Driller	Unknown		
P	7/23/1969		378	1.00	-359	1	Registered Water Well Driller	Unknown		
P	8/29/1969		386	8.00	-367	1	Private Firm or Industry	Air Line		
P	9/29/1969		387	1.00	-368	1	Private Firm or Industry	Air Line		
P	10/30/1969		378	(9.00)	-359	1	Private Firm or Industry	Air Line		
P	11/26/1969		381	3.00	-362	1	Private Firm or Industry	Air Line		
P	12/24/1969		380	(1.00)	-361	1	Private Firm or Industry	Air Line		
P	2/2/1970		383	3.00	-364	1	Private Firm or Industry	Air Line		
P	3/5/1970		369	(14.00)	-350	1	Private Firm or Industry	Air Line		
P	3/31/1970		385	16.00	-366	1	Private Firm or Industry	Air Line		
P	4/30/1970		384	(1.00)	-365	1	Private Firm or Industry	Air Line		
P	5/28/1970		386	2.00	-367	1	Private Firm or Industry	Air Line		
P	6/26/1970		390	4.00	-371	1	Private Firm or Industry	Air Line		
P	7/30/1970		393	3.00	-374	1	Private Firm or Industry	Air Line		
P	8/28/1970		395	2.00	-376	1	Private Firm or Industry	Air Line		
P	9/24/1970		396	1.00	-377	1	Private Firm or Industry	Air Line		
P	10/28/1970		383	(13.00)	-364	1	Private Firm or Industry	Air Line		
P	11/25/1970		386	3.00	-367	1	Private Firm or Industry	Air Line		
P	12/24/1970		391	5.00	-372	1	Private Firm or Industry	Air Line		
P	1/28/1971		381	(10.00)	-362	1	Private Firm or Industry	Air Line		
P	2/23/1971		381	0.00	-362	1	Private Firm or Industry	Air Line		
P	3/24/1971		366	(15.00)	-347	1	Private Firm or Industry	Air Line		
P	4/30/1971		375	9.00	-356	1	Private Firm or Industry	Air Line		
P	6/3/1971		377	2.00	-358	1	Private Firm or Industry	Air Line		
P	7/30/1971		396	19.00	-377	1	Private Firm or Industry	Air Line		
P	9/3/1971		396	0.00	-377	1	Private Firm or Industry	Air Line		
P	9/29/1971		391	(5.00)	-372	1	Private Firm or Industry	Air Line		
P	10/27/1971		390	(1.00)	-371	1	Private Firm or Industry	Air Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	11/23/1971		394	4.00	-375	1	Private Firm or Industry	Air Line		
P	12/28/1971		393	(1.00)	-374	1	Private Firm or Industry	Air Line		
P	1/27/1972		392	(1.00)	-373	1	Private Firm or Industry	Air Line		
P	2/24/1972		394	2.00	-375	1	Private Firm or Industry	Air Line		
P	3/29/1972		399	5.00	-380	1	Private Firm or Industry	Air Line		
P	4/26/1972		398	(1.00)	-379	1	Private Firm or Industry	Air Line		
P	5/24/1972		399	1.00	-380	1	Private Firm or Industry	Air Line		
P	6/27/1972		402	3.00	-383	1	Private Firm or Industry	Air Line		
P	7/26/1972		401	(1.00)	-382	1	Private Firm or Industry	Air Line		
P	8/23/1972		400	(1.00)	-381	1	Private Firm or Industry	Air Line		
P	9/29/1972		404	4.00	-385	1	Private Firm or Industry	Air Line		
P	10/19/1972		402	(2.00)	-383	1	Private Firm or Industry	Air Line		
P	11/30/1972		397	(5.00)	-378	1	Private Firm or Industry	Air Line		
P	1/2/1973		399	2.00	-380	1	Private Firm or Industry	Air Line		
P	2/28/1973		393	(6.00)	-374	1	Private Firm or Industry	Air Line		
P	3/30/1973		395	2.00	-376	1	Private Firm or Industry	Air Line		
P	4/25/1973		396	1.00	-377	1	Private Firm or Industry	Air Line		
P	5/23/1973		397	1.00	-378	1	Private Firm or Industry	Air Line		
P	6/27/1973		405	8.00	-386	1	Private Firm or Industry	Air Line		
P	7/24/1973		401	(4.00)	-382	1	Private Firm or Industry	Air Line		
P	8/28/1973		402	1.00	-383	1	Private Firm or Industry	Air Line		
P	9/26/1973		402	0.00	-383	1	Private Firm or Industry	Air Line		
P	10/23/1973		403	1.00	-384	1	Private Firm or Industry	Air Line		
P	11/27/1973		401	(2.00)	-382	1	Private Firm or Industry	Air Line		
P	1/4/1974		403	2.00	-384	1	Private Firm or Industry	Air Line		
P	1/22/1974		404	1.00	-385	1	Private Firm or Industry	Air Line		
P	2/26/1974		404	0.00	-385	1	Private Firm or Industry	Air Line		
P	3/26/1974		401	(3.00)	-382	1	Private Firm or Industry	Air Line		
P	4/25/1974		405	4.00	-386	1	Private Firm or Industry	Air Line		
P	5/28/1974		406	1.00	-387	1	Private Firm or Industry	Air Line		
P	6/27/1974		408	2.00	-389	1	Private Firm or Industry	Air Line		
P	7/24/1974		408	0.00	-389	1	Private Firm or Industry	Air Line		
P	9/5/1974		409	1.00	-390	1	Private Firm or Industry	Air Line		
P	1/9/1975		403	(6.00)	-384	1	Private Firm or Industry	Air Line		
P	6/24/1975		403	0.00	-384	1	Private Firm or Industry	Air Line		
P	7/22/1975		398	(5.00)	-379	1	Private Firm or Industry	Air Line		
P	8/29/1975		404	6.00	-385	1	Private Firm or Industry	Air Line		
P	10/16/1975		404	0.00	-385	1	Private Firm or Industry	Air Line		
P	11/25/1975		404	0.00	-385	1	Private Firm or Industry	Air Line		
P	1/29/1976		401	(3.00)	-382	1	Private Firm or Industry	Air Line		
P	2/25/1976		401	0.00	-382	1	Private Firm or Industry	Air Line		
P	3/23/1976		399	(2.00)	-380	1	Private Firm or Industry	Air Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	5/17/1976		400	1.00	-381	1	Private Firm or Industry	Air Line		
P	5/25/1976		406	6.00	-387	1	Private Firm or Industry	Air Line		
P	6/22/1976		399	(7.00)	-380	1	Private Firm or Industry	Air Line		
P	7/29/1976		404	5.00	-385	1	Private Firm or Industry	Air Line		
P	8/24/1976		403	(1.00)	-384	1	Private Firm or Industry	Air Line		
P	9/29/1976		402	(1.00)	-383	1	Private Firm or Industry	Air Line		
P	10/26/1976		392	(10.00)	-373	1	Private Firm or Industry	Air Line		
P	11/23/1976		398	6.00	-379	1	Private Firm or Industry	Air Line		
P	12/29/1976		372	(26.00)	-353	1	Private Firm or Industry	Air Line		
P	1/31/1977		365	(7.00)	-346	1	Private Firm or Industry	Air Line		
P	3/4/1977		355	(10.00)	-336	1	Private Firm or Industry	Air Line		
P	3/22/1977		350	(5.00)	-331	1	Private Firm or Industry	Air Line		
P	4/26/1977		345	(5.00)	-326	1	Private Firm or Industry	Air Line		
P	5/24/1977		345	0.00	-326	1	Registered Water Well Driller	Unknown		
P	6/28/1977		345	0.00	-326	1	Registered Water Well Driller	Unknown		
P	7/27/1977		344	(1.00)	-325	1	Registered Water Well Driller	Unknown		
P	9/29/1977		338	(6.00)	-319	1	Registered Water Well Driller	Unknown		
P	10/28/1977		333	(5.00)	-314	1	Registered Water Well Driller	Unknown		
P	11/28/1977		333	0.00	-314	1	Registered Water Well Driller	Unknown		
P	12/30/1977		332	(1.00)	-313	1	Registered Water Well Driller	Unknown		
P	1/30/1978		330	(2.00)	-311	1	Registered Water Well Driller	Unknown		
P	3/26/1978		320	(10.00)	-301	1	Registered Water Well Driller	Unknown		
P	5/24/1978		306	(14.00)	-287	1	Registered Water Well Driller	Unknown		
P	6/21/1978		303	(3.00)	-284	1	Registered Water Well Driller	Unknown		
P	7/25/1978		302	(1.00)	-283	1	Registered Water Well Driller	Unknown		
P	8/31/1978		298	(4.00)	-279	1	Registered Water Well Driller	Unknown		
P	9/27/1978		295	(3.00)	-276	1	Registered Water Well Driller	Unknown		
P	10/25/1978		294	(1.00)	-275	1	Registered Water Well Driller	Unknown		
P	11/28/1978		292	(2.00)	-273	1	Registered Water Well Driller	Unknown		
P	12/21/1978		291	(1.00)	-272	1	Registered Water Well Driller	Unknown		
P	1/31/1979		290	(1.00)	-271	1	Registered Water Well Driller	Unknown		
P	2/27/1979		289	(1.00)	-270	1	Registered Water Well Driller	Unknown		
P	3/27/1979		288	(1.00)	-269	1	Registered Water Well Driller	Unknown		
P	4/27/1979		285	(3.00)	-266	1	Registered Water Well Driller	Unknown		
P	5/23/1979		287	2.00	-268	1	Registered Water Well Driller	Unknown		
P	6/27/1979		279	(8.00)	-260	1	Registered Water Well Driller	Unknown		
P	7/24/1979		277	(2.00)	-258	1	Registered Water Well Driller	Unknown		
P	8/29/1979		275	(2.00)	-256	1	Registered Water Well Driller	Unknown		
P	9/25/1979		274	(1.00)	-255	1	Registered Water Well Driller	Unknown		
P	10/25/1979		274	0.00	-255	1	Registered Water Well Driller	Unknown		
P	11/27/1979		270	(4.00)	-251	1	Registered Water Well Driller	Unknown		
P	12/28/1979		269	(1.00)	-250	1	Registered Water Well Driller	Unknown		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/23/1980		269	0.00	-250	1	Registered Water Well Driller	Unknown		
P	2/26/1980		267	(2.00)	-248	1	Registered Water Well Driller	Unknown		
P	3/27/1980		267	0.00	-248	1	Registered Water Well Driller	Unknown		
P	4/28/1980		266	(1.00)	-247	1	Registered Water Well Driller	Unknown		
P	5/29/1980		264	(2.00)	-245	1	Registered Water Well Driller	Unknown		
P	6/24/1980		266	2.00	-247	1	Registered Water Well Driller	Unknown		
P	7/17/1980		268	2.00	-249	1	Registered Water Well Driller	Unknown		
P	8/27/1980		267	(1.00)	-248	1	Registered Water Well Driller	Unknown		
P	9/24/1980		269	2.00	-250	1	Registered Water Well Driller	Unknown		
P	12/17/1980		268	(1.00)	-249	1	Registered Water Well Driller	Unknown		
P	1/4/1981		269	1.00	-250	1	Registered Water Well Driller	Unknown		
P	2/1/1981		266	(3.00)	-247	1	Registered Water Well Driller	Unknown		
P	3/1/1981		266	0.00	-247	1	Registered Water Well Driller	Unknown		
P	4/12/1981		258	(8.00)	-239	1	Registered Water Well Driller	Unknown		
P	5/8/1981		263	5.00	-244	1	Registered Water Well Driller	Unknown		
P	6/16/1981		265	2.00	-246	1	U.S. Geological Survey	Steel Tape		
P	6/20/1981		267	2.00	-248	1	U.S. Geological Survey	Steel Tape		
P	7/7/1981		267	0.00	-248	1	U.S. Geological Survey	Steel Tape		
P	8/4/1981		268	1.00	-249	1	U.S. Geological Survey	Steel Tape		
P	9/7/1981		267	(1.00)	-248	1	U.S. Geological Survey	Steel Tape		
P	10/10/1981		268	1.00	-249	1	U.S. Geological Survey	Steel Tape		
P	11/2/1981		268	0.00	-249	1	U.S. Geological Survey	Steel Tape		
P	12/6/1981		268	0.00	-249	1	U.S. Geological Survey	Steel Tape		
P	1/3/1982		266	(2.00)	-247	1	U.S. Geological Survey	Steel Tape		
P	2/7/1982		268	2.00	-249	1	U.S. Geological Survey	Steel Tape		
P	4/3/1982		268	0.00	-249	1	U.S. Geological Survey	Steel Tape		
P	5/2/1982		267	(1.00)	-248	1	U.S. Geological Survey	Steel Tape		
P	6/28/1982		262	(5.00)	-243	1	U.S. Geological Survey	Steel Tape		
P	8/24/1982		262	0.00	-243	1	U.S. Geological Survey	Steel Tape		
P	9/8/1982		262	0.00	-243	1	U.S. Geological Survey	Steel Tape		
P	10/6/1982		263	1.00	-244	1	U.S. Geological Survey	Steel Tape		
P	11/7/1982		263	0.00	-244	1	U.S. Geological Survey	Air Line		
P	12/15/1982		263	0.00	-244	1	U.S. Geological Survey	Air Line		
P	1/2/1983		262	(1.00)	-243	1	U.S. Geological Survey	Air Line		
P	1/23/1983		260	(2.00)	-241	1	U.S. Geological Survey	Air Line		
P	2/6/1983		261	1.00	-242	1	U.S. Geological Survey	Air Line		
P	3/5/1983		260	(1.00)	-241	1	U.S. Geological Survey	Air Line		
P	4/3/1983		259	(1.00)	-240	1	U.S. Geological Survey	Air Line		
P	5/1/1983		258	(1.00)	-239	1	U.S. Geological Survey	Air Line		
P	6/26/1983		255	(3.00)	-236	1	U.S. Geological Survey	Air Line		
P	7/2/1983		260	5.00	-241	1	U.S. Geological Survey	Air Line		
P	9/4/1983		260	0.00	-241	1	U.S. Geological Survey	Air Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	10/2/1983		259	(1.00)	-240	1	U.S. Geological Survey	Air Line		
P	11/5/1983		259	0.00	-240	1	U.S. Geological Survey	Air Line		
P	12/4/1983		259	0.00	-240	1	U.S. Geological Survey	Air Line		
P	1/23/1984		260	1.00	-241	1	U.S. Geological Survey	Unknown		
P	2/5/1984		258	(2.00)	-239	1	U.S. Geological Survey	Air Line		
P	3/4/1984		255	(3.00)	-236	1	U.S. Geological Survey	Air Line		
P	3/31/1984		254	(1.00)	-235	1	U.S. Geological Survey	Air Line		
P	5/25/1984		252	(2.00)	-233	1	U.S. Geological Survey	Air Line		
P	6/25/1984		252	0.00	-233	1	U.S. Geological Survey	Air Line		
P	7/4/1984		252	0.00	-233	1	U.S. Geological Survey	Air Line		
P	8/5/1984		254	2.00	-235	1	U.S. Geological Survey	Air Line		
P	9/3/1984		253	(1.00)	-234	1	U.S. Geological Survey	Air Line		
P	10/7/1984		252	(1.00)	-233	1	U.S. Geological Survey	Air Line		
P	2/6/1985		249	(3.00)	-230	1	U.S. Geological Survey	Air Line		
P	3/3/1985		248	(1.00)	-229	1	U.S. Geological Survey	Air Line		
P	4/24/1985		247	(1.00)	-228	1	U.S. Geological Survey	Air Line		
P	5/5/1985		246	(1.00)	-227	1	U.S. Geological Survey	Air Line		
P	6/4/1985		246	0.00	-227	1	U.S. Geological Survey	Air Line		
P	9/2/1985		255	9.00	-236	1	U.S. Geological Survey	Air Line		
P	10/0/1985		252	(3.00)	-233	1	U.S. Geological Survey	Unknown		
P	10/1/1985		252	0.00	-233	1	U.S. Geological Survey	Air Line		
P	12/0/1985		253	1.00	-234	1	U.S. Geological Survey	Unknown		
P	12/1/1985		253	0.00	-234	1	U.S. Geological Survey	Air Line		
P	1/5/1986		252	(1.00)	-233	1	U.S. Geological Survey	Air Line		
P	2/2/1986		248	(4.00)	-229	1	U.S. Geological Survey	Air Line		
P	3/2/1986		246	(2.00)	-227	1	U.S. Geological Survey	Air Line		
P	11/3/1986		244	(2.00)	-225	1	U.S. Geological Survey	Unknown		
P	12/7/1986		247	3.00	-228	1	U.S. Geological Survey	Unknown		
P	1/4/1987		243	(4.00)	-224	1	U.S. Geological Survey	Unknown		
P	7/5/1987		243	0.00	-224	1	U.S. Geological Survey	Unknown		
P	1/3/1988		240	(3.00)	-221	1	U.S. Geological Survey	Unknown		
P	5/1/1988		245	5.00	-226	1	U.S. Geological Survey	Unknown		
P	11/5/1988		245	0.00	-226	1	U.S. Geological Survey	Unknown		
P	1/1/1989		235	(10.00)	-216	1	U.S. Geological Survey	Unknown		
P	2/26/1989		237	2.00	-218	1	U.S. Geological Survey	Unknown		
P	1/7/1991		243	6.00	-224	1	U.S. Geological Survey	Steel Tape		
P	12/1/1991		219	(24.00)	-200	1	U.S. Geological Survey	Steel Tape		
P	12/4/1992		215	(4.00)	-196	1	U.S. Geological Survey	Steel Tape		
P	12/31/1992		220	5.00	-201	1	U.S. Geological Survey	Steel Tape		
P	1/2/1994		207	(13.00)	-188	1	U.S. Geological Survey	Steel Tape		
P	1/1/1995		200	(7.00)	-181	1	U.S. Geological Survey	Air Line		
P	1/11/1996		195	(5.00)	-176	1	U.S. Geological Survey	Electric Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/5/1997		197	2.00	-178	1	U.S. Geological Survey	Electric Line		
P	1/16/1998		183	(14.00)	-164	1	U.S. Geological Survey	Unknown		
P	2/2/1999		175	(8.00)	-156	1	U.S. Geological Survey	Recorder (Float or Transducer)		
P	2/1/2000		173	(2.00)	-154	1	U.S. Geological Survey	Unknown		
P	2/1/2001		170	(3.00)	-151	1	U.S. Geological Survey	Unknown		
P	1/14/2002		168	(2.00)	-149	1	U.S. Geological Survey	Unknown		
P	1/28/2003		225	57.00	-206	1	U.S. Geological Survey	Steel Tape		
P	1/13/2004		161	(64.00)	-142	1	U.S. Geological Survey	Steel Tape		
P	1/19/2005		150	(11.00)	-131	1	U.S. Geological Survey	Unknown		
P	1/12/2006		150	0.00	-131	1	U.S. Geological Survey	Steel Tape		
Q	1/24/2007		146	(4.00)	-127	1	U.S. Geological Survey	Other	4	
P	1/10/2008		139	(7.00)	-120	1	U.S. Geological Survey	Unknown		
P	1/10/2009		152	13.00	-133	1	U.S. Geological Survey	Unknown		
P	2/4/2010		148	(4.00)	-129	1	U.S. Geological Survey	Unknown		
P	1/12/2011		141	(7.00)	-122	1	Well Owner or Operator	Steel Tape		
P	1/10/2012		149	8.00	-130	1	Well Owner or Operator	Steel Tape		
Q	1/7/2013		145	(4.00)	-126	1	Well Owner or Operator	Unknown	4	
P	1/10/2014		143	(2.00)	-124	1	U.S. Geological Survey	Unknown		
P	12/26/2014		144	1.00	-125	1	U.S. Geological Survey	Unknown		
P	1/14/2016		141	(3.00)	-122	1	Other or Source of Measurement Unknown	Unknown		
Q	1/11/2017	0001	141	0.00	-122	1	U.S. Geological Survey	Unknown	4	
P	1/30/2018		142	1.00	-123	1	U.S. Geological Survey	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable
Q	Questionable

Remark ID	Remark Description
4	Well pumped recently

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523101

WRD Exp. (GW)
April 1966

Well No. LJ-65-23-101

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

MASTER CARD

Record by C.W. BONNET / T.R. FLUELLEN — Source of data FILE — Date 8-28-68 — Map PASADENA 1955 1:24000

State TEXAS 5-1-51 — 48 — County (or town) HARRIS — LJ

CKN Latitude: 29 42 45 N (deg, min, sec) — Longitude: 095 12 43 (degrees, min, sec) — Sequential number: 1

Lat-long accuracy: 1 — T. ___ S, R ___ W, Sec ___, ___ ¼, ___ ¼, ___ ¼ ___ B & M

Local well number: LJ-65-23-101 — Other number: ___

Local use: ___ — Owner or name: PASADENA NO. 8

Owner or name: CITY PASADENA — Address: OLD CITY HALL

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist — M

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other — P

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed — W

DATA AVAILABLE: Well data ___ Freq. W/L meas.: ___ Field aquifer char. ___

Hyd. lab. data: ___

Qual. water data; type: ___

Freq. sampling: ___ Pumpage inventory: yes no, period: ___

Aperture cards: ___ yes

Log data: ___

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD — Depth well: 1262 ft — 1262 — Meas. rept. DRILLER accuracy — 3

Depth cased (first perf.): 667 ft — 667 — Casing type: S; Diam 12-8 in — 12

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) other — S

Method Drilled: (A) air rot, (B) hored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other — H

Date Drilled: 11-1950 — 950 — Pump intake setting: 380 (1960) ft

Driller: McMASTERS + POMEROY (name) — PASADENA, TEXAS (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other — T — Deep Shallow — D

Power (type): diesel, elec, nat gas, gasoline, hand, LP gas, wind; H.P. 150 — W — Trans. or meter no. ___

Descrip. MP ___ ft above below LSD. Alt. MP ___

Alt. LSD: 27 — 27 — Accuracy: (source) TOPO 5' — 3

Water Level 258 ft above below MP; Ft above below LSD — 258 — Accuracy: REPT — D

Date meas: 11-1950 — N50 — Yield: ___ gpm — Method determined ___

Drawdown: — ft — Accuracy: ___ — Pumping period — hrs

QUALITY OF WATER DATA: Iron ___ ppm — Sulfate ___ ppm — Chloride ___ ppm — Hard. ___ ppm

Sp. Conduct ___ K x 10^6 — Temp. ___ °F — Date sampled ___

Taste, color, etc.

Well No. LJ-65-23-101

Well No. LJ-65-23-101

Latitude-longitude 29.42.45 0 95.12.43
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) Physiographic Province: COASTAL PLAIN 0 3 (20–21) Section: _____

_____ F (22) Drainage Basin: _____ 5 1 R (23–25) Subbasin: _____ (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat _____ (27)

MAJOR AQUIFER: _____ system, _____ series T (28–29) _____ aquifer, formation, group E (30–31) ✓

Lithology: _____ (32–33) Origin: _____ (34) Aquifer Thickness: _____ ft

(35–37) Length of well open to: 260 ft 260 (38–40) Depth to top of: _____ ft (41–43)

MINOR AQUIFER: _____ system, _____ series (44–45) _____ aquifer, formation, group (46–47)

Lithology: _____ (48–49) Origin: _____ (50) Aquifer Thickness: _____ ft

(51–53) Length of well open to: _____ ft (54–56) Depth to top of: _____ ft (57–59)

* Intervals Screened: _____

Depth to consolidated rock: _____ ft (60–63) Source of data: _____ (64)

Depth to basement: _____ ft (65–68) Source of data: _____ (69)

Surficial material: _____ (70–71) Infiltration characteristics: _____ (72)

Coefficient Trans: _____ gpd/ft (73–75) Coefficient Storage: _____ (76–78)

Coefficient Perm: _____ gpd/ft^2; Spec cap: _____ gpm/ft; Number of geologic cards: _____ (79)

* 667 - 709'
732 - 753.
792 - 813
934 - 974.
1024 - 1068
1072 - 1089
1135 - 1165
1200 - 1242
T.D. - 1260

634' of 12" csg
600' - 1262 - 8" csg

* SL 1-24-69
381.52 below M. pipe
+1.0'

Well No. LJ-65-23-101

GPO 857-700

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-101

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523101
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.712778
Latitude (degrees minutes seconds)	29° 42' 46" N
Longitude (decimal degrees)	-95.212501
Longitude (degrees minutes seconds)	095° 12' 45" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	27
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1262
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1950
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Public Supply
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	City of Pasadena
Driller	McMaster and Pomeroy
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	260 ft of screen between 667 and 1242 ft. Well 8.

Casing - No Data

Well Tests - No Data

Lithology - No Data

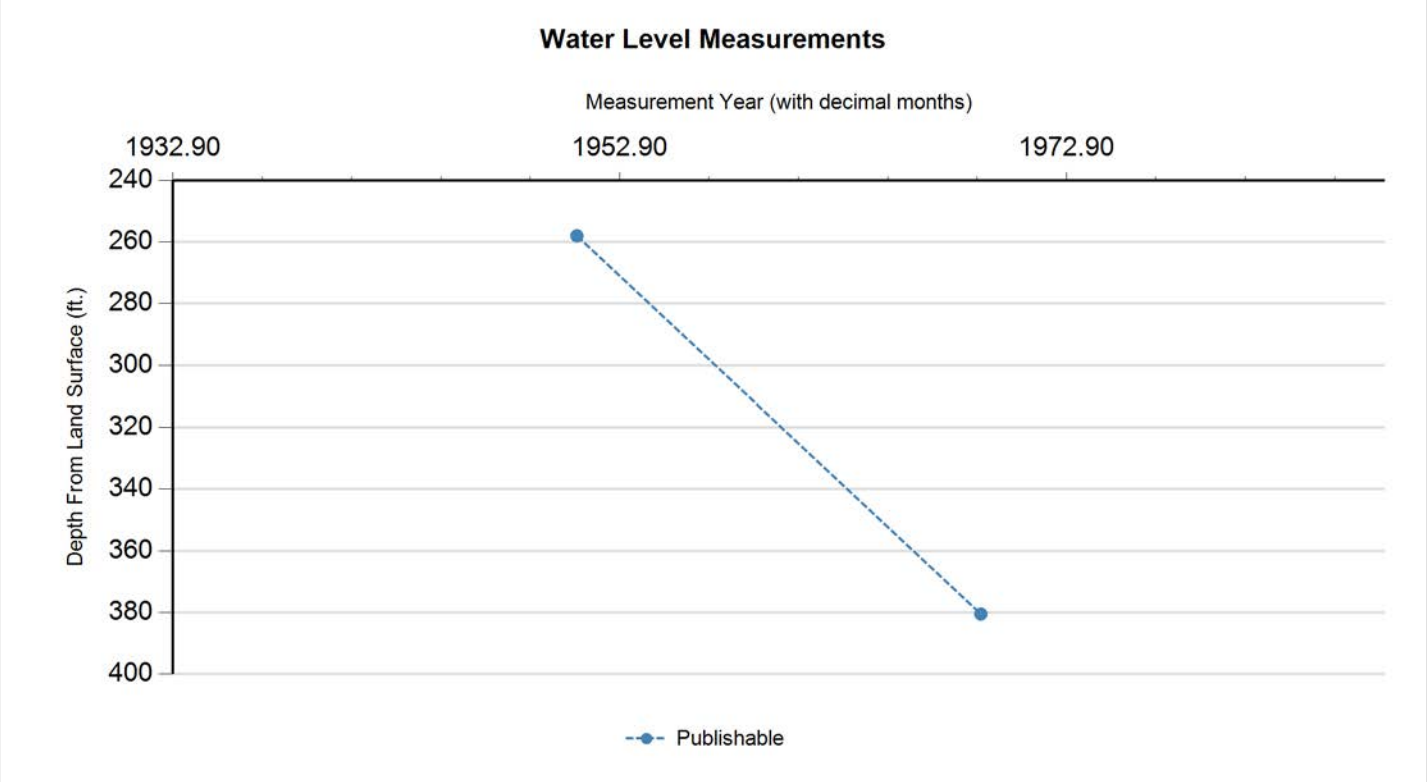
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	11/0/1950		258		-231	1	Registered Water Well Driller	Unknown		
P	1/24/1969		380.5	122.50	-353.5	1	Texas Water Development Board	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 1/29/1942 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:** Other or Identity Unknown

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: Laboratory Unknown **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		28	mg/L as CACO3	

Water Quality Analysis

Sample Date: 11/20/1951 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		226.23	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		276	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)		300	ug/L	
00910	CALCIUM (MG/L)		11	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		46	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.6	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		39	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		0	ug/L	
00920	MAGNESIUM (MG/L)		3	mg/L	
01055	MANGANESE, TOTAL (UG/L AS MN)		0	ug/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0.2	mg/L as NO3	
00400	PH (STANDARD UNITS), FIELD		7.9	SU	
00937	POTASSIUM, TOTAL (MG/L AS K)		1.6	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		3.72		
00955	SILICA, DISSOLVED (MG/L AS SI02)		18	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		8.34		
00932	SODIUM, CALCULATED, PERCENT		86	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		121	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		576	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		12	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		349	mg/L	

Water Quality Analysis

Sample Date: 7/20/1962 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		234.43	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		286	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		60	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		38	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.6	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		545	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		27	C	

Water Quality Analysis

Sample Date: 7/29/1963 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		234.43	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		286	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		60	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		40	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.7	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		625	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		27	C	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523139

Texas Water Development Board
Well Schedule

State Well Number 6523139 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **Zone** 1 **Latitude** 294319 **Longitude** 951332 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
H. L. & P. Co.
Deepwater Plant

Driller
Layne Texas Co.

Address _____ **Tenant/Oper.** _____

Date Drilled / /1929 **Depth** 836 **Source of Depth** R **Altitude** 18 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION **Const-Method** **Casing Material**

Completion **Screen Material**

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from_____**to**_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- _____ **GPM** **Pump** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** N **Logs -** **Other Data -**

WATER LEVELS 2 measurements
1931 to 1971
MIN -377 MAX -54.8

Recorded By _____ **Date Record Collected or Updated -** 07/18/2003

Reporting Agency 02

REMARKS -
TWDB R178: 119ft. of screen between
612 and 811ft.
Yield 500 gpm in 1939.

Aquifer - 121EVGL **ID -** 15

EVANGELINE
AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-139

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523139
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.7219444
Latitude (degrees minutes seconds)	29° 43' 19" N
Longitude (decimal degrees)	-95.2255556
Longitude (degrees minutes seconds)	095° 13' 32" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	18
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	836
Well Depth Source	Person Other than Owner
Drilling Start Date	
Drilling End Date	0/0/1929
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Historical
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	H. L. & P. Co. Deepwater Plant
Driller	Layne Texas Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	Houston Lighting and Power Co. [well 3]
Other Well Number	Historical Id 1170
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	7/18/2003
Last Update Date	7/19/2022

Remarks	TWDB R178: 119ft. of screen between 612 and 811ft. Yield 500 gpm in 1939.

Casing - No Data

Well Tests - No Data

Lithology - No Data

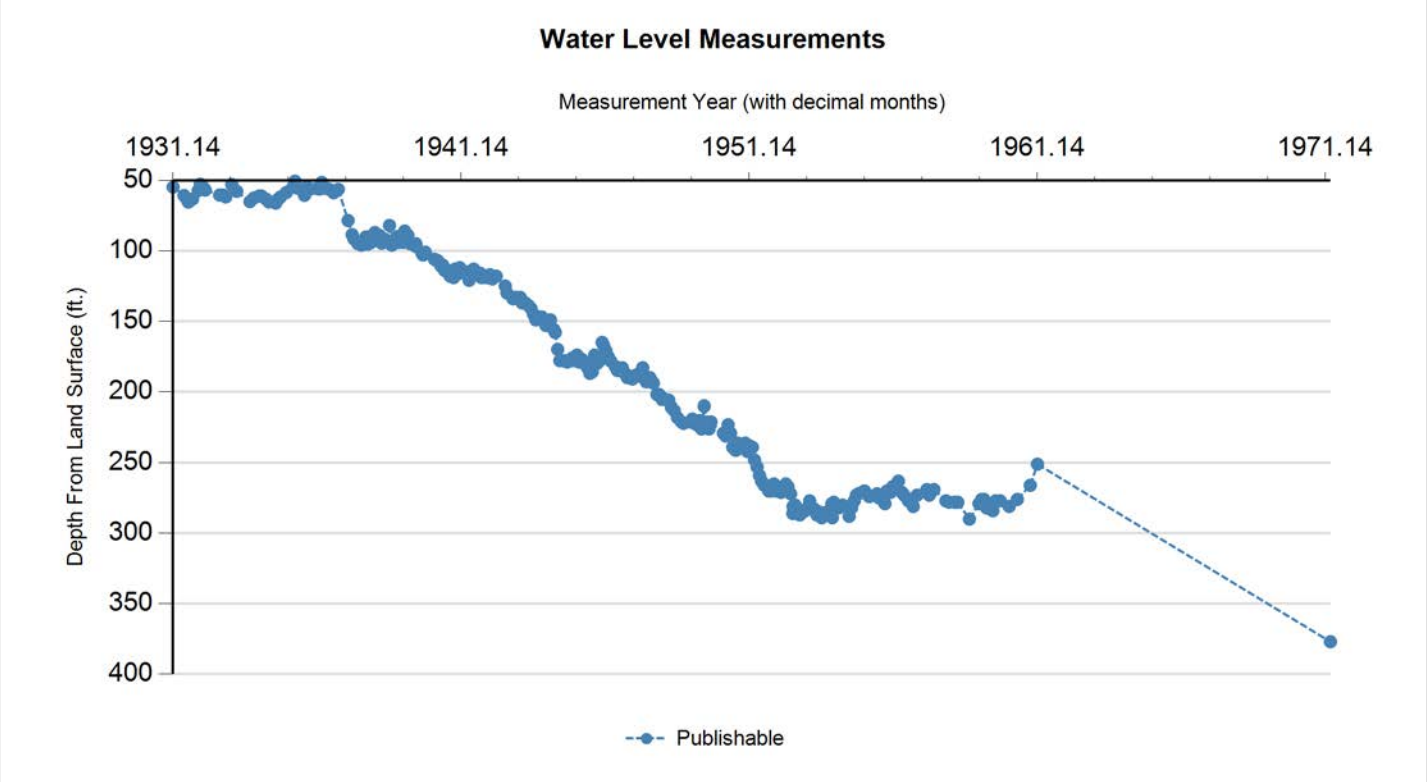
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/25/1931		54.8		-36.8	1	U.S. Geological Survey	Steel Tape		
P	7/13/1931		60.74	5.94	-42.74	1	U.S. Geological Survey	Steel Tape		
P	8/13/1931		62.74	2.00	-44.74	1	U.S. Geological Survey	Steel Tape		
P	9/8/1931		65.42	2.68	-47.42	1	U.S. Geological Survey	Steel Tape		
P	11/2/1931		63.3	(2.12)	-45.3	1	U.S. Geological Survey	Steel Tape		
P	1/8/1932		57.28	(6.02)	-39.28	1	U.S. Geological Survey	Steel Tape		
P	2/5/1932		52.71	(4.57)	-34.71	1	U.S. Geological Survey	Steel Tape		
P	3/3/1932		54.25	1.54	-36.25	1	U.S. Geological Survey	Steel Tape		
P	4/7/1932		56.91	2.66	-38.91	1	U.S. Geological Survey	Steel Tape		
P	10/10/1932		60.46	3.55	-42.46	1	U.S. Geological Survey	Steel Tape		
P	11/28/1932		60.43	(0.03)	-42.43	1	U.S. Geological Survey	Steel Tape		
P	12/28/1932		61.8	1.37	-43.8	1	U.S. Geological Survey	Steel Tape		
P	3/9/1933		52.93	(8.87)	-34.93	1	U.S. Geological Survey	Steel Tape		
P	5/12/1933		57.8	4.87	-39.8	1	U.S. Geological Survey	Steel Tape		
P	10/30/1933		65.1	7.30	-47.1	1	U.S. Geological Survey	Steel Tape		
P	12/21/1933		62.44	(2.66)	-44.44	1	U.S. Geological Survey	Steel Tape		
P	2/20/1934		61.2	(1.24)	-43.2	1	U.S. Geological Survey	Steel Tape		
P	3/20/1934		61.11	(0.09)	-43.11	1	U.S. Geological Survey	Steel Tape		
P	5/21/1934		63.42	2.31	-45.42	1	U.S. Geological Survey	Steel Tape		
P	6/25/1934		65.38	1.96	-47.38	1	U.S. Geological Survey	Steel Tape		
P	9/21/1934		66.16	0.78	-48.16	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	10/22/1934		63.27	(2.89)	-45.27	1	U.S. Geological Survey	Steel Tape		
P	11/20/1934		61.87	(1.40)	-43.87	1	U.S. Geological Survey	Steel Tape		
P	1/30/1935		58.62	(3.25)	-40.62	1	U.S. Geological Survey	Steel Tape		
P	4/23/1935		54.75	(3.87)	-36.75	1	U.S. Geological Survey	Steel Tape		
P	5/20/1935		50.6	(4.15)	-32.6	1	U.S. Geological Survey	Steel Tape		
P	6/18/1935		55.46	4.86	-37.46	1	U.S. Geological Survey	Steel Tape		
P	9/20/1935		60.66	5.20	-42.66	1	U.S. Geological Survey	Steel Tape		
P	10/25/1935		54.67	(5.99)	-36.67	1	U.S. Geological Survey	Steel Tape		
P	11/22/1935		56.5	1.83	-38.5	1	U.S. Geological Survey	Steel Tape		
P	2/19/1936		55.73	(0.77)	-37.73	1	U.S. Geological Survey	Steel Tape		
P	3/19/1936		56.14	0.41	-38.14	1	U.S. Geological Survey	Steel Tape		
P	4/24/1936		51.47	(4.67)	-33.47	1	U.S. Geological Survey	Steel Tape		
P	5/8/1936		55.69	4.22	-37.69	1	U.S. Geological Survey	Steel Tape		
P	7/28/1936		56.34	0.65	-38.34	1	U.S. Geological Survey	Steel Tape		
P	9/25/1936		58.83	2.49	-40.83	1	U.S. Geological Survey	Steel Tape		
P	11/24/1936		56.35	(2.48)	-38.35	1	U.S. Geological Survey	Steel Tape		
P	3/22/1937		78.52	22.17	-60.52	1	U.S. Geological Survey	Steel Tape		
P	5/14/1937		88.5	9.98	-70.5	1	U.S. Geological Survey	Steel Tape		
P	6/5/1937		91.5	3.00	-73.5	1	U.S. Geological Survey	Steel Tape		
P	7/24/1937		94.8	3.30	-76.8	1	U.S. Geological Survey	Steel Tape		
P	8/21/1937		95	0.20	-77	1	U.S. Geological Survey	Steel Tape		
P	9/11/1937		96	1.00	-78	1	U.S. Geological Survey	Steel Tape		
P	10/30/1937		94	(2.00)	-76	1	U.S. Geological Survey	Steel Tape		
P	11/8/1937		90.2	(3.80)	-72.2	1	U.S. Geological Survey	Steel Tape		
P	12/4/1937		95.3	5.10	-77.3	1	U.S. Geological Survey	Steel Tape		
P	1/8/1938		94.1	(1.20)	-76.1	1	U.S. Geological Survey	Steel Tape		
P	2/26/1938		87.08	(7.02)	-69.08	1	U.S. Geological Survey	Steel Tape		
P	3/11/1938		89	1.92	-71	1	U.S. Geological Survey	Steel Tape		
P	4/22/1938		89	0.00	-71	1	U.S. Geological Survey	Steel Tape		
P	5/23/1938		94.6	5.60	-76.6	1	U.S. Geological Survey	Steel Tape		
P	6/10/1938		91.9	(2.70)	-73.9	1	U.S. Geological Survey	Steel Tape		
P	7/1/1938		91.6	(0.30)	-73.6	1	U.S. Geological Survey	Steel Tape		
P	8/26/1938		94.5	2.90	-76.5	1	U.S. Geological Survey	Steel Tape		
P	9/2/1938		82	(12.50)	-64	1	U.S. Geological Survey	Steel Tape		
P	10/3/1938		96	14.00	-78	1	U.S. Geological Survey	Steel Tape		
P	11/25/1938		94	(2.00)	-76	1	U.S. Geological Survey	Steel Tape		
P	12/2/1938		90	(4.00)	-72	1	U.S. Geological Survey	Steel Tape		
P	1/6/1939		94	4.00	-76	1	U.S. Geological Survey	Steel Tape		
P	2/24/1939		94	0.00	-76	1	U.S. Geological Survey	Steel Tape		
P	3/10/1939		86	(8.00)	-68	1	U.S. Geological Survey	Steel Tape		
P	4/20/1939		89	3.00	-71	1	U.S. Geological Survey	Steel Tape		
P	5/19/1939		95	6.00	-77	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	7/31/1939		95	0.00	-77	1	U.S. Geological Survey	Steel Tape		
P	8/4/1939		97	2.00	-79	1	U.S. Geological Survey	Steel Tape		
P	10/20/1939		102	5.00	-84	1	U.S. Geological Survey	Steel Tape		
P	11/3/1939		103	1.00	-85	1	U.S. Geological Survey	Steel Tape		
P	12/1/1939		101	(2.00)	-83	1	U.S. Geological Survey	Steel Tape		
P	3/22/1940		106	5.00	-88	1	U.S. Geological Survey	Steel Tape		
P	4/19/1940		107	1.00	-89	1	U.S. Geological Survey	Steel Tape		
P	5/3/1940		107	0.00	-89	1	U.S. Geological Survey	Steel Tape		
P	6/17/1940		111	4.00	-93	1	U.S. Geological Survey	Steel Tape		
P	7/5/1940		110	(1.00)	-92	1	U.S. Geological Survey	Steel Tape		
P	8/1/1940		114	4.00	-96	1	U.S. Geological Survey	Steel Tape		
P	9/13/1940		114	0.00	-96	1	U.S. Geological Survey	Steel Tape		
P	10/10/1940		118	4.00	-100	1	U.S. Geological Survey	Steel Tape		
P	11/26/1940		119	1.00	-101	1	U.S. Geological Survey	Steel Tape		
P	12/13/1940		113	(6.00)	-95	1	U.S. Geological Survey	Steel Tape		
P	1/31/1941		116	3.00	-98	1	U.S. Geological Survey	Steel Tape		
P	2/7/1941		112	(4.00)	-94	1	U.S. Geological Survey	Steel Tape		
P	3/25/1941		115	3.00	-97	1	U.S. Geological Survey	Steel Tape		
P	4/15/1941		115	0.00	-97	1	U.S. Geological Survey	Steel Tape		
P	5/16/1941		115	0.00	-97	1	U.S. Geological Survey	Steel Tape		
P	6/6/1941		121	6.00	-103	1	U.S. Geological Survey	Steel Tape		
P	7/17/1941		114	(7.00)	-96	1	U.S. Geological Survey	Steel Tape		
P	8/4/1941		113	(1.00)	-95	1	U.S. Geological Survey	Steel Tape		
P	9/27/1941		116	3.00	-98	1	U.S. Geological Survey	Steel Tape		
P	10/28/1941		116	0.00	-98	1	U.S. Geological Survey	Steel Tape		
P	11/12/1941		119	3.00	-101	1	U.S. Geological Survey	Steel Tape		
P	12/11/1941		118	(1.00)	-100	1	U.S. Geological Survey	Steel Tape		
P	1/7/1942		119	1.00	-101	1	U.S. Geological Survey	Steel Tape		
P	2/25/1942		117	(2.00)	-99	1	U.S. Geological Survey	Steel Tape		
P	3/25/1942		120	3.00	-102	1	U.S. Geological Survey	Steel Tape		
P	4/14/1942		119	(1.00)	-101	1	U.S. Geological Survey	Steel Tape		
P	5/14/1942		118	(1.00)	-100	1	U.S. Geological Survey	Steel Tape		
P	9/9/1942		125	7.00	-107	1	U.S. Geological Survey	Steel Tape		
P	10/1/1942		130	5.00	-112	1	U.S. Geological Survey	Steel Tape		
P	12/16/1942		134	4.00	-116	1	U.S. Geological Survey	Steel Tape		
P	1/16/1943		133	(1.00)	-115	1	U.S. Geological Survey	Steel Tape		
P	3/13/1943		133	0.00	-115	1	U.S. Geological Survey	Steel Tape		
P	4/8/1943		137	4.00	-119	1	U.S. Geological Survey	Steel Tape		
P	5/18/1943		137	0.00	-119	1	U.S. Geological Survey	Steel Tape		
P	7/1/1943		139	2.00	-121	1	U.S. Geological Survey	Steel Tape		
P	8/1/1943		141	2.00	-123	1	U.S. Geological Survey	Steel Tape		
P	9/1/1943		145	4.00	-127	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	10/1/1943		149	4.00	-131	1	U.S. Geological Survey	Steel Tape		
P	11/15/1943		147	(2.00)	-129	1	U.S. Geological Survey	Steel Tape		
P	12/16/1943		147	0.00	-129	1	U.S. Geological Survey	Steel Tape		
P	1/16/1944		149	2.00	-131	1	U.S. Geological Survey	Steel Tape		
P	2/3/1944		153	4.00	-135	1	U.S. Geological Survey	Steel Tape		
P	3/16/1944		150	(3.00)	-132	1	U.S. Geological Survey	Steel Tape		
P	4/1/1944		149	(1.00)	-131	1	U.S. Geological Survey	Steel Tape		
P	5/16/1944		156	7.00	-138	1	U.S. Geological Survey	Steel Tape		
P	6/2/1944		158	2.00	-140	1	U.S. Geological Survey	Steel Tape		
P	7/3/1944		170	12.00	-152	1	U.S. Geological Survey	Steel Tape		
P	8/1/1944		178	8.00	-160	1	U.S. Geological Survey	Steel Tape		
P	9/18/1944		178	0.00	-160	1	U.S. Geological Survey	Steel Tape		
P	10/3/1944		178	0.00	-160	1	U.S. Geological Survey	Steel Tape		
P	11/2/1944		179	1.00	-161	1	U.S. Geological Survey	Steel Tape		
P	12/16/1944		178	(1.00)	-160	1	U.S. Geological Survey	Steel Tape		
P	1/5/1945		176	(2.00)	-158	1	U.S. Geological Survey	Steel Tape		
P	2/1/1945		178	2.00	-160	1	U.S. Geological Survey	Steel Tape		
P	3/2/1945		174	(4.00)	-156	1	U.S. Geological Survey	Steel Tape		
P	4/2/1945		179	5.00	-161	1	U.S. Geological Survey	Steel Tape		
P	5/3/1945		177	(2.00)	-159	1	U.S. Geological Survey	Steel Tape		
P	6/15/1945		179	2.00	-161	1	U.S. Geological Survey	Steel Tape		
P	7/16/1945		183	4.00	-165	1	U.S. Geological Survey	Steel Tape		
P	8/16/1945		187	4.00	-169	1	U.S. Geological Survey	Steel Tape		
P	9/16/1945		186	(1.00)	-168	1	U.S. Geological Survey	Steel Tape		
P	10/16/1945		174	(12.00)	-156	1	U.S. Geological Survey	Steel Tape		
P	11/16/1945		180	6.00	-162	1	U.S. Geological Survey	Steel Tape		
P	12/18/1945		178	(2.00)	-160	1	U.S. Geological Survey	Steel Tape		
P	1/16/1946		165	(13.00)	-147	1	U.S. Geological Survey	Steel Tape		
P	2/4/1946		167	2.00	-149	1	U.S. Geological Survey	Steel Tape		
P	3/5/1946		171	4.00	-153	1	U.S. Geological Survey	Steel Tape		
P	4/1/1946		175	4.00	-157	1	U.S. Geological Survey	Steel Tape		
P	5/1/1946		178	3.00	-160	1	U.S. Geological Survey	Steel Tape		
P	7/2/1946		182	4.00	-164	1	U.S. Geological Survey	Steel Tape		
P	8/1/1946		185	3.00	-167	1	U.S. Geological Survey	Steel Tape		
P	9/4/1946		184	(1.00)	-166	1	U.S. Geological Survey	Steel Tape		
P	10/2/1946		183	(1.00)	-165	1	U.S. Geological Survey	Steel Tape		
P	11/5/1946		187	4.00	-169	1	U.S. Geological Survey	Steel Tape		
P	12/5/1946		190	3.00	-172	1	U.S. Geological Survey	Steel Tape		
P	1/6/1947		189	(1.00)	-171	1	U.S. Geological Survey	Steel Tape		
P	2/3/1947		191	2.00	-173	1	U.S. Geological Survey	Steel Tape		
P	3/4/1947		189	(2.00)	-171	1	U.S. Geological Survey	Steel Tape		
P	4/1/1947		188	(1.00)	-170	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	5/1/1947		189	1.00	-171	1	U.S. Geological Survey	Steel Tape		
P	6/16/1947		183	(6.00)	-165	1	U.S. Geological Survey	Steel Tape		
P	7/3/1947		190	7.00	-172	1	U.S. Geological Survey	Steel Tape		
P	8/1/1947		193	3.00	-175	1	U.S. Geological Survey	Steel Tape		
P	9/16/1947		190	(3.00)	-172	1	U.S. Geological Survey	Steel Tape		
P	10/17/1947		193	3.00	-175	1	U.S. Geological Survey	Steel Tape		
P	11/1/1947		194	1.00	-176	1	U.S. Geological Survey	Steel Tape		
P	12/16/1947		202	8.00	-184	1	U.S. Geological Survey	Steel Tape		
P	1/8/1948		202	0.00	-184	1	U.S. Geological Survey	Steel Tape		
P	2/11/1948		205	3.00	-187	1	U.S. Geological Survey	Steel Tape		
P	3/10/1948		205	0.00	-187	1	U.S. Geological Survey	Steel Tape		
P	5/11/1948		206	1.00	-188	1	U.S. Geological Survey	Steel Tape		
P	6/16/1948		211	5.00	-193	1	U.S. Geological Survey	Steel Tape		
P	7/20/1948		213	2.00	-195	1	U.S. Geological Survey	Steel Tape		
P	8/31/1948		218	5.00	-200	1	U.S. Geological Survey	Steel Tape		
P	10/22/1948		221	3.00	-203	1	U.S. Geological Survey	Steel Tape		
P	11/17/1948		222	1.00	-204	1	U.S. Geological Survey	Steel Tape		
P	2/2/1949		221	(1.00)	-203	1	U.S. Geological Survey	Steel Tape		
P	3/4/1949		219	(2.00)	-201	1	U.S. Geological Survey	Steel Tape		
P	4/1/1949		222	3.00	-204	1	U.S. Geological Survey	Steel Tape		
P	5/2/1949		223	1.00	-205	1	U.S. Geological Survey	Steel Tape		
P	6/9/1949		220	(3.00)	-202	1	U.S. Geological Survey	Steel Tape		
P	7/1/1949		226	6.00	-208	1	U.S. Geological Survey	Steel Tape		
P	8/4/1949		210	(16.00)	-192	1	U.S. Geological Survey	Steel Tape		
P	9/1/1949		221	11.00	-203	1	U.S. Geological Survey	Steel Tape		
P	10/6/1949		226	5.00	-208	1	U.S. Geological Survey	Steel Tape		
P	11/1/1949		221	(5.00)	-203	1	U.S. Geological Survey	Steel Tape		
P	4/3/1950		229	8.00	-211	1	U.S. Geological Survey	Steel Tape		
P	5/2/1950		231	2.00	-213	1	U.S. Geological Survey	Steel Tape		
P	6/2/1950		223	(8.00)	-205	1	U.S. Geological Survey	Steel Tape		
P	7/3/1950		229	6.00	-211	1	U.S. Geological Survey	Steel Tape		
P	8/1/1950		239	10.00	-221	1	U.S. Geological Survey	Steel Tape		
P	9/5/1950		241	2.00	-223	1	U.S. Geological Survey	Steel Tape		
P	9/15/1950		241	0.00	-223	1	U.S. Geological Survey	Steel Tape		
P	10/4/1950		236	(5.00)	-218	1	U.S. Geological Survey	Steel Tape		
P	11/3/1950		238	2.00	-220	1	U.S. Geological Survey	Steel Tape		
P	12/4/1950		238	0.00	-220	1	U.S. Geological Survey	Steel Tape		
P	1/3/1951		236	(2.00)	-218	1	U.S. Geological Survey	Steel Tape		
P	2/2/1951		242	6.00	-224	1	U.S. Geological Survey	Steel Tape		
P	3/1/1951		238	(4.00)	-220	1	U.S. Geological Survey	Steel Tape		
P	4/5/1951		239	1.00	-221	1	U.S. Geological Survey	Steel Tape		
P	5/2/1951		248	9.00	-230	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	6/5/1951		253	5.00	-235	1	U.S. Geological Survey	Steel Tape		
P	7/5/1951		259	6.00	-241	1	U.S. Geological Survey	Steel Tape		
P	8/1/1951		263	4.00	-245	1	U.S. Geological Survey	Steel Tape		
P	9/6/1951		266	3.00	-248	1	U.S. Geological Survey	Steel Tape		
P	10/2/1951		266	0.00	-248	1	U.S. Geological Survey	Steel Tape		
P	11/2/1951		270	4.00	-252	1	U.S. Geological Survey	Steel Tape		
P	12/4/1951		270	0.00	-252	1	U.S. Geological Survey	Steel Tape		
P	1/3/1952		265	(5.00)	-247	1	U.S. Geological Survey	Steel Tape		
P	2/4/1952		270	5.00	-252	1	U.S. Geological Survey	Steel Tape		
P	3/3/1952		270	0.00	-252	1	U.S. Geological Survey	Steel Tape		
P	4/2/1952		271	1.00	-253	1	U.S. Geological Survey	Steel Tape		
P	5/1/1952		270	(1.00)	-252	1	U.S. Geological Survey	Steel Tape		
P	6/4/1952		265	(5.00)	-247	1	U.S. Geological Survey	Steel Tape		
P	7/1/1952		267	2.00	-249	1	U.S. Geological Survey	Steel Tape		
P	8/4/1952		272	5.00	-254	1	U.S. Geological Survey	Steel Tape		
P	9/2/1952		286	14.00	-268	1	U.S. Geological Survey	Steel Tape		
P	9/5/1952		281	(5.00)	-263	1	U.S. Geological Survey	Steel Tape		
P	10/1/1952		280	(1.00)	-262	1	U.S. Geological Survey	Steel Tape		
P	11/5/1952		286	6.00	-268	1	U.S. Geological Survey	Steel Tape		
P	12/1/1952		287	1.00	-269	1	U.S. Geological Survey	Steel Tape		
P	1/2/1953		285	(2.00)	-267	1	U.S. Geological Survey	Steel Tape		
P	2/3/1953		284	(1.00)	-266	1	U.S. Geological Survey	Steel Tape		
P	3/2/1953		282	(2.00)	-264	1	U.S. Geological Survey	Steel Tape		
P	4/1/1953		277	(5.00)	-259	1	U.S. Geological Survey	Steel Tape		
P	5/1/1953		282	5.00	-264	1	U.S. Geological Survey	Steel Tape		
P	6/3/1953		283	1.00	-265	1	U.S. Geological Survey	Steel Tape		
P	7/2/1953		287	4.00	-269	1	U.S. Geological Survey	Steel Tape		
P	8/3/1953		285	(2.00)	-267	1	U.S. Geological Survey	Steel Tape		
P	9/4/1953		289	4.00	-271	1	U.S. Geological Survey	Steel Tape		
P	10/5/1953		287	(2.00)	-269	1	U.S. Geological Survey	Steel Tape		
P	11/4/1953		285	(2.00)	-267	1	U.S. Geological Survey	Steel Tape		
P	12/7/1953		287	2.00	-269	1	U.S. Geological Survey	Steel Tape		
P	1/6/1954		279	(8.00)	-261	1	U.S. Geological Survey	Steel Tape		
P	1/13/1954		289	10.00	-271	1	U.S. Geological Survey	Steel Tape		
P	2/1/1954		278	(11.00)	-260	1	U.S. Geological Survey	Steel Tape		
P	3/3/1954		280	2.00	-262	1	U.S. Geological Survey	Steel Tape		
P	4/5/1954		282	2.00	-264	1	U.S. Geological Survey	Steel Tape		
P	5/25/1954		280	(2.00)	-262	1	U.S. Geological Survey	Steel Tape		
P	8/16/1954		288	8.00	-270	1	U.S. Geological Survey	Steel Tape		
P	9/17/1954		282	(6.00)	-264	1	U.S. Geological Survey	Steel Tape		
P	10/22/1954		277	(5.00)	-259	1	U.S. Geological Survey	Steel Tape		
P	11/18/1954		273	(4.00)	-255	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	12/12/1954		272	(1.00)	-254	1	U.S. Geological Survey	Steel Tape		
P	1/25/1955		271	(1.00)	-253	1	U.S. Geological Survey	Steel Tape		
P	2/25/1955		270	(1.00)	-252	1	U.S. Geological Survey	Steel Tape		
P	4/26/1955		274	4.00	-256	1	U.S. Geological Survey	Steel Tape		
P	7/7/1955		273	(1.00)	-255	1	U.S. Geological Survey	Steel Tape		
P	8/4/1955		272	(1.00)	-254	1	U.S. Geological Survey	Steel Tape		
P	9/2/1955		275	3.00	-257	1	U.S. Geological Survey	Steel Tape		
P	10/26/1955		276	1.00	-258	1	U.S. Geological Survey	Steel Tape		
P	11/15/1955		279	3.00	-261	1	U.S. Geological Survey	Steel Tape		
P	12/10/1955		270	(9.00)	-252	1	U.S. Geological Survey	Steel Tape		
P	1/20/1956		271	1.00	-253	1	U.S. Geological Survey	Steel Tape		
P	2/17/1956		267	(4.00)	-249	1	U.S. Geological Survey	Steel Tape		
P	3/22/1956		266	(1.00)	-248	1	U.S. Geological Survey	Steel Tape		
P	4/30/1956		263	(3.00)	-245	1	U.S. Geological Survey	Steel Tape		
P	6/14/1956		271	8.00	-253	1	U.S. Geological Survey	Steel Tape		
P	7/13/1956		273	2.00	-255	1	U.S. Geological Survey	Steel Tape		
P	9/7/1956		277	4.00	-259	1	U.S. Geological Survey	Steel Tape		
P	11/8/1956		281	4.00	-263	1	U.S. Geological Survey	Steel Tape		
P	12/27/1956		273	(8.00)	-255	1	U.S. Geological Survey	Steel Tape		
P	4/26/1957		269	(4.00)	-251	1	U.S. Geological Survey	Steel Tape		
P	5/27/1957		273	4.00	-255	1	U.S. Geological Survey	Steel Tape		
P	6/12/1957		271	(2.00)	-253	1	U.S. Geological Survey	Steel Tape		
P	7/24/1957		269	(2.00)	-251	1	U.S. Geological Survey	Steel Tape		
P	12/27/1957		277	8.00	-259	1	U.S. Geological Survey	Steel Tape		
P	2/3/1958		278	1.00	-260	1	U.S. Geological Survey	Steel Tape		
P	4/11/1958		278	0.00	-260	1	U.S. Geological Survey	Steel Tape		
P	5/22/1958		278	0.00	-260	1	U.S. Geological Survey	Steel Tape		
P	10/20/1958		290	12.00	-272	1	U.S. Geological Survey	Steel Tape		
P	2/16/1959		279	(11.00)	-261	1	U.S. Geological Survey	Steel Tape		
P	3/20/1959		276	(3.00)	-258	1	U.S. Geological Survey	Steel Tape		
P	4/20/1959		276	0.00	-258	1	U.S. Geological Survey	Steel Tape		
P	5/22/1959		282	6.00	-264	1	U.S. Geological Survey	Steel Tape		
P	7/21/1959		283	1.00	-265	1	U.S. Geological Survey	Steel Tape		
P	8/12/1959		284	1.00	-266	1	U.S. Geological Survey	Steel Tape		
P	9/18/1959		277	(7.00)	-259	1	U.S. Geological Survey	Steel Tape		
P	11/16/1959		277	0.00	-259	1	U.S. Geological Survey	Steel Tape		
P	3/4/1960		281	4.00	-263	1	U.S. Geological Survey	Steel Tape		
P	6/17/1960		276	(5.00)	-258	1	U.S. Geological Survey	Steel Tape		
P	12/1/1960		266	(10.00)	-248	1	U.S. Geological Survey	Steel Tape		
P	2/27/1961		251	(15.00)	-233	1	U.S. Geological Survey	Steel Tape		
P	3/0/1971		377	126.00	-359	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523503

Texas Water Development Board
Well Schedule

State Well Number 6523503 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294219 **Longitude** 951115 **Source of Coords** 1

Owner's Well No. _____ **Location** _____

Owner
City of Pasadena
Red Bluff well

Driller
McMasters & Pomeroy

Address _____ **Tenant/Oper.** _____

Date Drilled / /1950 **Depth** 1264 **Source of Depth** **Altitude** 36 **Source of Alt.** M

Well Type W **User** 651900

WELL CONSTRUCTION

Const-Method Hydraulic Rotary

Casing Material blank

Completion blank

Screen Material blank

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from_____**to**_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -** 125

YIELD Flow- _____**GPM** **Pump-** _____**GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** PUBLIC SUPPLY **Secondary -** blank **Tertiary -** blank

OTHER DATA AVAILABLE **Water Levels -** C **Quality -** N **Logs -** **Other Data -**

WATER LEVELS 1 measurement
2005
-176.98

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency

REMARKS -

Aquifer - 121EVGL **ID -** 15

EVANGELINE
AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-503

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523503
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.7052778
Latitude (degrees minutes seconds)	29° 42' 19" N
Longitude (decimal degrees)	-95.1875
Longitude (degrees minutes seconds)	095° 11' 15" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	36
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1264
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1950
Drilling Method	Mud (Hydraulic) Rotary
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Public Supply
Water Level Observation	Historical
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	City of Pasadena
Driller	McMasters & Pomeroy
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1010293A
Groundwater Conservation District Well Number	
Owner Well Number	Red Bluff Well
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	8/1/2006
Last Update Date	4/17/2018

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/19/2005		176.98		-140.98	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6515822

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-822

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515822
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.756389
Latitude (degrees minutes seconds)	29° 45' 23" N
Longitude (decimal degrees)	-95.17
Longitude (degrees minutes seconds)	095° 10' 12" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CHCTL - Chicot Aquifer, Lower
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	30
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	680
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1950
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Plugged or Destroyed
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Diamond Shamrock Corp.
Driller	Texas Water Wells
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/13/1999
Last Update Date	5/13/1999

Remarks	80 ft of screen between 355 and 680 ft. Reported yield 450 gpm with 65 ft drawdown when drilled. Test hole drilled to 688 ft. Well destroyed.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

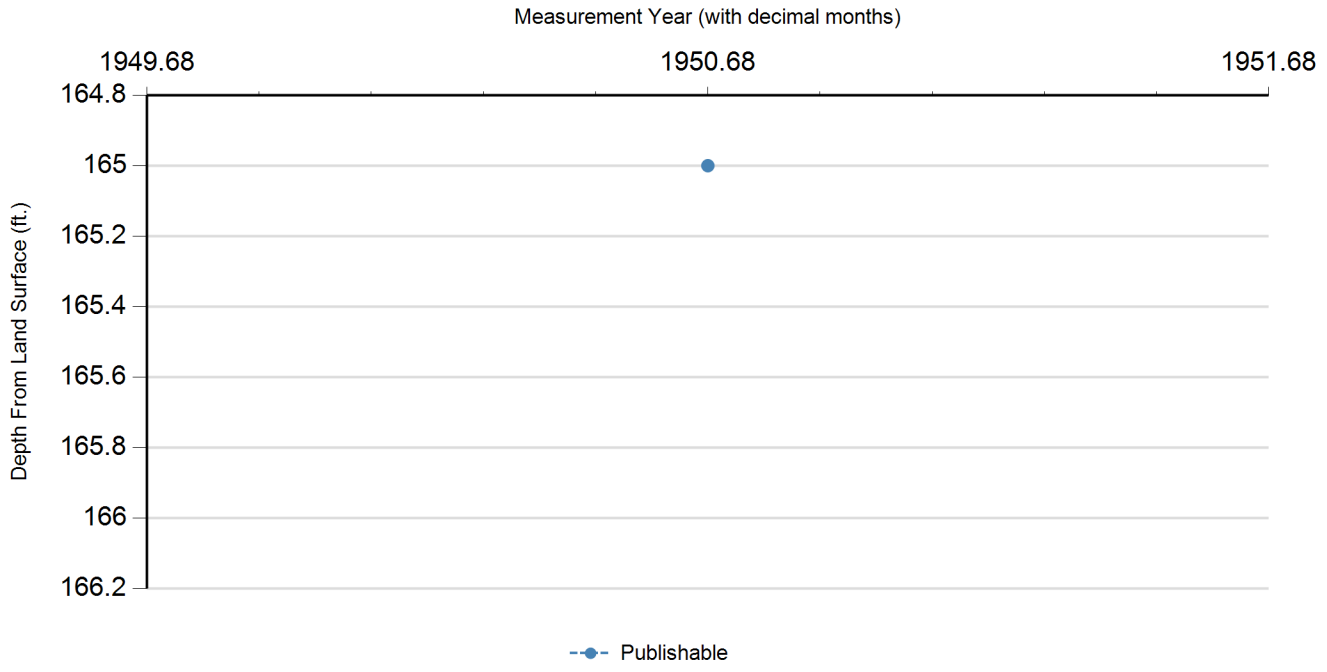
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/9/1950		165		-135	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 12/18/1950 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot Aquifer, Lower

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		200.82	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		245	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)		200	ug/L	
00910	CALCIUM (MG/L)		27	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		29	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.4	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		94	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		200	ug/L	
00920	MAGNESIUM (MG/L)		7	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00937	POTASSIUM, TOTAL (MG/L AS K)		2.8	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		2.09		
00955	SILICA, DISSOLVED (MG/L AS SI02)		15	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		3.33		
00932	SODIUM, CALCULATED, PERCENT		62	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		75	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		18	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		294	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6515829

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-15-829

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6515829
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.760834
Latitude (degrees minutes seconds)	29° 45' 39" N
Longitude (decimal degrees)	-95.174167
Longitude (degrees minutes seconds)	095° 10' 27" W
Coordinate Source	+/- 1 Second
Aquifer Code	112CHCTL - Chicot Aquifer, Lower
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	32
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	342
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	0/0/1953
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	None
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Pennsalt Chemical Co
Driller	McMasters & Pomeroy
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	1/25/1999
Last Update Date	1/25/1999

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523152

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 23 152 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 44 03 Longitude - 95 14 16 Source of Coords - 2

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - City of Galena Park
Well #2
Driller - Layne Texas

Address _____ Tenant/Oper. _____
Date Drilled - 06/24/1942 Depth - 740 ft. Source of Depth - M Altitude - 34 ft. Source of Alt. - M
Aquifer - 112CEVG CHICOT AND EVANGELINE AQUIFERS Well Type - W User - 315800

WELL CONSTRUCTION
Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

| Casing or Blank Pipe (C)
| Well Screen or Slotted Zone (
| Open Hole (O)
| Cemented from_____to_____
| Diam. (in.) Setting(feet) From To

LIFT DATA - Pump Mfr. _____ Type - TURBINE PUMP No. Stages ____

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower -

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

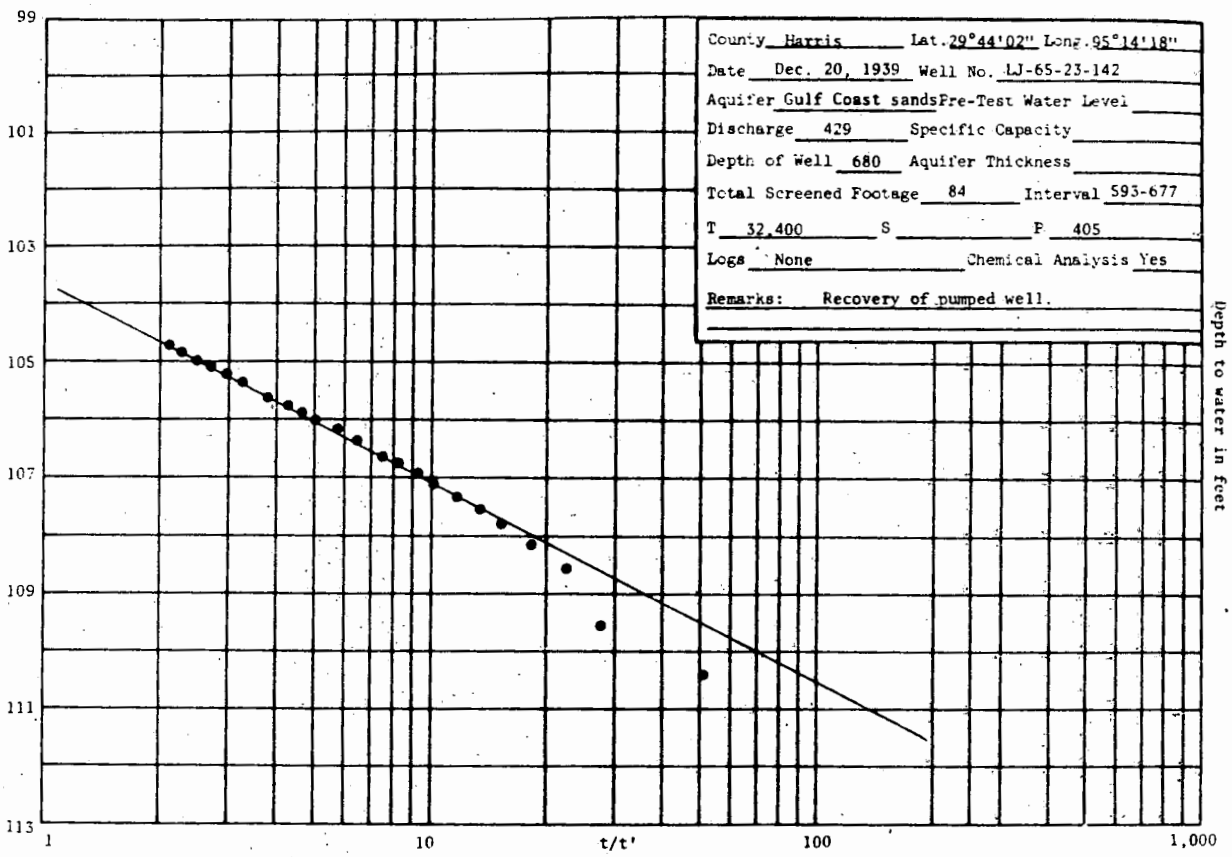
WATER USE Primary- PUBLIC SUPPLY Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- M Quality- N Logs- Other Data-

WATER LEVELS Date- 06/24/1942 Measurement- -121.00
Date- 02/13/1953 Measurement- -275.70

Recorded By _____ Date Record Collected or Updated- / /

Reporting Agency - UNITED STATES GEOLOGICAL SURVEY
REMARKS -


County Harris Lat. 29°44'02" Long. 95°14'18"
Date Dec. 20, 1939 Well No. LJ-65-23-142
Aquifer Gulf Coast sands Pre-Test Water Level
Discharge 429 Specific Capacity
Depth of Well 680 Aquifer Thickness
Total Screened Footage 84 Interval 593-677
T 32,400 S P 405
Logs None Chemical Analysis Yes
Remarks: Recovery of pumped well.
99
101
103
105
107
109
111
113
Depth to water in feet
1
10
t/t'
100
1,000

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-152

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523152
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.734445
Latitude (degrees minutes seconds)	29° 44' 04" N
Longitude (decimal degrees)	-95.238056
Longitude (degrees minutes seconds)	095° 14' 17" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CEVG - Chicot and Evangeline Aquifers
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	34
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	740
Well Depth Source	Memory of Owner
Drilling Start Date	
Drilling End Date	6/24/1942
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Public Supply
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	City of Galena Park Well #2
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1010009B
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	9/26/1997
Last Update Date	9/26/1997

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

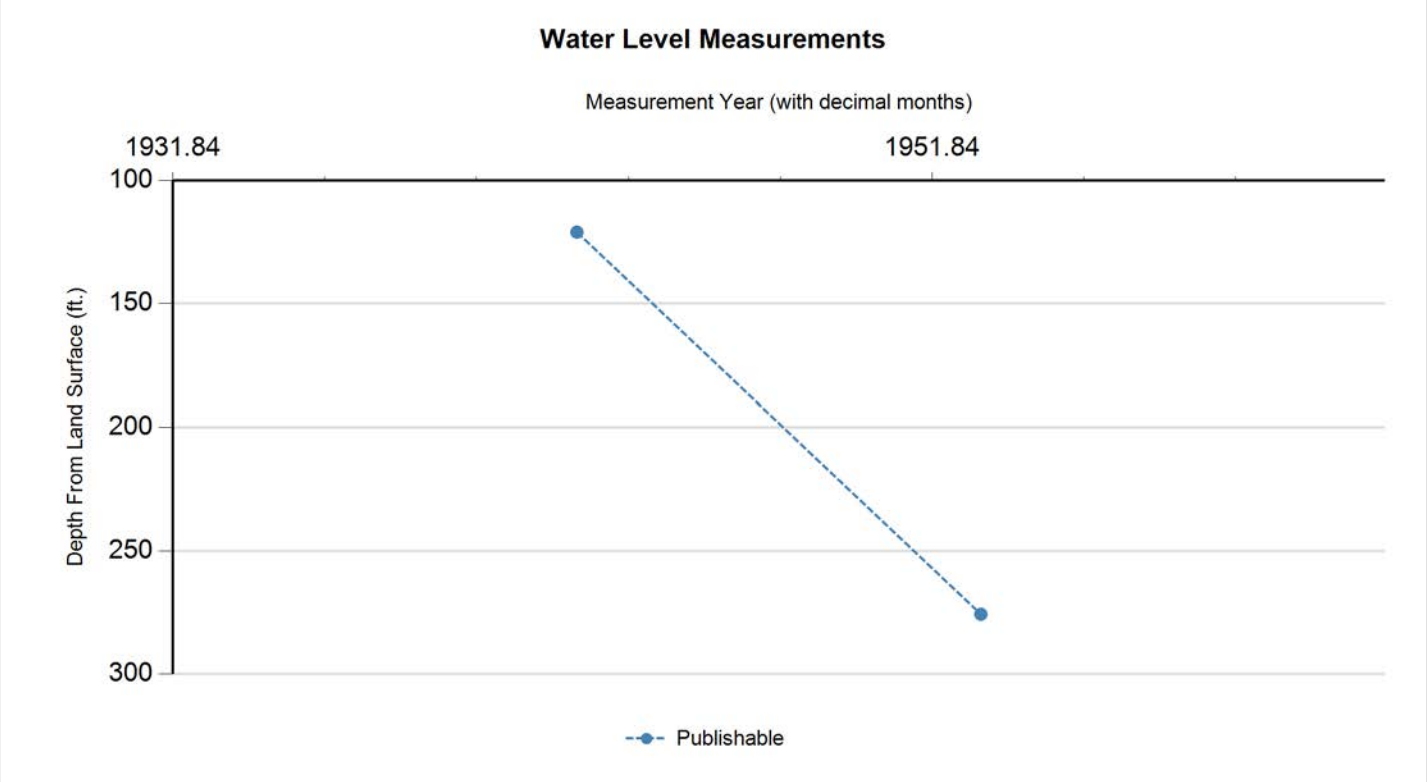
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	6/24/1942		121		-87	1	Registered Water Well Driller	Unknown		
P	2/13/1953		275.7	154.70	-241.7	1	U.S. Geological Survey	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523213

Texas Water Development Board
Well Schedule

State Well Number 6523213 **Previous Well Number** #4 **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294344 **Longitude** 951029 **Source of Coords** 1

Owner's Well No. _____ **Location** _____

Owner
Phillips 66 Co.
Houston Chemical

Driller
Layne Texas

Address _____ **Tenant/Oper.** _____

Date Drilled 09/ /1951 **Depth** 884 **Source of Depth** D **Altitude** 30 **Source of Alt.** M

Well Type W **User** 667400

WELL CONSTRUCTION

Const-Method

Casing Material

Screen Material

Completion blank

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from_____**to**_____

LIFT DATA - Pump Mfr. - _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -** 125

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** N **Quality -** N **Logs -** **Other Data -**

WATER LEVELS

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency 02

REMARKS -

Aquifer - 112CEVG **ID -** 15

CHICOT AND EVANGELINE AQUIFERS

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-213

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523213
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.728889
Latitude (degrees minutes seconds)	29° 43' 44" N
Longitude (decimal degrees)	-95.174722
Longitude (degrees minutes seconds)	095° 10' 29" W
Coordinate Source	+/- 1 Second
Aquifer Code	112CEVG - Chicot and Evangeline Aquifers
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	30
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	884
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	9/0/1951
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	None
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Phillips 66 Co. Houston Chemical
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	1/25/1999
Last Update Date	1/25/1999

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523106

WRD Exp. (GW)
April 1966

Well No. LJ-65-23-106

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

MASTER CARD

Record by C.W. BONNET / B. PETITT 9-20-50 — Source of data FILE — Date 8-28-68 — Map PASADENA 1955 1:24000

State TEXAS 48 — County (or town) HARRIS LJ

Latitude: 29 43 27 N — Longitude: 095 13 29 — Sequential number: 1

Lat-long accuracy: 1 — T. ___ S, R ___ W, Sec ___, ___ ¼, ___ ¼, ___ ¼ ___ B & M

Local well number: LJ-65-23-106 — Other number: C-66

Local use: — Owner or name: HOUSTON LIGHT + POWER CO. #5

Owner or name: H L E P CO — Address: DEEPWATER PLANT.

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist — N

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other — N

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed — W

DATA AVAILABLE: Well data ___ Freq. W/L meas.: 1951 meas. by owner ___ Field aquifer char. ___

Hyd. lab. data: ___

Qual. water data; type: ___

Freq. sampling: ___ Pumpage inventory: yes no, period: ___

Aperture cards: ___ yes

Log data: E-LOG CC-32 — E

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD — Depth well: 940 ft 940 — Meas. rept accuracy REPT. — 3

Depth cased (first perf.): 638 ft 638 — Casing type: S; Diam 18-10¾ in 18

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) other — G

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other — H

Date Drilled: 1-1949 949 — Pump intake setting: 350' ft 350

Driller: LAYNE-TEXAS Co. (name), HOUSTON, TEXAS (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other — T — Deep Shallow — D

Power (type): diesel, elec, nat gas, gasoline, hand, LP gas, wind; H.P. 75 — V — Trans. or meter no. ___

Descrip. MP ___ ft above below LSD. Alt. MP ___

Alt. LSD: 18 18 — Accuracy (source): TOPO 5' — 3

Water Level — ft above below MP; Ft above below LSD ___ — Accuracy: ___

Date meas: 1-49 149 — Yield: 678 gpm 678 — Method determined ___

Drawdown: 25 ft 25 — Accuracy: Rept. 3 — Pumping period — hrs ___

QUALITY OF WATER DATA: Iron ___ ppm — Sulfate ___ ppm — Chloride ___ ppm — Hard. ___ ppm

Sp. Conduct ___ K x 10^6 — Temp. ___ °F — Date sampled ___

Taste, color, etc. ___

Well No. LJ-65-23-106

Well No. LJ-65-23-106

Latitude-longitude 29, 43, 27 (S) 95, 13, 29
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) Physiographic Province: COASTAL PLAIN [03] (20–21) Section: _____

_____ [F] (22) Drainage Basin: _____ [S1R] (23–25) Subbasin: _____ (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat _____ (27)

MAJOR AQUIFER: _____ system, _____ series [T] (28–29) _____ aquifer, formation, group [E] (30–31)

Lithology: _____ (32–33) Origin: _____ (34) Aquifer Thickness: _____ ft

(35–37) Length of well open to: 99 ft [99] (38–40) Depth to top of: _____ ft (41–43)

MINOR AQUIFER: _____ system, _____ series (44–45) _____ aquifer, formation, group (46–47)

Lithology: _____ (48–49) Origin: _____ (50) Aquifer Thickness: _____ ft

(51–53) Length of well open to: ~~99~~ ft [~~99~~] (54–56) Depth to top of: _____ ft (57–59)

* Intervals Screened: _____

Depth to consolidated rock: _____ ft (60–63) Source of data: _____ (64)

Depth to basement: _____ ft (65–68) Source of data: _____ (69)

Surficial material: _____ (70–71) Infiltration characteristics: _____ (72)

Coefficient Trans: _____ gpd/ft (73–75) Coefficient Storage: _____ (76–78)

Coefficient Perm: _____ gpd/ft^2; Spec cap: _____ gpm/ft; Number of geologic cards: _____ (79)

* 638 – 661 .021 GA.
678 – 805 .021 GA.
844 – 860 .021 GA.
878 – 900 .018 GA.
908 – 931 .018 GA.
.99

UNDERREAMED 30"

530' – 18" CSG,

NIPPLE + BACK PRESSURE VALVE.

Well No. LJ-65-23-106

GPO 857-700

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-106

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523106
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.7244444
Latitude (degrees minutes seconds)	29° 43' 28" N
Longitude (decimal degrees)	-95.225
Longitude (degrees minutes seconds)	095° 13' 30" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	18
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	940
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1949
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Historical
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Houston Light. & Power Deepwater Plant
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	294327095132901
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	2/13/1997
Last Update Date	5/7/2021

Remarks	99 ft of screen between 638 and 931ft. Reported yield 678 gpm with 25 ft drawdown when drilled. Well 5.

Casing - No Data

Well Tests - No Data

Lithology - No Data

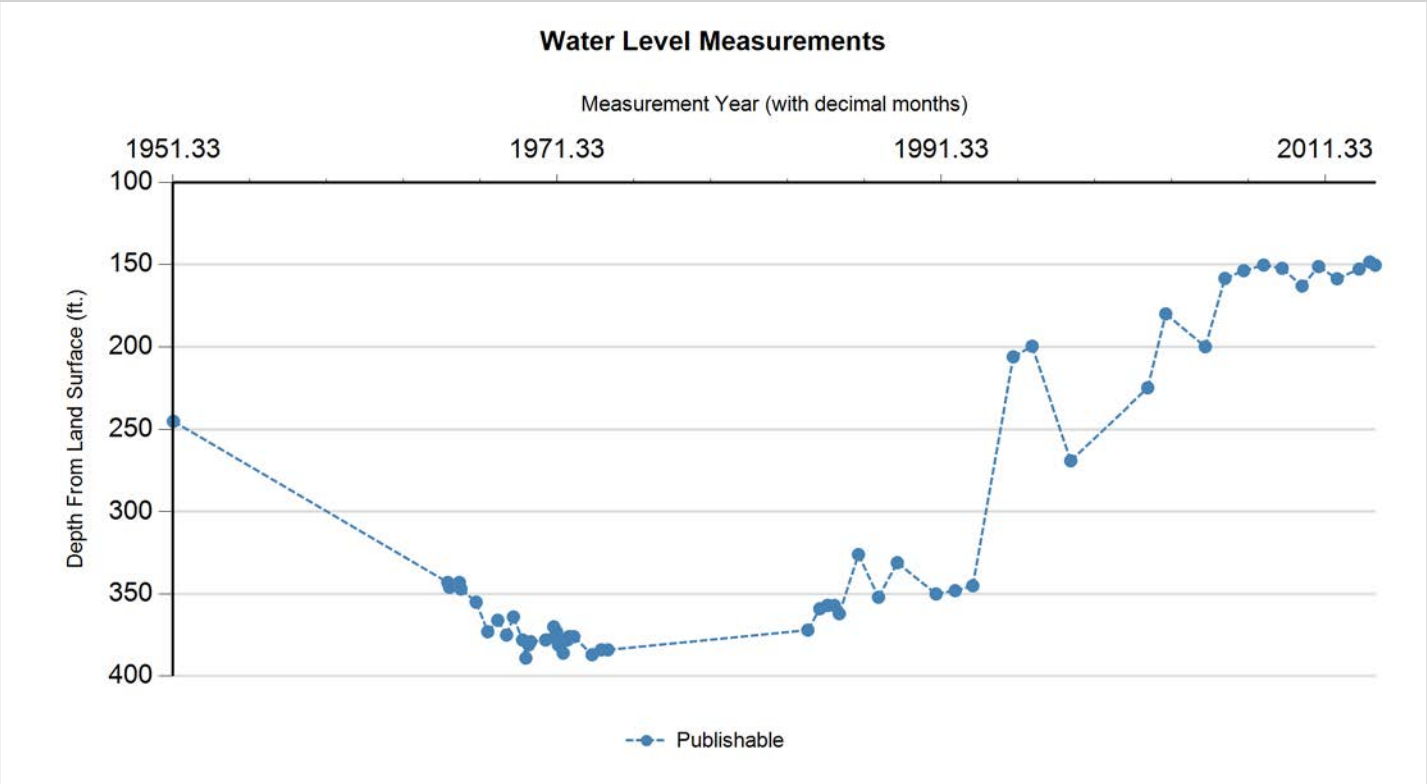
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	5/11/1951		245		-227	1	Other or Source of Measurement Unknown	Unknown		
P	8/25/1965		343	98.00	-325	1	Registered Water Well Driller	Air Line		
P	9/29/1965		346	3.00	-328	1	Registered Water Well Driller	Air Line		
P	3/30/1966		343	(3.00)	-325	1	Registered Water Well Driller	Air Line		
P	4/30/1966		347	4.00	-329	1	Registered Water Well Driller	Air Line		
P	2/14/1967		355	8.00	-337	1	Registered Water Well Driller	Air Line		
P	9/25/1967		373	18.00	-355	1	Registered Water Well Driller	Air Line		
P	3/29/1968		366	(7.00)	-348	1	Registered Water Well Driller	Air Line		
P	9/18/1968		375	9.00	-357	1	Registered Water Well Driller	Air Line		
P	1/22/1969		364	(11.00)	-346	1	Registered Water Well Driller	Air Line		
P	7/16/1969		378	14.00	-360	1	Registered Water Well Driller	Air Line		
P	9/18/1969		389	11.00	-371	1	Registered Water Well Driller	Air Line		
P	11/12/1969		381	(8.00)	-363	1	Registered Water Well Driller	Air Line		
P	12/18/1969		379	(2.00)	-361	1	Registered Water Well Driller	Air Line		
P	9/30/1970		378	(1.00)	-360	1	Private Firm or Industry	Air Line		
P	1/0/1971		370	(8.00)	-352	1	Private Firm or Industry	Air Line		
P	3/24/1971		377	7.00	-359	1	Private Firm or Industry	Air Line		
P	4/22/1971		373	(4.00)	-355	1	Private Firm or Industry	Air Line		
P	5/27/1971		381	8.00	-363	1	Private Firm or Industry	Air Line		
P	7/0/1971		386	5.00	-368	1	Private Firm or Industry	Air Line		
P	10/0/1971		377	(9.00)	-359	1	Private Firm or Industry	Air Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	11/18/1971		378	1.00	-360	1	Private Firm or Industry	Air Line		
P	12/17/1971		376	(2.00)	-358	1	Private Firm or Industry	Air Line		
P	3/16/1972		376	0.00	-358	1	Private Firm or Industry	Air Line		
P	2/27/1973		387	11.00	-369	1	Private Firm or Industry	Air Line		
P	8/21/1973		384	(3.00)	-366	1	Private Firm or Industry	Air Line		
P	11/0/1973		384	0.00	-366	1	Private Firm or Industry	Air Line		
P	5/23/1984		372	(12.00)	-354	1	U.S. Geological Survey	Air Line		
P	1/5/1985		359	(13.00)	-341	1	U.S. Geological Survey	Air Line		
P	5/29/1985		357	(2.00)	-339	1	U.S. Geological Survey	Air Line		
P	6/10/1985		357	0.00	-339	1	U.S. Geological Survey	Air Line		
P	10/10/1985		357	0.00	-339	1	U.S. Geological Survey	Air Line		
P	1/10/1986		362	5.00	-344	1	U.S. Geological Survey	Air Line		
P	1/9/1987		326	(36.00)	-308	1	U.S. Geological Survey	Unknown		
P	1/25/1988		352	26.00	-334	1	U.S. Geological Survey	Unknown		
P	1/17/1989		331	(21.00)	-313	1	U.S. Geological Survey	Unknown		
P	1/24/1991		350	19.00	-332	1	U.S. Geological Survey	Steel Tape		
P	1/22/1992		348	(2.00)	-330	1	U.S. Geological Survey	Steel Tape		
P	12/28/1992		345	(3.00)	-327	1	U.S. Geological Survey	Steel Tape		
P	1/31/1995		206.15	(138.85)	-188.15	1	U.S. Geological Survey	Steel Tape		
P	1/25/1996		199.68	(6.47)	-181.68	1	U.S. Geological Survey	Steel Tape		
P	1/28/1998		269	69.32	-251	1	U.S. Geological Survey	Unknown		
P	1/31/2002		225	(44.00)	-207	1	U.S. Geological Survey	Unknown		
P	1/9/2003		180	(45.00)	-162	1	U.S. Geological Survey	Steel Tape		
P	1/31/2005		200	20.00	-182	1	U.S. Geological Survey	Unknown		
P	2/8/2006		158.44	(41.56)	-140.44	1	U.S. Geological Survey	Steel Tape		
P	1/31/2007		153.74	(4.70)	-135.74	1	U.S. Geological Survey	Steel Tape		
P	2/14/2008		150.34	(3.40)	-132.34	1	U.S. Geological Survey	Steel Tape		
P	1/30/2009		152.3	1.96	-134.3	1	U.S. Geological Survey	Steel Tape		
P	2/15/2010		163.08	10.78	-145.08	1	U.S. Geological Survey	Steel Tape		
P	12/28/2010		151.25	(11.83)	-133.25	1	U.S. Geological Survey	Steel Tape		
P	12/16/2011		158.68	7.43	-140.68	1	U.S. Geological Survey	Steel Tape		
P	2/4/2013		152.74	(5.94)	-134.74	1	U.S. Geological Survey	Steel Tape		
P	8/27/2013		148.44	(4.30)	-130.44	1	U.S. Geological Survey	Steel Tape		
P	12/10/2013		150.42	1.98	-132.42	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523124

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 23 124 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 43 06 Longitude - 95 12 52 Source of Coords - 1

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Champion Papers Driller - Layne Texas

Address _____ Tenant/Oper. _____
Date Drilled - / /1937 Depth - 1,937 ft. Source of Depth - Altitude - 28 ft. Source of Alt. -
Aquifer - 121EVGL EVANGELINE AQUIFER Well Type - W User -

WELL CONSTRUCTION Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

| Casing or Blank Pipe (C)
| Well Screen or Slotted Zone (
| Open Hole (O)
| Cemented from_____to_____
| Diam. (in.) Setting(feet) From To

LIFT DATA - Pump Mfr. _____ Type - TURBINE PUMP No. Stages ____

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower - 250

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- INDUSTRIAL Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- M Quality- Y Logs- Other Data- AC

WATER LEVELS Date- 01/17/1937 Measurement- -42.00
Date- / / Measurement-

Recorded By _____ Date Record Collected or Updated- / /

Reporting Agency -
REMARKS -
363 ft of screen between 1393 and
1933 ft. Reported yield 3030 gpm
with 119 ft drawdown when drilled.
Test hole drilled to 1939 ft.
Well A-3. Aquifer test data in
TWDB R-98.

County Harris Lat. 29°43'07" Long. 95°12'52"

Date July 3, 1939 Well No. LJ-65-23-124

Aquifer Gulf Coast sands Pre-Test Water Level 220.0

Discharge 2,970 Specific Capacity 28.9 (2 days)

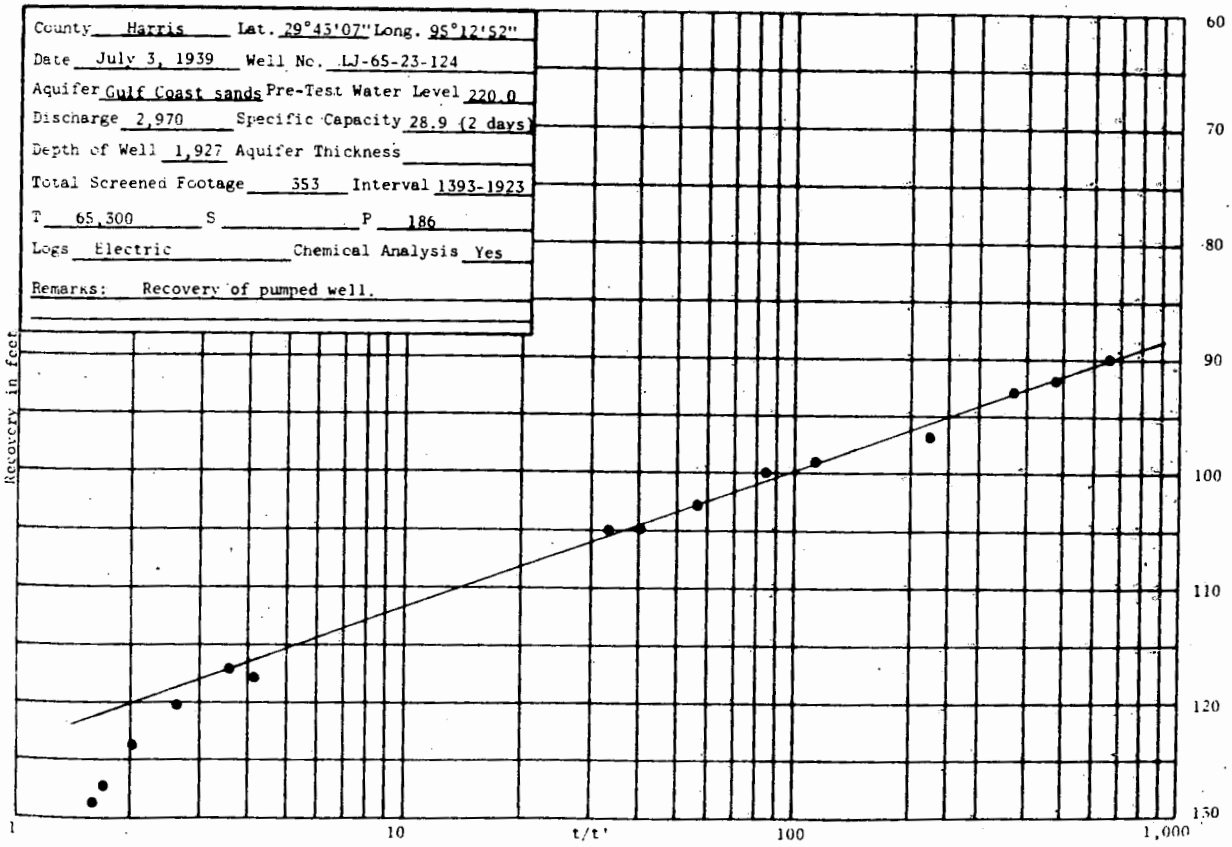
Depth of Well 1,927 Aquifer Thickness

Total Screened Footage 353 Interval 1393-1923

T 65,300 S P 186

Logs Electric Chemical Analysis Yes

Remarks: Recovery of pumped well.



Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-124

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523124
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.718333
Latitude (degrees minutes seconds)	29° 43' 06" N
Longitude (decimal degrees)	-95.214445
Longitude (degrees minutes seconds)	095° 12' 52" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	28
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1927
Well Depth Source	Another Government Agency
Drilling Start Date	
Drilling End Date	0/0/1937
Drilling Method	
Borehole Completion	Perforated or Slotted

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Champion Papers
Driller	Layne Texas
Other Data Available	Aquifer Test
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	Champion Paper Mill well A-3
Other Well Number	Historical Id 1137
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	7/3/1939
Last Update Date	4/28/2011

Remarks	Screened 353 feet between 1393 and 1923 feet. Reported yield 2970 GPM with 102.7 feet recovery in 1939. Specific capacity 28.9 GPM/ft. Aquifer test results in TWDB R-98. No test data in TWDB files.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

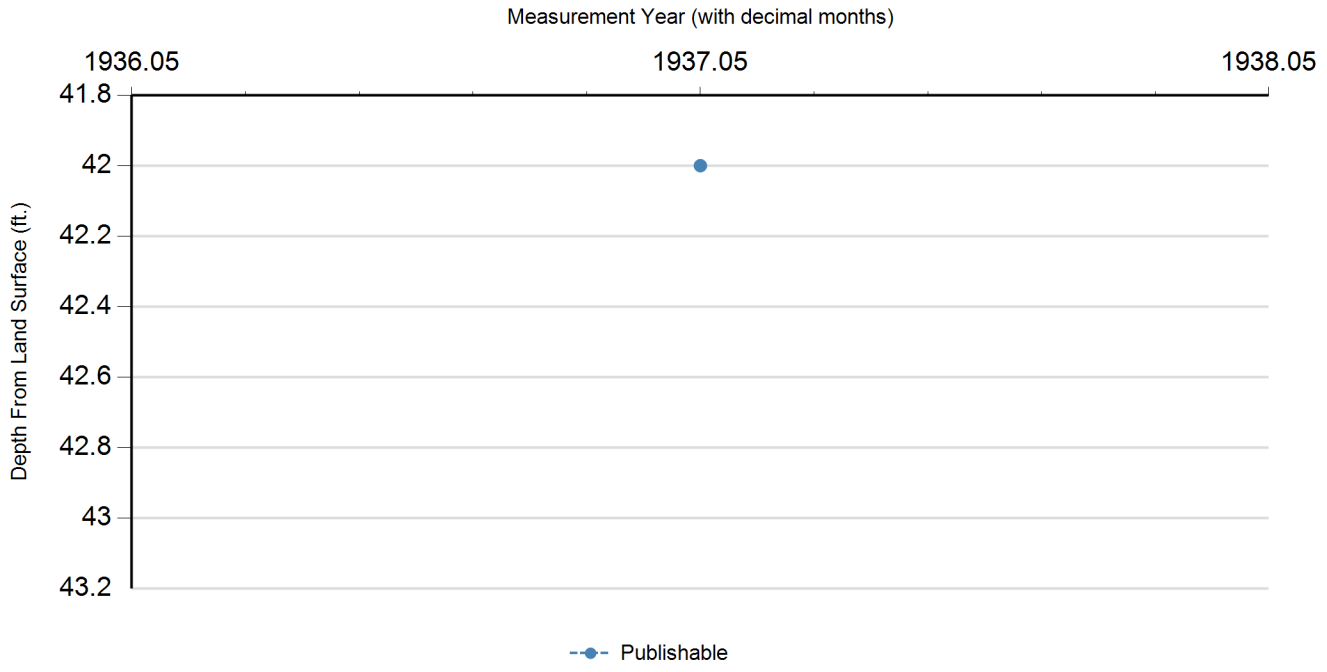
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/17/1937		42		-14	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 7/7/1939 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		355.64	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		434	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		63	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00929	SODIUM, TOTAL (MG/L AS NA)		198	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		2	mg/L as SO4	

Water Quality Analysis

Sample Date: 2/19/1941 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		375.3	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		458	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		82	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		22	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		216	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		1	mg/L as SO4	

Water Quality Analysis

Sample Date: 1/13/1943 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		235.25	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		287	mg/L	
00910	CALCIUM (MG/L)		9	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		40	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		13	mg/L as CACO3	
00920	MAGNESIUM (MG/L)		2	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		4.09		
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		9.89		
00932	SODIUM, CALCULATED, PERCENT		89	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		126	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		12	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		330	mg/L	

Water Quality Analysis

Sample Date: 9/12/1943 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		411.48	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		502	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		94	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		45	mg/L as CACO3	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1000	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		1	mg/L as SO4	

Water Quality Analysis

Sample Date: 6/22/1945 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		87	mg/L	

Water Quality Analysis

Sample Date: 2/10/1947 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		80	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		27	mg/L as CACO3	

Water Quality Analysis

Sample Date: 2/11/1949 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		360.66	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		440	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		82	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		918	MICR	

Water Quality Analysis

Sample Date: 2/6/1950 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		434	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		80	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.6	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		887	MICR	

Water Quality Analysis

Sample Date: 3/14/1951 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		347.54	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		424	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		78	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		22	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		887	MICR	

Water Quality Analysis

Sample Date: 1/28/1952 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		443	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		81	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.4	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		890	MICR	

Water Quality Analysis

Sample Date: 2/6/1953 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		439	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		82	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		870	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		31	C	

Water Quality Analysis

Sample Date: 3/12/1954 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		439	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		83	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		885	MICR	

Water Quality Analysis

Sample Date: 2/0/1956 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		495	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		21	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.7	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1080	MICR	

Water Quality Analysis

Sample Date: 3/0/1957 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		405.74	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		495	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		113	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		23	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1080	MICR	

Water Quality Analysis

Sample Date: 3/0/1958 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		503	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		112	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		21	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.9	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1070	MICR	

Water Quality Analysis

Sample Date: 4/15/1959 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		486	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		112	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.5	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1080	MICR	

Water Quality Analysis

Sample Date: 3/22/1960 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		406.56	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		496	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		111	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		21	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.1	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1070	MICR	

Water Quality Analysis

Sample Date: 4/18/1961 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		494	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		108	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.4	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1080	MICR	

Water Quality Analysis

Sample Date: 4/20/1962 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		406.56	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		496	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		110	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1070	MICR	

Water Quality Analysis

Sample Date: 5/1/1963 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		498	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		110	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		17	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.4	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1060	MICR	

Water Quality Analysis

Sample Date: 3/31/1964 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		409.84	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		500	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		112	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		21	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1090	MICR	

Water Quality Analysis

Sample Date: 4/5/1965 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		512	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		110	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		22	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.4	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1070	MICR	

Water Quality Analysis

Sample Date: 4/1/1966 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		413.11	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		504	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		109	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1110	MICR	

Water Quality Analysis

Sample Date: 4/4/1967 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		406.56	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		496	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		111	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		22	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1060	MICR	

Water Quality Analysis

Sample Date: 4/5/1968 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		411.48	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		502	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		113	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		22	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1090	MICR	

Water Quality Analysis

Sample Date: 4/11/1969 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		400	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		488	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		108	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		24	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.9	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1060	MICR	

Water Quality Analysis

Sample Date: 5/8/1970 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		393.44	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		480	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		125	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1050	MICR	

Water Quality Analysis

Sample Date: 4/7/1971 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		393.44	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		480	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		120	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1110	MICR	

Water Quality Analysis

Sample Date: 4/4/1972 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		395.08	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		482	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		110	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1090	MICR	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523128

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 23 128 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 43 10 Longitude - 95 13 50 Source of Coords - 3

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Lyondeel-Citgo Refin. Driller - Layne Texas

Address _____ Tenant/Oper. _____
Date Drilled - / /1934 Depth - 1,701 ft. Source of Depth - D Altitude - 20 ft. Source of Alt. - M
Aquifer - 121EVGL EVANGELINE AQUIFER Well Type - W User - 40080

WELL CONSTRUCTION
Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (
Open Hole (O)
Cemented from_____to_____

Diam. (in.)	Setting(feet) From	To
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		

LIFT DATA - Pump Mfr. _____ Type - TURBINE PUMP No. Stages ____
Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.
Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower - 150
YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____
PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM
Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft
QUALITY (Remarks- _____
WATER USE Primary- INDUSTRIAL Secondary- _____ Tertiary- _____
OTHER DATA AVAILAIBLE Water Levels- M Quality- Y Logs- Other Data-
WATER LEVELS Date- 09/00/1934 Measurement- -53.00
Date- 01/29/1940 Measurement- -106.00
Recorded By _____ Date Record Collected or Updated- 02/04/1999

Reporting Agency -
REMARKS -
232 ft of screen between 1358 and
1697 ft. Reported yield 1525 gpm
Feb.1940. Test hole drilled to 1705
ft. Formerly Sinclair Refining Co.
Well 8.

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-128

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523128
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.719722
Latitude (degrees minutes seconds)	29° 43' 11" N
Longitude (decimal degrees)	-95.230833
Longitude (degrees minutes seconds)	095° 13' 51" W
Coordinate Source	+/- 10 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	20
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1701
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	0/0/1934
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Lyondeel-Citgo Refin.
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1011570A
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	2/4/1999
Last Update Date	2/4/1999

Remarks	232 ft of screen between 1358 and 1697 ft. Reported yield 1525 gpm Feb.1940. Test hole drilled to 1705 ft. Formerly Sinclair Refining Co. Well 8.

Casing - No Data

Well Tests - No Data

Lithology - No Data

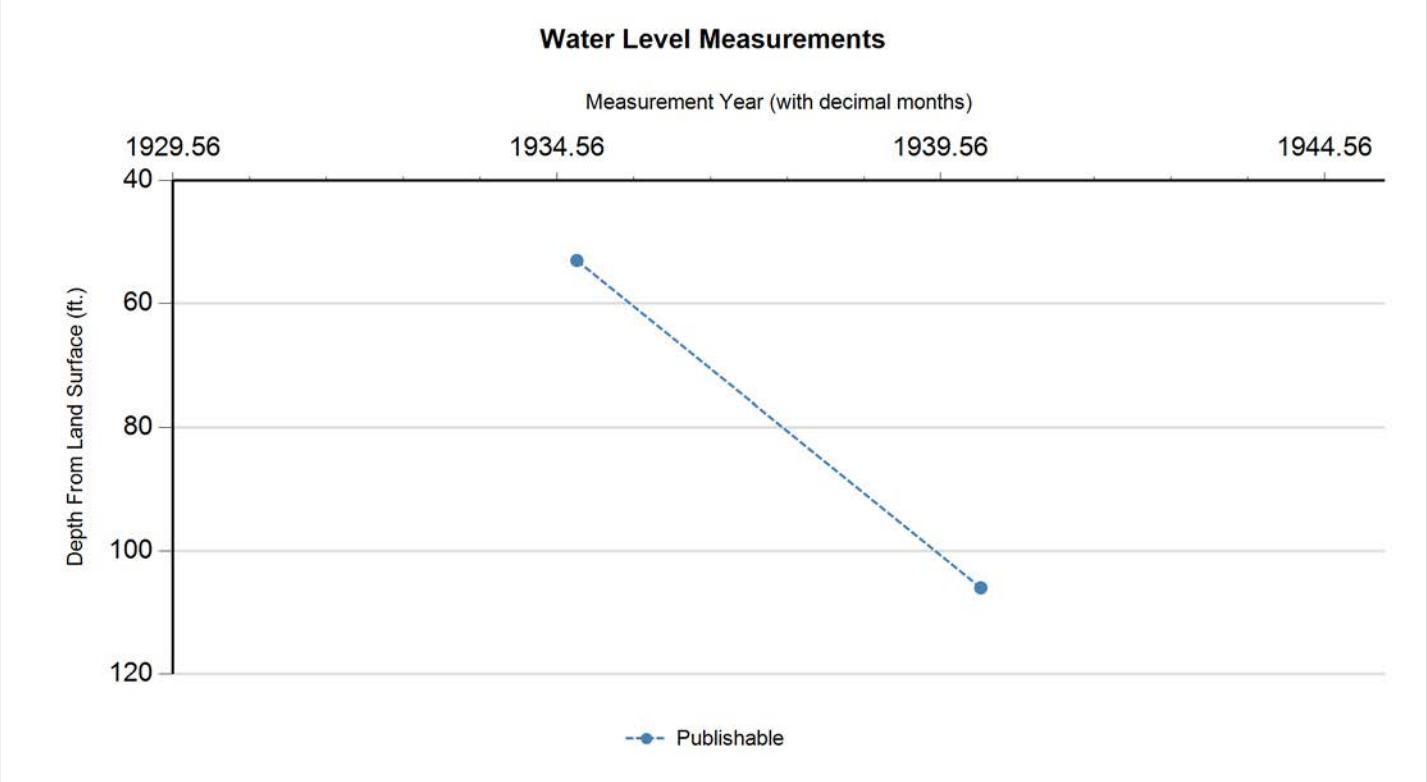
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/0/1934		53		-33	1	Registered Water Well Driller	Unknown		
P	1/29/1940		106	53.00	-86	1	Texas Water Development Board	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 1/18/1939 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		322.04	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		393	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		36	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		1.2	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		9	mg/L as CACO3	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0.1	mg/L as NO3	
00929	SODIUM, TOTAL (MG/L AS NA)		169	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		1	mg/L as SO4	

Water Quality Analysis

Sample Date: 8/5/1939 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		320.4	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		391	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		38	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		1.2	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		15	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		167	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		1	mg/L as SO4	

Water Quality Analysis

Sample Date: 5/24/1940 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		322.86	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		394	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		38	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		15	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		167	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		1	mg/L as SO4	

Water Quality Analysis

Sample Date: 2/19/1941 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		321.22	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		392	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		36	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		21	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		163	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		2	mg/L as SO4	

Water Quality Analysis

Sample Date: 1/29/1942 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		326.96	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		399	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		37	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		22	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		162	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		2	mg/L as SO4	

Water Quality Analysis

Sample Date: 1/13/1943 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		314.75	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		384	mg/L	
00910	CALCIUM (MG/L)		92	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		40	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		31	mg/L as CACO3	
00920	MAGNESIUM (MG/L)		2	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		1.53		
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		3.81		
00932	SODIUM, CALCULATED, PERCENT		55	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		135	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		2	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		459	mg/L	

Water Quality Analysis

Sample Date: 9/10/1943 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		319.67	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		390	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		38	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		48	mg/L as CACO3	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		688	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		1	mg/L as SO4	

Water Quality Analysis

Sample Date: 6/25/1945 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		42	mg/L	

Water Quality Analysis

Sample Date: 2/10/1947 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		42	mg/L	

Water Quality Analysis

Sample Date: 2/8/1949 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		301.64	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		368	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		39	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		12	mg/L as CACO3	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		665	MICR	

Water Quality Analysis

Sample Date: 2/24/1950 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		367	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		35	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		12	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.6	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		652	MICR	

Water Quality Analysis

Sample Date: 3/14/1951 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		292.54	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		357	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		56	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		27	mg/L as CACO3	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		719	MICR	

Water Quality Analysis

Sample Date: 5/10/1951 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		358	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		36	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		15	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.7	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		635	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		2	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		31	C	

Water Quality Analysis

Sample Date: 2/18/1952 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		343	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		13	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.4	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		639	MICR	

Water Quality Analysis

Sample Date: 2/6/1953 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		366	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		35	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		15	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.7	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		639	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		30	C	

Water Quality Analysis

Sample Date: 3/3/1955 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		30	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		604	MICR	

Water Quality Analysis

Sample Date: 7/20/1962 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		275.41	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		336	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		33	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		11	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		594	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		31	C	

Water Quality Analysis

Sample Date: 3/18/1964 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		280.33	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		342	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		28	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		12	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.1	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		602	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		31	C	

Water Quality Analysis

Sample Date: 5/4/1970 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		278.69	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		340	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		32	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		13	mg/L as CACO3	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		623	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		31	C	

Water Quality Analysis

Sample Date: 4/7/1971 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		275.41	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		336	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		31	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		16	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		639	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		31	C	

Water Quality Analysis

Sample Date: 4/28/1975 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		277.05	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		338	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		36	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		627	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		1	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		37	C	

Water Quality Analysis

Sample Date: 6/26/1978 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		350	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		38	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.3	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		640	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		0	mg/L as SO4	

Water Quality Analysis

Sample Date: 3/7/1979 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		350	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		38	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.3	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		651	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		2	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		28	C	

Water Quality Analysis

Sample Date: 5/10/1979 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		295.08	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		360	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00400	PH (STANDARD UNITS), FIELD		7.9	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		656	MICR	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523235

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 23 235 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 43 07 Longitude - 95 12 06 Source of Coords - 2

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Champion Papers Driller - Layne Texas

Address _____ Tenant/Oper. _____
Date Drilled - / /1937 Depth - 960 ft. Source of Depth - Altitude - 34 ft. Source of Alt. -
Aquifer - 121EVGL EVANGELINE AQUIFER Well Type - W User -

WELL CONSTRUCTION
Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

| Casing or Blank Pipe (C)
| Well Screen or Slotted Zone (
| Open Hole (O)
| Cemented from_____to_____
| Diam. (in.) Setting(feet) From To

LIFT DATA - Pump Mfr. _____ Type - TURBINE PUMP No. Stages ____

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower - 250

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- INDUSTRIAL Secondary- _____ Tertiary- _____

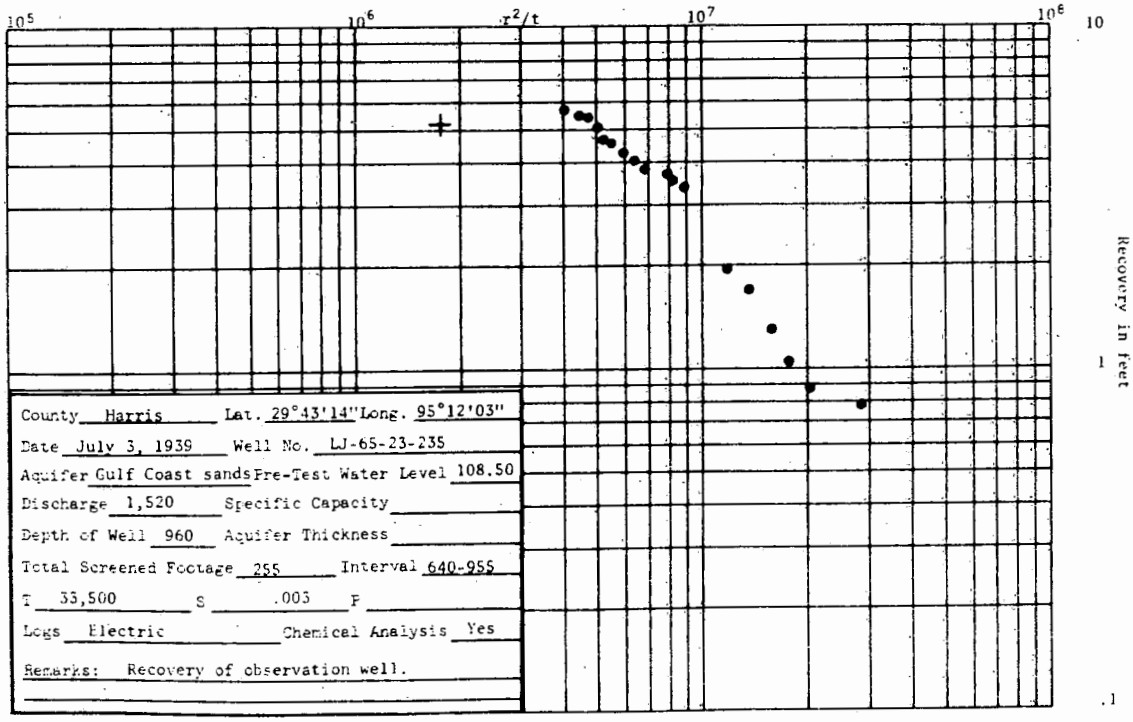
OTHER DATA AVAILAIBLE Water Levels- M Quality- Y Logs- Other Data-

WATER LEVELS Date- 03/05/1937 Measurement- -67.00
Date- / / Measurement-

Recorded By _____ Date Record Collected or Updated- / /

Reporting Agency -
REMARKS -
255 ft of screen between 640 and
955 ft. Reported yield 2170 gpm
with 115 ft drawdown when drilled.
Test hole drilled to 1947 ft.
Well B-1.

Aquifer - 121EVGL
Well No. - 65 23 235



County Harris Lat. 29°43'14" Long. 95°12'03"

Date July 3, 1939 Well No. LJ-65-23-235

Aquifer Gulf Coast sands Pre-Test Water Level 108.50

Discharge 1,520 Specific Capacity

Depth of Well 960 Aquifer Thickness

Total Screened Footage 255 Interval 640-955

T 33,500 S .003 P

Logs Electric Chemical Analysis Yes

Remarks: Recovery of observation well.

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-235

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523235
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.718611
Latitude (degrees minutes seconds)	29° 43' 07" N
Longitude (decimal degrees)	-95.201667
Longitude (degrees minutes seconds)	095° 12' 06" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	34
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	960
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1937
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Champion Papers
Driller	Layne Texas
Other Data Available	Aquifer Test
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	Champion Paper Mill well B-1
Other Well Number	Historical Id 1131
Previous State Well Number	
Reporting Agency	
Created Date	8/4/2006
Last Update Date	8/4/2006

Remarks	Screened 255 feet between 640 and 955 feet. Observation well for aquifer test in TWDB R-98. No test data in TWDB files.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	3/5/1937		67		-33	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 7/8/1939 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		207.32	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		253	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		37	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		21	mg/L as CACO3	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00929	SODIUM, TOTAL (MG/L AS NA)		114	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		10	mg/L as SO4	

Water Quality Analysis

Sample Date: 7/8/1939 **Sample Time:** 0000 **Sample Number:** 2 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		196.67	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		240.01	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		36	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		27	mg/L as CACO3	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00929	SODIUM, TOTAL (MG/L AS NA)		106	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		10	mg/L as SO4	

Water Quality Analysis

Sample Date: 2/19/1941 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		205.68	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		251	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		34	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		36	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		106	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		12	mg/L as SO4	

Water Quality Analysis

Sample Date: 2/19/1941 **Sample Time:** 0000 **Sample Number:** 2 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		332.69	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		406	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		62	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		1.3	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		187	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		1	mg/L as SO4	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523237

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 65 23 237 Previous Well Number - County - Harris 201
River Basin - San Jacinto River - 10 Zone - 1 Latitude - 29 43 11 Longitude - 95 12 05 Source of Coords - 2

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Champion Papers Driller - Layne Texas

Address _____ Tenant/Oper. _____
Date Drilled - / /1937 Depth - 1,399 ft. Source of Depth - Altitude - 30 ft. Source of Alt. -
Aquifer - 121EVGL EVANGELINE AQUIFER Well Type - W User -

WELL CONSTRUCTION Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

| Casing or Blank Pipe (C)
| Well Screen or Slotted Zone (
| Open Hole (O)
| Cemented from_____to_____
| Diam. (in.) Setting(feet) From To

LIFT DATA - Pump Mfr. _____ Type - NONE No. Stages ____

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - Horsepower -

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- UNUSED Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- M Quality- Y Logs- Other Data-

WATER LEVELS Date- 02/10/1937 Measurement- -174.00
Date- / / Measurement-

Recorded By _____ Date Record Collected or Updated- / /

Reporting Agency -
REMARKS -
280 ft of screen between 1009 and
1395 ft. Reported yield 2475 gpm
when drilled. Test hole drilled to
1403 ft. Well B-3.

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-237

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523237
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.719722
Latitude (degrees minutes seconds)	29° 43' 11" N
Longitude (decimal degrees)	-95.201389
Longitude (degrees minutes seconds)	095° 12' 05" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	30
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1399
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1937
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Champion Papers
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	Champion Paper Mill well B-3
Other Well Number	Historical Id 1133
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	280 ft of screen between 1009 and 1395 ft. Reported yield 2475 gpm when drilled. Test hole drilled to 1403 ft. Well B-3.

Casing - No Data

Well Tests - No Data

Lithology - No Data

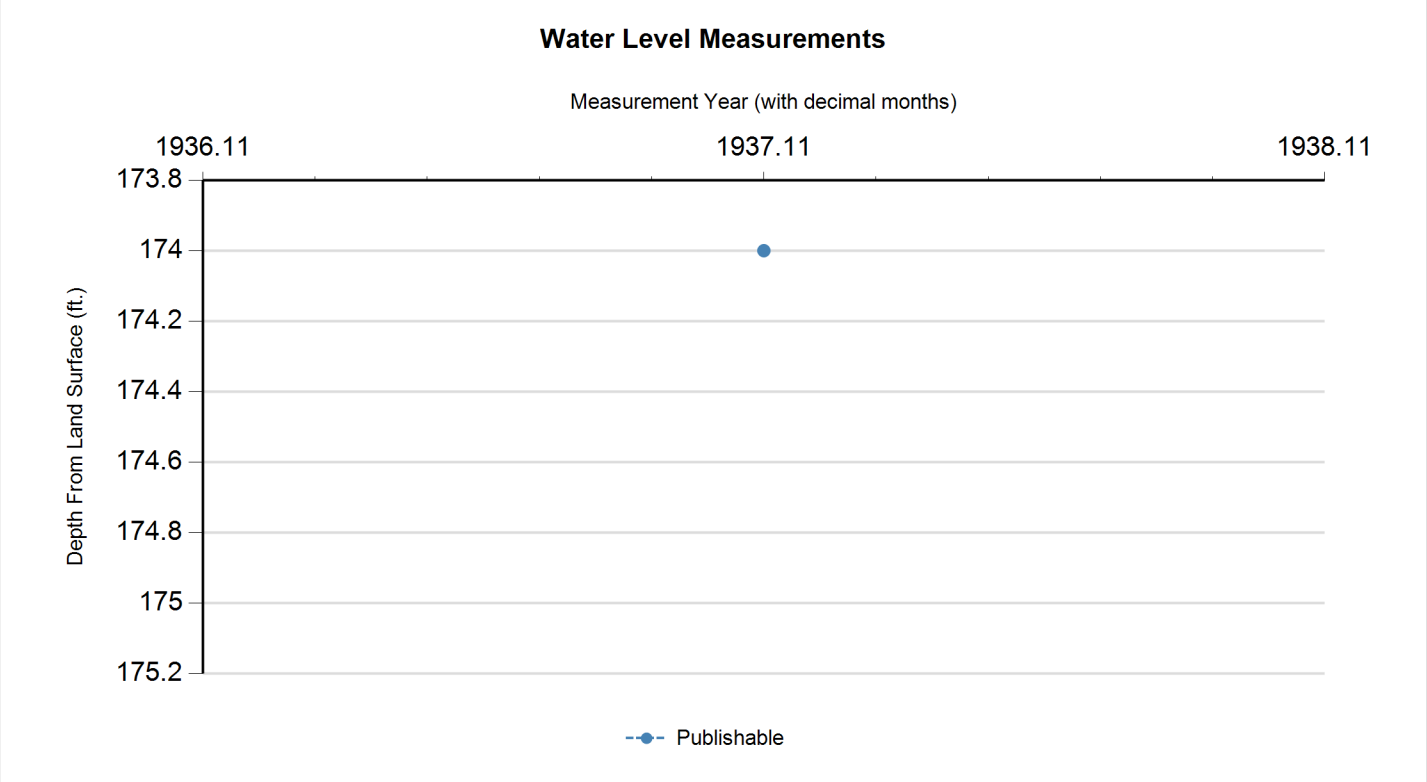
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/10/1937		174		-144	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 2/19/1941 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		267.14	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		326	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		54	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		14	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		155	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		7	mg/L as SO4	

Water Quality Analysis

Sample Date: 9/12/1943 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		279.51	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		341	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		61	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		39	mg/L as CACO3	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		723	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		8	mg/L as SO4	

Water Quality Analysis

Sample Date: 2/10/1947 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		68	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		21	mg/L as CACO3	

Water Quality Analysis

Sample Date: 2/11/1949 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		285.25	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		348	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		71	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		17	mg/L as CACO3	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		740	MICR	

Water Quality Analysis

Sample Date: 2/6/1950 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		330	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		67	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		14	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.6	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		716	MICR	

Water Quality Analysis

Sample Date: 3/14/1951 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		259.84	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		317	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		68	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		712	MICR	

Water Quality Analysis

Sample Date: 1/28/1952 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		191.8	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		234	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		34	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		38	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		496	MICR	

Water Quality Analysis

Sample Date: 2/26/1952 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		331	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		68	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		17	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.6	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		733	MICR	

Water Quality Analysis

Sample Date: 2/6/1953 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		337	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		87	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		20	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.7	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		767	MICR	
00010	TEMPERATURE, WATER (CELSIUS)		28	C	

Water Quality Analysis

Sample Date: 3/12/1954 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		332	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		73	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		14	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		721	MICR	

Water Quality Analysis

Sample Date: 3/7/1955 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		83	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		794	MICR	

Water Quality Analysis

Sample Date: 2/0/1956 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		347	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		88	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		18	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.6	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		803	MICR	

Water Quality Analysis

Sample Date: 3/0/1957 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		408	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		155	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		22	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.5	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1080	MICR	

Water Quality Analysis

Sample Date: 3/21/1958 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		344	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		81	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		21	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		772	MICR	

Water Quality Analysis

Sample Date: 4/15/1959 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		368.85	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		450	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		201	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		32	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1300	MICR	

Water Quality Analysis

Sample Date: 3/23/1960 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		361.48	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		441	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		222	mg/L	
00400	PH (STANDARD UNITS), FIELD		7.9	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1340	MICR	

Water Quality Analysis

Sample Date: 4/18/1961 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		400	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		306	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		44	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.4	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1570	MICR	

Water Quality Analysis

Sample Date: 4/20/1962 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		354.1	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		432	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		201	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		30	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1250	MICR	

Water Quality Analysis

Sample Date: 5/1/1963 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		438	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		232	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		30	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.3	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1630	MICR	

Water Quality Analysis

Sample Date: 4/5/1965 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		372	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		135	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		22	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		8.4	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		976	MICR	

Water Quality Analysis

Sample Date: 4/1/1966 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		296.72	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		362	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		121	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		22	mg/L as CACO3	
00400	PH (STANDARD UNITS), FIELD		7.7	SU	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		940	MICR	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523304

Texas Water Development Board
Well Schedule

State Well Number 6523304 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **Zone** 1 **Latitude** 294351 **Longitude** 950909 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Tenneco Chemical Co.

Driller
Layne Texas

Address _____ **Tenant/Oper.** _____

Date Drilled / /1962 **Depth** 1200 **Source of Depth** **Altitude** 32 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION

Const-Method

Completion

Casing Material Blank

Screen Material Blank

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from_____**to**_____

LIFT DATA - **Pump Mfr. -** **Type -** TURBINE PUMP **No. Stages**

Bowls Diam - **in.** **Setting -** **ft.** **Column Diam. -** **in.**

Motor Mfr. - **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- **GPM** **Pump** **GPM** **Meas.,Rept.,Est.-** **Date-**

WATER USE **Primary -** INDUSTRIAL **Secondary -** blank **Tertiary -** blank

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** Y **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1962
-311

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency

REMARKS -
120 ft of screen between 929 and 1189 ft. Reported yield 1059 gpm with 60 ft drawdown when drilled. Well 1.

Aquifer - 121EVGL **ID -** 15

EVANGELINE AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-304

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523304
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.730833
Latitude (degrees minutes seconds)	29° 43' 51" N
Longitude (decimal degrees)	-95.152501
Longitude (degrees minutes seconds)	095° 09' 09" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	32
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1200
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1962
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Tenneco Chemical Co.
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	120 ft of screen between 929 and 1189 ft. Reported yield 1059 gpm with 60 ft drawdown when drilled. Well 1.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	4/19/1962		311		-279	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 6/6/1962 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		438	mg/L	
00910	CALCIUM (MG/L)		3	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		50	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		12	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		200	ug/L	
00920	MAGNESIUM (MG/L)		1	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.5	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		6.94		
00955	SILICA, DISSOLVED (MG/L AS SI02)		14	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		24.52		
00932	SODIUM, CALCULATED, PERCENT		97	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		192	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		760	MICR	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		475	mg/L	

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WATER WELL NO. 6523307

WRD Exp. (GW)
April 1966

Well No. LJ-65-23-307

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

MASTER CARD

Record by C.W. BONNET WESSELMAN-62 Source of data FILE Date 10-21-68 Map PASADENA 1955 1:24000

State TEXAS 48 County (or town) HARRIS LJ

Latitude: 294458N (deg, min, sec) Longitude: 0950951 (degrees, min, sec) Sequential number: 1

Lat-long accuracy: 1 T. ___ S, R ___ W, Sec ___, ___ ¼, ___ ¼, ___ ¼ ___ B & M

Local well number: LJ-65-23-307 Other number:

Local use: Owner or name: Port of Houston Authority #1

Owner or name: H.C. NAVIGATION Address: Sr. well

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist C

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other INCIDENTALT SHIP LOADING Well abd. 1971 Z

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed ~~W~~ U(1971)

DATA AVAILABLE: Well data ___ Freq. W/L meas.: obs well 1972 Q Field aquifer char. ___

Hyd. lab. data: ___

Qual. water data; type: ___

Freq. sampling: none Pumpage inventory: yes no, period: ___

Aperture cards: ___ yes

Log data: Caliper, Gamma, Gamma-Gamma, Neutron, Temp. CC81

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 675 ft 675 Meas. rept OWNER accuracy 6

Depth cased: (first perf.) 635 ft 635 Casing type: S ; Diam. 6-4 in 6

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) other S

Method Drilled: (A) air rot, (B) hored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other H

Date Drilled: 3-60 960 Pump intake setting: ___ ft

Driller: TEXAS WATER WELLS INC 951 McCARTY, HOUSTON (name, address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other T Deep Shallow D

Power (type): diesel, elec, nat gas, gasoline, hand, LP gas, wind; H.P. 25 V Trans. or meter no.

Descrip. MP ___ ft above below LSD, Alt. MP ___

Alt. LSD: 20 20 Accuracy: (source) TOPO 5' 3

Water Level ___ ft above below MP; Ft above below LSD ___ Accuracy: ___

Date meas: ___ Yield: ___ gpm Method determined ___

Drawdown: ___ ft Accuracy: ___ Pumping period ___ hrs

QUALITY OF WATER DATA: Iron ___ ppm Sulfate ___ ppm Chloride ___ ppm Hard. ___ ppm

Sp. Conduct ___ K x 10^6 Temp. ___ °F Date sampled ___

Taste, color, etc.

Well No. LJ-65-23-307

Well No. LJ-65-23-307

Latitude-longitude 29 44 58 (S) 95 09 51
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) Physiographic Province: COASTAL PLAIN [03] (20–21) Section: _____

[F] (22) Drainage Basin: _____ [51 R] (23–25) Subbasin: _____ (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat _____ (27)

MAJOR AQUIFER: _____ system, _____ series T [8] (28–29) _____ aquifer, formation, group E [S X] (30–31)

Lithology: _____ (32–33) Origin: _____ (34) Aquifer Thickness: _____ ft

(35–37) Length of well open to: 40 ft [40] (38–40) Depth to top of: _____ ft (41–43)

MINOR AQUIFER: _____ system, _____ series (44–45) _____ aquifer, formation, group (46–47)

Lithology: _____ (48–49) Origin: _____ (50) Aquifer Thickness: _____ ft

(51–53) Length of well open to: _____ ft (54–56) Depth to top of: _____ ft (57–59)

Intervals Screened: 635-675'

Depth to consolidated rock: _____ ft (60–63) Source of data: _____ (64)

Depth to basement: _____ ft (65–68) Source of data: _____ (69)

Surficial material: _____ (70–71) Infiltration characteristics: _____ (72)

Coefficient Trans: _____ gpd/ft (73–75) Coefficient Storage: _____ (76–78)

Coefficient Perm: _____ gpd/ft^2; Spec cap: _____ gpm/ft; Number of geologic cards: _____ (79)

CEMENTED - LEAD SEAL AT 409'.

429' - 6" CSG.

Well No. LJ-65-23-307

GPO 857-700

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-307

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523307
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.749722
Latitude (degrees minutes seconds)	29° 44' 59" N
Longitude (decimal degrees)	-95.164445
Longitude (degrees minutes seconds)	095° 09' 52" W
Coordinate Source	+/- 1 Second
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	20
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	675
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1960
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	Historical
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Port of Houston Authority
Driller	Texas Water Wells
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/13/1999
Last Update Date	5/13/1999

Remarks	Screen from 635 to 675 ft. Supplies water for loading ships.

Casing - No Data

Well Tests - No Data

Lithology - No Data

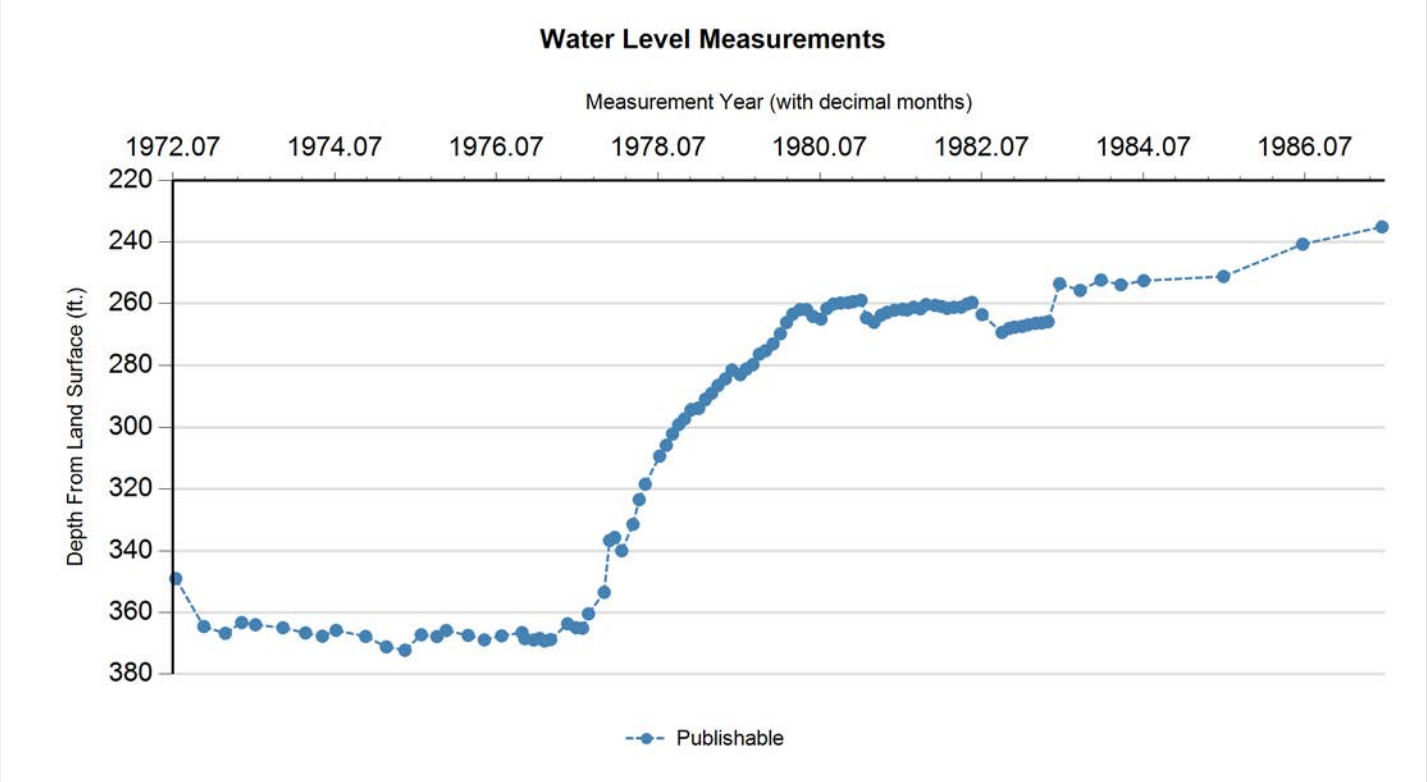
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/7/1972		349		-329	1	U.S. Geological Survey	Air Line		
P	6/14/1972		364.56	15.56	-344.56	1	U.S. Geological Survey	Steel Tape		
P	9/21/1972		366.76	2.20	-346.76	1	U.S. Geological Survey	Steel Tape		
P	12/5/1972		363.26	(3.50)	-343.26	1	U.S. Geological Survey	Steel Tape		
P	2/2/1973		363.99	0.73	-343.99	1	U.S. Geological Survey	Steel Tape		
P	6/6/1973		364.95	0.96	-344.95	1	U.S. Geological Survey	Steel Tape		
P	9/18/1973		366.64	1.69	-346.64	1	U.S. Geological Survey	Steel Tape		
P	12/4/1973		367.68	1.04	-347.68	1	U.S. Geological Survey	Steel Tape		
P	2/1/1974		365.8	(1.88)	-345.8	1	U.S. Geological Survey	Steel Tape		
P	6/14/1974		367.76	1.96	-347.76	1	U.S. Geological Survey	Steel Tape		
P	9/18/1974		371.16	3.40	-351.16	1	U.S. Geological Survey	Steel Tape		
P	12/12/1974		372.25	1.09	-352.25	1	U.S. Geological Survey	Steel Tape		
P	2/20/1975		367.23	(5.02)	-347.23	1	U.S. Geological Survey	Steel Tape		
P	5/1/1975		367.8	0.57	-347.8	1	U.S. Geological Survey	Steel Tape		
P	6/13/1975		365.85	(1.95)	-345.85	1	U.S. Geological Survey	Steel Tape		
P	9/22/1975		367.43	1.58	-347.43	1	U.S. Geological Survey	Steel Tape		
P	12/5/1975		368.88	1.45	-348.88	1	U.S. Geological Survey	Steel Tape		
P	2/18/1976		367.56	(1.32)	-347.56	1	U.S. Geological Survey	Steel Tape		
P	5/20/1976		366.54	(1.02)	-346.54	1	U.S. Geological Survey	Steel Tape		
P	6/3/1976		368.49	1.95	-348.49	1	U.S. Geological Survey	Steel Tape		
P	7/13/1976		368.92	0.43	-348.92	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	8/10/1976		368.42	(0.50)	-348.42	1	U.S. Geological Survey	Steel Tape		
P	9/2/1976		369.24	0.82	-349.24	1	U.S. Geological Survey	Steel Tape		
P	9/29/1976		368.8	(0.44)	-348.8	1	U.S. Geological Survey	Steel Tape		
P	12/16/1976		363.66	(5.14)	-343.66	1	U.S. Geological Survey	Steel Tape		
P	1/19/1977		364.95	1.29	-344.95	1	U.S. Geological Survey	Steel Tape		
P	2/18/1977		365.1	0.15	-345.1	1	U.S. Geological Survey	Steel Tape		
P	3/15/1977		360.45	(4.65)	-340.45	1	U.S. Geological Survey	Steel Tape		
P	5/26/1977		353.47	(6.98)	-333.47	1	U.S. Geological Survey	Steel Tape		
P	6/20/1977		336.65	(16.82)	-316.65	1	U.S. Geological Survey	Steel Tape		
P	7/13/1977		335.64	(1.01)	-315.64	1	U.S. Geological Survey	Steel Tape		
P	8/15/1977		339.97	4.33	-319.97	1	U.S. Geological Survey	Steel Tape		
P	10/6/1977		331.42	(8.55)	-311.42	1	U.S. Geological Survey	Steel Tape		
P	11/4/1977		323.4	(8.02)	-303.4	1	U.S. Geological Survey	Steel Tape		
P	12/1/1977		318.39	(5.01)	-298.39	1	U.S. Geological Survey	Steel Tape		
P	2/1/1978		309.26	(9.13)	-289.26	1	U.S. Geological Survey	Steel Tape		
P	3/1/1978		305.76	(3.50)	-285.76	1	U.S. Geological Survey	Steel Tape		
P	3/29/1978		302.1	(3.66)	-282.1	1	U.S. Geological Survey	Steel Tape		
P	4/27/1978		299.05	(3.05)	-279.05	1	U.S. Geological Survey	Steel Tape		
P	5/23/1978		297.22	(1.83)	-277.22	1	U.S. Geological Survey	Steel Tape		
P	6/22/1978		294.33	(2.89)	-274.33	1	U.S. Geological Survey	Steel Tape		
P	7/27/1978		293.81	(0.52)	-273.81	1	U.S. Geological Survey	Steel Tape		
P	8/28/1978		290.97	(2.84)	-270.97	1	U.S. Geological Survey	Steel Tape		
P	9/26/1978		289.09	(1.88)	-269.09	1	U.S. Geological Survey	Steel Tape		
P	10/25/1978		286.54	(2.55)	-266.54	1	U.S. Geological Survey	Steel Tape		
P	11/28/1978		284.41	(2.13)	-264.41	1	U.S. Geological Survey	Steel Tape		
P	12/28/1978		281.52	(2.89)	-261.52	1	U.S. Geological Survey	Steel Tape		
P	1/30/1979		283.06	1.54	-263.06	1	U.S. Geological Survey	Steel Tape		
P	2/27/1979		281.24	(1.82)	-261.24	1	U.S. Geological Survey	Steel Tape		
P	3/27/1979		279.79	(1.45)	-259.79	1	U.S. Geological Survey	Steel Tape		
P	4/26/1979		276.4	(3.39)	-256.4	1	U.S. Geological Survey	Steel Tape		
P	5/24/1979		275.28	(1.12)	-255.28	1	U.S. Geological Survey	Steel Tape		
P	6/28/1979		273.06	(2.22)	-253.06	1	U.S. Geological Survey	Steel Tape		
P	8/1/1979		269.76	(3.30)	-249.76	1	U.S. Geological Survey	Steel Tape		
P	8/29/1979		266.13	(3.63)	-246.13	1	U.S. Geological Survey	Steel Tape		
P	9/27/1979		263.41	(2.72)	-243.41	1	U.S. Geological Survey	Steel Tape		
P	10/30/1979		261.93	(1.48)	-241.93	1	U.S. Geological Survey	Steel Tape		
P	11/29/1979		261.93	0.00	-241.93	1	U.S. Geological Survey	Steel Tape		
P	12/28/1979		264.13	2.20	-244.13	1	U.S. Geological Survey	Steel Tape		
P	1/29/1980		265.04	0.91	-245.04	1	U.S. Geological Survey	Steel Tape		
P	2/26/1980		261.55	(3.49)	-241.55	1	U.S. Geological Survey	Steel Tape		
P	3/26/1980		260.12	(1.43)	-240.12	1	U.S. Geological Survey	Steel Tape		
P	4/28/1980		259.79	(0.33)	-239.79	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	6/3/1980		259.68	(0.11)	-239.68	1	U.S. Geological Survey	Steel Tape		
P	6/26/1980		259.33	(0.35)	-239.33	1	U.S. Geological Survey	Steel Tape		
P	7/30/1980		258.9	(0.43)	-238.9	1	U.S. Geological Survey	Steel Tape		
P	8/25/1980		264.63	5.73	-244.63	1	U.S. Geological Survey	Steel Tape		
P	9/29/1980		266.06	1.43	-246.06	1	U.S. Geological Survey	Steel Tape		
P	10/31/1980		263.74	(2.32)	-243.74	1	U.S. Geological Survey	Steel Tape		
P	11/28/1980		262.84	(0.90)	-242.84	1	U.S. Geological Survey	Steel Tape		
P	12/31/1980		262.14	(0.70)	-242.14	1	U.S. Geological Survey	Steel Tape		
P	2/2/1981		261.88	(0.26)	-241.88	1	U.S. Geological Survey	Steel Tape		
P	2/23/1981		262.05	0.17	-242.05	1	U.S. Geological Survey	Steel Tape		
P	3/23/1981		261.18	(0.87)	-241.18	1	U.S. Geological Survey	Steel Tape		
P	4/23/1981		261.7	0.52	-241.7	1	U.S. Geological Survey	Steel Tape		
P	5/18/1981		260.3	(1.40)	-240.3	1	U.S. Geological Survey	Steel Tape		
P	6/29/1981		260.58	0.28	-240.58	1	U.S. Geological Survey	Steel Tape		
P	7/27/1981		260.9	0.32	-240.9	1	U.S. Geological Survey	Steel Tape		
P	8/24/1981		261.52	0.62	-241.52	1	U.S. Geological Survey	Steel Tape		
P	9/24/1981		261.22	(0.30)	-241.22	1	U.S. Geological Survey	Steel Tape		
P	10/27/1981		261.13	(0.09)	-241.13	1	U.S. Geological Survey	Steel Tape		
P	11/25/1981		260.1	(1.03)	-240.1	1	U.S. Geological Survey	Steel Tape		
P	12/16/1981		259.6	(0.50)	-239.6	1	U.S. Geological Survey	Steel Tape		
P	1/26/1982		263.58	3.98	-243.58	1	U.S. Geological Survey	Steel Tape		
P	4/26/1982		269.36	5.78	-249.36	1	U.S. Geological Survey	Steel Tape		
P	5/28/1982		268.06	(1.30)	-248.06	1	U.S. Geological Survey	Steel Tape		
P	6/23/1982		267.64	(0.42)	-247.64	1	U.S. Geological Survey	Steel Tape		
P	7/27/1982		267.39	(0.25)	-247.39	1	U.S. Geological Survey	Steel Tape		
P	8/24/1982		266.87	(0.52)	-246.87	1	U.S. Geological Survey	Steel Tape		
P	9/28/1982		266.41	(0.46)	-246.41	1	U.S. Geological Survey	Steel Tape		
P	10/26/1982		266.28	(0.13)	-246.28	1	U.S. Geological Survey	Steel Tape		
P	11/24/1982		265.86	(0.42)	-245.86	1	U.S. Geological Survey	Steel Tape		
P	1/11/1983		253.54	(12.32)	-233.54	1	U.S. Geological Survey	Steel Tape		
P	4/14/1983		255.72	2.18	-235.72	1	U.S. Geological Survey	Steel Tape		
P	7/18/1983		252.35	(3.37)	-232.35	1	U.S. Geological Survey	Steel Tape		
P	10/18/1983		253.91	1.56	-233.91	1	U.S. Geological Survey	Steel Tape		
P	1/26/1984		252.56	(1.35)	-232.56	1	U.S. Geological Survey	Steel Tape		
P	1/21/1985		251.19	(1.37)	-231.19	1	U.S. Geological Survey	Steel Tape		
P	1/13/1986		240.72	(10.47)	-220.72	1	U.S. Geological Survey	Steel Tape		
P	1/6/1987		235.12	(5.60)	-215.12	1	U.S. Geological Survey	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523212

Texas Water Development Board
Well Schedule

State Well Number 6523212 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294426 **Longitude** 951135 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Olin Corp.

Driller
Layne-Texas

Address _____ **Tenant/Oper.** _____

Date Drilled / /1951 **Depth** 982 **Source of Depth** **Altitude** 15 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION

Const-Method blank

Casing Material blank

Screen Material blank

Completion blank

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** blank **Tertiary -** blank

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** Y **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1951
-272

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency

REMARKS -
80 ft of screen between 830 and 970 ft. Reported yield 530 gpm with with 38 ft. drawdown when drilled. Well 3.

Aquifer - 121EVGL **ID -** 15

EVANGELINE AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-212

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523212
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.740556
Latitude (degrees minutes seconds)	29° 44' 26" N
Longitude (decimal degrees)	-95.193056
Longitude (degrees minutes seconds)	095° 11' 35" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	15
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	982
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1951
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Olin Corp.
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	80 ft of screen between 830 and 970 ft. Reported yield 530 gpm with with 38 ft. drawdown when drilled. Well 3.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	6/20/1951		272		-257	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 1/19/1971 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		208.2	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		254	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)		200	ug/L	
00910	CALCIUM (MG/L)		15	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		34	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.6	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		52	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		0	ug/L	
00920	MAGNESIUM (MG/L)		4	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00400	PH (STANDARD UNITS), FIELD		7.9	SU	
00937	POTASSIUM, TOTAL (MG/L AS K)		2.1	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		3.08		
00955	SILICA, DISSOLVED (MG/L AS SI02)		17	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		5.87		
00932	SODIUM, CALCULATED, PERCENT		79	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		99	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		515	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		10	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		26	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		306	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523224

Texas Water Development Board
Well Schedule

State Well Number 6523224 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **GMA** 14 **Latitude** 294430 **Longitude** 951126 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Mobil Mining & Mineral Co.

Driller
Layne Texas

Address _____ **Tenant/Oper.** _____

Date Drilled / /1961 **Depth** 1230 **Source of Depth** D **Altitude** 15 **Source of Alt.** M

Well Type W **User** 651950

WELL CONSTRUCTION

Const-Method blank

Casing Material blank

Screen Material blank

Completion blank

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** blank **Tertiary -** blank

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** Y **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1962
-331

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency 02

REMARKS -
141 ft of screen between 760 and 1220 ft. Reported yield 760 gpm with 30 ft drawdown when drilled. Well 5.

Aquifer - 121EVGL **ID -** 15
EVANGELINE AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-224

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523224
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.741667
Latitude (degrees minutes seconds)	29° 44' 30" N
Longitude (decimal degrees)	-95.190556
Longitude (degrees minutes seconds)	095° 11' 26" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	15
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1230
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	0/0/1961
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Mobil Mining & Mineral Co.
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1010936A
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	10/2/1997
Last Update Date	10/2/1997

Remarks	141 ft of screen between 760 and 1220 ft. Reported yield 760 gpm with 30 ft drawdown when drilled. Well 5.

Casing - No Data

Well Tests - No Data

Lithology - No Data

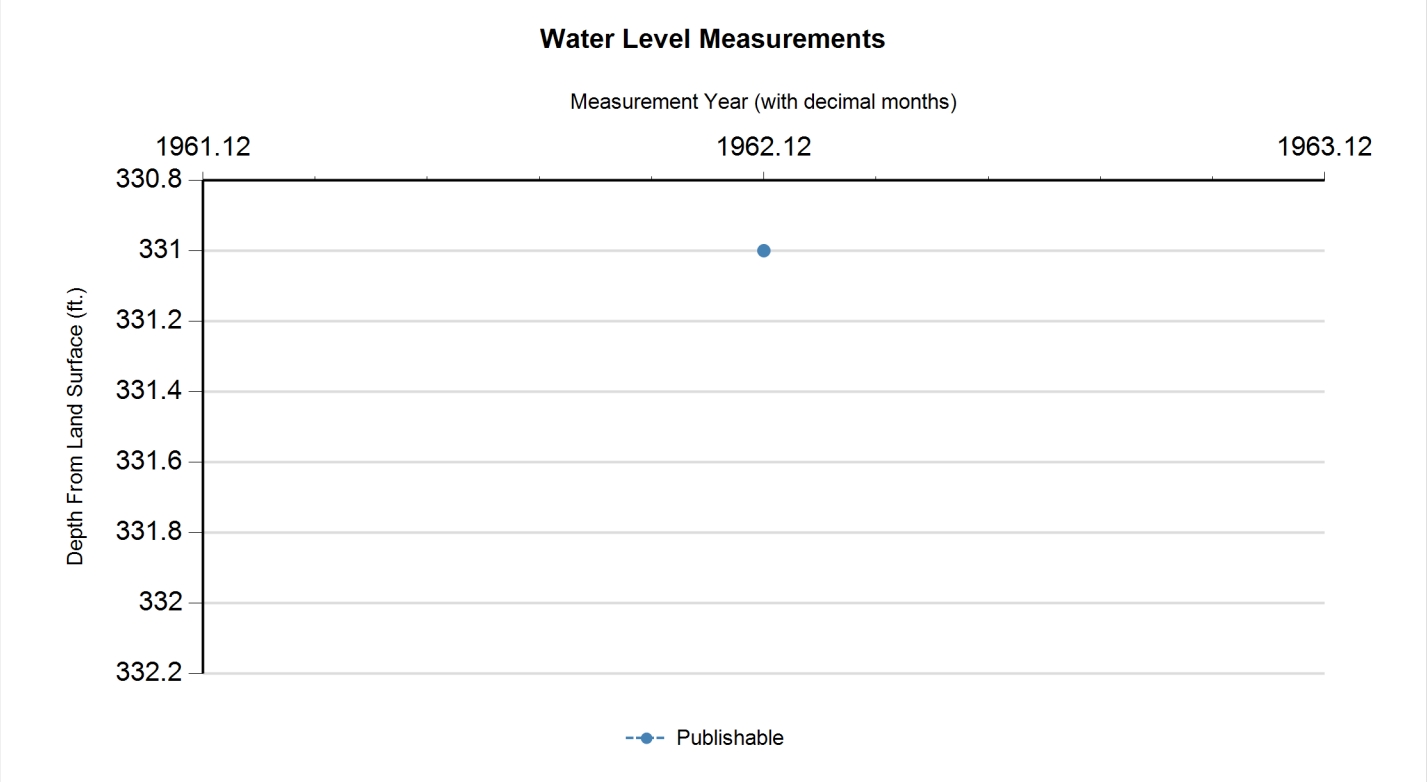
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/15/1962		331		-316	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 12/16/1961 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		332	mg/L	
00910	CALCIUM (MG/L)		7	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		38	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		22	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		1	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.4	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		5		
00955	SILICA, DISSOLVED (MG/L AS SI02)		14	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		13.11		
00932	SODIUM, CALCULATED, PERCENT		93	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		140	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		615	MICR	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		363	mg/L	

Water Quality Analysis

Sample Date: 1/19/1971 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		268.85	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		328	mg/L	
00910	CALCIUM (MG/L)		9	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		38	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		1	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		30	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		0	ug/L	
00920	MAGNESIUM (MG/L)		2	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00400	PH (STANDARD UNITS), FIELD		8	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		4.76		
00955	SILICA, DISSOLVED (MG/L AS SI02)		12	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		10.99		
00932	SODIUM, CALCULATED, PERCENT		90	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		140	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		618	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		4	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		27	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		367	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523239

Texas Water Development Board
Well Schedule

State Well Number 6523239 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **Zone** 1 **Latitude** 294354 **Longitude** 951212 **Source of Coords** 3

Owner's Well No. _____ **Location** _____

Owner
Phillips Petro.Co.

Driller
McMasters and
Pomeroy

Address _____ **Tenant/Oper.** _____

Date Drilled / /1936 **Depth** 757 **Source of Depth** **Altitude** 27 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION **Const-Method** **Casing Material** Blank

Screen Material Blank

Completion

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** NONE **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** blank **Horsepower -**

YIELD Flow- _____ **GPM** **Pump** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** UNUSED **Secondary -** blank **Tertiary -** blank

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** Y **Logs -** **Other Data -**

WATER LEVELS 2 measurements
1936 to 1956
MIN -277 MAX -67

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency

REMARKS -
Screen from 717 to 757 ft. Reported yield 100 gpm with 21 ft drawdown when drilled. Well destroyed.
Well 2.

Aquifer - 121EVGL **ID -** 15

EVANGELINE
AQUIFER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-239

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523239
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.731667
Latitude (degrees minutes seconds)	29° 43' 54" N
Longitude (decimal degrees)	-95.203334
Longitude (degrees minutes seconds)	095° 12' 12" W
Coordinate Source	+/- 10 Seconds
Aquifer Code	121EVGL - Evangeline Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	27
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	757
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1936
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Plugged or Destroyed
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Phillips Petro.Co.
Driller	McMasters and Pomeroy
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	Screen from 717 to 757 ft. Reported yield 100 gpm with 21 ft drawdown when drilled. Well destroyed. Well 2.

Casing - No Data

Well Tests - No Data

Lithology - No Data

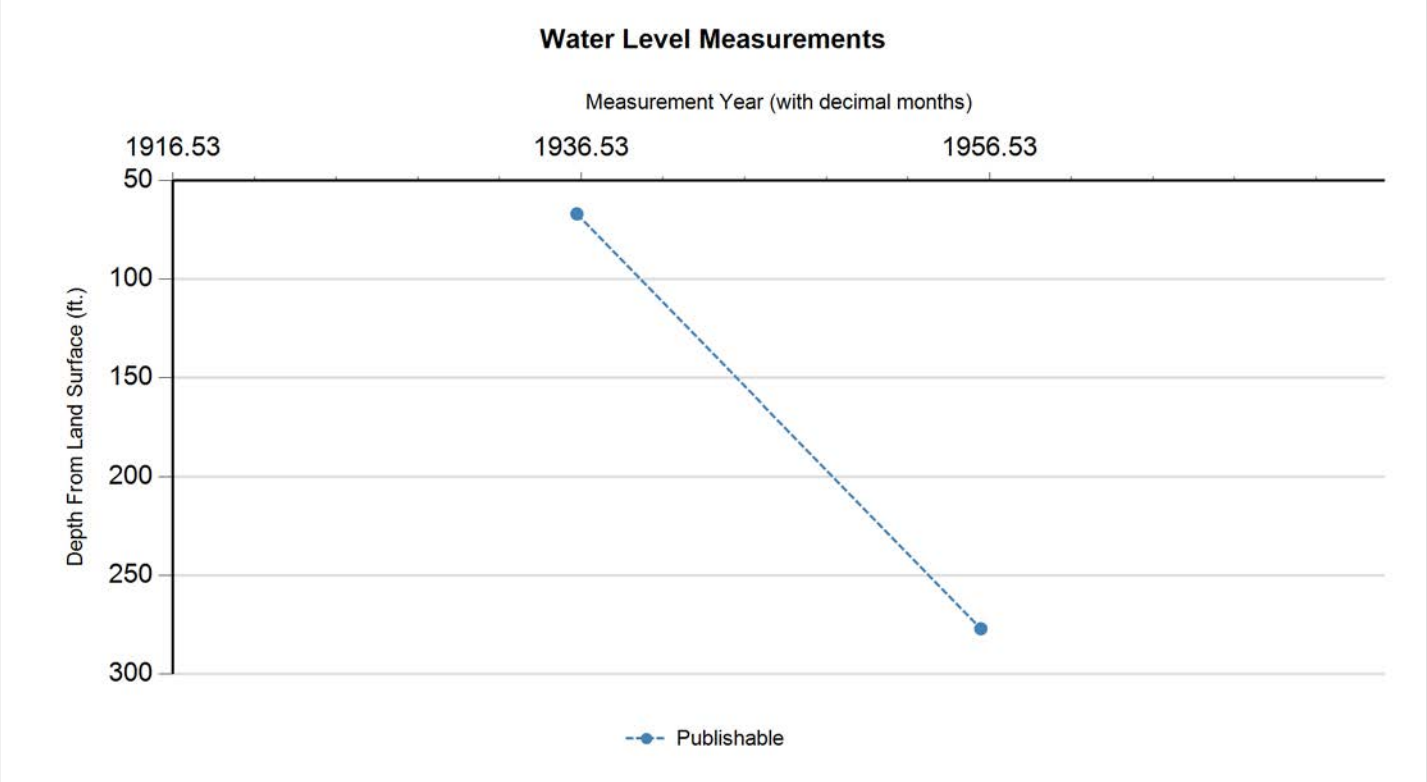
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	4/25/1936		67		-40	1	Registered Water Well Driller	Unknown		
P	2/7/1956		277	210.00	-250	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 7/29/1946 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Evangeline Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		191.8	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		234	mg/L	
00910	CALCIUM (MG/L)		25	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		36	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.6	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		85	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		5	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0.2	mg/L as NO3	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		2.17		
00955	SILICA, DISSOLVED (MG/L AS SI02)		17	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		3.82		
00932	SODIUM, CALCULATED, PERCENT		67	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		80	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		525	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		14	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		292	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523220

WRD Exp. (GM)
April 1966

Well No. LJ-65-23-220

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

MASTER CARD

Record by C.W. BONNET / WINSLOW-1952 Source of data FILE Date 10-16-68 Map PASADENA 1955 1:24000

State TEXAS [48] County (or town) HARRIS [LJ]

Latitude: 29 44 25 N (deg min sec) Longitude: 095 10 08 (degrees min sec) Sequential number: 1

Lat-long accuracy: [ ] T. ___ N S, R ___ E W, Sec ___, ___ k, ___ k, ___ k ___ B & M

Local well number: LJ-65-23-220 Other number:

Local use: Owner or name: ETHYL CORP. 3-A

Owner or name: ETHYL CORP. Address: PASADENA, TEXAS

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist ___ [N]

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Mud, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other ___ [N]

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Exc, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed [W]

DATA AVAILABLE: Well data [ ] Freq. W/L meas.: 1951 — mpos. by owner [M] Field aquifer char. [ ]

Hyd. lab. data: [ ]

Qual. water data; type: [ ]

Freq. sampling: ___ Pumpage inventory: yes no, period: ___ [ ]

Aperture cards: ___ yes [ ]

Log data: E-LOG CC-17 [E]

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 477 ft [477] Meas. rept accuracy [3]

Depth cased (first perf.): 329 ft [329] Casing type: S; Diam 14-10 3/4 in [14]

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., screen, (S) sd. pt., (T) shored, (W) open hole, (Z) other ___ [G]

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (E) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other ___ [H]

Date Drilled: 5-51 [951] Pump intake setting: ___ ft

Driller: LAYNE-TEXAS CO. (name) HOUSTON TEXAS (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple, (cent.), (M) multiple, (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other [T] Deep Shallow [D]

Power (type): diesel, elec, nat gas, gasoline, hand, LP gas, wind; H.P. ___ [S] Trans. or meter no. ___

Descrip. MP PUMP BASE +1.0 ft above below LSD, Alt. MP ___

Alt. LSD: 20 [20] Accuracy (source): TOPO 5' [3]

PL 226
166
60

Water Level 166 ft above below MP; Ft above below LSD [165] Accuracy: REPT. [D]

Date meas: 5-9-51 [551] Yield: 1515 gpm [1515] Method determined [ ]

Drawdown: 60 ft [60] Accuracy: REPT. [3] Pumping period 8 hrs [8]

QUALITY OF WATER DATA: Iron ___ ppm [ ] Sulfate ___ ppm [ ] Chloride ___ ppm [ ] Hard. ___ ppm [ ]

Sp. Conduct ___ K x 10^6 [ ] Temp. ___ °F [ ] Date sampled [ ]

Taste, color, etc. ___

Well No. LJ-65-23-220

Well No. LJ-65-23-220

Latitude-longitude 29 44 25 (d m s) 95 10 08 (d m s)

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) Physiographic Province: COASTAL PLAIN 03 (20–21) Section: _____

F (22) Drainage Basin: _____ 51R (23–25) Subbasin: _____ (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat _____ (27)

MAJOR AQUIFER: _____ system, _____ series Q (28–29) _____ aquifer, formation, group CL (30–31)

Lithology: _____ (32–33) Origin: _____ (34) Aquifer Thickness: _____ ft

(35–37) Length of well open to: 136 ft 136 (38–40) Depth to top of: _____ ft (41–43)

MINOR AQUIFER: _____ system, _____ series (44–45) _____ aquifer, formation, group (46–47)

Lithology: _____ (48–49) Origin: _____ (50) Aquifer Thickness: _____ ft

(51–53) Length of well open to: _____ ft (54–56) Depth to top of: _____ ft (57–59)

Intervals Screened: 329 - 465'

Depth to consolidated rock: _____ ft (60–63) Source of data: _____ (64)

Depth to basement: _____ ft (65–68) Source of data: _____ (69)

Surficial material: _____ (70–71) Infiltration characteristics: _____ (72)

Coefficient Trans: _____ gpd/ft (73–75) Coefficient Storage: _____ (76–78)

Coefficient Perm: _____ gpd/ft^2; Spec cap: _____ gpm/ft; Number of geologic cards: _____ (79)

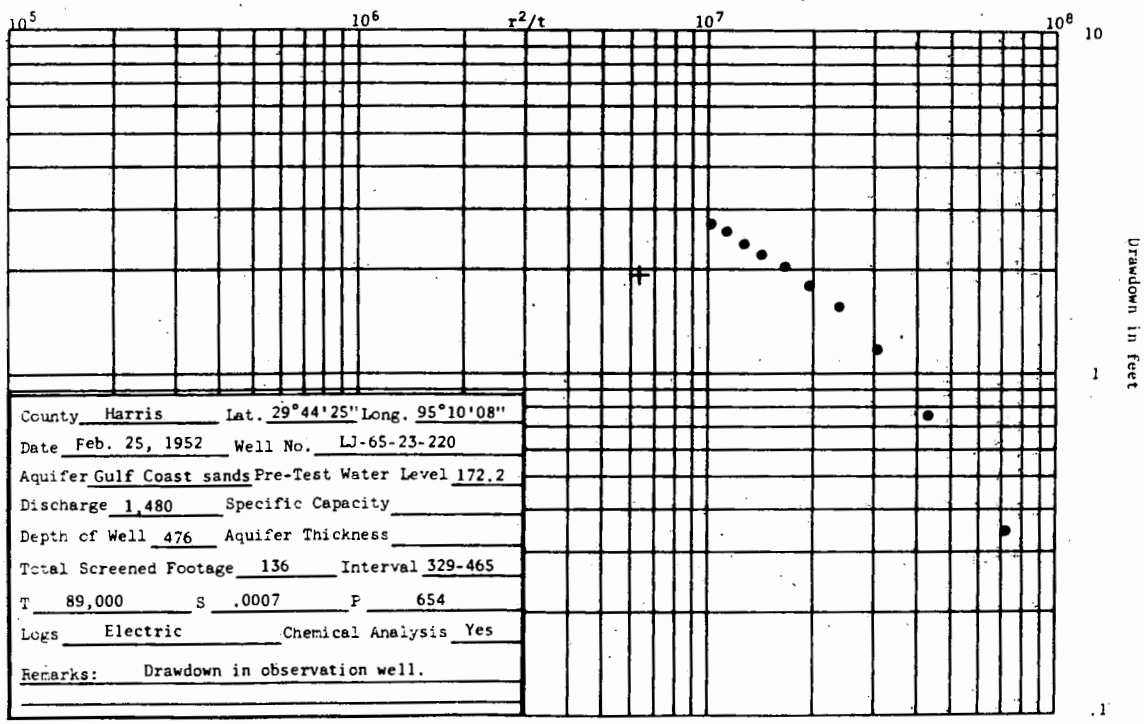
DEPTH	LENGTH
328	328 - 14" CSG.
329	1 - 14" x 10 3/4" SWEGE
464.6	135.6 - 10 3/4 ADM. BR. WW SCR. .027
474.9	10.3 - 10 3/4 CSG.
476.9	2.0 - SET NIPPLE TO BPV.

STATIC 5-10-51 156.18' BELOW PUMP BASE, +1.0' LSD.

PL 226' @ 1515 gpm

Well No. LJ-65-23-220

GPO 857-700



County Harris Lat. 29°44'25" Long. 95°10'08"

Date Feb. 25, 1952 Well No. LJ-65-23-220

Aquifer Gulf Coast sands Pre-Test Water Level 172.2

Discharge 1,480 Specific Capacity

Depth of Well 476 Aquifer Thickness

Total Screened Footage 136 Interval 329-465

T 89,000 S .0007 P 654

Logs Electric Chemical Analysis Yes

Remarks: Drawdown in observation well.

TEXAS WATER DEVELOPMENT BOARD

REPORT 178

GROUND-WATER DATA FOR HARRIS COUNTY, TEXAS

VOLUME II

RECORDS OF WELLS, 1892-1972

By

R. K. Gabrysch, W. L. Naftel, Gene D. McAdoo, and C. W. Bonnet
United States Geological Survey

This report was prepared by the U.S. Geological Survey
under cooperative agreement with the
Texas Water Development Board
and the
City of Houston

January 1974

Records of wells in Harris County--Continued

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing: Diameter (in.)	Casing: Depth (ft.)	Water Bearing unit	Altitude of land surface (ft.)	Water Level: Above (+) below land surface datum (ft.)	Water Level: Date of Measurement	Method of lift	Use of Water	Remarks
65-23-203	Crown Central Petroleum Co. Well 8	McMasters and Pomeroy	1944	1,262	12 10 8	-- -- 1,262	E	31	272	Sept. 1950	T,E 125	Ind	175 ft. of screen between 680 and 1,256 ft. 2/
204	Crown Central Petroleum Co. Well 9	Layne Texas Co.	1950	1,274	16 8	-- 1,274	E	32	288	July 17, 1950	T,E 125	Ind	197 ft. of screen between 816 and 1,263 ft. Test hole drilled to 1,300 ft. 2/
205	Armco Steel Corp. Well 1	do	1943	1,385	18 10	505 1,385	E	25	260	Jan. 18, 1951	T,E 150	Ind	217 ft. of screen between 950 and 1,350 ft. Reported yield 1,365 gpm with 55 ft. drawdown Jan. 1951.
206	Armco Steel Corp. Well 2	do	1943	1,266	18 10	492 1,266	E	30	254 327	Jan. 4, 1951 Mar. 6, 1962	T,E 150	Ind	161 ft. of screen between 831 and 1,238 ft. Reported yield 1,266 gpm with 61 ft. drawdown Jan. 4, 1951.
207	Armco Steel Corp. Well 3	do	1943	1,255	18 10	381 1,255	E	30	254	Jan. 11, 1951	T,E 150	Ind	190 ft. of screen between 778 and 1,252 ft. Reported yield 1,266 gpm with 64 ft. drawdown Jan. 11, 1951.
208	Olin Corp.	do	1948	412	10 8	190 412	CL	15	160	1958	T,E 40	Ind	111 ft. of screen between 219 and 410 ft. Reported yield 280 gpm with 50 ft. drawdown in 1958.
209	do	do	1948	918	10 8	200 918	E	15	--	--	N	N	111 ft. of screen between 756 and 906 ft.
210	do	McMasters and Pomeroy	1944	673	8 5	320 673	CL	15	--	--	N	N	100 ft. of screen between 342 and 673 ft. Well destroyed. 2/
211	do	do	1944	705	8 5	330 705	E,CL	15	--	--	N	N	100 ft. of screen between 364 and 705 ft. Well destroyed. 2/
* 212	Olin Corp. Well 3	Layne Texas Co.	1951	982	12 8	820 982	E	15	272	June 20, 1951	T,E	Ind	80 ft. of screen between 830 and 970 ft. Reported yield 530 gpm with 38 ft. drawdown when drilled.
213	Phillips Chemical Co. Well 4	do	1951	884	22 10	612 884	E	30	262 310	Sept. 1951 1962	T,E 125	Ind	100 ft. of screen between 697 and 866 ft. Reported yield 767 gpm with 36 ft. drawdown when drilled.
* 214	Phillips Chemical Co. Well 5	do	1952	1,967	20 12	1,220 1,967	E	25	275 353	July 29, 1952 May 1970	T,G	Ind	216 ft. of screen between 1,429 and 1,955 ft. Reported yield 1,705 gpm with 60 ft. drawdown when drilled. 1/
* 215	Phillips Chemical Co. Well 6	do	1952	1,220	20 12	695 1,220	E	25	388	Sept. 15, 1970	T,E	Ind	210 ft. of screen between 730 and 1,200 ft. Reported yield 1,500 gpm with 30 ft. drawdown Sept. 1970.
216	Phillips Chemical Co. Well 3	McMasters and Pomeroy	1943	639	8 5	284 639	CL	10	86	June 9, 1943	N	N	95 ft. of screen between 351 and 639 ft. Reported yield 380 gpm when drilled. 2/
217	Ethyl Corp. Well 1A	Layne Texas Co.	1951	459	8 6	387 459	CL	15	159	June 12, 1951	N	N	Screen from 394 to 450 ft. Construction well for plant. Well destroyed.
218	Ethyl Corp. Well 5A	do	1951	453	14 10	308 453	CL	18	159 267	June 1951 Feb. 23, 1971	T,E	Ind	Screen from 309 to 440 ft. Reported yield 1,543 gpm with 46 ft. drawdown when drilled. 1/
219	Ethyl Corp. Well 4L	do	1951	1,252	20 12 10	692 1,050 1,252	E	21	275 386	Feb. 15, 1955 Feb. 23, 1971	T,E	Ind	290 ft. of screen between 698 and 1,235 ft. Reported yield 1,800 gpm with 54 ft. drawdown Dec. 1954. 1/
220	Ethyl Corp. Well 3A	do	1951	477	14 10	328 477	CL	20	155.2 269	May 10, 1951 Feb. 23, 1971	T,E	Ind	Screen from 329 to 465 ft. Reported yield 1,515 gpm with 60 ft. drawdown when drilled. 1/

See footnotes at end of table.

TEXAS WATER DEVELOPMENT BOARD

REPORT 122

RECORDS OF WATER-LEVEL MEASUREMENTS IN WELLS IN HARRIS COUNTY, TEXAS, 1966-69

Compiled by

R. K. Gabrysch, C. W. Bonnet, and W. L. Naftel
United States Geological Survey

Prepared by the U.S. Geological Survey
in cooperation with the
Texas Water Development Board
and the
City of Houston

November 1970

WATER LEVEL MEASUREMENTS, IN FEET, BELOW LAND SURFACE - CONTINUED

STATE WELL NUMBER	OLD WELL NUMBER	DEPTH OF WELL	ELEVATION OF LAND SURFACE	DATE	MEASUREMENT	CHANGE IN WATER LEVEL FROM PREVIOUS MEASUREMENT DECLINE	RISE
65-23-219		1252	21.	12-27-68	400.	1.	
				01-31-69	397.		3.
				02-25-69	381.		16.
				03-26-69	382.	1.	
				04-21-69	390.	8.	
				06-02-69	398.	8.	
				07-23-69	406.	8.	
65-23-220		477	20.	01-08-66	239.		
				04-18-66	245.	6.	
				06-15-66	242.		3.
				07-26-66	248.	6.	
				08-23-66	250.	2.	
				09-21-66	247.		3.
				10-31-66	252.	5.	
				11-28-66	255.	3.	
				12-27-66	255.	0.	
				01-25-67	252.		3.
				03-01-67	252.	0.	
				04-26-67	252.	0.	
				05-24-67	253.	1.	
				07-06-67	256.	3.	
				08-23-67	257.	1.	
				09-27-67	257.	0.	
				11-16-67	255.		2.
				12-28-67	252.		3.
				01-24-68	253.	1.	
				02-29-68	255.	2.	
				03-28-68	261.	6.	
				04-25-68	263.	2.	
				05-31-68	262.		1.
				06-26-68	258.		4.
				07-23-68	266.	8.	
				08-29-68	262.		4.
				09-25-68	258.		4.
				10-25-68	257.		1.
				11-28-68	257.	0.	
				12-27-68	256.		1.
				01-31-69	257.	1.	
				02-25-69	266.	9.	
				03-26-69	268.	2.	
				04-21-69	263.		5.
				06-02-69	262.		1.
				07-23-69	258.		4.

TX DOC
W600.7
R299
No. 103

Development Bd
03

TEXAS
WATER
DEVELOPMENT
BOARD

Report 103

RECORDS OF WATER-LEVEL MEASUREMENTS IN OBSERVATION WELLS IN HARRIS COUNTY, TEXAS

DECEMBER 1969

Table 1.--Water Levels in Wells--Continued

WELL NUMBER	COMPLETION DEPTH INTERVAL	DEPTH OF WELL	ELEVATION OF LAND SURFACE	DATE OF MEASUREMENT	DEPTH TO WATER
65-23-219	0698-1235		21.--	01-21-58	274.--
				02-25-58	275.--
				03-26-58	276.--
				04-23-58	271.--
				05-20-58	277.--
				06-24-58	282.--
				07-29-58	282.--
				08-27-58	282.--
				09-23-58	285.--
				10-28-58	291.--
				11-20-58	288.--
				12-23-58	285.--
				01-20-59	285.--
				02-18-59	283.--
				03-17-59	283.--
				04-22-59	285.--
				05-28-59	286.--
				06-24-59	283.--
				07-08-59	283.--
				08-20-59	284.--
				09-23-59	285.--
				10-21-59	274.--
				11-19-59	274.--
				12-16-59	286.--
				01-27-60	284.--
				02-24-60	287.--
				03-23-60	288.--
				04-20-60	288.--
				05-26-60	289.--
				06-24-60	295.--
				07-19-60	295.--
				08-26-60	294.--
				09-22-60	295.--
				10-25-60	291.--
				11-29-60	288.--
				12-20-60	288.--
				01-24-61	286.--
				02-21-61	287.--
				03-20-61	290.--
				04-26-61	290.--
				05-23-61	292.--
				06-27-61	290.--
				07-27-61	294.--
				08-22-61	295.--
				09-21-61	288.--
				10-27-61	294.--
				11-22-61	294.--
				12-19-61	293.--
				01-17-62	292.--
				02-20-62	294.--
				03-23-62	293.--
65-23-219	0698-1235		21.--	04-25-62	294.--
				05-23-62	294.--
				06-20-62	295.--
				07-25-62	300.--
				08-22-62	304.--
				09-21-62	307.--
				10-23-62	304.--
				11-21-62	308.--
				12-19-62	301.--
				01-22-63	300.--
				02-19-63	306.--
				03-20-63	306.--
				04-24-63	304.--
				05-21-63	308.--
				06-26-63	312.--
				07-24-63	318.--
				08-14-63	318.--
				09-13-63	316.--
				10-09-63	316.--
				11-14-63	318.--
				12-27-63	315.--
				01-28-64	317.--
				02-28-64	314.--
				03-18-64	318.--
				04-08-64	318.--
				05-13-64	318.--
				06-02-64	319.--
				07-09-64	326.--
				08-20-64	331.--
				09-22-64	328.--
				10-08-64	329.--
				11-17-64	327.--
				01-07-65	326.--
				03-15-65	330.--
				04-02-65	332.--
				05-11-65	328.--
				08-03-65	340.--
				10-18-65	350.--
65-23-220	0329-0465		20.--	05-10-51	155.18
				02-19-52	172.63
				06-09-52	177.71
				09-05-52	179.03
				12-11-52	184.45
				02-18-53	182.10
				12-03-53	185.13
				02-08-54	185.44
				02-15-55	176.--
				03-30-55	179.--
				04-06-55	186.--

Table 1.--Water Levels in Wells--Continued

WELL NUMBER	COMPLETION DEPTH INTERVAL	DEPTH OF WELL	ELEVATION OF LAND SURFACE	DATE OF MEASUREMENT	DEPTH TO WATER
65-23-220	0329-0465		20.--	05-04-55	196.--
				06-02-55	194.--
				07-06-55	188.--
				08-02-55	193.--
				09-08-55	191.--
				10-05-55	195.--
				11-02-55	193.--
				12-08-55	194.--
				01-05-56	195.--
				02-01-56	195.--
				03-01-56	197.--
				04-12-56	198.--
				05-09-56	196.--
				06-06-56	194.--
				07-05-56	195.--
				08-15-56	200.--
				09-06-56	201.--
				10-04-56	203.--
				11-07-56	203.--
				12-05-56	203.--
				01-01-57	201.--
				02-06-57	200.--
				03-06-57	197.--
				04-03-57	195.--
				05-08-57	198.--
				07-31-57	203.--
				08-27-57	210.--
				09-24-57	197.--
				10-29-57	201.--
				11-26-57	205.--
				12-24-57	203.--
				01-28-58	204.--
				02-25-58	204.--
				03-26-58	204.--
				04-29-58	203.--
				05-27-58	206.--
				06-24-58	205.--
				07-29-58	208.--
				08-22-58	205.--
				09-30-58	201.--
				10-28-58	204.--
				11-20-58	207.--
				12-23-58	209.--
				01-27-59	207.--
				02-25-59	201.--
				03-24-59	200.--
				04-28-59	200.--
				05-28-59	204.--
				06-24-59	206.--
				07-08-59	206.--
				08-20-59	211.--
65-23-220	0329-0465		20.--	09-23-59	204.--
				10-28-59	205.--
				11-25-59	207.--
				12-23-59	204.--
				01-27-60	202.--
				02-24-60	203.--
				03-23-60	205.--
				04-27-60	208.--
				05-26-60	211.--
				06-24-60	221.--
				07-26-60	225.--
				08-26-60	228.--
				09-27-60	227.--
				10-25-60	223.--
				11-29-60	224.--
				12-20-60	223.--
				01-24-61	220.--
				02-21-61	220.--
				03-20-61	217.--
				04-26-61	224.--
				05-23-61	225.--
				06-27-61	230.--
				07-27-61	225.--
				08-22-61	225.--
				09-21-61	219.--
				10-27-61	224.--
				11-22-61	225.--
				12-19-61	223.--
				01-23-62	223.--
				02-20-62	223.--
				03-23-62	223.--
				04-25-62	224.--
				05-23-62	223.--
				06-20-62	223.--
				07-25-62	226.--
				08-22-62	229.--
				09-26-62	220.--
				10-23-62	223.--
				11-21-62	216.--
				12-19-62	223.--
				01-22-63	230.--
				02-19-63	225.--
				03-20-63	222.--
				04-24-63	224.--
				05-21-63	223.--
				06-26-63	223.--
				07-24-63	226.--
				08-14-63	227.--
				09-13-63	226.--
				11-14-63	232.--
				12-27-63	230.--

Table 1.--Water Levels in Wells--Continued

WELL NUMBER	COMPLETION DEPTH INTERVAL	DEPTH OF WELL	ELEVATION OF LAND SURFACE	DATE OF MEASUREMENT	DEPTH TO WATER
65-23-220	0329-0465		20.--	01-28-64	231.--
				02-28-64	232.--
				03-18-64	230.--
				04-08-64	230.--
				05-13-64	230.--
				06-02-64	231.--
				07-09-64	233.--
				08-20-64	243.--
				09-22-64	245.--
				10-08-64	243.--
				11-17-64	244.--
				01-07-65	242.--
				03-15-65	234.--
				04-02-65	237.--
				05-25-65	233.--
				06-23-65	235.--
				08-18-65	246.--
				09-10-65	247.--
				10-18-65	244.--
65-23-221	1070-1720		19.--	08-22-51	237.--
				02-15-55	250.--
				03-30-55	285.--
				04-06-55	254.--
				05-25-55	253.--
				06-15-55	252.--
				07-06-55	246.--
				08-02-55	253.--
				09-08-55	247.--
				10-05-55	250.--
				11-02-55	248.--
				12-08-55	243.--
				01-05-56	239.--
				02-01-56	241.--
				03-01-56	240.--
				04-12-56	240.--
				05-09-56	236.--
				06-06-56	235.--
				07-05-56	234.--
				08-15-56	236.--
				09-06-56	236.--
				10-04-56	234.--
				11-07-56	232.--
				12-05-56	230.--
				01-03-57	228.--
				02-06-57	233.--
				03-06-57	234.--
				04-03-57	232.--
				05-08-57	234.--
				07-31-57	234.--
65-23-221	1070-1720		19.--	08-20-57	243.--
				09-04-57	244.--
				10-01-57	250.--
				11-13-57	243.--
				12-03-57	238.--
				01-06-58	245.--
				02-04-58	249.--
				03-04-58	252.--
				04-04-58	249.--
				05-06-58	252.--
				06-03-58	254.--
				07-01-58	256.--
				08-05-58	261.--
				09-03-58	264.--
				10-28-58	265.--
				11-11-58	265.--
				12-02-58	264.--
				01-06-59	259.--
				02-03-59	260.--
				03-03-59	260.--
				04-08-59	257.--
				05-05-59	259.--
				06-03-59	259.--
				07-08-59	262.--
				08-13-59	259.--
				09-02-59	260.--
				10-21-59	256.--
				11-04-59	259.--
				12-02-59	262.--
				01-06-60	262.--
				02-03-60	262.--
				03-02-60	262.--
				04-13-60	257.--
				05-04-60	260.--
				06-01-60	258.--
				07-06-60	265.--
				08-02-60	264.--
				09-07-60	268.--
				10-04-60	267.--
				11-01-60	265.--
				12-07-60	268.--
				01-05-61	266.--
				02-02-61	262.--
				03-07-61	262.--
				04-05-61	267.--
				05-02-61	266.--
				06-01-61	267.--
				07-05-61	256.--
				08-02-61	263.--
				09-06-61	261.--
				10-03-61	262.--

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-220

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523220
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.7405556
Latitude (degrees minutes seconds)	29° 44' 26" N
Longitude (decimal degrees)	-95.1691667
Longitude (degrees minutes seconds)	095° 10' 09" W
Coordinate Source	+/- 1 Second
Aquifer Code	112CHCTL - Chicot Aquifer, Lower
Aquifer	Gulf Coast
Aquifer Pick Method	Provided by U.S. Geological Survey
Land Surface Elevation (feet above sea level)	20
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	477
Well Depth Source	Another Government Agency
Drilling Start Date	
Drilling End Date	5/0/1951
Drilling Method	Mud (Hydraulic) Rotary
Borehole Completion	Gravel Pack w/Screen

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Historical
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Albemarle Corp.
Driller	Layne Texas
Other Data Available	Aquifer Test
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	294425095100801
Texas Commission on Environmental Quality Source Id	G1011172A
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	10/16/1968
Last Update Date	7/15/2023

Remarks	Observation well for aquifer test. Results in TWDB R-98. No test data in TWDB files.

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
14	Blank	Steel			0	328
10	Screen	Steel			328	464
10	Blank	Steel			464	477

Well Tests - No Data

Lithology - No Data

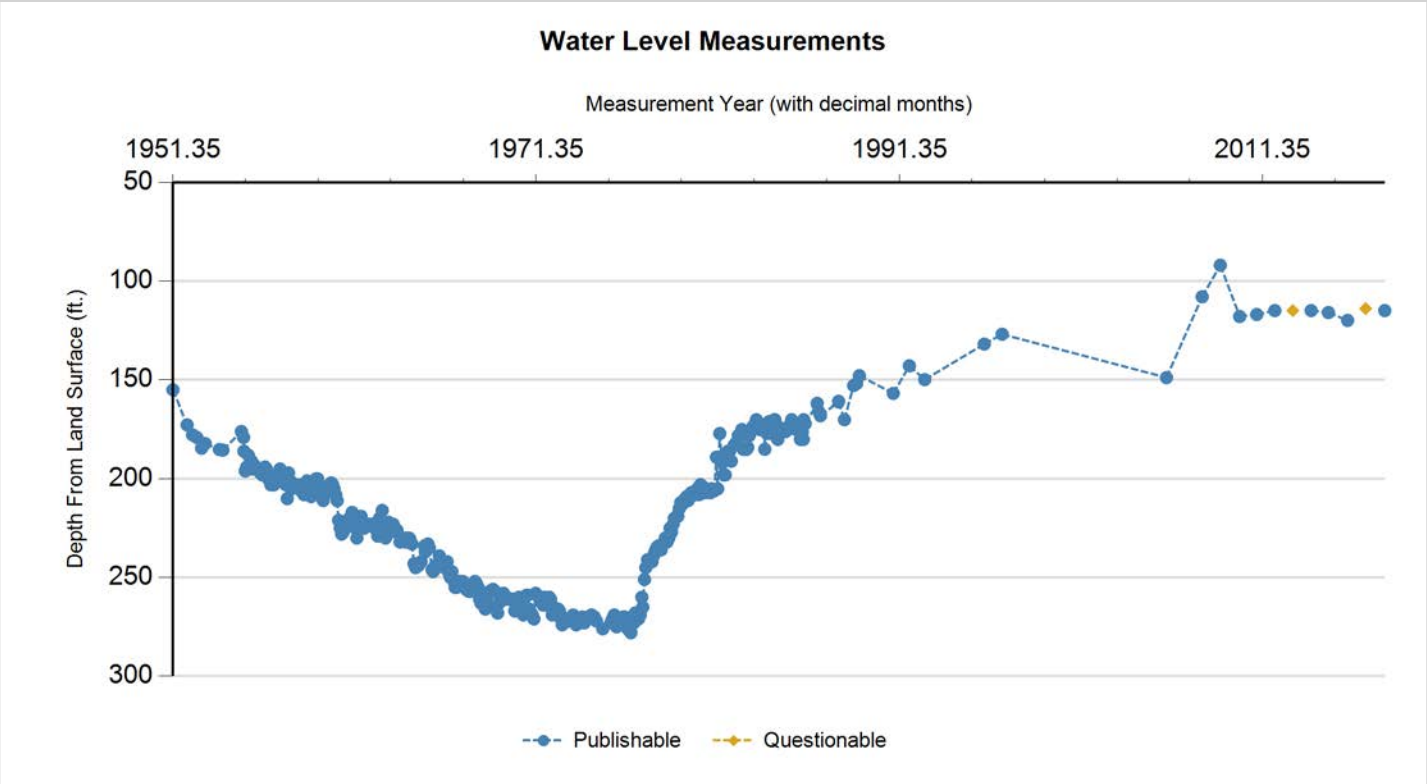
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	5/10/1951		155.18		-135.18	1	Other or Source of Measurement Unknown	Unknown		
P	2/19/1952		172.63	17.45	-152.63	1	U.S. Geological Survey	Steel Tape		
P	6/9/1952		177.71	5.08	-157.71	1	U.S. Geological Survey	Steel Tape		
P	9/5/1952		179.03	1.32	-159.03	1	U.S. Geological Survey	Steel Tape		
P	12/11/1952		184.45	5.42	-164.45	1	U.S. Geological Survey	Steel Tape		
P	2/18/1953		182.1	(2.35)	-162.1	1	U.S. Geological Survey	Steel Tape		
P	12/3/1953		185.13	3.03	-165.13	1	U.S. Geological Survey	Steel Tape		
P	2/8/1954		185.44	0.31	-165.44	1	U.S. Geological Survey	Steel Tape		
P	2/15/1955		176	(9.44)	-156	1	U.S. Geological Survey	Steel Tape		
P	3/30/1955		179	3.00	-159	1	U.S. Geological Survey	Steel Tape		
P	4/6/1955		186	7.00	-166	1	U.S. Geological Survey	Steel Tape		
P	5/4/1955		196	10.00	-176	1	U.S. Geological Survey	Steel Tape		
P	6/2/1955		194	(2.00)	-174	1	U.S. Geological Survey	Steel Tape		
P	7/6/1955		188	(6.00)	-168	1	U.S. Geological Survey	Steel Tape		
P	8/2/1955		193	5.00	-173	1	U.S. Geological Survey	Steel Tape		
P	9/8/1955		191	(2.00)	-171	1	U.S. Geological Survey	Steel Tape		
P	10/5/1955		195	4.00	-175	1	U.S. Geological Survey	Steel Tape		
P	11/2/1955		193	(2.00)	-173	1	U.S. Geological Survey	Steel Tape		
P	12/8/1955		194	1.00	-174	1	U.S. Geological Survey	Steel Tape		
P	1/5/1956		195	1.00	-175	1	U.S. Geological Survey	Steel Tape		
P	2/1/1956		195	0.00	-175	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	3/1/1956		197	2.00	-177	1	U.S. Geological Survey	Steel Tape		
P	4/12/1956		198	1.00	-178	1	U.S. Geological Survey	Steel Tape		
P	5/9/1956		196	(2.00)	-176	1	U.S. Geological Survey	Steel Tape		
P	6/6/1956		194	(2.00)	-174	1	U.S. Geological Survey	Steel Tape		
P	7/5/1956		195	1.00	-175	1	U.S. Geological Survey	Steel Tape		
P	8/15/1956		200	5.00	-180	1	U.S. Geological Survey	Steel Tape		
P	9/6/1956		201	1.00	-181	1	U.S. Geological Survey	Steel Tape		
P	10/4/1956		203	2.00	-183	1	U.S. Geological Survey	Steel Tape		
P	11/7/1956		203	0.00	-183	1	U.S. Geological Survey	Steel Tape		
P	12/5/1956		203	0.00	-183	1	U.S. Geological Survey	Steel Tape		
P	1/1/1957		201	(2.00)	-181	1	U.S. Geological Survey	Steel Tape		
P	2/6/1957		200	(1.00)	-180	1	U.S. Geological Survey	Steel Tape		
P	3/6/1957		197	(3.00)	-177	1	U.S. Geological Survey	Steel Tape		
P	4/3/1957		195	(2.00)	-175	1	U.S. Geological Survey	Steel Tape		
P	5/8/1957		198	3.00	-178	1	U.S. Geological Survey	Steel Tape		
P	7/31/1957		203	5.00	-183	1	U.S. Geological Survey	Steel Tape		
P	8/27/1957		210	7.00	-190	1	U.S. Geological Survey	Steel Tape		
P	9/24/1957		197	(13.00)	-177	1	U.S. Geological Survey	Steel Tape		
P	10/29/1957		201	4.00	-181	1	U.S. Geological Survey	Steel Tape		
P	11/26/1957		205	4.00	-185	1	U.S. Geological Survey	Steel Tape		
P	12/24/1957		203	(2.00)	-183	1	U.S. Geological Survey	Steel Tape		
P	1/28/1958		204	1.00	-184	1	U.S. Geological Survey	Steel Tape		
P	2/25/1958		204	0.00	-184	1	U.S. Geological Survey	Steel Tape		
P	3/26/1958		204	0.00	-184	1	U.S. Geological Survey	Steel Tape		
P	4/29/1958		203	(1.00)	-183	1	U.S. Geological Survey	Steel Tape		
P	5/27/1958		206	3.00	-186	1	U.S. Geological Survey	Steel Tape		
P	6/24/1958		205	(1.00)	-185	1	U.S. Geological Survey	Steel Tape		
P	7/29/1958		208	3.00	-188	1	U.S. Geological Survey	Steel Tape		
P	8/22/1958		205	(3.00)	-185	1	U.S. Geological Survey	Steel Tape		
P	9/30/1958		201	(4.00)	-181	1	U.S. Geological Survey	Steel Tape		
P	10/28/1958		204	3.00	-184	1	U.S. Geological Survey	Steel Tape		
P	11/20/1958		207	3.00	-187	1	U.S. Geological Survey	Steel Tape		
P	12/23/1958		209	2.00	-189	1	U.S. Geological Survey	Steel Tape		
P	1/27/1959		207	(2.00)	-187	1	U.S. Geological Survey	Steel Tape		
P	2/25/1959		201	(6.00)	-181	1	U.S. Geological Survey	Steel Tape		
P	3/24/1959		200	(1.00)	-180	1	U.S. Geological Survey	Steel Tape		
P	4/28/1959		200	0.00	-180	1	U.S. Geological Survey	Steel Tape		
P	5/28/1959		204	4.00	-184	1	U.S. Geological Survey	Steel Tape		
P	6/24/1959		206	2.00	-186	1	U.S. Geological Survey	Steel Tape		
P	7/8/1959		206	0.00	-186	1	U.S. Geological Survey	Steel Tape		
P	8/20/1959		211	5.00	-191	1	U.S. Geological Survey	Steel Tape		
P	9/23/1959		204	(7.00)	-184	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	10/28/1959		205	1.00	-185	1	U.S. Geological Survey	Steel Tape		
P	11/25/1959		207	2.00	-187	1	U.S. Geological Survey	Steel Tape		
P	12/23/1959		204	(3.00)	-184	1	U.S. Geological Survey	Steel Tape		
P	1/27/1960		202	(2.00)	-182	1	U.S. Geological Survey	Steel Tape		
P	2/24/1960		203	1.00	-183	1	U.S. Geological Survey	Steel Tape		
P	3/23/1960		205	2.00	-185	1	U.S. Geological Survey	Steel Tape		
P	4/27/1960		208	3.00	-188	1	U.S. Geological Survey	Steel Tape		
P	5/26/1960		211	3.00	-191	1	U.S. Geological Survey	Steel Tape		
P	6/24/1960		221	10.00	-201	1	U.S. Geological Survey	Steel Tape		
P	7/26/1960		225	4.00	-205	1	U.S. Geological Survey	Steel Tape		
P	8/26/1960		228	3.00	-208	1	U.S. Geological Survey	Steel Tape		
P	9/27/1960		227	(1.00)	-207	1	U.S. Geological Survey	Steel Tape		
P	10/25/1960		223	(4.00)	-203	1	U.S. Geological Survey	Steel Tape		
P	11/29/1960		224	1.00	-204	1	U.S. Geological Survey	Steel Tape		
P	12/20/1960		223	(1.00)	-203	1	U.S. Geological Survey	Steel Tape		
P	1/24/1961		220	(3.00)	-200	1	U.S. Geological Survey	Steel Tape		
P	2/21/1961		220	0.00	-200	1	U.S. Geological Survey	Steel Tape		
P	3/20/1961		217	(3.00)	-197	1	U.S. Geological Survey	Steel Tape		
P	4/26/1961		224	7.00	-204	1	U.S. Geological Survey	Steel Tape		
P	5/23/1961		225	1.00	-205	1	U.S. Geological Survey	Steel Tape		
P	6/27/1961		230	5.00	-210	1	U.S. Geological Survey	Steel Tape		
P	7/27/1961		225	(5.00)	-205	1	U.S. Geological Survey	Steel Tape		
P	8/22/1961		225	0.00	-205	1	U.S. Geological Survey	Steel Tape		
P	9/21/1961		219	(6.00)	-199	1	U.S. Geological Survey	Steel Tape		
P	10/27/1961		224	5.00	-204	1	U.S. Geological Survey	Steel Tape		
P	11/22/1961		225	1.00	-205	1	U.S. Geological Survey	Steel Tape		
P	12/19/1961		223	(2.00)	-203	1	U.S. Geological Survey	Steel Tape		
P	1/23/1962		223	0.00	-203	1	U.S. Geological Survey	Steel Tape		
P	2/20/1962		223	0.00	-203	1	U.S. Geological Survey	Steel Tape		
P	3/23/1962		223	0.00	-203	1	U.S. Geological Survey	Steel Tape		
P	4/25/1962		224	1.00	-204	1	U.S. Geological Survey	Steel Tape		
P	5/23/1962		223	(1.00)	-203	1	U.S. Geological Survey	Steel Tape		
P	6/20/1962		223	0.00	-203	1	U.S. Geological Survey	Steel Tape		
P	7/25/1962		226	3.00	-206	1	U.S. Geological Survey	Steel Tape		
P	8/22/1962		229	3.00	-209	1	U.S. Geological Survey	Steel Tape		
P	9/26/1962		220	(9.00)	-200	1	U.S. Geological Survey	Steel Tape		
P	10/23/1962		223	3.00	-203	1	U.S. Geological Survey	Steel Tape		
P	11/21/1962		216	(7.00)	-196	1	U.S. Geological Survey	Steel Tape		
P	12/19/1962		223	7.00	-203	1	U.S. Geological Survey	Steel Tape		
P	1/22/1963		230	7.00	-210	1	U.S. Geological Survey	Steel Tape		
P	2/19/1963		225	(5.00)	-205	1	U.S. Geological Survey	Steel Tape		
P	3/20/1963		222	(3.00)	-202	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	4/24/1963		224	2.00	-204	1	U.S. Geological Survey	Steel Tape		
P	5/21/1963		223	(1.00)	-203	1	U.S. Geological Survey	Steel Tape		
P	6/26/1963		223	0.00	-203	1	U.S. Geological Survey	Steel Tape		
P	7/24/1963		226	3.00	-206	1	U.S. Geological Survey	Steel Tape		
P	8/14/1963		227	1.00	-207	1	U.S. Geological Survey	Steel Tape		
P	9/13/1963		226	(1.00)	-206	1	U.S. Geological Survey	Steel Tape		
P	11/14/1963		232	6.00	-212	1	U.S. Geological Survey	Steel Tape		
P	12/27/1963		230	(2.00)	-210	1	U.S. Geological Survey	Steel Tape		
P	1/28/1964		231	1.00	-211	1	U.S. Geological Survey	Steel Tape		
P	2/28/1964		232	1.00	-212	1	U.S. Geological Survey	Steel Tape		
P	3/18/1964		230	(2.00)	-210	1	U.S. Geological Survey	Steel Tape		
P	4/8/1964		230	0.00	-210	1	U.S. Geological Survey	Steel Tape		
P	5/13/1964		230	0.00	-210	1	U.S. Geological Survey	Steel Tape		
P	6/2/1964		231	1.00	-211	1	U.S. Geological Survey	Steel Tape		
P	7/9/1964		233	2.00	-213	1	U.S. Geological Survey	Steel Tape		
P	8/20/1964		243	10.00	-223	1	U.S. Geological Survey	Steel Tape		
P	9/22/1964		245	2.00	-225	1	U.S. Geological Survey	Steel Tape		
P	10/8/1964		243	(2.00)	-223	1	U.S. Geological Survey	Steel Tape		
P	11/17/1964		244	1.00	-224	1	U.S. Geological Survey	Steel Tape		
P	1/7/1965		242	(2.00)	-222	1	U.S. Geological Survey	Steel Tape		
P	3/15/1965		234	(8.00)	-214	1	U.S. Geological Survey	Steel Tape		
P	4/2/1965		237	3.00	-217	1	U.S. Geological Survey	Steel Tape		
P	5/25/1965		233	(4.00)	-213	1	U.S. Geological Survey	Steel Tape		
P	6/23/1965		235	2.00	-215	1	U.S. Geological Survey	Steel Tape		
P	8/18/1965		246	11.00	-226	1	U.S. Geological Survey	Steel Tape		
P	9/10/1965		247	1.00	-227	1	U.S. Geological Survey	Steel Tape		
P	10/18/1965		244	(3.00)	-224	1	U.S. Geological Survey	Steel Tape		
P	1/8/1966		239	(5.00)	-219	1	Registered Water Well Driller	Unknown		
P	4/18/1966		245	6.00	-225	1	Registered Water Well Driller	Unknown		
P	6/15/1966		242	(3.00)	-222	1	Registered Water Well Driller	Unknown		
P	7/26/1966		248	6.00	-228	1	Registered Water Well Driller	Unknown		
P	8/23/1966		250	2.00	-230	1	Registered Water Well Driller	Unknown		
P	9/21/1966		247	(3.00)	-227	1	Registered Water Well Driller	Unknown		
P	10/31/1966		252	5.00	-232	1	Registered Water Well Driller	Unknown		
P	11/28/1966		255	3.00	-235	1	Registered Water Well Driller	Unknown		
P	12/27/1966		255	0.00	-235	1	Registered Water Well Driller	Unknown		
P	1/25/1967		252	(3.00)	-232	1	Registered Water Well Driller	Unknown		
P	3/1/1967		252	0.00	-232	1	Registered Water Well Driller	Unknown		
P	4/26/1967		252	0.00	-232	1	Registered Water Well Driller	Unknown		
P	5/24/1967		253	1.00	-233	1	Registered Water Well Driller	Unknown		
P	7/6/1967		256	3.00	-236	1	Registered Water Well Driller	Unknown		
P	8/23/1967		257	1.00	-237	1	Registered Water Well Driller	Unknown		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/27/1967		257	0.00	-237	1	Registered Water Well Driller	Unknown		
P	11/16/1967		255	(2.00)	-235	1	Registered Water Well Driller	Unknown		
P	12/28/1967		252	(3.00)	-232	1	Registered Water Well Driller	Unknown		
P	1/24/1968		253	1.00	-233	1	Registered Water Well Driller	Unknown		
P	2/29/1968		255	2.00	-235	1	Registered Water Well Driller	Unknown		
P	3/28/1968		261	6.00	-241	1	Registered Water Well Driller	Unknown		
P	4/25/1968		263	2.00	-243	1	Registered Water Well Driller	Unknown		
P	5/31/1968		262	(1.00)	-242	1	Registered Water Well Driller	Unknown		
P	6/26/1968		258	(4.00)	-238	1	Registered Water Well Driller	Unknown		
P	7/23/1968		266	8.00	-246	1	Registered Water Well Driller	Unknown		
P	8/29/1968		262	(4.00)	-242	1	Registered Water Well Driller	Unknown		
P	9/25/1968		258	(4.00)	-238	1	Registered Water Well Driller	Unknown		
P	10/25/1968		257	(1.00)	-237	1	Registered Water Well Driller	Unknown		
P	11/28/1968		257	0.00	-237	1	Registered Water Well Driller	Unknown		
P	12/27/1968		256	(1.00)	-236	1	Registered Water Well Driller	Unknown		
P	1/31/1969		257	1.00	-237	1	Registered Water Well Driller	Unknown		
P	2/25/1969		266	9.00	-246	1	Registered Water Well Driller	Unknown		
P	3/26/1969		268	2.00	-248	1	Registered Water Well Driller	Unknown		
P	4/21/1969		263	(5.00)	-243	1	Registered Water Well Driller	Unknown		
P	6/2/1969		262	(1.00)	-242	1	Registered Water Well Driller	Unknown		
P	7/23/1969		258	(4.00)	-238	1	Registered Water Well Driller	Unknown		
P	8/29/1969		261	3.00	-241	1	Private Firm or Industry	Air Line		
P	9/29/1969		260	(1.00)	-240	1	Private Firm or Industry	Air Line		
P	10/30/1969		261	1.00	-241	1	Private Firm or Industry	Air Line		
P	11/26/1969		261	0.00	-241	1	Private Firm or Industry	Air Line		
P	12/24/1969		261	0.00	-241	1	Private Firm or Industry	Air Line		
P	2/2/1970		261	0.00	-241	1	Private Firm or Industry	Air Line		
P	3/5/1970		267	6.00	-247	1	Private Firm or Industry	Air Line		
P	3/31/1970		265	(2.00)	-245	1	Private Firm or Industry	Air Line		
P	4/30/1970		264	(1.00)	-244	1	Private Firm or Industry	Air Line		
P	5/28/1970		260	(4.00)	-240	1	Private Firm or Industry	Air Line		
P	6/26/1970		263	3.00	-243	1	Private Firm or Industry	Air Line		
P	7/30/1970		265	2.00	-245	1	Private Firm or Industry	Air Line		
P	8/28/1970		269	4.00	-249	1	Private Firm or Industry	Air Line		
P	9/24/1970		266	(3.00)	-246	1	Private Firm or Industry	Air Line		
P	10/28/1970		259	(7.00)	-239	1	Private Firm or Industry	Air Line		
P	11/25/1970		259	0.00	-239	1	Private Firm or Industry	Air Line		
P	12/24/1970		266	7.00	-246	1	Private Firm or Industry	Air Line		
P	1/28/1971		268	2.00	-248	1	Private Firm or Industry	Air Line		
P	2/23/1971		269	1.00	-249	1	Private Firm or Industry	Air Line		
P	3/24/1971		271	2.00	-251	1	Private Firm or Industry	Air Line		
P	4/30/1971		258	(13.00)	-238	1	Private Firm or Industry	Air Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	6/3/1971		259	1.00	-239	1	Private Firm or Industry	Air Line		
P	7/30/1971		262	3.00	-242	1	Private Firm or Industry	Air Line		
P	9/3/1971		261	(1.00)	-241	1	Private Firm or Industry	Air Line		
P	9/29/1971		264	3.00	-244	1	Private Firm or Industry	Air Line		
P	10/27/1971		260	(4.00)	-240	1	Private Firm or Industry	Air Line		
P	11/23/1971		264	4.00	-244	1	Private Firm or Industry	Air Line		
P	12/28/1971		261	(3.00)	-241	1	Private Firm or Industry	Air Line		
P	1/27/1972		260	(1.00)	-240	1	Private Firm or Industry	Air Line		
P	2/24/1972		261	1.00	-241	1	Private Firm or Industry	Air Line		
P	3/29/1972		269	8.00	-249	1	Private Firm or Industry	Air Line		
P	4/26/1972		265	(4.00)	-245	1	Private Firm or Industry	Air Line		
P	5/24/1972		266	1.00	-246	1	Private Firm or Industry	Air Line		
P	6/27/1972		267	1.00	-247	1	Private Firm or Industry	Air Line		
P	7/26/1972		266	(1.00)	-246	1	Private Firm or Industry	Air Line		
P	8/23/1972		267	1.00	-247	1	Private Firm or Industry	Air Line		
P	9/29/1972		271	4.00	-251	1	Private Firm or Industry	Air Line		
P	10/19/1972		274	3.00	-254	1	Private Firm or Industry	Air Line		
P	11/30/1972		273	(1.00)	-253	1	Private Firm or Industry	Air Line		
P	1/2/1973		271	(2.00)	-251	1	Private Firm or Industry	Air Line		
P	2/28/1973		271	0.00	-251	1	Private Firm or Industry	Air Line		
P	3/30/1973		272	1.00	-252	1	Private Firm or Industry	Air Line		
P	4/25/1973		270	(2.00)	-250	1	Private Firm or Industry	Air Line		
P	5/23/1973		269	(1.00)	-249	1	Private Firm or Industry	Air Line		
P	6/27/1973		270	1.00	-250	1	Private Firm or Industry	Air Line		
P	7/24/1973		274	4.00	-254	1	Private Firm or Industry	Air Line		
P	8/28/1973		272	(2.00)	-252	1	Private Firm or Industry	Air Line		
P	9/26/1973		273	1.00	-253	1	Private Firm or Industry	Air Line		
P	10/23/1973		273	0.00	-253	1	Private Firm or Industry	Air Line		
P	11/27/1973		270	(3.00)	-250	1	Private Firm or Industry	Air Line		
P	1/4/1974		273	3.00	-253	1	Private Firm or Industry	Air Line		
P	1/22/1974		271	(2.00)	-251	1	Private Firm or Industry	Air Line		
P	2/26/1974		271	0.00	-251	1	Private Firm or Industry	Air Line		
P	3/26/1974		270	(1.00)	-250	1	Private Firm or Industry	Air Line		
P	4/25/1974		270	0.00	-250	1	Private Firm or Industry	Air Line		
P	5/28/1974		269	(1.00)	-249	1	Private Firm or Industry	Air Line		
P	6/27/1974		270	1.00	-250	1	Private Firm or Industry	Air Line		
P	7/24/1974		270	0.00	-250	1	Private Firm or Industry	Air Line		
P	9/5/1974		272	2.00	-252	1	Private Firm or Industry	Air Line		
P	1/9/1975		276	4.00	-256	1	Private Firm or Industry	Air Line		
P	6/24/1975		273	(3.00)	-253	1	Private Firm or Industry	Air Line		
P	7/22/1975		271	(2.00)	-251	1	Private Firm or Industry	Air Line		
P	8/29/1975		269	(2.00)	-249	1	Private Firm or Industry	Air Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	10/16/1975		275	6.00	-255	1	Private Firm or Industry	Air Line		
P	11/25/1975		274	(1.00)	-254	1	Private Firm or Industry	Air Line		
P	1/29/1976		274	0.00	-254	1	Private Firm or Industry	Air Line		
P	2/25/1976		270	(4.00)	-250	1	Private Firm or Industry	Air Line		
P	3/23/1976		270	0.00	-250	1	Private Firm or Industry	Air Line		
P	5/17/1976		271	1.00	-251	1	Private Firm or Industry	Air Line		
P	5/25/1976		276	5.00	-256	1	Private Firm or Industry	Air Line		
P	6/22/1976		271	(5.00)	-251	1	Private Firm or Industry	Air Line		
P	7/29/1976		278	7.00	-258	1	Private Firm or Industry	Air Line		
P	8/24/1976		273	(5.00)	-253	1	Private Firm or Industry	Air Line		
P	9/29/1976		273	0.00	-253	1	Private Firm or Industry	Air Line		
P	10/26/1976		268	(5.00)	-248	1	Private Firm or Industry	Air Line		
P	11/23/1976		270	2.00	-250	1	Private Firm or Industry	Air Line		
P	12/29/1976		271	1.00	-251	1	Private Firm or Industry	Air Line		
P	1/31/1977		269	(2.00)	-249	1	Private Firm or Industry	Air Line		
P	3/4/1977		260	(9.00)	-240	1	Private Firm or Industry	Air Line		
P	3/22/1977		265	5.00	-245	1	Private Firm or Industry	Air Line		
P	4/26/1977		251	(14.00)	-231	1	Private Firm or Industry	Air Line		
P	5/24/1977		245	(6.00)	-225	1	Registered Water Well Driller	Unknown		
P	6/28/1977		241	(4.00)	-221	1	Registered Water Well Driller	Unknown		
P	7/27/1977		242	1.00	-222	1	Registered Water Well Driller	Unknown		
P	9/29/1977		242	0.00	-222	1	Registered Water Well Driller	Unknown		
P	10/28/1977		239	(3.00)	-219	1	Registered Water Well Driller	Unknown		
P	11/28/1977		237	(2.00)	-217	1	Registered Water Well Driller	Unknown		
P	12/30/1977		235	(2.00)	-215	1	Registered Water Well Driller	Unknown		
P	1/30/1978		234	(1.00)	-214	1	Registered Water Well Driller	Unknown		
P	3/26/1978		236	2.00	-216	1	Registered Water Well Driller	Unknown		
P	5/24/1978		232	(4.00)	-212	1	Registered Water Well Driller	Unknown		
P	6/21/1978		230	(2.00)	-210	1	Registered Water Well Driller	Unknown		
P	7/25/1978		232	2.00	-212	1	Registered Water Well Driller	Unknown		
P	8/31/1978		230	(2.00)	-210	1	Registered Water Well Driller	Unknown		
P	9/27/1978		225	(5.00)	-205	1	Registered Water Well Driller	Unknown		
P	10/25/1978		227	2.00	-207	1	Registered Water Well Driller	Unknown		
P	11/28/1978		223	(4.00)	-203	1	Registered Water Well Driller	Unknown		
P	12/21/1978		220	(3.00)	-200	1	Registered Water Well Driller	Unknown		
P	1/31/1979		219	(1.00)	-199	1	Registered Water Well Driller	Unknown		
P	2/27/1979		219	0.00	-199	1	Registered Water Well Driller	Unknown		
P	3/27/1979		215	(4.00)	-195	1	Registered Water Well Driller	Unknown		
P	4/27/1979		212	(3.00)	-192	1	Registered Water Well Driller	Unknown		
P	5/23/1979		213	1.00	-193	1	Registered Water Well Driller	Unknown		
P	6/27/1979		212	(1.00)	-192	1	Registered Water Well Driller	Unknown		
P	7/24/1979		210	(2.00)	-190	1	Registered Water Well Driller	Unknown		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	8/29/1979		209	(1.00)	-189	1	Registered Water Well Driller	Unknown		
P	9/25/1979		211	2.00	-191	1	Registered Water Well Driller	Unknown		
P	10/25/1979		208	(3.00)	-188	1	Registered Water Well Driller	Unknown		
P	11/27/1979		207	(1.00)	-187	1	Registered Water Well Driller	Unknown		
P	12/28/1979		207	0.00	-187	1	Registered Water Well Driller	Unknown		
P	1/23/1980		208	1.00	-188	1	Registered Water Well Driller	Unknown		
P	2/26/1980		207	(1.00)	-187	1	Registered Water Well Driller	Unknown		
P	3/27/1980		205	(2.00)	-185	1	Registered Water Well Driller	Unknown		
P	4/28/1980		208	3.00	-188	1	Registered Water Well Driller	Unknown		
P	5/24/1980		203	(5.00)	-183	1	Registered Water Well Driller	Unknown		
P	5/29/1980		203	0.00	-183	1	U.S. Geological Survey	Unknown		
P	6/24/1980		206	3.00	-186	1	Registered Water Well Driller	Unknown		
P	7/17/1980		204	(2.00)	-184	1	Registered Water Well Driller	Unknown		
P	8/27/1980		207	3.00	-187	1	Registered Water Well Driller	Unknown		
P	9/24/1980		206	(1.00)	-186	1	Registered Water Well Driller	Unknown		
P	12/17/1980		207	1.00	-187	1	Registered Water Well Driller	Unknown		
P	1/4/1981		205	(2.00)	-185	1	Registered Water Well Driller	Unknown		
P	2/1/1981		206	1.00	-186	1	Registered Water Well Driller	Unknown		
P	3/1/1981		206	0.00	-186	1	Registered Water Well Driller	Unknown		
P	4/12/1981		189	(17.00)	-169	1	Registered Water Well Driller	Unknown		
P	5/8/1981		205	16.00	-185	1	Registered Water Well Driller	Unknown		
P	6/20/1981		177	(28.00)	-157	1	U.S. Geological Survey	Steel Tape		
P	8/4/1981		192	15.00	-172	1	U.S. Geological Survey	Steel Tape		
P	9/7/1981		198	6.00	-178	1	U.S. Geological Survey	Steel Tape		
P	10/10/1981		198	0.00	-178	1	U.S. Geological Survey	Steel Tape		
P	11/2/1981		187	(11.00)	-167	1	U.S. Geological Survey	Steel Tape		
P	12/6/1981		186	(1.00)	-166	1	U.S. Geological Survey	Steel Tape		
P	1/3/1982		186	0.00	-166	1	U.S. Geological Survey	Steel Tape		
P	2/7/1982		191	5.00	-171	1	U.S. Geological Survey	Steel Tape		
P	4/3/1982		183	(8.00)	-163	1	U.S. Geological Survey	Steel Tape		
P	5/2/1982		182	(1.00)	-162	1	U.S. Geological Survey	Steel Tape		
P	6/28/1982		178	(4.00)	-158	1	U.S. Geological Survey	Steel Tape		
P	8/24/1982		178	0.00	-158	1	U.S. Geological Survey	Steel Tape		
P	9/8/1982		175	(3.00)	-155	1	U.S. Geological Survey	Steel Tape		
P	10/6/1982		185	10.00	-165	1	U.S. Geological Survey	Steel Tape		
P	11/7/1982		185	0.00	-165	1	U.S. Geological Survey	Air Line		
P	12/15/1982		185	0.00	-165	1	U.S. Geological Survey	Unknown		
P	1/2/1983		184	(1.00)	-164	1	U.S. Geological Survey	Air Line		
P	2/6/1983		178	(6.00)	-158	1	U.S. Geological Survey	Air Line		
P	3/5/1983		175	(3.00)	-155	1	U.S. Geological Survey	Air Line		
P	4/3/1983		174	(1.00)	-154	1	U.S. Geological Survey	Air Line		
P	5/1/1983		173	(1.00)	-153	1	U.S. Geological Survey	Air Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	6/26/1983		170	(3.00)	-150	1	U.S. Geological Survey	Unknown		
P	7/2/1983		173	3.00	-153	1	U.S. Geological Survey	Air Line		
P	9/4/1983		175	2.00	-155	1	U.S. Geological Survey	Air Line		
P	10/2/1983		175	0.00	-155	1	U.S. Geological Survey	Air Line		
P	11/5/1983		173	(2.00)	-153	1	U.S. Geological Survey	Air Line		
P	12/4/1983		174	1.00	-154	1	U.S. Geological Survey	Air Line		
P	12/15/1983		185	11.00	-165	1	U.S. Geological Survey	Air Line		
P	1/23/1984		177	(8.00)	-157	1	U.S. Geological Survey	Unknown		
P	2/5/1984		175	(2.00)	-155	1	U.S. Geological Survey	Air Line		
P	3/4/1984		171	(4.00)	-151	1	U.S. Geological Survey	Air Line		
P	3/31/1984		172	1.00	-152	1	U.S. Geological Survey	Air Line		
P	5/25/1984		171	(1.00)	-151	1	U.S. Geological Survey	Air Line		
P	6/25/1984		170	(1.00)	-150	1	U.S. Geological Survey	Air Line		
P	7/2/1984		170	0.00	-150	1	U.S. Geological Survey	Unknown		
P	8/5/1984		179	9.00	-159	1	U.S. Geological Survey	Air Line		
P	9/3/1984		180	1.00	-160	1	U.S. Geological Survey	Air Line		
P	10/7/1984		174	(6.00)	-154	1	U.S. Geological Survey	Air Line		
P	2/6/1985		176	2.00	-156	1	U.S. Geological Survey	Air Line		
P	3/3/1985		175	(1.00)	-155	1	U.S. Geological Survey	Air Line		
P	4/24/1985		173	(2.00)	-153	1	U.S. Geological Survey	Air Line		
P	5/5/1985		173	0.00	-153	1	U.S. Geological Survey	Air Line		
P	6/4/1985		170	(3.00)	-150	1	U.S. Geological Survey	Air Line		
P	9/2/1985		175	5.00	-155	1	U.S. Geological Survey	Air Line		
P	10/0/1985		174	(1.00)	-154	1	U.S. Geological Survey	Unknown		
P	10/1/1985		174	0.00	-154	1	U.S. Geological Survey	Air Line		
P	12/0/1985		180	6.00	-160	1	U.S. Geological Survey	Unknown		
P	12/1/1985		180	0.00	-160	1	U.S. Geological Survey	Air Line		
P	1/5/1986		176	(4.00)	-156	1	U.S. Geological Survey	Air Line		
P	2/2/1986		170	(6.00)	-150	1	U.S. Geological Survey	Air Line		
P	3/2/1986		172	2.00	-152	1	U.S. Geological Survey	Air Line		
P	11/3/1986		162	(10.00)	-142	1	U.S. Geological Survey	Unknown		
P	12/7/1986		166	4.00	-146	1	U.S. Geological Survey	Unknown		
P	1/4/1987		168	2.00	-148	1	U.S. Geological Survey	Unknown		
P	1/3/1988		161	(7.00)	-141	1	U.S. Geological Survey	Unknown		
P	5/1/1988		170	9.00	-150	1	U.S. Geological Survey	Unknown		
P	11/5/1988		153	(17.00)	-133	1	U.S. Geological Survey	Unknown		
P	1/1/1989		152	(1.00)	-132	1	U.S. Geological Survey	Unknown		
P	2/26/1989		148	(4.00)	-128	1	U.S. Geological Survey	Unknown		
P	1/7/1991		157	9.00	-137	1	U.S. Geological Survey	Steel Tape		
P	12/1/1991		143	(14.00)	-123	1	U.S. Geological Survey	Steel Tape		
P	10/4/1992		150	7.00	-130	1	U.S. Geological Survey	Steel Tape		
P	1/11/1996		132	(18.00)	-112	1	U.S. Geological Survey	Electric Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/5/1997		127	(5.00)	-107	1	U.S. Geological Survey	Electric Line		
P	1/23/2006		149	22.00	-129	1	U.S. Geological Survey	Steel Tape		
P	1/10/2008		108	(41.00)	-88	1	U.S. Geological Survey	Unknown		
P	1/10/2009		92	(16.00)	-72	1	U.S. Geological Survey	Unknown		
P	2/4/2010		118	26.00	-98	1	U.S. Geological Survey	Unknown		
P	1/12/2011		117	(1.00)	-97	1	Well Owner or Operator	Steel Tape		
P	1/10/2012		115	(2.00)	-95	1	Well Owner or Operator	Steel Tape		
Q	1/7/2013		115	0.00	-95	1	Well Owner or Operator	Unknown	4	
P	1/10/2014		115	0.00	-95	1	U.S. Geological Survey	Unknown		
P	12/28/2014		116	1.00	-96	1	U.S. Geological Survey	Unknown		
P	1/14/2016		120	4.00	-100	1	Other or Source of Measurement Unknown	Unknown		
Q	1/11/2017	0001	114	(6.00)	-94	1	U.S. Geological Survey	Unknown	4	
P	1/30/2018		115	1.00	-95	1	U.S. Geological Survey	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable
Q	Questionable

Remark ID	Remark Description
4	Well pumped recently

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523145

(6)

TEXAS DEPARTMENT OF WATER RESOURCES

WELL SCHEDULE

Aquifer(s) Evangeline Project No. _____ State Well No. 65-23-145

_____ Field No./Owner's Well No. _____ County Harris

1. Location: ___ ¼, ___ ¼, Section ___, Block ___, Survey _____, Lat. ~~29° 42' 44"~~, Long. 95° 14' 10"
29° 43' 44" N
MAP SCALED by LEWALLUHLE

2. Owner: The Terminals Address: _____

Tenant (other): _____ Address: _____

Driller: Layne Texas Address: _____

3. Land Surface Elevation: 25 ft. above msl determined by _____

4. Drilled: 8-18 19 72 ; Dug, Cable Tool, Rotary, Air, _____

5. Depth: Rept. 1135 ft. Meas. _____ ft.

6. Borehole Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfr. _____ Type T

No. Stages _____, Bowls Diam. ___ in., Setting _____ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Mfr. _____ Fuel E HP. 250

9. Yield: Flow ___ gpm, Pump ___ gpm, Meas., Rept., Est. ___ Date ___

10. Performance Test: Date 9-28-72 Length of Test ___ Made by L-T

Static Level 399 ft. Pumping Level 480 ft. Drawdown 81 ft.

Production 1023 gpm Specific Capacity _____ gpm/ft.

11. Quality: (Remarks on taste, odor, color, etc.) _____

Analyses

Date _____ Laboratory _____ TDS ___ Sp Cond ___

Date _____ Laboratory _____ TDS ___ Sp Cond ___

12. Other data available (as circled): Pumping Test, Power & Yield Test, Drillers Log, Formation Samples, Geophysical Log(s) Q1742 (type)

13. Water Level(s): _____ ft. rept. meas. _____ 19 ___ above below _____ which is ___ ft. above below Land Surface

_____ ft. rept. meas. _____ 19 ___ above below _____ which is ___ ft. above below Land Surface

14. Use: Dom., Stock, Public Supply, Ind., Irr., Observation, Other (Test Hole, Oil Test, etc.) _____

15. Recorded by: _____ Source of data: _____ Date: _____

16. Remarks: _____

17. Location or Sketch:

CASING, BLANK PIPE & WELL SCREEN Cemented From ___ ft. to ___ ft.			
Diam. (in.)	Type	Setting (feet) from	to
16			750
10			1135

TDWR-0308

W/L Obs. Well ___ W/O Obs. Well ___
State Well No. 65-23-145

Q 1742

nd original copy by
rtified mail to the
xas Water Development Board
O. Box 12386
stin, Texas 78711

State of Texas

WATER WELL REPORT

For TWDB use only
Well No. 65-24-1P
Located on map yes
Received: 73

)OWNER:
Person having well drilled Tec Terminals Inc, South (Name) Address 1500 Clinton Drive (Street or RFD) Galena Park (City) Texas (State)

Landowner _____ (Name) Address _____ (Street or RFD) (City) (State)

)LOCATION OF WELL:
County Harris, _____ miles in _____ (N.E., S.W., etc.) direction from _____ (Town)

Locate by sketch map showing landmarks, roads, creeks, hiway number, etc.*

See attached map

North

(Use reverse side if necessary)

or

Give legal location with distances and directions from adjacent sections or survey lines.

Labor _____ League _____

Block _____ Survey _____

Abstract No. _____

(NW¼ NE¼ SW¼ SE¼) of Section _____

)TYPE OF WORK (Check):
New Well Deepening
Reconditioning Plugging

4)PROPOSED USE (Check):
Domestic Industrial Municipal
Irrigation Test Well Other

5)TYPE OF WELL (Check):
Rotary Driven Dug
Cable Jetted Bored

)WELL LOG:
Diameter of hole _____ in. Depth drilled _____ ft. Depth of completed well _____ ft. Date drilled _____

All measurements made from _____ ft. above ground level.

From (ft.)	To (ft.)	Description and color of formation material

See attached Completion Report

(Use reverse side if necessary)

9) Casing:
Type: Old New Steel Plastic Other

Cemented from _____ ft. to _____ ft.

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Gage

10) SCREEN:
Type _____

Perforated Slotted

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Slot Size

) COMPLETION (Check):
Straight wall Gravel packed Other
Under reamed Open Hole

) WATER LEVEL:
Static level _____ ft. below land surface Date _____
Artesian pressure _____ lbs. per square inch Date _____
Depth to pump bowls, cylinder, jet, etc., _____ ft. below land surface.

11) WELL TESTS:
Was a pump test made? Yes No If yes, by whom?
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.
Bailer test _____ gpm with _____ ft. drawdown after _____ hrs.
Artesian flow _____ gpm
Temperature of water _____

12) WATER QUALITY:
Was a chemical analysis made? Yes No
Did any strata contain undesirable water? Yes No
Type of water? _____ depth of strata _____

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Gaston L. Alciatore (Type or Print) Water Well Drillers Registration No. 1201

ADDRESS P O Box 5469 (Street or RFD) Houston (City) 77011 (State)

(Signed) GASTON (GAS) ALCIATORE (Water Well Driller) Layne Texas Co (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

*Additional instructions on reverse side.

Q-1742

65-23-145

TWDBE-GW-53

65-24-1P

FORM NO. 26

State

LAYNE TEXAS COMPANY,

HOUSTON -:- DALLAS

WELL LOG

REPORT NO 8008
S. O. 1104-7
PAGE 1 of 1
FILE NO. 3612
DATE 8/22/72

CUSTOMER LOCATION	WELL DATA
FOR Tec Terminals, Inc.	NAME WELL / WELL NO. 1
LOCATION WELL Deer Park	ELEVATION / DATUM
SURVEY / FIELD	RT / C / GR
COUNTY Harris / STATE Texas	TEST HOLE SIZE 9-7/8" TO 1207'
OTHER LAND MARKS Battleground Road	DATE STARTED DRILLING 8-15-72
	DATE FINISHED DRILLING 8-18-72
	DRILLER C. Brewer / RIG NO. 17
	TYPE MUD Gel / NO. SACKS 50
	ELECTRIC LOG Yes / TYPE Schlumberger
	SURVEY Eastman / TYPE Single-shot
	OTHER drillers: Nobles & Murphy

DEPTH STRATA	EACH STRATUM	DESCRIPTION FORMATION	SAMPLES DEPTH	SAMPLES TYPE	SAMPLES NUMBER
0		Surface			
8	8	Black land			
94	86	Clay			
115	21	Sand			
175	60	Clay			
235	60	Sand			
365	130	Sand & shale			
395	30	Hard shale & sand			
423	28	Sand			
467	44	Sand, shale & layers of shale			
485	18	Shale & layers of lime			
548	63	Shale & layers of sand			
571	23	Blue sandy shale			
675	104	Brown sandy shale			
680	5	Sand & shale			
695	15	Clay & shale			
756	61	Shale & gravel			
785	29	Sand, shale & gravel			
846	61	Sand			
906	60	Sand & shale			
965	59	Sand			
1059	94	Hard sand, shale & fine hard sand			
1115	56	Fine hard sand & layer of shale			
1200	85	Fine hard sand			
1207	7	Shale			
Total depth 1207 ft.					

Q 1742

85-23-145

WB

FORM NO 1202 · IM · 8-51 · B&L

THE LAYNE TEXAS COMPANY, LTD.

HOUSTON -:- DALLAS

MATERIAL SETTING

REPORT NO. 8909
S. O. 1104-2187
PAGE 1 OF 1
FILE NO. 3612
DATE 10/2/78

CUSTOMER LOCATION

FOR Tec Terminals, Inc.

LOCATION WELL Deer Park

SURVEY FIELD

COUNTY Harris STATE Texas

OTHER LAND MARKS Battleground Rd. near F.M. 134

WELL DATA

NAME WELL WELL NO. 1

ELEVATION DATUM

TYPE WELL Gravel-wall

SURFACE CASING CEMENTED Yes NO. SACKS 380+8% Gel

SIZE HOLE UNDERREAMED 30" DEPTH 750-1135'

GRAVEL TYPE 112-113- NO. CU. YDS. 122
165-131

TYPE SCREEN SS WW Barlug GAGE .045"

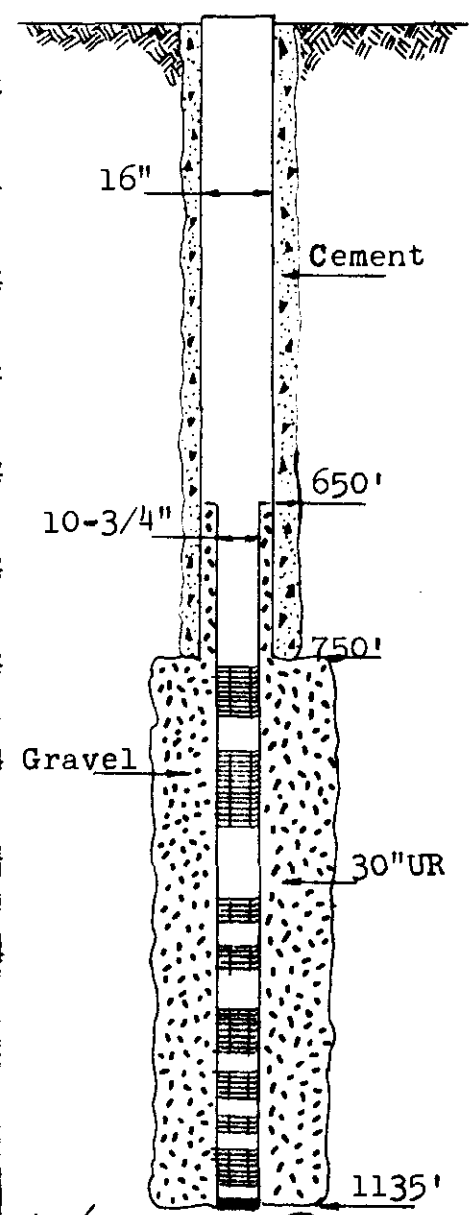
DRILLER C. Brewer RIG NO. 17

OTHER Q. K. Nobles

DEPTH	LENGTH	SIZE, KIND, WEIGHT MATERIAL
+2'		16" O.D. surface casing 62.58#
0		Surface
650'		Top of 10-3/4" liner
750'	752'	16" O.D. surface casing 62.58#
760'	110'	10-3/4" O.D. blank liner 31.20#
787'	27'	10-3/4" O.D. S.S. W.W. Barlug screen .045" ga.
800'	13'	10-3/4" O.D. blank liner 31.20#
830'	30'	10-3/4" O.D. S.S. W.W. Barlug screen .045" ga.
900'	70'	10-3/4" O.D. blank liner 31.20#
910'	10'	10-3/4" O.D. S.S. W.W. Barlug screen .045" ga.
920'	10'	10-3/4" O.D. blank liner 31.20#
930'	10'	10-3/4" O.D. S.S. W.W. Barlug .045" ga. screen
960'	30'	10-3/4" O.D. blank liner 31.20#
985'	25'	10-3/4" O.D. S.S. W.W. Barlug screen .045" ga.
1000'	15'	10-3/4" O.D. blank liner 31.20#
1018'	18'	10-3/4" O.D. S.S. W.W. Barlug screen .045" ga.
1023'	5'	10-3/4" O.D. blank liner 31.20#
1043'	20'	10-3/4" O.D. S.S. W.W. Barlug screen .045" ga.
1070'	27'	10-3/4" O.D. blank liner 31.20#
1085'	15'	10-3/4" O.D. S.S. W.W. Barlug screen .045" ga.
1095'	10'	10-3/4" O.D. blank liner 31.20#
1120'	25'	10-3/4" O.D. S.S. W.W. Barlug screen .045" ga.
1133'	13'	10-3/4" O.D. blank liner 31.20#
1135'	2'	10-3/4" O.D. set nipple & back pressure valve

Total depth 1135 ft.

SKETCH



Attach 65-24-1P
65-23-145

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-145

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523145
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.729444
Latitude (degrees minutes seconds)	29° 43' 46" N
Longitude (decimal degrees)	-95.235556
Longitude (degrees minutes seconds)	095° 14' 08" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CEVG - Chicot and Evangeline Aquifers
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	27
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	752
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1922
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Gulf Oil Co.
Driller	Layne Bowler Co.
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	153 ft of screen between 499 and 747 ft.

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

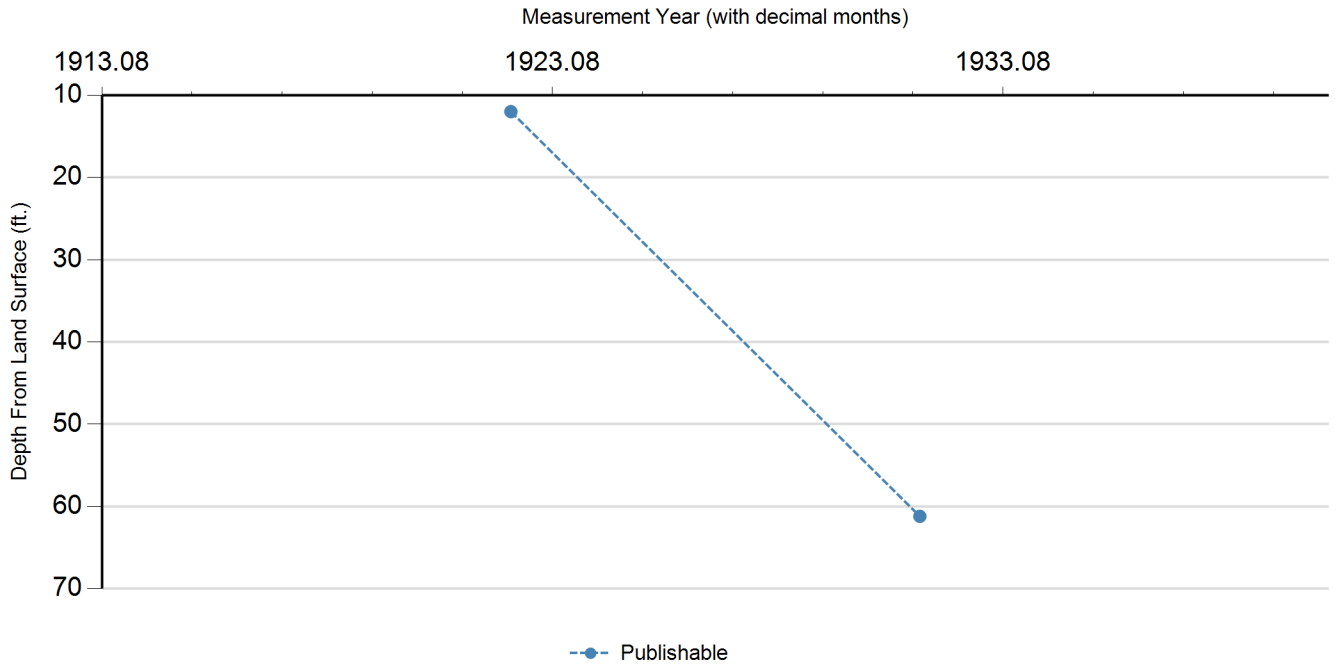
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	0/0/1922		12		15	1	Registered Water Well Driller	Unknown		
P	3/27/1931		61.2	49.20	-34.2	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 1/19/1939 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot and Evangeline Aquifers

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		301.55	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		368	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		36	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		87	mg/L as CACO3	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0.7	mg/L as NO3	
00929	SODIUM, TOTAL (MG/L AS NA)		123	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		2	mg/L as SO4	

Water Quality Analysis

Sample Date: 8/5/1939 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot and Evangeline Aquifers

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		216.39	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		264	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		27	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		117	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		72	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		18	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		268	mg/L	

Water Quality Analysis

Sample Date: 5/24/1940 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot and Evangeline Aquifers

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		219.67	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		268	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		27	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		104	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		76	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		12	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		283	mg/L	

Water Quality Analysis

Sample Date: 2/19/1941 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot and Evangeline Aquifers

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		216.39	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		264	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		25	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		110	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		75	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		20	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		288	mg/L	

Water Quality Analysis

Sample Date: 1/29/1942 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot and Evangeline Aquifers

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		220.49	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		269	mg/L	
00910	CALCIUM (MG/L)		32	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		25	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		75	mg/L as CACO3	
00920	MAGNESIUM (MG/L)		9	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		2.07		
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		3.02		
00932	SODIUM, CALCULATED, PERCENT		58	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		75	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		21	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		294	mg/L	

Water Quality Analysis

Sample Date: 1/15/1943 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot and Evangeline Aquifers

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		229.51	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		280	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		30	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		10	mg/L as SO4	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523147

Texas Water Development Board
Well Schedule

State Well Number 6523147 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **Zone** 1 **Latitude** 294343 **Longitude** 951318 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Texaco Inc.

Driller
Layne Texas

Address _____ **Tenant/Oper.** _____

Date Drilled / /1929 **Depth** 1376 **Source of Depth** **Altitude** 19 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION

Const-Method

Casing Material Blank

Screen Material Blank

Completion

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from_____**to**_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** NONE **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** blank **Horsepower -**

YIELD Flow- _____ **GPM** **Pump** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** UNUSED **Secondary -** blank **Tertiary -** blank

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** Y **Logs -** **Other Data -**

WATER LEVELS 2 measurements
1929 to 1953
MIN -228 MAX -35

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency

REMARKS -
194 ft of screen between 289 and 1374 ft. Reported yield 1300 gpm with 103 ft drawdown when drilled. Well 5.

Aquifer - 112CEVG **ID -** 15

CHICOT AND EVANGELINE AQUIFERS

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-147

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523147
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.728611
Latitude (degrees minutes seconds)	29° 43' 43" N
Longitude (decimal degrees)	-95.221667
Longitude (degrees minutes seconds)	095° 13' 18" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CEVG - Chicot and Evangeline Aquifers
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	19
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1376
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1929
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Texaco Inc.
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	194 ft of screen between 289 and 1374 ft. Reported yield 1300 gpm with 103 ft drawdown when drilled. Well 5.

Casing - No Data

Well Tests - No Data

Lithology - No Data

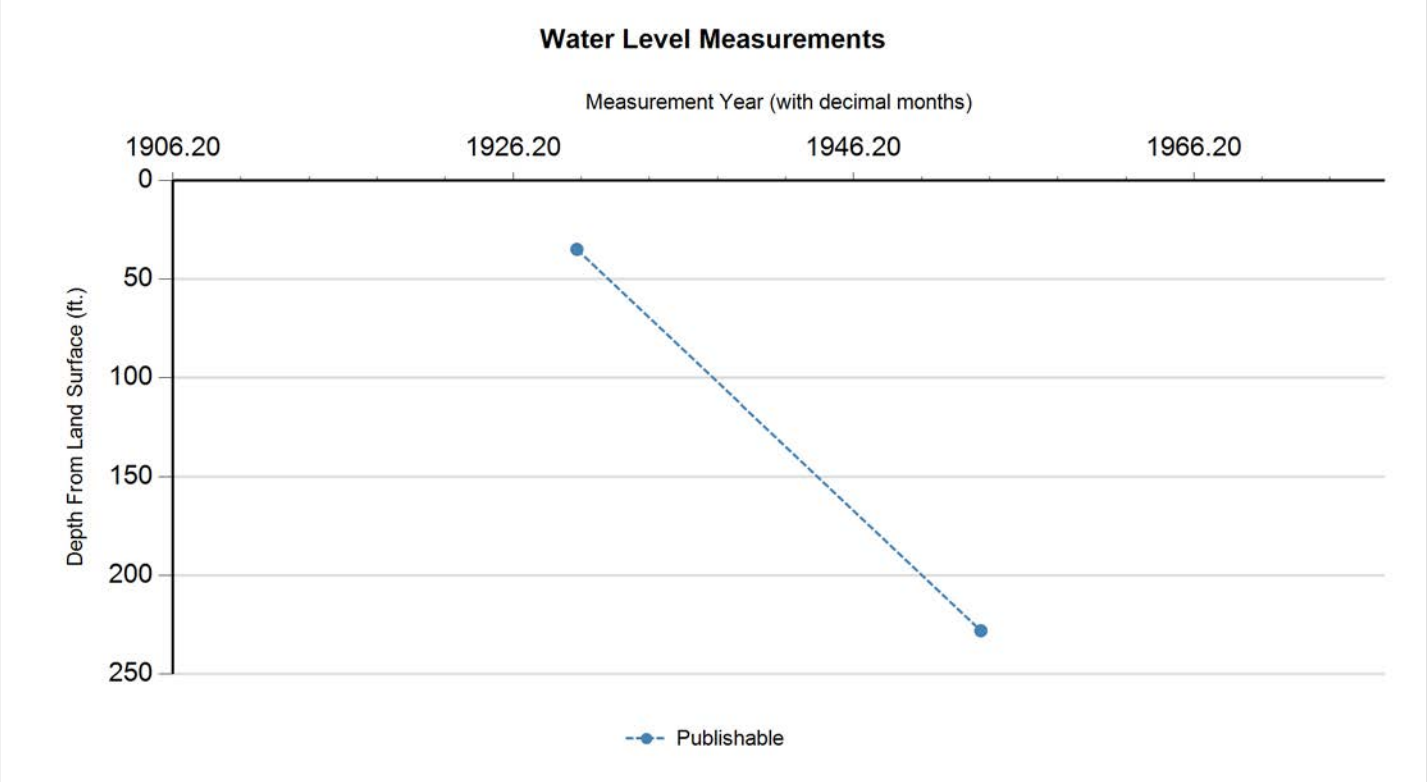
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	12/14/1929		35		-16	1	Registered Water Well Driller	Unknown		
P	9/9/1953		228	193.00	-209	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 1/19/1939 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot and Evangeline Aquifers

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		232.79	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		284	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		31	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.5	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		100	mg/L as CACO3	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0.5	mg/L as NO3	
00929	SODIUM, TOTAL (MG/L AS NA)		90	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		17	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		312	mg/L	

Water Quality Analysis

Sample Date: 8/5/1939 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot and Evangeline Aquifers

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		222.13	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		271	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		32	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.6	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		64	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		100	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		12	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		295	mg/L	

Water Quality Analysis

Sample Date: 5/24/1940 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot and Evangeline Aquifers

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		213.11	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		260	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		32	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		82	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		87	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		12	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		285	mg/L	

Water Quality Analysis

Sample Date: 2/19/1941 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot and Evangeline Aquifers

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		221.31	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		270	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		31	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		64	mg/L as CACO3	
00929	SODIUM, TOTAL (MG/L AS NA)		99	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		13	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		293	mg/L	

Water Quality Analysis

Sample Date: 1/29/1942 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot and Evangeline Aquifers

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		226.23	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		276	mg/L	
00910	CALCIUM (MG/L)		18	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		32	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		70	mg/L as CACO3	
00920	MAGNESIUM (MG/L)		6	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		3.13		
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		5.16		
00932	SODIUM, CALCULATED, PERCENT		75	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		99	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		12	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		302	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523104

WRD Exp. (GW)
April 1966

Well No. LJ-65-23-104

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

MASTER CARD G.D. McAdoo

Record by R.K. Gabrysch M63 / W.L. Nettel 1951 — Source of data: File — Date: 1-22-68 — Map: Pasadena 1955 1:24000

State: Texas [48] — County (or town): Harris [LJ]

Latitude: 294445 N — Longitude: 095141 — Sequential number: 1

Lat-long accuracy: 1 — T. ___ N, R ___ E, Sec ___, ___ k, ___ k, ___ k

Local well number: LJ-65-23-104 — Other number: B & M owner #4 C-135

Local use: — Owner or name: City of Galena Park

Owner or name: GALENA PARK — Address:

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist — [M]

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other — [P]

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (S) Destroyed — [W]

DATA AVAILABLE: Well data [1] — Freq. W/L meas.: Annual 1953 [A] — Field aquifer char.

Hyd. lab. data:

Qual. water data; type:

Freq. sampling: 7-28-64 [0] — Pumpage inventory: yes no, period:

Aperture cards: yes

Log data: E-Log (CC-2) [E]

WELL-DESCRIPTION CARD

[SAME AS ON MASTER CARD] — Depth well: 1350 ft [1350] Meas. Rept. Driller accuracy [3]

Depth cased (first perf.): 607 ft [607] — Casing type: S; Diam. 12-10-8 in [12]

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) other — [G]

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other — [H]

Date Drilled: Aug 1951 [951] — Pump intake setting: ft

Driller: Layne Texas co (name), Houston, Texas (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple, (cent.), (M) multiple, (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other — [T] Deep / Shallow [D]

Power (type): diesel, elec, nat gas, gasoline, hand, LP gas, wind; H.P. 150 — [W] Trans. or meter no.

Descrip. MP: ft above/below LSD, Alt. MP

Alt. LSD: 33 [33] — Accuracy (source): Topo 5' [3]

Water Level: 267 ft above/below MP; Ft above/below LSD [267] — Accuracy: rept. [D]

Date meas.: 9-24-51 [951] — Yield: 1043 gpm [1043] — Method determined

Drawdown: 93 ft [93] — Accuracy: rept 1951 [3] — Pumping period: 24 hrs

QUALITY OF WATER DATA: Iron ppm — Sulfate ppm — Chloride ppm — Hard. ppm

Sp. Conduct K x 10^6 — Temp. °F — Date sampled

Taste, color, etc.

PL 360 267/931

Well No. LJ-65-23-104

Well No. LJ-65-3-104

Latitude-longitude 29 d, 44 m, 45 s N 095 d, 14 m, 11.1 s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) Physiographic Province: Coastal Plain (20–21) 07 Section: West

G.C.P (22) F Drainage Basin: (23–25) 5 1 R Subbasin: (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (Q) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat (27)

MAJOR AQUIFER: system, series (28–29) T aquifer, formation, group (30–31) E

Lithology: (32–33) Origin: (34) Aquifer Thickness: ft

(35–37) Length of well open to: 271 ft (38–40) 2 7 1 Depth to top of: ft (41–43)

MINOR AQUIFER: system, series (44–45) aquifer, formation, group (46–47)

Lithology: (48–49) Origin: (50) Aquifer Thickness: ft

(51–53) Length of well open to: ft (54–56) Depth to top of: ft (57–59)

Intervals Screened: * Screened app sand (607-1306)

Depth to consolidated rock: ft (60–63) Source of data: (64)

Depth to basement: ft (65–68) Source of data: (69)

Surficial material: (70–71) Infiltration characteristics: (72)

Coefficient Trans: gpd/ft (73–75) Coefficient Storage: (76–78)

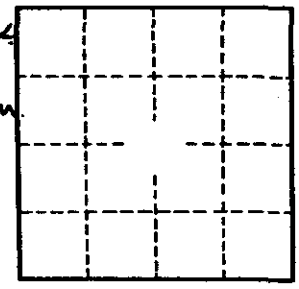
Coefficient Perm: gpd/ft^2; Spec cap: gpm/ft; Number of geologic cards: (79)

0-601' · 12 3/4" csg.
526-577 : 10 3/4" csg
577-1351 8 5/8" csg.

Screen S.S.W.W.
.020 gw 607-639. - 32
.016 — 657-678 - 21
.016 — 732. 753 - 21
.018 — 778-798 - 20
.020 — 811-833 - 22
.018 — 848-877 - 29
.020 — 906. 929 - 23
.016 — 1067-1108 - 41
.020 — 1215-1226 - 11
.015 — 1255-1306. 51

9-24-51
24hr pumptest
P/L = 360 @ 1043 GPM

Recovery
5 min - 274
10 " - 272
15 " - 270
20 " - 269
25 " - 268
30 " - 267



Well No. LJ-65-23-104

GPO 857-700

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-104

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523104
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.7461111
Latitude (degrees minutes seconds)	29° 44' 46" N
Longitude (decimal degrees)	-95.2366667
Longitude (degrees minutes seconds)	095° 14' 12" W
Coordinate Source	+/- 1 Second
Aquifer Code	112CHCT - Chicot Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	Provided by U.S. Geological Survey
Land Surface Elevation (feet above sea level)	33
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1350
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	0/0/1951
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Public Supply
Water Level Observation	USGS Current Site Visit
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	City of Galena Park Well #4
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	294445095141101
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	4
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	9/26/1997
Last Update Date	11/4/2022

Remarks	271 ft of screen between 607 and 1306 ft. Reported yield 1043 gpm with 93 fr drawdown when drilled. GW Aquifer updated with information provided by USGS, 11/4/2022

Casing - No Data

Well Tests - No Data

Lithology - No Data

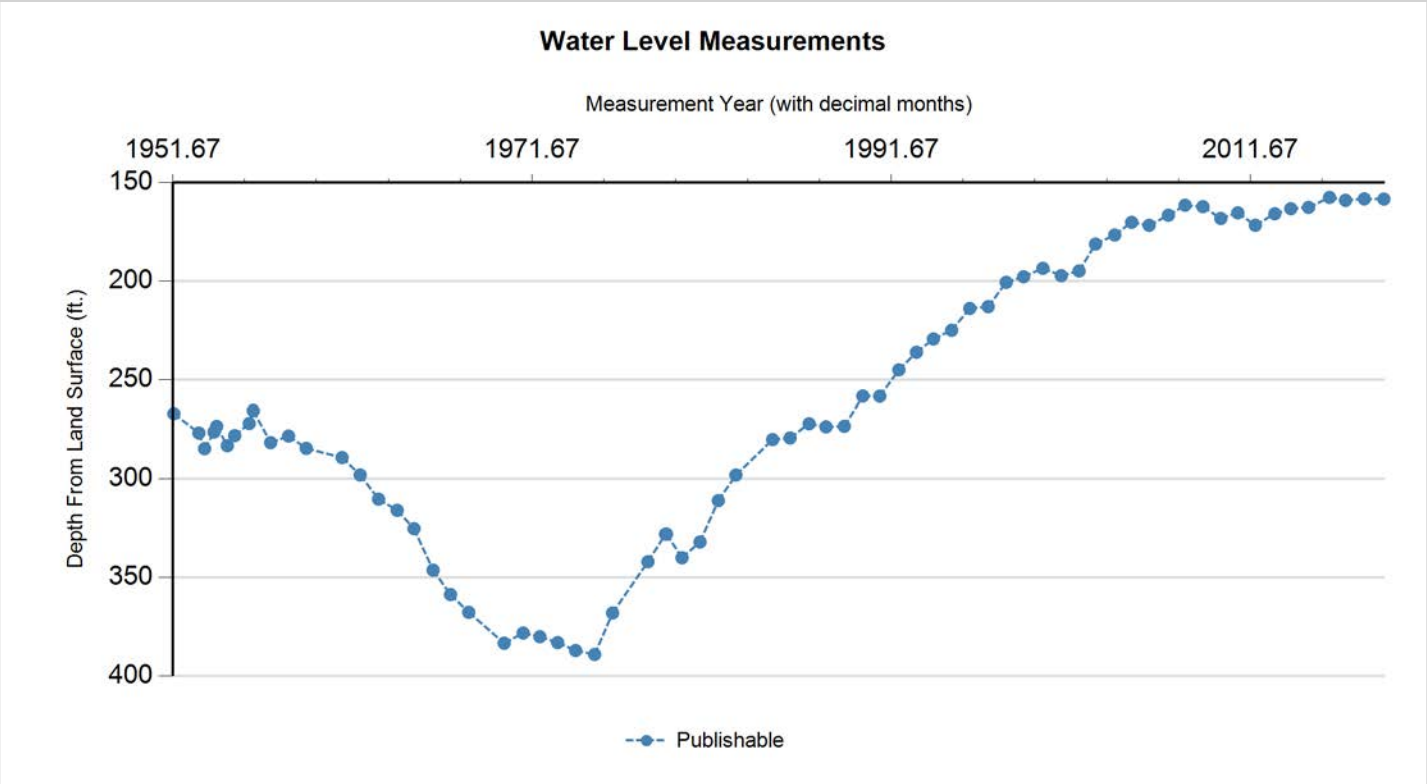
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/24/1951		267		-234	1	U.S. Geological Survey	Steel Tape		
P	2/13/1953		276.8	9.80	-243.8	1	Other or Source of Measurement Unknown	Unknown		
P	6/9/1953		284.71	7.91	-251.71	1	U.S. Geological Survey	Steel Tape		
P	12/22/1953		276.25	(8.46)	-243.25	1	U.S. Geological Survey	Steel Tape		
P	2/9/1954		273.4	(2.85)	-240.4	1	U.S. Geological Survey	Steel Tape		
P	9/16/1954		283.21	9.81	-250.21	1	U.S. Geological Survey	Steel Tape		
P	2/10/1955		278.12	(5.09)	-245.12	1	U.S. Geological Survey	Steel Tape		
P	12/6/1955		271.96	(6.16)	-238.96	1	U.S. Geological Survey	Steel Tape		
P	2/23/1956		265.51	(6.45)	-232.51	1	U.S. Geological Survey	Steel Tape		
P	2/11/1957		281.64	16.13	-248.64	1	U.S. Geological Survey	Steel Tape		
P	2/11/1958		278.3	(3.34)	-245.3	1	U.S. Geological Survey	Steel Tape		
P	2/6/1959		284.55	6.25	-251.55	1	U.S. Geological Survey	Steel Tape		
P	2/3/1961		289.2	4.65	-256.2	1	U.S. Geological Survey	Steel Tape		
P	2/6/1962		298	8.80	-265	1	U.S. Geological Survey	Steel Tape		
P	2/15/1963		310.3	12.30	-277.3	1	U.S. Geological Survey	Steel Tape		
P	2/28/1964		315.94	5.64	-282.94	1	U.S. Geological Survey	Steel Tape		
P	2/5/1965		325.25	9.31	-292.25	1	U.S. Geological Survey	Steel Tape		
P	2/28/1966		346.26	21.01	-313.26	1	U.S. Geological Survey	Steel Tape		
P	2/17/1967		358.63	12.37	-325.63	1	U.S. Geological Survey	Steel Tape		
P	2/21/1968		367.62	8.99	-334.62	1	U.S. Geological Survey	Steel Tape		
P	2/12/1970		383.3	15.68	-350.3	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	3/3/1971		378.15	(5.15)	-345.15	1	U.S. Geological Survey	Steel Tape		
P	2/8/1972		380	1.85	-347	1	U.S. Geological Survey	Air Line		
P	2/5/1973		383	3.00	-350	1	U.S. Geological Survey	Air Line		
P	2/5/1974		387	4.00	-354	1	U.S. Geological Survey	Air Line		
P	2/26/1975		389	2.00	-356	1	U.S. Geological Survey	Air Line		
P	2/26/1976		368	(21.00)	-335	1	U.S. Geological Survey	Air Line		
P	2/14/1978		342	(26.00)	-309	1	U.S. Geological Survey	Air Line		
P	2/7/1979		328	(14.00)	-295	1	U.S. Geological Survey	Steel Tape		
P	2/27/1979		328	0.00	-295	1	U.S. Geological Survey	Air Line		
P	1/7/1980		340	12.00	-307	1	U.S. Geological Survey	Air Line		
P	1/7/1981		332	(8.00)	-299	1	U.S. Geological Survey	Air Line		
P	1/15/1982		311	(21.00)	-278	1	U.S. Geological Survey	Steel Tape		
P	1/7/1983		298.06	(12.94)	-265.06	1	U.S. Geological Survey	Steel Tape		
P	1/23/1985		280.09	(17.97)	-247.09	1	U.S. Geological Survey	Steel Tape		
P	1/13/1986		279.27	(0.82)	-246.27	1	U.S. Geological Survey	Steel Tape		
P	2/5/1987		272.06	(7.21)	-239.06	1	U.S. Geological Survey	Unknown		
P	1/14/1988		273.65	1.59	-240.65	1	U.S. Geological Survey	Unknown		
P	1/20/1989		273.37	(0.28)	-240.37	1	U.S. Geological Survey	Unknown		
P	2/1/1990		258.31	(15.06)	-225.31	1	U.S. Geological Survey	Unknown		
P	1/11/1991		258.37	0.06	-225.37	1	U.S. Geological Survey	Steel Tape		
P	2/4/1992		245.05	(13.32)	-212.05	1	U.S. Geological Survey	Steel Tape		
P	1/26/1993		236.15	(8.90)	-203.15	1	U.S. Geological Survey	Steel Tape		
P	1/6/1994		229.4	(6.75)	-196.4	1	U.S. Geological Survey	Steel Tape		
P	1/11/1995		224.98	(4.42)	-191.98	1	U.S. Geological Survey	Steel Tape		
P	1/15/1996		213.94	(11.04)	-180.94	1	U.S. Geological Survey	Steel Tape		
P	1/24/1997		213.03	(0.91)	-180.03	1	U.S. Geological Survey	Steel Tape		
P	1/26/1998		200.68	(12.35)	-167.68	1	U.S. Geological Survey	Steel Tape		
P	1/14/1999		197.86	(2.82)	-164.86	1	U.S. Geological Survey	Steel Tape		
P	2/11/2000		193.58	(4.28)	-160.58	1	U.S. Geological Survey	Steel Tape		
P	2/19/2001		197.33	3.75	-164.33	1	U.S. Geological Survey	Steel Tape		
P	2/17/2002		194.92	(2.41)	-161.92	1	U.S. Geological Survey	Steel Tape		
P	1/16/2003		181.3	(13.62)	-148.3	1	U.S. Geological Survey	Steel Tape		
P	2/11/2004		176.67	(4.63)	-143.67	1	U.S. Geological Survey	Steel Tape		
P	1/20/2005		170.28	(6.39)	-137.28	1	U.S. Geological Survey	Steel Tape		
P	1/10/2006		171.79	1.51	-138.79	1	U.S. Geological Survey	Steel Tape		
P	2/7/2007		166.67	(5.12)	-133.67	1	U.S. Geological Survey	Steel Tape		
P	1/10/2008		161.59	(5.08)	-128.59	1	U.S. Geological Survey	Steel Tape		
P	1/8/2009		162.32	0.73	-129.32	1	U.S. Geological Survey	Steel Tape		
P	1/6/2010		168.3	5.98	-135.3	1	U.S. Geological Survey	Steel Tape		
P	12/22/2010		165.47	(2.83)	-132.47	1	U.S. Geological Survey	Steel Tape		
P	12/13/2011		171.78	6.31	-138.78	1	U.S. Geological Survey	Steel Tape		
P	1/10/2013		165.94	(5.84)	-132.94	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	12/5/2013		163.35	(2.59)	-130.35	1	U.S. Geological Survey	Steel Tape		
P	12/1/2014		162.7	(0.65)	-129.7	1	U.S. Geological Survey	Steel Tape		
P	1/27/2016	1141	157.64	(5.06)	-124.64	1	U.S. Geological Survey	Steel Tape		
P	12/21/2016	1003	159.11	1.47	-126.11	1	U.S. Geological Survey	Steel Tape		
P	1/3/2018	1153	158.39	(0.72)	-125.39	1	U.S. Geological Survey	Steel Tape		
P	2/6/2019	8400	158.49	0.10	-125.49	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 9/25/1951 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		209.84	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		256	mg/L	
00910	CALCIUM (MG/L)		30	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		28	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		100	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		200	ug/L	
00920	MAGNESIUM (MG/L)		6	mg/L	
00400	PH (STANDARD UNITS), FIELD		7.6	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		2.2		
00955	SILICA, DISSOLVED (MG/L AS SI02)		10	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		3.27		
00932	SODIUM, CALCULATED, PERCENT		62	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		75	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		12	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		26	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		286	mg/L	

Water Quality Analysis

Sample Date: 7/28/1964 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot Aquifer

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		211.48	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		258	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)		100	ug/L	
00910	CALCIUM (MG/L)		25	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		24	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.6	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		86	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		300	ug/L	
00920	MAGNESIUM (MG/L)		6	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0	mg/L as NO3	
00400	PH (STANDARD UNITS), FIELD		7.4	SU	
00937	POTASSIUM, TOTAL (MG/L AS K)		1.7	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		2.48		
00955	SILICA, DISSOLVED (MG/L AS SI02)		19	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		3.59		
00932	SODIUM, CALCULATED, PERCENT		65	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		77	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		488	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		11	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		26	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		291	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523218

WRD Exp. (GW)
April 1966

Well No. LJ-65-23-218

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

MASTER CARD

1:24000

Record by C.W. BONNET WINSLOW + WESSELMAN -1962 Source of data FILE Date 10-11-68 Map PASADENA 1955

State TEXAS 48 County (or town) HARRIS LJ

Latitude: 29 44 37 N (deg, min, sec) Longitude: 095 10 11 (degrees, min, sec) Sequential number: 1

Lat-long accuracy: 1 T. ___ N S, R ___ E W, Sec ___, ___ ¼, ___ ¼, ___ ¼ ___ B & M

Local well number: LJ-65-23-218 Other number: ___

Local use: ___ Owner or name: ETHYL CORP. #5-A

Owner or name: ETHYL CORP. Address: PASADENA, TEXAS

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist ___ N

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other ___ N

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed W

DATA AVAILABLE: Well data ___ Freq. W/L meas.: 1951 - Aug 1973 meas. by owner M Field aquifer char. ___

Hyd. lab. data: ___ "Last meas. obstruction in pipe"

Qual. water data; type: ___

Freq. sampling: ___ Pumpage inventory: yes no, period: ___

Aperture cards: ___ yes

Log data: E-LOG CC-14 E

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 453 ft 453 Meas. rept accuracy REPT. 3

Depth cased: (first perf.) 309 ft 309 Casing type: S ; Diam. 14-10¾ in 14

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) other G

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other H

Date Drilled: 5-51 951 Pump intake setting: ___ ft ___

Driller: LAYNE-TEXAS CO. (name) HOUSTON, TEXAS (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other T Deep Shallow D

Power (type): diesel, (Elec) nat gas, gasoline, hand, LP gas, wind; H.P. ___ 5 Trans. or meter no. ___

Descrip. MP ___ ft above below LSD, Alt. MP ___

Alt. LSD: 18 18 Accuracy: (source) TOPO 5' 3

Water Level 165 ft above below MP; Ft above below LSD 165 Accuracy: REPT. D

Date meas: 5-28-51 551 Yield: 1543 gpm 1543 Method determined ___

Drawdown: 46 ft 46 Accuracy: REPT. 3 Pumping period 8 hrs 8

QUALITY OF WATER DATA: Iron ___ ppm Sulfate ___ ppm Chloride ___ ppm Hard. ___ ppm

Sp. Conduct ___ K x 10^6 Temp. ___ °F Date sampled ___

Taste, color, etc. ___

PL 211
165
46

Well No. LJ-65-23-218

Well No. LJ-65-23-218

Latitude-longitude 29.44.37 S 95.10.11
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) Physiographic Province: COASTAL PLAIN (20–21) 03 Section: _____

_____ (22) F Drainage Basin: _____ (23–25) STR Subbasin: _____ (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat _____ (27)

MAJOR AQUIFER: _____ system, _____ series (28–29) 1 _____ aquifer, formation, group (30–31) CL

Lithology: _____ (32–33) Origin: _____ (34) Aquifer Thickness: _____ ft

(35–37) Length of well open to: 131 ft (38–40) 131 Depth to top of: _____ ft (41–43)

MINOR AQUIFER: _____ system, _____ series (44–45) _____ aquifer, formation, group (46–47)

Lithology: _____ (48–49) Origin: _____ (50) Aquifer Thickness: _____ ft

(51–53) Length of well open to: _____ ft (54–56) Depth to top of: _____ ft (57–59)

Intervals Screened: 309 - 440'

Depth to consolidated rock: _____ ft (60–63) Source of data: _____ (64)

Depth to basement: _____ ft (65–68) Source of data: _____ (69)

Surficial material: _____ (70–71) Infiltration characteristics: _____ (72)

Coefficient Trans: _____ gpd/ft (73–75) Coefficient Storage: _____ (76–78)

Coefficient Perm: _____ gpd/ft^2; Spec cap: _____ gpm/ft; Number of geologic cards: _____ (79)

RECOVERY TEST LAYNE-TEXAS

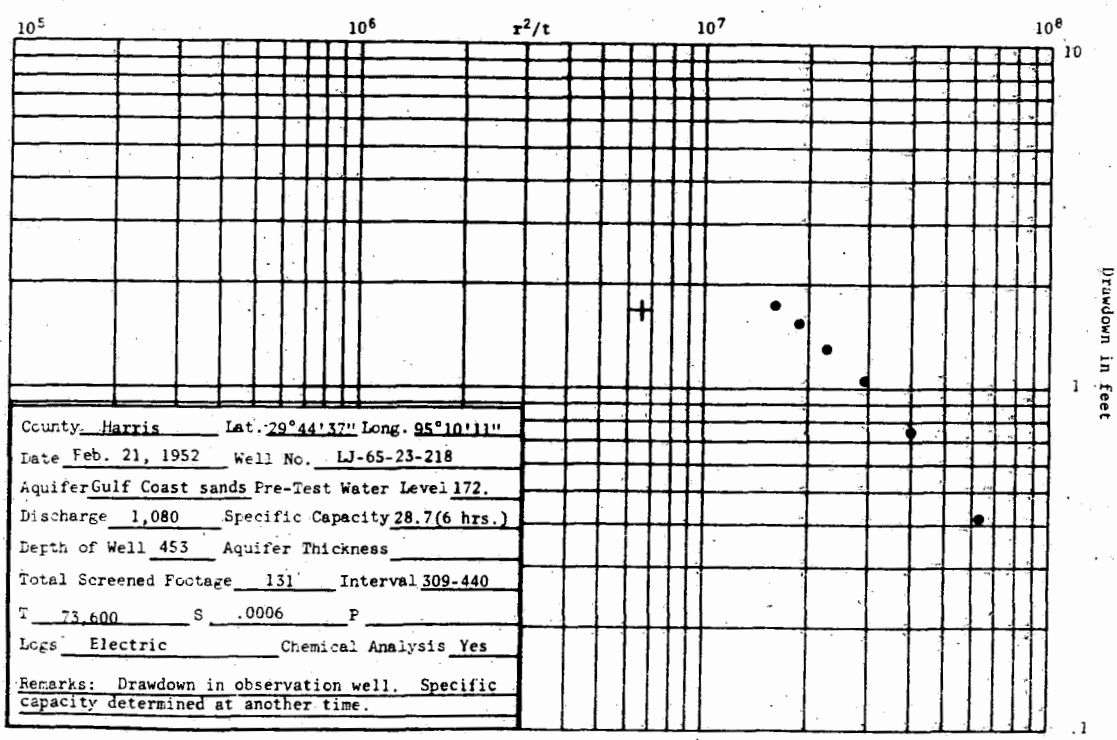
S.D. 9:30

9:35 - 168	11:00 - 161.9
40 - 166.	30 - 161.2
45 - 165.	12:00 - 160.8
10:00 - 163.3	30 - 160.6
15 - 162.8	1:00 - 161.0
30 - 162.5	
45 - 162.0	

D.	L.	
308.2	308.2	14" CSG.
309.3	1.1	14" x 10 3/4" SWEGE
440.6	131.3	10 3/4" ADM. BR. SCR. .027
453.2	12.6	10 3/4" OD BLANK LINER BPV + SN

Well No. LJ-65-23-218

GPO 857-700



County Harris Lat. 29°44'37" Long. 95°10'11"

Date Feb. 21, 1952 Well No. LJ-65-23-218

Aquifer Gulf Coast sands Pre-Test Water Level 172.

Discharge 1,080 Specific Capacity 28.7(6 hrs.)

Depth of Well 453 Aquifer Thickness

Total Screened Footage 131 Interval 309-440

T 73,600 S .0006 P

Logs Electric Chemical Analysis Yes

Remarks: Drawdown in observation well. Specific capacity determined at another time.

TEXAS WATER DEVELOPMENT BOARD

REPORT 178

GROUND-WATER DATA FOR HARRIS COUNTY, TEXAS

VOLUME II

RECORDS OF WELLS, 1892-1972

By

R. K. Gabrysch, W. L. Naftel, Gene D. McAdoo, and C. W. Bonnet
United States Geological Survey

This report was prepared by the U.S. Geological Survey
under cooperative agreement with the
Texas Water Development Board
and the
City of Houston

January 1974

Records of wells in Harris County--Continued

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing: Diameter (in.)	Casing: Depth (ft.)	Water Bearing unit	Altitude of land surface (ft.)	Water Level: Above (+) below land surface datum (ft.)	Water Level: Date of Measurement	Method of lift	Use of Water	Remarks
65-23-203	Crown Central Petroleum Co. Well 8	McMasters and Pomeroy	1944	1,262	12 10 8	-- -- 1,262	E	31	272	Sept. 1950	T,E 125	Ind	175 ft. of screen between 680 and 1,256 ft. 2/
204	Crown Central Petroleum Co. Well 9	Layne Texas Co.	1950	1,274	16 8	-- 1,274	E	32	288	July 17, 1950	T,E 125	Ind	197 ft. of screen between 816 and 1,263 ft. Test hole drilled to 1,300 ft. 2/
205	Armco Steel Corp. Well 1	do	1943	1,385	18 10	505 1,385	E	25	260	Jan. 18, 1951	T,E 150	Ind	217 ft. of screen between 950 and 1,350 ft. Reported yield 1,365 gpm with 55 ft. drawdown Jan. 1951.
206	Armco Steel Corp. Well 2	do	1943	1,266	18 10	492 1,266	E	30	254 327	Jan. 4, 1951 Mar. 6, 1962	T,E 150	Ind	161 ft. of screen between 831 and 1,238 ft. Reported yield 1,266 gpm with 61 ft. drawdown Jan. 4, 1951.
207	Armco Steel Corp. Well 3	do	1943	1,255	18 10	381 1,255	E	30	254	Jan. 11, 1951	T,E 150	Ind	190 ft. of screen between 778 and 1,252 ft. Reported yield 1,266 gpm with 64 ft. drawdown Jan. 11, 1951.
208	Olin Corp.	do	1948	412	10 8	190 412	CL	15	160	1958	T,E 40	Ind	111 ft. of screen between 219 and 410 ft. Reported yield 280 gpm with 50 ft. drawdown in 1958.
209	do	do	1948	918	10 8	200 918	E	15	--	--	N	N	111 ft. of screen between 756 and 906 ft.
210	do	McMasters and Pomeroy	1944	673	8 5	320 673	CL	15	--	--	N	N	100 ft. of screen between 342 and 673 ft. Well destroyed. 2/
211	do	do	1944	705	8 5	330 705	E,CL	15	--	--	N	N	100 ft. of screen between 364 and 705 ft. Well destroyed. 2/
* 212	Olin Corp. Well 3	Layne Texas Co.	1951	982	12 8	820 982	E	15	272	June 20, 1951	T,E	Ind	80 ft. of screen between 830 and 970 ft. Reported yield 530 gpm with 38 ft. drawdown when drilled.
213	Phillips Chemical Co. Well 4	do	1951	884	22 10	612 884	E	30	262 310	Sept. 1951 1962	T,E 125	Ind	100 ft. of screen between 697 and 866 ft. Reported yield 767 gpm with 36 ft. drawdown when drilled.
* 214	Phillips Chemical Co. Well 5	do	1952	1,967	20 12	1,220 1,967	E	25	275 353	July 29, 1952 May 1970	T,G	Ind	216 ft. of screen between 1,429 and 1,955 ft. Reported yield 1,705 gpm with 60 ft. drawdown when drilled. 1/
* 215	Phillips Chemical Co. Well 6	do	1952	1,220	20 12	695 1,220	E	25	388	Sept. 15, 1970	T,E	Ind	210 ft. of screen between 730 and 1,200 ft. Reported yield 1,500 gpm with 30 ft. drawdown Sept. 1970.
216	Phillips Chemical Co. Well 3	McMasters and Pomeroy	1943	639	8 5	284 639	CL	10	86	June 9, 1943	N	N	95 ft. of screen between 351 and 639 ft. Reported yield 380 gpm when drilled. 2/
217	Ethyl Corp. Well 1A	Layne Texas Co.	1951	459	8 6	387 459	CL	15	159	June 12, 1951	N	N	Screen from 394 to 450 ft. Construction well for plant. Well destroyed.
218	Ethyl Corp. Well 5A	do	1951	453	14 10	308 453	CL	18	159 267	June 1951 Feb. 23, 1971	T,E	Ind	Screen from 309 to 440 ft. Reported yield 1,543 gpm with 46 ft. drawdown when drilled. 1/
219	Ethyl Corp. Well 4L	do	1951	1,252	20 12 10	692 1,050 1,252	E	21	275 386	Feb. 15, 1955 Feb. 23, 1971	T,E	Ind	290 ft. of screen between 698 and 1,235 ft. Reported yield 1,800 gpm with 54 ft. drawdown Dec. 1954. 1/
220	Ethyl Corp. Well 3A	do	1951	477	14 10	328 477	CL	20	155.2 269	May 10, 1951 Feb. 23, 1971	T,E	Ind	Screen from 329 to 465 ft. Reported yield 1,515 gpm with 60 ft. drawdown when drilled. 1/

See footnotes at end of table.

TEXAS WATER DEVELOPMENT BOARD

REPORT 122

RECORDS OF WATER-LEVEL MEASUREMENTS IN WELLS IN HARRIS COUNTY, TEXAS, 1966-69

Compiled by

R. K. Gabrysch, C. W. Bonnet, and W. L. Naftel
United States Geological Survey

Prepared by the U.S. Geological Survey
in cooperation with the
Texas Water Development Board
and the
City of Houston

November 1970

WATER LEVEL MEASUREMENTS, IN FEET, BELOW LAND SURFACE - CONTINUED

STATE WELL NUMBER	OLD WELL NUMBER	DEPTH OF WELL	ELEVATION OF LAND SURFACE	DATE	MEASUREMENT	CHANGE IN WATER LEVEL FROM PREVIOUS MEASUREMENT DECLINE	RISE
65-23-106		940	18.	04-30-66	347.	4.	
				02-14-67	355.	8.	
				09-25-67	373.	18.	
				03-29-68	366.		7.
				09-18-68	375.	9.	
				01-22-69	364.		11.
				07-16-69	378.	14.	
				09-18-69	389.	11.	
				11-12-69	381.		8.
				12-18-69	379.		2.
65-23-148	1174	798	19.	06-15-66	185.96		
				09-29-66	187.74	1.78	
				12-20-66	188.24	0.50	
				02-03-67	188.70	0.46	
				06-05-67	193.27	4.57	
				09-27-67	193.74	0.47	
				12-06-67	190.61		3.13
				02-05-68	190.56		0.05
				06-06-68	192.17	1.61	
				12-11-68	192.27	0.10	
				02-12-69	193.07	0.80	
				09-29-69	194.27	1.20	
				12-02-69	195.07	0.80	
65-23-218		453	18.	01-08-66	230.		
				03-12-66	240.	10.	
				05-10-66	243.	3.	
				06-29-66	243.	0.	
				09-21-66	245.	2.	
				10-31-66	252.	7.	
				11-28-66	253.	1.	
				12-27-66	255.	2.	
				01-25-67	246.		9.
				03-01-67	250.	4.	
				04-26-67	252.	2.	
				05-24-67	252.	0.	
				07-06-67	253.	1.	
				08-23-67	255.	2.	
				09-27-67	256.	1.	
				11-16-67	252.		4.
				12-28-67	252.	0.	
				01-24-68	257.	5.	
				02-29-68	258.	1.	
				03-28-68	261.	3.	

WATER LEVEL MEASUREMENTS, IN FEET, BELOW LAND SURFACE - CONTINUED

STATE WELL NUMBER	OLD WELL NUMBER	DEPTH OF WELL	ELEVATION OF LAND SURFACE	DATE	MEASUREMENT	CHANGE IN WATER LEVEL FROM PREVIOUS MEASUREMENT DECLINE	RISE
65-23-218		453	18.	04-25-68	263.	2.	
				05-31-68	261.		2.
				06-26-68	256.		5.
				07-23-68	262.	6.	
				08-29-68	262.	0.	
				09-25-68	253.		9.
				10-25-68	264.	11.	
				11-28-68	259.		5.
				12-27-68	262.	3.	
				01-31-69	258.		4.
				03-26-69	269.	11.	
				04-21-69	259.		10.
				06-25-69	258.		1.
				07-23-69	258.	0.	
65-23-219		1252	21.	01-08-66	341.		
				03-12-66	347.	6.	
				04-18-66	364.	17.	
				05-10-66	356.		8.
				06-15-66	364.	8.	
				07-26-66	380.	16.	
				08-23-66	386.	6.	
				09-21-66	369.		17.
				10-31-66	379.	10.	
				11-28-66	384.	5.	
				12-27-66	381.		3.
				01-25-67	377.		4.
				03-01-67	381.	4.	
				04-26-67	383.	2.	
				05-24-67	386.	3.	
				07-06-67	388.	2.	
				08-23-67	394.	6.	
				09-27-67	386.		8.
				11-16-67	390.	4.	
				12-28-67	384.		6.
				01-24-68	376.		8.
				02-29-68	377.	1.	
				03-28-68	385.	8.	
				04-25-68	378.		7.
				05-31-68	385.	7.	
				06-26-68	397.	12.	
				07-23-68	392.		5.
				08-29-68	406.	14.	
				09-25-68	405.		1.
				10-25-68	401.		4.
				11-28-68	399.		2.

TX DOC
W600.7
R299
No. 103

Development Bd
03

TEXAS
WATER
DEVELOPMENT
BOARD

Report 103

RECORDS OF WATER-LEVEL MEASUREMENTS IN OBSERVATION WELLS IN HARRIS COUNTY, TEXAS

DECEMBER 1969

Table 1.--Water Levels in Wells--Continued

WELL NUMBER	COMPLETION DEPTH INTERVAL	DEPTH OF WELL	ELEVATION OF LAND SURFACE	DATE OF MEASUREMENT	DEPTH TO WATER
65-23-151	0700-0834		27.--	02-13-51	246.79
				06-07-51	280.90
65-23-152	0584-0729		34.--	06-24-42	121.--
				04-21-43	125.00
				06-17-43	143.07
				07-30-43	150.21
				08-23-43	150.50
				09-27-43	153.75
				01-21-44	153.90
				05-12-44	158.84
				07-07-44	170.72
				09-12-44	180.05
				12-07-44	175.12
				01-22-45	176.80
				03-20-45	174.60
				06-25-45	177.54
				01-31-46	167.20
				07-15-46	181.15
				12-05-46	185.96
				03-10-47	186.58
				09-18-47	193.00
				12-09-47	198.02
				02-03-48	201.51
				06-08-48	206.85
				09-15-48	213.67
				12-08-48	217.55
				02-03-49	217.94
				06-07-49	225.79
				09-13-49	224.10
				02-08-50	224.10
				09-15-50	240.90
				06-07-51	250.22
				09-07-51	258.63
				05-01-52	270.55
				02-13-53	275.66
65-23-218	0309-0440		18.--	06----51	159.0-
				02-21-52	170.20
				02-15-53	187.--
				06-18-53	184.53
				09-09-53	174.64
				06-07-54	176.49
				12-09-54	181.63
				02-18-55	177.97
				03-30-55	177.--
				04-13-55	188.--
				05-18-55	198.--
				06-15-55	196.--
65-23-218	0309-0440		18.--	07-20-55	195.--
				08-17-55	195.--
				09-14-55	195.--
				10-12-55	198.--
				11-16-55	196.--
				12-21-55	197.--
				01-18-56	196.--
				02-15-56	197.--
				03-21-56	198.--
				04-18-56	208.--
				05-23-56	198.--
				06-22-56	196.--
				07-24-56	196.--
				08-22-56	202.--
				09-21-56	204.--
				10-24-56	204.--
				11-21-56	205.--
				12-19-56	203.--
				01-16-57	199.--
				02-20-57	198.--
				03-20-57	196.--
				04-24-57	197.--
				05-15-57	198.--
				08-20-57	210.--
				09-24-57	200.--
				10-29-57	197.--
				11-26-57	203.--
				12-24-57	203.--
				01-21-58	200.--
				02-18-58	202.--
				03-18-58	204.--
				04-23-58	201.--
				05-20-58	202.--
				06-24-58	206.--
				07-29-58	208.--
				08-27-58	206.--
				09-23-58	205.--
				10-28-58	204.--
				11-20-58	207.--
				12-23-58	209.--
				01-20-59	206.--
				02-18-59	204.--
				03-24-59	203.--
				04-22-59	203.--
				05-28-59	201.--
				06-24-59	206.--
				07-08-59	206.--
				08-20-59	212.--
				09-23-59	205.--
				10-21-59	205.--
				11-25-59	208.--

Table 1.--Water Levels in Wells--Continued

WELL NUMBER	COMPLETION DEPTH INTERVAL	DEPTH OF WELL	ELEVATION OF LAND SURFACE	DATE OF MEASUREMENT	DEPTH TO WATER
65-23-218	0309-0440		18.--	12-23-59	208.--
				01-27-60	205.--
				02-24-60	204.--
				03-23-60	206.--
				04-20-60	208.--
				05-26-60	211.--
				06-24-60	220.--
				07-26-60	228.--
				08-26-60	223.--
				09-22-60	226.--
				10-25-60	222.--
				11-29-60	223.--
				12-20-60	224.--
				01-24-61	218.--
				02-21-61	219.--
				03-20-61	219.--
				04-26-61	220.--
				05-23-61	224.--
				06-20-61	226.--
				07-27-61	221.--
				08-22-61	223.--
				09-21-61	223.--
				10-27-61	221.--
				11-22-61	221.--
				12-19-61	225.--
				01-17-62	220.--
				02-20-62	221.--
				03-23-62	221.--
				04-25-62	221.--
				05-23-62	219.--
				06-20-62	220.--
				07-25-62	225.--
				08-22-62	226.--
				09-21-62	218.--
				10-23-62	222.--
				11-21-62	216.--
				12-19-62	222.--
				01-22-63	227.--
				02-19-63	226.--
				03-20-63	220.--
				04-24-63	223.--
				05-21-63	222.--
				06-26-63	222.--
				07-24-63	225.--
				08-14-63	226.--
				10-09-63	227.--
				11-14-63	227.--
				12-27-63	230.--
				01-28-64	230.--
				02-28-64	219.--
				03-18-64	229.--
65-23-218	0309-0440		18.--	04-08-64	229.--
				05-13-64	229.--
				06-02-64	228.--
				07-09-64	234.--
				08-20-64	241.--
				09-22-64	240.--
				10-08-64	238.--
				11-17-64	240.--
				01-29-65	239.--
				03-15-65	232.--
				04-02-65	235.--
				05-11-65	231.--
				06-23-65	230.--
				08-03-65	242.--
				09-10-65	243.--
				10-18-65	231.--
65-23-219	0698-1235		21.--	02-15-55	275.--
				03-30-55	285.--
				05-04-55	285.--
				06-02-55	285.--
				07-06-55	271.--
				08-02-55	278.--
				09-08-55	275.--
				10-05-55	280.--
				11-02-55	277.--
				12-08-55	276.--
				01-05-56	273.--
				02-01-56	270.--
				03-01-56	278.--
				04-12-56	265.--
				05-09-56	256.--
				06-06-56	258.--
				07-05-56	263.--
				08-15-56	258.--
				09-06-56	263.--
				10-04-56	263.--
				11-07-56	262.--
				12-05-56	260.--
				01-03-57	259.--
				02-06-57	252.--
				03-06-57	253.--
				04-03-57	252.--
				05-08-57	254.--
				07-31-57	256.--
				08-27-57	267.--
				09-24-57	268.--
				10-22-57	270.--
				11-19-57	268.--
				12-24-57	271.--

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-218

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523218
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.743889
Latitude (degrees minutes seconds)	29° 44' 38" N
Longitude (decimal degrees)	-95.17
Longitude (degrees minutes seconds)	095° 10' 12" W
Coordinate Source	+/- 10 Seconds
Aquifer Code	112CHCT - Chicot Aquifer
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	18
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	453
Well Depth Source	Another Government Agency
Drilling Start Date	
Drilling End Date	5/0/1951
Drilling Method	Mud (Hydraulic) Rotary
Borehole Completion	Gravel Pack w/Screen

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Historical
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Albemarle Corp.
Driller	Layne Texas
Other Data Available	Aquifer Test
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1011172C
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	10/11/1968
Last Update Date	2/6/2013

Remarks	Observation well for aquifer test. Aquifer test results in TWDB R-98. No test data in TWDB files. Histor- ical observation well. Water levels from 1962 to 1965 came from Report 103.

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
14	Blank	Steel			0	309
10	Screen	Steel			309	440
10	Blank	Steel			440	453

Well Tests - No Data

Lithology - No Data

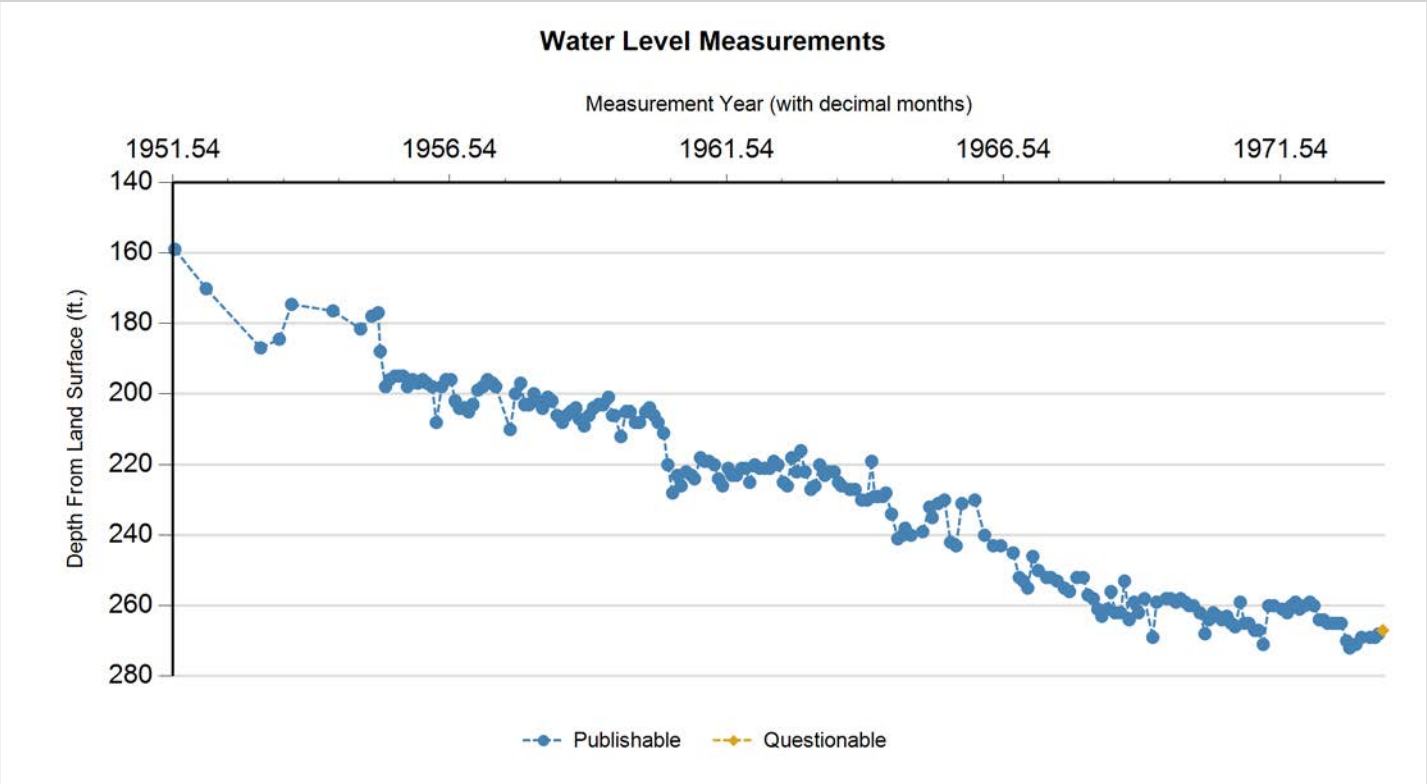
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	6/0/1951		159		-141	1	Registered Water Well Driller	Unknown		
P	2/21/1952		170.2	11.20	-152.2	1	Other or Source of Measurement Unknown	Unknown		
P	2/15/1953		187	16.80	-169	1	Other or Source of Measurement Unknown	Unknown		
P	6/18/1953		184.53	(2.47)	-166.53	1	Other or Source of Measurement Unknown	Unknown		
P	9/9/1953		174.64	(9.89)	-156.64	1	Other or Source of Measurement Unknown	Unknown		
P	6/7/1954		176.49	1.85	-158.49	1	Other or Source of Measurement Unknown	Unknown		
P	12/9/1954		181.63	5.14	-163.63	1	Other or Source of Measurement Unknown	Unknown		
P	2/18/1955		177.97	(3.66)	-159.97	1	Other or Source of Measurement Unknown	Unknown		
P	3/30/1955		177	(0.97)	-159	1	Other or Source of Measurement Unknown	Unknown		
P	4/13/1955		188	11.00	-170	1	Other or Source of Measurement Unknown	Unknown		
P	5/18/1955		198	10.00	-180	1	Other or Source of Measurement Unknown	Unknown		
P	6/15/1955		196	(2.00)	-178	1	Other or Source of Measurement Unknown	Unknown		
P	7/20/1955		195	(1.00)	-177	1	Other or Source of Measurement Unknown	Unknown		
P	8/17/1955		195	0.00	-177	1	Other or Source of Measurement Unknown	Unknown		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/14/1955		195	0.00	-177	1	Other or Source of Measurement Unknown	Unknown		
P	10/12/1955		198	3.00	-180	1	Other or Source of Measurement Unknown	Unknown		
P	11/16/1955		196	(2.00)	-178	1	Other or Source of Measurement Unknown	Unknown		
P	12/21/1955		197	1.00	-179	1	Other or Source of Measurement Unknown	Unknown		
P	1/18/1956		196	(1.00)	-178	1	Other or Source of Measurement Unknown	Unknown		
P	2/15/1956		197	1.00	-179	1	Other or Source of Measurement Unknown	Unknown		
P	3/21/1956		198	1.00	-180	1	Other or Source of Measurement Unknown	Unknown		
P	4/18/1956		208	10.00	-190	1	Other or Source of Measurement Unknown	Unknown		
P	5/23/1956		198	(10.00)	-180	1	Other or Source of Measurement Unknown	Unknown		
P	6/22/1956		196	(2.00)	-178	1	Other or Source of Measurement Unknown	Unknown		
P	7/24/1956		196	0.00	-178	1	Other or Source of Measurement Unknown	Unknown		
P	8/22/1956		202	6.00	-184	1	Other or Source of Measurement Unknown	Unknown		
P	9/21/1956		204	2.00	-186	1	Other or Source of Measurement Unknown	Unknown		
P	10/24/1956		204	0.00	-186	1	Other or Source of Measurement Unknown	Unknown		
P	11/21/1956		205	1.00	-187	1	Other or Source of Measurement Unknown	Unknown		
P	12/19/1956		203	(2.00)	-185	1	Other or Source of Measurement Unknown	Unknown		
P	1/16/1957		199	(4.00)	-181	1	Other or Source of Measurement Unknown	Unknown		
P	2/20/1957		198	(1.00)	-180	1	Other or Source of Measurement Unknown	Unknown		
P	3/20/1957		196	(2.00)	-178	1	Other or Source of Measurement Unknown	Unknown		
P	4/24/1957		197	1.00	-179	1	Other or Source of Measurement Unknown	Unknown		
P	5/15/1957		198	1.00	-180	1	Other or Source of Measurement Unknown	Unknown		
P	8/20/1957		210	12.00	-192	1	Other or Source of Measurement Unknown	Unknown		
P	9/24/1957		200	(10.00)	-182	1	Other or Source of Measurement Unknown	Unknown		
P	10/29/1957		197	(3.00)	-179	1	Other or Source of Measurement Unknown	Unknown		
P	11/26/1957		203	6.00	-185	1	Other or Source of Measurement Unknown	Unknown		
P	12/24/1957		203	0.00	-185	1	Other or Source of Measurement Unknown	Unknown		
P	1/21/1958		200	(3.00)	-182	1	Other or Source of Measurement Unknown	Unknown		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/18/1958		202	2.00	-184	1	Other or Source of Measurement Unknown	Unknown		
P	3/18/1958		204	2.00	-186	1	Other or Source of Measurement Unknown	Unknown		
P	4/23/1958		201	(3.00)	-183	1	Other or Source of Measurement Unknown	Unknown		
P	5/20/1958		202	1.00	-184	1	Other or Source of Measurement Unknown	Unknown		
P	6/24/1958		206	4.00	-188	1	Other or Source of Measurement Unknown	Unknown		
P	7/29/1958		208	2.00	-190	1	Other or Source of Measurement Unknown	Unknown		
P	8/27/1958		206	(2.00)	-188	1	Other or Source of Measurement Unknown	Unknown		
P	9/23/1958		205	(1.00)	-187	1	Other or Source of Measurement Unknown	Unknown		
P	10/28/1958		204	(1.00)	-186	1	Other or Source of Measurement Unknown	Unknown		
P	11/20/1958		207	3.00	-189	1	Other or Source of Measurement Unknown	Unknown		
P	12/23/1958		209	2.00	-191	1	Other or Source of Measurement Unknown	Unknown		
P	1/20/1959		206	(3.00)	-188	1	Other or Source of Measurement Unknown	Unknown		
P	2/18/1959		204	(2.00)	-186	1	Other or Source of Measurement Unknown	Unknown		
P	3/24/1959		203	(1.00)	-185	1	Other or Source of Measurement Unknown	Unknown		
P	4/22/1959		203	0.00	-185	1	Other or Source of Measurement Unknown	Unknown		
P	5/28/1959		201	(2.00)	-183	1	Other or Source of Measurement Unknown	Unknown		
P	6/24/1959		206	5.00	-188	1	Other or Source of Measurement Unknown	Unknown		
P	7/8/1959		206	0.00	-188	1	Other or Source of Measurement Unknown	Unknown		
P	8/20/1959		212	6.00	-194	1	Other or Source of Measurement Unknown	Unknown		
P	9/23/1959		205	(7.00)	-187	1	Other or Source of Measurement Unknown	Unknown		
P	10/21/1959		205	0.00	-187	1	Other or Source of Measurement Unknown	Unknown		
P	11/25/1959		208	3.00	-190	1	Other or Source of Measurement Unknown	Unknown		
P	12/23/1959		208	0.00	-190	1	Other or Source of Measurement Unknown	Unknown		
P	1/27/1960		205	(3.00)	-187	1	Other or Source of Measurement Unknown	Unknown		
P	2/24/1960		204	(1.00)	-186	1	Other or Source of Measurement Unknown	Unknown		
P	3/23/1960		206	2.00	-188	1	Other or Source of Measurement Unknown	Unknown		
P	4/20/1960		208	2.00	-190	1	Other or Source of Measurement Unknown	Unknown		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	5/26/1960		211	3.00	-193	1	Other or Source of Measurement Unknown	Unknown		
P	6/24/1960		220	9.00	-202	1	Other or Source of Measurement Unknown	Unknown		
P	7/26/1960		228	8.00	-210	1	Other or Source of Measurement Unknown	Unknown		
P	8/26/1960		223	(5.00)	-205	1	Other or Source of Measurement Unknown	Unknown		
P	9/22/1960		226	3.00	-208	1	Other or Source of Measurement Unknown	Unknown		
P	10/25/1960		222	(4.00)	-204	1	Other or Source of Measurement Unknown	Unknown		
P	11/29/1960		223	1.00	-205	1	Other or Source of Measurement Unknown	Unknown		
P	12/20/1960		224	1.00	-206	1	Other or Source of Measurement Unknown	Unknown		
P	1/24/1961		218	(6.00)	-200	1	Other or Source of Measurement Unknown	Unknown		
P	2/21/1961		219	1.00	-201	1	Other or Source of Measurement Unknown	Unknown		
P	3/20/1961		219	0.00	-201	1	Other or Source of Measurement Unknown	Unknown		
P	4/26/1961		220	1.00	-202	1	Other or Source of Measurement Unknown	Unknown		
P	5/23/1961		224	4.00	-206	1	Other or Source of Measurement Unknown	Unknown		
P	6/20/1961		226	2.00	-208	1	Other or Source of Measurement Unknown	Unknown		
P	7/27/1961		221	(5.00)	-203	1	Other or Source of Measurement Unknown	Unknown		
P	8/22/1961		223	2.00	-205	1	Other or Source of Measurement Unknown	Unknown		
P	9/21/1961		223	0.00	-205	1	Other or Source of Measurement Unknown	Unknown		
P	10/27/1961		221	(2.00)	-203	1	Other or Source of Measurement Unknown	Unknown		
P	11/22/1961		221	0.00	-203	1	Other or Source of Measurement Unknown	Unknown		
P	12/19/1961		225	4.00	-207	1	Other or Source of Measurement Unknown	Unknown		
P	1/17/1962		220	(5.00)	-202	1	Other or Source of Measurement Unknown	Unknown		
P	2/20/1962		221	1.00	-203	1	Other or Source of Measurement Unknown	Unknown		
P	3/23/1962		221	0.00	-203	1	Other or Source of Measurement Unknown	Unknown		
P	4/25/1962		221	0.00	-203	1	Other or Source of Measurement Unknown	Unknown		
P	5/23/1962		219	(2.00)	-201	1	Other or Source of Measurement Unknown	Unknown		
P	6/20/1962		220	1.00	-202	1	Other or Source of Measurement Unknown	Unknown		
P	7/25/1962		225	5.00	-207	1	Other or Source of Measurement Unknown	Unknown		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	8/22/1962		226	1.00	-208	1	Other or Source of Measurement Unknown	Unknown		
P	9/21/1962		218	(8.00)	-200	1	Other or Source of Measurement Unknown	Unknown		
P	10/23/1962		222	4.00	-204	1	Other or Source of Measurement Unknown	Unknown		
P	11/21/1962		216	(6.00)	-198	1	Other or Source of Measurement Unknown	Unknown		
P	12/19/1962		222	6.00	-204	1	Other or Source of Measurement Unknown	Unknown		
P	1/22/1963		227	5.00	-209	1	Other or Source of Measurement Unknown	Unknown		
P	2/19/1963		226	(1.00)	-208	1	Other or Source of Measurement Unknown	Unknown		
P	3/20/1963		220	(6.00)	-202	1	Other or Source of Measurement Unknown	Unknown		
P	4/24/1963		223	3.00	-205	1	Other or Source of Measurement Unknown	Unknown		
P	5/21/1963		222	(1.00)	-204	1	Other or Source of Measurement Unknown	Unknown		
P	6/26/1963		222	0.00	-204	1	Other or Source of Measurement Unknown	Unknown		
P	7/24/1963		225	3.00	-207	1	Other or Source of Measurement Unknown	Unknown		
P	8/14/1963		226	1.00	-208	1	Other or Source of Measurement Unknown	Unknown		
P	10/9/1963		227	1.00	-209	1	Other or Source of Measurement Unknown	Unknown		
P	11/14/1963		227	0.00	-209	1	Other or Source of Measurement Unknown	Unknown		
P	12/27/1963		230	3.00	-212	1	Other or Source of Measurement Unknown	Unknown		
P	1/28/1964		230	0.00	-212	1	Other or Source of Measurement Unknown	Unknown		
P	2/28/1964		219	(11.00)	-201	1	Other or Source of Measurement Unknown	Unknown		
P	3/18/1964		229	10.00	-211	1	Other or Source of Measurement Unknown	Unknown		
P	4/8/1964		229	0.00	-211	1	Other or Source of Measurement Unknown	Unknown		
P	5/13/1964		229	0.00	-211	1	Other or Source of Measurement Unknown	Unknown		
P	6/2/1964		228	(1.00)	-210	1	Other or Source of Measurement Unknown	Unknown		
P	7/9/1964		234	6.00	-216	1	Other or Source of Measurement Unknown	Unknown		
P	8/20/1964		241	7.00	-223	1	Other or Source of Measurement Unknown	Unknown		
P	9/22/1964		240	(1.00)	-222	1	Other or Source of Measurement Unknown	Unknown		
P	10/8/1964		238	(2.00)	-220	1	Other or Source of Measurement Unknown	Unknown		
P	11/17/1964		240	2.00	-222	1	Other or Source of Measurement Unknown	Unknown		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/29/1965		239	(1.00)	-221	1	Other or Source of Measurement Unknown	Unknown		
P	3/15/1965		232	(7.00)	-214	1	Other or Source of Measurement Unknown	Unknown		
P	4/2/1965		235	3.00	-217	1	Other or Source of Measurement Unknown	Unknown		
P	5/11/1965		231	(4.00)	-213	1	Other or Source of Measurement Unknown	Unknown		
P	6/23/1965		230	(1.00)	-212	1	Other or Source of Measurement Unknown	Unknown		
P	8/3/1965		242	12.00	-224	1	Other or Source of Measurement Unknown	Unknown		
P	9/10/1965		243	1.00	-225	1	Other or Source of Measurement Unknown	Unknown		
P	10/18/1965		231	(12.00)	-213	1	Other or Source of Measurement Unknown	Unknown		
P	1/8/1966		230	(1.00)	-212	1	Registered Water Well Driller	Unknown		
P	3/12/1966		240	10.00	-222	1	Registered Water Well Driller	Unknown		
P	5/10/1966		243	3.00	-225	1	Registered Water Well Driller	Unknown		
P	6/29/1966		243	0.00	-225	1	Registered Water Well Driller	Unknown		
P	9/21/1966		245	2.00	-227	1	Registered Water Well Driller	Unknown		
P	10/31/1966		252	7.00	-234	1	Registered Water Well Driller	Unknown		
P	11/28/1966		253	1.00	-235	1	Registered Water Well Driller	Unknown		
P	12/27/1966		255	2.00	-237	1	Registered Water Well Driller	Unknown		
P	1/25/1967		246	(9.00)	-228	1	Registered Water Well Driller	Unknown		
P	3/1/1967		250	4.00	-232	1	Registered Water Well Driller	Unknown		
P	4/26/1967		252	2.00	-234	1	Registered Water Well Driller	Unknown		
P	5/24/1967		252	0.00	-234	1	Registered Water Well Driller	Unknown		
P	7/6/1967		253	1.00	-235	1	Registered Water Well Driller	Unknown		
P	8/23/1967		255	2.00	-237	1	Registered Water Well Driller	Unknown		
P	9/27/1967		256	1.00	-238	1	Registered Water Well Driller	Unknown		
P	11/16/1967		252	(4.00)	-234	1	Registered Water Well Driller	Unknown		
P	12/28/1967		252	0.00	-234	1	Registered Water Well Driller	Unknown		
P	1/24/1968		257	5.00	-239	1	Registered Water Well Driller	Unknown		
P	2/29/1968		258	1.00	-240	1	Registered Water Well Driller	Unknown		
P	3/28/1968		261	3.00	-243	1	Registered Water Well Driller	Unknown		
P	4/25/1968		263	2.00	-245	1	Registered Water Well Driller	Unknown		
P	5/31/1968		261	(2.00)	-243	1	Registered Water Well Driller	Unknown		
P	6/26/1968		256	(5.00)	-238	1	Registered Water Well Driller	Unknown		
P	7/23/1968		262	6.00	-244	1	Registered Water Well Driller	Unknown		
P	8/29/1968		262	0.00	-244	1	Registered Water Well Driller	Unknown		
P	9/25/1968		253	(9.00)	-235	1	Registered Water Well Driller	Unknown		
P	10/25/1968		264	11.00	-246	1	Registered Water Well Driller	Unknown		
P	11/28/1968		259	(5.00)	-241	1	Registered Water Well Driller	Unknown		
P	12/27/1968		262	3.00	-244	1	Registered Water Well Driller	Unknown		
P	1/31/1969		258	(4.00)	-240	1	Registered Water Well Driller	Unknown		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	3/26/1969		269	11.00	-251	1	Registered Water Well Driller	Unknown		
P	4/21/1969		259	(10.00)	-241	1	Registered Water Well Driller	Unknown		
P	6/25/1969		258	(1.00)	-240	1	Registered Water Well Driller	Unknown		
P	7/23/1969		258	0.00	-240	1	Registered Water Well Driller	Unknown		
P	8/29/1969		259	1.00	-241	1	Private Firm or Industry	Unknown		
P	9/29/1969		258	(1.00)	-240	1	Private Firm or Industry	Unknown		
P	10/30/1969		259	1.00	-241	1	Private Firm or Industry	Unknown		
P	11/26/1969		260	1.00	-242	1	Private Firm or Industry	Unknown		
P	12/24/1969		260	0.00	-242	1	Private Firm or Industry	Unknown		
P	2/2/1970		262	2.00	-244	1	Private Firm or Industry	Unknown		
P	3/5/1970		268	6.00	-250	1	Private Firm or Industry	Unknown		
P	3/31/1970		264	(4.00)	-246	1	Private Firm or Industry	Unknown		
P	4/30/1970		262	(2.00)	-244	1	Private Firm or Industry	Unknown		
P	5/28/1970		263	1.00	-245	1	Private Firm or Industry	Unknown		
P	6/26/1970		264	1.00	-246	1	Private Firm or Industry	Unknown		
P	7/30/1970		263	(1.00)	-245	1	Private Firm or Industry	Unknown		
P	8/28/1970		265	2.00	-247	1	Private Firm or Industry	Unknown		
P	9/24/1970		266	1.00	-248	1	Private Firm or Industry	Unknown		
P	10/28/1970		259	(7.00)	-241	1	Private Firm or Industry	Unknown		
P	11/25/1970		265	6.00	-247	1	Private Firm or Industry	Unknown		
P	12/24/1970		265	0.00	-247	1	Private Firm or Industry	Unknown		
P	1/28/1971		267	2.00	-249	1	Private Firm or Industry	Unknown		
P	2/23/1971		267	0.00	-249	1	Private Firm or Industry	Unknown		
P	3/24/1971		271	4.00	-253	1	Private Firm or Industry	Air Line		
P	4/30/1971		260	(11.00)	-242	1	Private Firm or Industry	Air Line		
P	6/3/1971		260	0.00	-242	1	Private Firm or Industry	Air Line		
P	7/30/1971		261	1.00	-243	1	Private Firm or Industry	Air Line		
P	9/3/1971		262	1.00	-244	1	Private Firm or Industry	Air Line		
P	9/29/1971		260	(2.00)	-242	1	Private Firm or Industry	Air Line		
P	10/27/1971		259	(1.00)	-241	1	Private Firm or Industry	Air Line		
P	11/23/1971		261	2.00	-243	1	Private Firm or Industry	Air Line		
P	12/28/1971		260	(1.00)	-242	1	Private Firm or Industry	Air Line		
P	1/27/1972		259	(1.00)	-241	1	Private Firm or Industry	Air Line		
P	2/24/1972		260	1.00	-242	1	Private Firm or Industry	Air Line		
P	3/29/1972		264	4.00	-246	1	Private Firm or Industry	Air Line		
P	4/26/1972		264	0.00	-246	1	Private Firm or Industry	Air Line		
P	5/24/1972		265	1.00	-247	1	Private Firm or Industry	Air Line		
P	6/27/1972		265	0.00	-247	1	Private Firm or Industry	Air Line		
P	7/26/1972		265	0.00	-247	1	Private Firm or Industry	Air Line		
P	8/23/1972		265	0.00	-247	1	Private Firm or Industry	Air Line		
P	9/29/1972		270	5.00	-252	1	Private Firm or Industry	Air Line		
P	10/19/1972		272	2.00	-254	1	Private Firm or Industry	Air Line		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	11/30/1972		271	(1.00)	-253	1	Private Firm or Industry	Air Line		
P	1/2/1973		269	(2.00)	-251	1	Private Firm or Industry	Air Line		
P	2/28/1973		269	0.00	-251	1	Private Firm or Industry	Air Line		
P	3/30/1973		269	0.00	-251	1	Private Firm or Industry	Air Line		
P	4/25/1973		268	(1.00)	-250	1	Private Firm or Industry	Air Line		
Q	5/23/1973		267	(1.00)	-249	1	Private Firm or Industry	Air Line	15	

Code Descriptions

Status Code	Status Description
P	Publishable
Q	Questionable

Remark ID	Remark Description
15	Tape may not have fallen free in well during measurement

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

WATER WELL NO. 6523121

Texas Water Development Board
Well Schedule

State Well Number 6523121 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **Zone** 1 **Latitude** 294248 **Longitude** 951245 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
City of Pasadena

Driller
McMasters and
Pomeroy

Address _____ **Tenant/Oper.** _____

Date Drilled / /1941 **Depth** 350 **Source of Depth** **Altitude** 27 **Source of Alt.**

Well Type W **User** 651900

WELL CONSTRUCTION

Const-Method

Casing Material Blank

Screen Material Blank

Completion

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** NONE **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** blank **Horsepower -**

YIELD Flow- _____ **GPM** **Pump** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** UNUSED **Secondary -** blank **Tertiary -** blank

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** Y **Logs -** **Other Data -**

WATER LEVELS 1 measurement
1941
-81

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency

REMARKS -
Screen from 300 to 350 ft. Reported yield 250 gpm when drilled. Well destroyed. Well 3.

Aquifer - 112CHCTL **ID -** 15

CHICOT
AQUIFER,LOWER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-121

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523121
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.713334
Latitude (degrees minutes seconds)	29° 42' 48" N
Longitude (decimal degrees)	-95.212501
Longitude (degrees minutes seconds)	095° 12' 45" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CHCTL - Chicot Aquifer, Lower
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	27
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	350
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1941
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Plugged or Destroyed
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	City of Pasadena
Driller	McMasters and Pomeroy
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	Screen from 300 to 350 ft. Reported yield 250 gpm when drilled. Well destroyed. Well 3.

Casing - No Data

Well Tests - No Data

Lithology - No Data

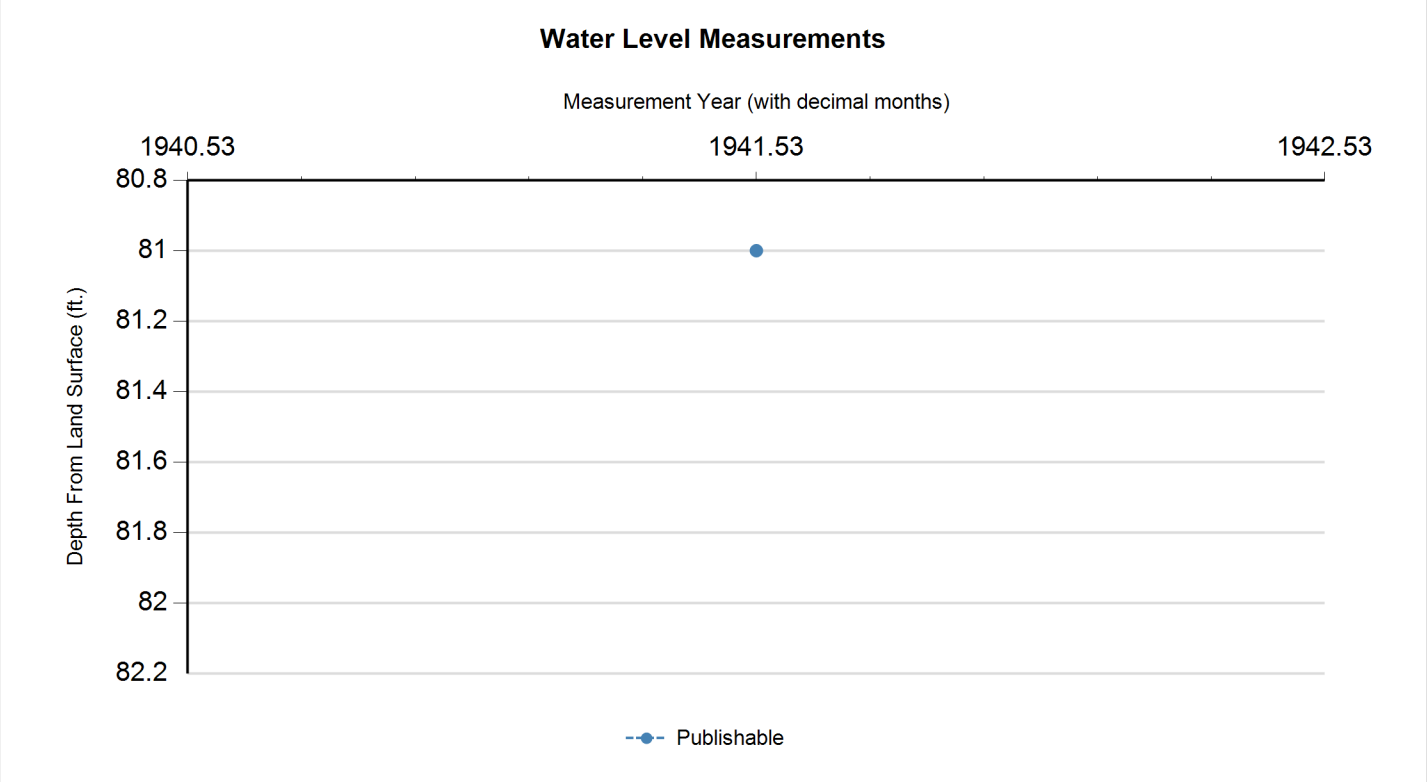
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	7/15/1941		81		-54	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 8/13/1941 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot Aquifer, Lower

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		200	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		244	mg/L	
00910	CALCIUM (MG/L)		19	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		36	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.3	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		80	mg/L as CACO3	
00920	MAGNESIUM (MG/L)		8	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0.5	mg/L as NO3	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		2.39		
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		4.17		
00932	SODIUM, CALCULATED, PERCENT		69	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		86	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		13	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		282	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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WATER WELL NO. 6523231

Texas Water Development Board
Well Schedule

State Well Number 6523231 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **Zone** 1 **Latitude** 294427 **Longitude** 951035 **Source of Coords** 2

Owner's Well No. **Location**

Owner
Phillips Chemical Co.
well #1

Driller
McMasters and
Pomeroy

Address **Tenant/Oper.**

Date Drilled 04/15/1941 **Depth** 767 **Source of Depth** D **Altitude** 14 **Source of Alt.** M

Well Type W **User** 667400

WELL CONSTRUCTION **Const-Method** **Casing Material** **Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) or Open Hole (O) Cemented from_____to_____**

Completion **Screen Material**

LIFT DATA - **Pump Mfr. -** **Type -** NONE **No. Stages**

Bowls Diam - **in.** **Setting -** **ft.** **Column Diam. -** **in.**

Motor Mfr. - **Fuel or Power -** **Horsepower -**

YIELD Flow- **GPM** **Pump** **GPM** **Meas.,Rept.,Est.-** **Date-**

WATER USE **Primary -** UNUSED **Secondary -** **Tertiary -**

OTHER DATA AVAILABLE **Water Levels -** N **Quality -** N **Logs -** **Other Data -**

WATER LEVELS

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency 02

REMARKS -

Aquifer - 112CHCTL **ID -** 15

CHICOT
AQUIFER,LOWER

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-231

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523231
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.740834
Latitude (degrees minutes seconds)	29° 44' 27" N
Longitude (decimal degrees)	-95.176389
Longitude (degrees minutes seconds)	095° 10' 35" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CHCTL - Chicot Aquifer, Lower
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	14
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	767
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	4/15/1941
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	None
Water Quality Available	No
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Phillips Chemical Co. well #1
Driller	McMasters and Pomeroy
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	U.S. Geological Survey
Created Date	1/25/1999
Last Update Date	1/25/1999

Remarks	

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523148

WRD Exp. (GW)
April 1966

Well No. T-65-23-148

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

MASTER CARD

Record by G.D. McAdoo (P. Livingston 1931) Source of data File Date 1-22-68 Map 1:24000 Pasadena [illegible]

State Texas 48 County (or town) Harris LJ

Latitude: 29 43 51 N (deg, min, sec) Longitude: 095 13 04 (degrees, min, sec) Sequential number: 1

Lat-long accuracy: 1 T. ___ N S, R ___ E W, Sec ___, ___ ¼, ___ ¼, ___ ¼

Local well number: LJ-65-23-148 Other number: B & M #1174

Local use: Owner or name: East well ~~Texaco~~, Ref. #6

Owner or name: Address: Texaco, Inc. Galena Park

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist — N

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other — U

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed — U

DATA AVAILABLE: Well data 2 Freq. W/L meas.: 1931 Quarterly Q Field aquifer char.

Hyd. lab. data:

Qual. water data; type:

Freq. sampling: r Pumpage inventory: yes no, period:

Aperture cards: yes

Log data: D-Log D

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 802 ft 802 Meas. rept. Driller accuracy 3

Depth cased: (first perf.) 428 ft 428 Casing type: S ; Diam. 24-12 in 24

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) other — S

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other — H

Date Drilled: Mar 1930 930 Pump intake setting: ___ ft

Driller: Layne Texas Co (name), Houston, Texas (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other — N Deep Shallow

Power (type): diesel, elec, nat gas, gasoline, hand, LP gas, wind; H.P. Trans. or meter no.

Descrip. MP Pump base + 1.5 ft above below LSD, Alt. MP

Alt. LSD: 19 19 Accuracy: (source) Topo 5' 3

Water Level 43.59 ft above below MP; Ft above below LSD 42 Accuracy: Meas A

Date meas: 3-25-31 331 Yield: ___ gpm Method determined

Drawdown: ___ ft Accuracy: Pumping period ___ hrs

QUALITY OF WATER DATA: Iron ___ ppm Sulfate ___ ppm Chloride ___ ppm Hard. ___ ppm

Sp. Conduct ___ K x 10^6 Temp. ___ °F Date sampled

Taste, color, etc.

Well No. LJ-65-23-148

Well No. LJ-65-[illegible]3-148

Latitude-longitude 29 43 51 N S 095 13 04.1
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) Physiographic Province: Coastal Plain 03 (20–21) Section: West

G.C.P. F (22) Drainage Basin: 51R (23–25) Subbasin: (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat (27)

MAJOR AQUIFER: system, series Q (28–29) aquifer, formation, group CL (30–31)

Lithology: (32–33) Origin: (34) Aquifer Thickness: ft

(35–37) Length of well open to: 122 ft 122 (38–40) Depth to top of: ft (41–43)

MINOR AQUIFER: system, series T (44–45) aquifer, formation, group E (46–47)

Lithology: (48–49) Origin: (50) Aquifer Thickness: ft

(51–53) Length of well open to: ft (54–56) Depth to top of: ft (57–59)

Intervals Screened: 428-469 (41); 621-661 (40); 750-791 (41).

Depth to consolidated rock: ft (60–63) Source of data: (64)

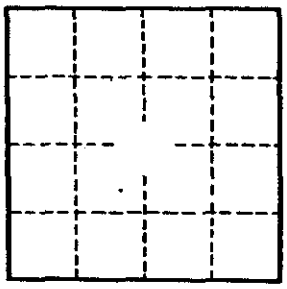
Depth to basement: ft (65–68) Source of data: (69)

Surficial material: (70–71) Infiltration characteristics: (72)

Coefficient Trans: gpd/ft (73–75) Coefficient Storage: (76–78)

Coefficient Perm: gpd/ft^2; Spec cap: gpm/ft; Number of geologic cards: (79)

250' of 24" csg
552 of 12" csg.



Well No. LJ-65-23-148

GPO 857-700

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-148

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523148
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.731111
Latitude (degrees minutes seconds)	29° 43' 52" N
Longitude (decimal degrees)	-95.218055
Longitude (degrees minutes seconds)	095° 13' 05" W
Coordinate Source	+/- 1 Second
Aquifer Code	112CEVG - Chicot and Evangeline Aquifers
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	19
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	802
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1930
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	Historical
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Texas Inc.
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	294351095130401
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	Texaco east well
Other Well Number	Historical Id 1174
Previous State Well Number	
Reporting Agency	
Created Date	8/20/1996
Last Update Date	8/20/1996

Remarks	122 ft of screen between 428 and 791 ft. Well 6.

Casing - No Data

Well Tests - No Data

Lithology - No Data

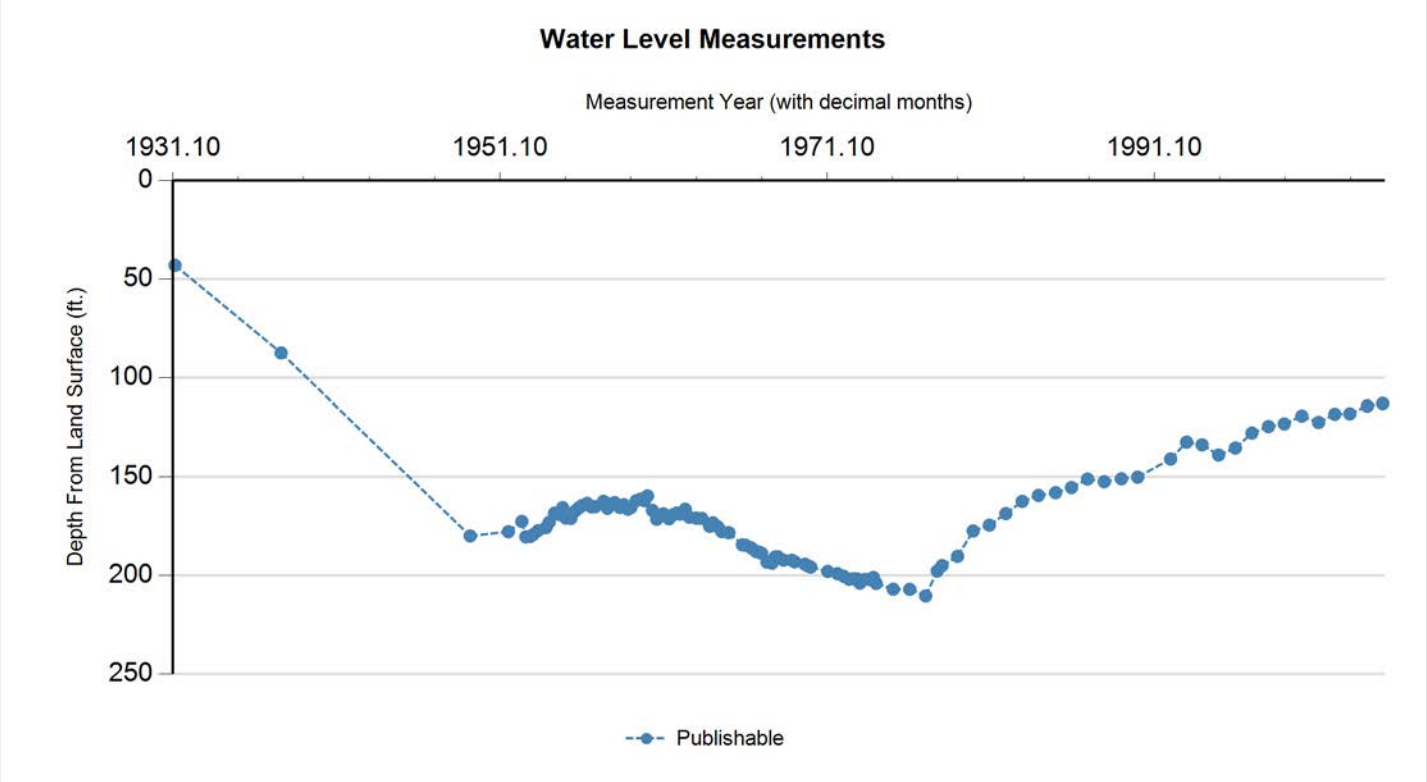
Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	3/25/1931		43.09		-24.09	1	Other or Source of Measurement Unknown	Unknown		
P	9/22/1937		87.45	44.36	-68.45	1	U.S. Geological Survey	Steel Tape		
P	4/11/1949		179.95	92.50	-160.95	1	U.S. Geological Survey	Steel Tape		
P	8/13/1951		177.78	(2.17)	-158.78	1	U.S. Geological Survey	Steel Tape		
P	6/9/1952		172.58	(5.20)	-153.58	1	U.S. Geological Survey	Steel Tape		
P	9/8/1952		180.41	7.83	-161.41	1	U.S. Geological Survey	Steel Tape		
P	12/12/1952		180.22	(0.19)	-161.22	1	U.S. Geological Survey	Steel Tape		
P	2/13/1953		179.31	(0.91)	-160.31	1	U.S. Geological Survey	Steel Tape		
P	6/8/1953		177.23	(2.08)	-158.23	1	U.S. Geological Survey	Steel Tape		
P	12/2/1953		175.72	(1.51)	-156.72	1	U.S. Geological Survey	Steel Tape		
P	2/8/1954		173.05	(2.67)	-154.05	1	U.S. Geological Survey	Steel Tape		
P	6/7/1954		168.39	(4.66)	-149.39	1	U.S. Geological Survey	Steel Tape		
P	9/16/1954		169.03	0.64	-150.03	1	U.S. Geological Survey	Steel Tape		
P	12/9/1954		165.56	(3.47)	-146.56	1	U.S. Geological Survey	Steel Tape		
P	2/15/1955		170.83	5.27	-151.83	1	U.S. Geological Survey	Steel Tape		
P	6/8/1955		171.03	0.20	-152.03	1	U.S. Geological Survey	Steel Tape		
P	9/13/1955		167.3	(3.73)	-148.3	1	U.S. Geological Survey	Steel Tape		
P	12/5/1955		165.7	(1.60)	-146.7	1	U.S. Geological Survey	Steel Tape		
P	2/7/1956		164.66	(1.04)	-145.66	1	U.S. Geological Survey	Steel Tape		
P	6/5/1956		163.42	(1.24)	-144.42	1	U.S. Geological Survey	Steel Tape		
P	9/10/1956		165.19	1.77	-146.19	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	12/5/1956		165.12	(0.07)	-146.12	1	U.S. Geological Survey	Steel Tape		
P	6/6/1957		162.36	(2.76)	-143.36	1	U.S. Geological Survey	Steel Tape		
P	9/5/1957		165.93	3.57	-146.93	1	U.S. Geological Survey	Steel Tape		
P	12/6/1957		163.62	(2.31)	-144.62	1	U.S. Geological Survey	Steel Tape		
P	2/11/1958		163.07	(0.55)	-144.07	1	U.S. Geological Survey	Steel Tape		
P	6/4/1958		165.48	2.41	-146.48	1	U.S. Geological Survey	Steel Tape		
P	9/5/1958		164.11	(1.37)	-145.11	1	U.S. Geological Survey	Steel Tape		
P	12/5/1958		166.37	2.26	-147.37	1	U.S. Geological Survey	Steel Tape		
P	2/6/1959		165.57	(0.80)	-146.57	1	U.S. Geological Survey	Steel Tape		
P	6/4/1959		162.1	(3.47)	-143.1	1	U.S. Geological Survey	Steel Tape		
P	9/15/1959		161.29	(0.81)	-142.29	1	U.S. Geological Survey	Steel Tape		
P	12/10/1959		162.06	0.77	-143.06	1	U.S. Geological Survey	Steel Tape		
P	2/11/1960		159.64	(2.42)	-140.64	1	U.S. Geological Survey	Steel Tape		
P	6/2/1960		166.98	7.34	-147.98	1	U.S. Geological Survey	Steel Tape		
P	9/8/1960		171.49	4.51	-152.49	1	U.S. Geological Survey	Steel Tape		
P	12/15/1960		169.67	(1.82)	-150.67	1	U.S. Geological Survey	Steel Tape		
P	2/2/1961		168.75	(0.92)	-149.75	1	U.S. Geological Survey	Steel Tape		
P	6/7/1961		171.22	2.47	-152.22	1	U.S. Geological Survey	Steel Tape		
P	9/6/1961		169.19	(2.03)	-150.19	1	U.S. Geological Survey	Steel Tape		
P	12/6/1961		168.3	(0.89)	-149.3	1	U.S. Geological Survey	Steel Tape		
P	2/6/1962		168.9	0.60	-149.9	1	U.S. Geological Survey	Steel Tape		
P	6/5/1962		166.41	(2.49)	-147.41	1	U.S. Geological Survey	Steel Tape		
P	9/5/1962		170.45	4.04	-151.45	1	U.S. Geological Survey	Steel Tape		
P	2/7/1963		170.93	0.48	-151.93	1	U.S. Geological Survey	Steel Tape		
P	6/12/1963		171.07	0.14	-152.07	1	U.S. Geological Survey	Steel Tape		
P	12/5/1963		175.06	3.99	-156.06	1	U.S. Geological Survey	Steel Tape		
P	2/14/1964		173.25	(1.81)	-154.25	1	U.S. Geological Survey	Steel Tape		
P	6/3/1964		175.36	2.11	-156.36	1	U.S. Geological Survey	Steel Tape		
P	9/2/1964		177.78	2.42	-158.78	1	U.S. Geological Survey	Steel Tape		
P	2/3/1965		178.3	0.52	-159.3	1	U.S. Geological Survey	Steel Tape		
P	12/6/1965		184.46	6.16	-165.46	1	U.S. Geological Survey	Steel Tape		
P	2/3/1966		184.61	0.15	-165.61	1	U.S. Geological Survey	Steel Tape		
P	6/15/1966		185.96	1.35	-166.96	1	U.S. Geological Survey	Steel Tape		
P	9/29/1966		187.74	1.78	-168.74	1	U.S. Geological Survey	Steel Tape		
P	12/20/1966		188.24	0.50	-169.24	1	U.S. Geological Survey	Steel Tape		
P	2/3/1967		188.7	0.46	-169.7	1	U.S. Geological Survey	Steel Tape		
P	6/5/1967		193.27	4.57	-174.27	1	U.S. Geological Survey	Steel Tape		
P	9/27/1967		193.74	0.47	-174.74	1	U.S. Geological Survey	Steel Tape		
P	12/6/1967		190.61	(3.13)	-171.61	1	U.S. Geological Survey	Steel Tape		
P	2/5/1968		190.56	(0.05)	-171.56	1	U.S. Geological Survey	Steel Tape		
P	6/6/1968		192.17	1.61	-173.17	1	U.S. Geological Survey	Steel Tape		
P	12/11/1968		192.27	0.10	-173.27	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/12/1969		193.07	0.80	-174.07	1	U.S. Geological Survey	Steel Tape		
P	9/29/1969		194.27	1.20	-175.27	1	U.S. Geological Survey	Steel Tape		
P	12/2/1969		195.07	0.80	-176.07	1	U.S. Geological Survey	Steel Tape		
P	2/4/1970		195.74	0.67	-176.74	1	U.S. Geological Survey	Steel Tape		
P	2/19/1971		197.94	2.20	-178.94	1	U.S. Geological Survey	Steel Tape		
P	9/27/1971		199.07	1.13	-180.07	1	U.S. Geological Survey	Steel Tape		
P	2/8/1972		200.37	1.30	-181.37	1	U.S. Geological Survey	Steel Tape		
P	6/9/1972		201.87	1.50	-182.87	1	U.S. Geological Survey	Steel Tape		
P	9/20/1972		201.68	(0.19)	-182.68	1	U.S. Geological Survey	Steel Tape		
P	12/13/1972		201.77	0.09	-182.77	1	U.S. Geological Survey	Steel Tape		
P	2/5/1973		203.88	2.11	-184.88	1	U.S. Geological Survey	Steel Tape		
P	6/6/1973		201.97	(1.91)	-182.97	1	U.S. Geological Survey	Steel Tape		
P	9/20/1973		202.07	0.10	-183.07	1	U.S. Geological Survey	Steel Tape		
P	12/7/1973		201	(1.07)	-182	1	U.S. Geological Survey	Steel Tape		
P	2/4/1974		204	3.00	-185	1	U.S. Geological Survey	Steel Tape		
P	2/20/1975		206.93	2.93	-187.93	1	U.S. Geological Survey	Steel Tape		
P	2/23/1976		207	0.07	-188	1	U.S. Geological Survey	Steel Tape		
P	2/14/1977		210.34	3.34	-191.34	1	U.S. Geological Survey	Steel Tape		
P	11/2/1977		197.73	(12.61)	-178.73	1	U.S. Geological Survey	Steel Tape		
P	2/15/1978		194.98	(2.75)	-175.98	1	U.S. Geological Survey	Steel Tape		
P	1/25/1979		190.26	(4.72)	-171.26	1	U.S. Geological Survey	Steel Tape		
P	1/9/1980		177.42	(12.84)	-158.42	1	U.S. Geological Survey	Steel Tape		
P	1/5/1981		174.46	(2.96)	-155.46	1	U.S. Geological Survey	Steel Tape		
P	1/7/1982		168.6	(5.86)	-149.6	1	U.S. Geological Survey	Steel Tape		
P	1/7/1983		162.41	(6.19)	-143.41	1	U.S. Geological Survey	Steel Tape		
P	1/5/1984		159.41	(3.00)	-140.41	1	U.S. Geological Survey	Steel Tape		
P	1/23/1985		158	(1.41)	-139	1	U.S. Geological Survey	Steel Tape		
P	1/13/1986		155.42	(2.58)	-136.42	1	U.S. Geological Survey	Steel Tape		
P	1/6/1987		151.08	(4.34)	-132.08	1	U.S. Geological Survey	Unknown		
P	1/14/1988		152.44	1.36	-133.44	1	U.S. Geological Survey	Unknown		
P	1/31/1989		150.97	(1.47)	-131.97	1	U.S. Geological Survey	Unknown		
P	1/29/1990		150.16	(0.81)	-131.16	1	U.S. Geological Survey	Unknown		
P	2/4/1992		140.93	(9.23)	-121.93	1	U.S. Geological Survey	Steel Tape		
P	1/26/1993		132.39	(8.54)	-113.39	1	U.S. Geological Survey	Steel Tape		
P	1/5/1994		133.75	1.36	-114.75	1	U.S. Geological Survey	Steel Tape		
P	1/10/1995		138.92	5.17	-119.92	1	U.S. Geological Survey	Steel Tape		
P	1/19/1996		135.39	(3.53)	-116.39	1	U.S. Geological Survey	Steel Tape		
P	1/24/1997		127.8	(7.59)	-108.8	1	U.S. Geological Survey	Steel Tape		
P	1/27/1998		124.52	(3.28)	-105.52	1	U.S. Geological Survey	Steel Tape		
P	1/14/1999		123.18	(1.34)	-104.18	1	U.S. Geological Survey	Steel Tape		
P	2/11/2000		119.23	(3.95)	-100.23	1	U.S. Geological Survey	Steel Tape		
P	2/19/2001		122.43	3.20	-103.43	1	U.S. Geological Survey	Steel Tape		

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/17/2002		118.29	(4.14)	-99.29	1	U.S. Geological Survey	Steel Tape		
P	1/16/2003		118.1	(0.19)	-99.1	1	U.S. Geological Survey	Steel Tape		
P	2/13/2004		114.25	(3.85)	-95.25	1	U.S. Geological Survey	Steel Tape		
P	1/21/2005		112.94	(1.31)	-93.94	1	U.S. Geological Survey	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

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WATER WELL NO. 6523303

Texas Water Development Board
Well Schedule

State Well Number 6523303 **Previous Well Number** **County** Harris 201

River Basin 10 San Jacinto River **Zone** 1 **Latitude** 294352 **Longitude** 950908 **Source of Coords** 2

Owner's Well No. _____ **Location** _____

Owner
Tenneco Chemical Co

Driller
Layne Texas

Address _____ **Tenant/Oper.** _____

Date Drilled / /1962 **Depth** 802 **Source of Depth** **Altitude** 32 **Source of Alt.**

Well Type W **User**

WELL CONSTRUCTION

Const-Method blank

Casing Material blank

Screen Material blank

Completion blank

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from_____**to**_____

LIFT DATA - **Pump Mfr. -** _____ **Type -** TURBINE PUMP **No. Stages** _____

Bowls Diam - _____ **in.** **Setting -** _____ **ft.** **Column Diam. -** _____ **in.**

Motor Mfr. - _____ **Fuel or Power -** ELECTRIC MOTOR **Horsepower -**

YIELD Flow- _____ **GPM** **Pump-** _____ **GPM** **Meas.,Rept.,Est.-** _____ **Date-** _____

WATER USE **Primary -** INDUSTRIAL **Secondary -** blank **Tertiary -** blank

OTHER DATA AVAILABLE **Water Levels -** M **Quality -** Y **Logs -** **Other Data -**

WATER LEVELS
1 measurement
1962
-272

Recorded By _____ **Date Record Collected or Updated -** / /

Reporting Agency

REMARKS -
120 ft of screen between 459 and 790 ft. Reported yield 1059 gpm with 58 ft drawdown when drilled. Test hole drilled to 815 ft. Well 2

Aquifer - 112CEVG **ID -** 15

CHICOT AND EVANGELINE AQUIFERS

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 65-23-303

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	6523303
County	Harris
River Basin	San Jacinto
Groundwater Management Area	14
Regional Water Planning Area	H - Region H
Groundwater Conservation District	Harris-Galveston Subsidence District
Latitude (decimal degrees)	29.731111
Latitude (degrees minutes seconds)	29° 43' 52" N
Longitude (decimal degrees)	-95.152223
Longitude (degrees minutes seconds)	095° 09' 08" W
Coordinate Source	+/- 5 Seconds
Aquifer Code	112CEVG - Chicot and Evangeline Aquifers
Aquifer	Gulf Coast
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	32
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	802
Well Depth Source	Unknown
Drilling Start Date	
Drilling End Date	0/0/1962
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Tenneco Chemical Co
Driller	Layne Texas
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	
Created Date	5/18/1999
Last Update Date	5/18/1999

Remarks	120 ft of screen between 459 and 790 ft. Reported yield 1059 gpm with 58 ft drawdown when drilled. Test hole drilled to 815 ft. Well 2

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	5/24/1962		272		-240	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 5/25/1962 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:**

Sampled Aquifer: Chicot and Evangeline Aquifers

Analyzed Lab: **Reliability:** Reliability unknown or not available

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		214.75	mg/L as CACO3	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		262	mg/L	
00910	CALCIUM (MG/L)		14	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		36	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		51	mg/L as CACO3	
01045	IRON, TOTAL (UG/L AS FE)		100	ug/L	
00920	MAGNESIUM (MG/L)		4	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		3.26		
00955	SILICA, DISSOLVED (MG/L AS SI02)		14	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		6.31		
00932	SODIUM, CALCULATED, PERCENT		81	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		104	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		530	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		11	mg/L as SO4	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		311	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

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APPENDIX F

WASTE STREAM ANALYSES AND WASTE ANALYSIS PLAN

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

October 02, 2023

Jacqueline Bode
ARCADIS U.S., Inc.
10205 Westheimer Road
Suite 800
Houston, TX 77042

Work Order: **HS23090731**

Laboratory Results for: **2023 Annual Waste Sample**

Dear Jacqueline Bode,

ALS Environmental received 1 sample(s) on Sep 13, 2023 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Bernadette A. Fini
Project Manager

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
Work Order: HS23090731

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS23090731-01	PAS-AWS-091323	Water		13-Sep-2023 10:57	13-Sep-2023 10:57	☐

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
Work Order: HS23090731

CASE NARRATIVE

Work Order Comments

- Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.

  The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 °C.

GCMS Semivolatiles by Method SW8270

Batch ID: 200551

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Sample ID: PAS-AWS-091323 (HS23090731-01)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Metals by Method SW7470A

Batch ID: 201190

Sample ID: PAS-AWS-091323 (HS23090731-01MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

Sample ID: PAS-AWS-091323 (HS23090731-01MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

WetChemistry by Method M2540D

Batch ID: R446746

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E300

Batch ID: R447398

Sample ID: HS23090185-08MS

- MS and MSD are for an unrelated sample

Sample ID: HS23091223-04MS

- MS and MSD are for an unrelated sample

WetChemistry by Method SW9040C

Batch ID: R446696

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW7196

Batch ID: R446264

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
Work Order: HS23090731

CASE NARRATIVE

WetChemistry by Method M2540C

Batch ID: R446606

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM4500 NH3-B-F

Batch ID: 201028

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E365.3

Batch ID: 200973

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	ARCADIS U.S., Inc.	**ANALYTICAL REPORT**	
Project:	2023 Annual Waste Sample	WorkOrder:HS23090731	
Sample ID:	PAS-AWS-091323	Lab ID:HS23090731-01	
Collection Date:	13-Sep-2023 10:57	Matrix:Water	

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**		Prep:SW3510 / 18-Sep-2023		Analyst: GEY
2,4-Dinitrotoluene	**0.11**		**0.0040**	**mg/L**	20	25-Sep-2023 15:12
Surr: 2,4,6-Tribromophenol	*106*		*34-129*	*%REC*	*20*	*25-Sep-2023 15:12*
Surr: 2-Fluorobiphenyl	*102*		*40-125*	*%REC*	*20*	*25-Sep-2023 15:12*
Surr: 2-Fluorophenol	*87.2*		*20-120*	*%REC*	*20*	*25-Sep-2023 15:12*
Surr: 4-Terphenyl-d14	*113*		*40-135*	*%REC*	*20*	*25-Sep-2023 15:12*
Surr: Nitrobenzene-d5	*104*		*41-120*	*%REC*	*20*	*25-Sep-2023 15:12*
Surr: Phenol-d6	*119*		*20-120*	*%REC*	*20*	*25-Sep-2023 15:12*
MERCURY BY SW7470A		**Method:SW7470A**		Prep:SW7470A / 29-Sep-2023		Analyst: JS
Mercury	ND		0.000200	mg/L	1	29-Sep-2023 12:19
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**				Analyst: TH
Chloride	**40.2**		**2.50**	**mg/L**	5	26-Sep-2023 21:41
Fluoride	**1,920**		**10.0**	**mg/L**	100	26-Sep-2023 21:47
Sulfate	**3,760**		**50.0**	**mg/L**	100	26-Sep-2023 21:47
PHOSPHORUS BY E365.3-1978		**Method:E365.3**		Prep:E365.3 / 26-Sep-2023		Analyst: AB
Phosphorus, Total (As P)	**4.38**		**0.250**	**mg/L**	5	26-Sep-2023 15:15
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: DC
Total Dissolved Solids (Residue, Filterable)	**22,400**		**10.0**	**mg/L**	1	15-Sep-2023 13:05
TOTAL SUSPENDED SOLIDS BY SM 2540D-2011		**Method:M2540D**				Analyst: DC
Suspended Solids (Residue, Non -Filterable)	**8.63**		**2.50**	**mg/L**	1	19-Sep-2023 07:00
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**		Prep:M4500-NH3 B / 27-Sep-2023		Analyst: AB
Nitrogen, Ammonia (as N)	ND		0.050	mg/L	1	27-Sep-2023 16:35
HEXAVALENT CHROMIUM BY SW7196A		**Method:SW7196**				Analyst: MZD
Chromium, Hexavalent	ND		0.0100	mg/L	1	13-Sep-2023 17:02
PH BY SW9040C		**Method:SW9040C**				Analyst: DW
pH	**1.91**	H	**0.100**	**pH Units**	1	18-Sep-2023 16:52
Temp Deg C @pH	**20.8**	H	**0**	**DEG C**	1	18-Sep-2023 16:52
SUBCONTRACT ANALYSIS - METALS ANALYSIS		**Method:NA**				Analyst: SUBHO
Subcontract Analysis	See Attached			NA	1	02-Oct-2023 14:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Weight / Prep Log

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
WorkOrder: HS23090731

Batch ID: 200551 **Start Date:** 18 Sep 2023 15:26 **End Date:** 18 Sep 2023 15:26
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23090731-01	1	1000 (mL)	1 (mL)	0.001	1-liter amber glass, Neat

Batch ID: 200973 **Start Date:** 26 Sep 2023 10:00 **End Date:** 26 Sep 2023 10:00
Method: PHOSPHOROUS **Prep Code:** P_TW_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23090731-01		50 (mg/L)	50 (mL)	1	500 mL plastic, H2SO4 to pH <2

Batch ID: 201028 **Start Date:** 27 Sep 2023 08:30 **End Date:** 27 Sep 2023 08:30
Method: NITROGEN AMMONIA - WATER - PREP **Prep Code:** NIT_AMM_W_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23090731-01		25 (mL)	25 (mL)	1	500 mL plastic, H2SO4 to pH <2

Batch ID: 201190 **Start Date:** 29 Sep 2023 07:00 **End Date:** 29 Sep 2023 07:00
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23090731-01		10 (mL)	10 (mL)	1	120 plastic HNO3

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
WorkOrder: HS23090731

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 200551 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS23090731-01	PAS-AWS-091323	13 Sep 2023 10:57		18 Sep 2023 15:26	25 Sep 2023 15:12	20
Batch ID: 200973 (0)	**Test Name :** PHOSPHORUS BY E365.3-1978				**Matrix:** Water	
HS23090731-01	PAS-AWS-091323	13 Sep 2023 10:57		26 Sep 2023 10:00	26 Sep 2023 15:15	5
Batch ID: 201028 (0)	**Test Name :** AMMONIA AS N BY SM4500 NH3-B-F-2011				**Matrix:** Water	
HS23090731-01	PAS-AWS-091323	13 Sep 2023 10:57		27 Sep 2023 08:30	27 Sep 2023 16:35	1
Batch ID: 201190 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Water	
HS23090731-01	PAS-AWS-091323	13 Sep 2023 10:57		29 Sep 2023 07:00	29 Sep 2023 12:19	1
Batch ID: R446264 (0)	**Test Name :** HEXAVALENT CHROMIUM BY SW7196A				**Matrix:** Water	
HS23090731-01	PAS-AWS-091323	13 Sep 2023 10:57			13 Sep 2023 17:02	1
Batch ID: R446606 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Water	
HS23090731-01	PAS-AWS-091323	13 Sep 2023 10:57			15 Sep 2023 13:05	1
Batch ID: R446696 (0)	**Test Name :** PH BY SW9040C				**Matrix:** Water	
HS23090731-01	PAS-AWS-091323	13 Sep 2023 10:57			18 Sep 2023 16:52	1
Batch ID: R446746 (0)	**Test Name :** TOTAL SUSPENDED SOLIDS BY SM 2540D-2011				**Matrix:** Water	
HS23090731-01	PAS-AWS-091323	13 Sep 2023 10:57			19 Sep 2023 07:00	1
Batch ID: R447398 (0)	**Test Name :** ANIONS BY E300.0, REV 2.1, 1993				**Matrix:** Water	
HS23090731-01	PAS-AWS-091323	13 Sep 2023 10:57			26 Sep 2023 21:47	100
HS23090731-01	PAS-AWS-091323	13 Sep 2023 10:57			26 Sep 2023 21:41	5
Batch ID: R447912 (0)	**Test Name :** SUBCONTRACT ANALYSIS - METALS ANALYSIS				**Matrix:** Water	
HS23090731-01	PAS-AWS-091323	13 Sep 2023 10:57			02 Oct 2023 14:17	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
WorkOrder: HS23090731

QC BATCH REPORT

Batch ID: **201190 (0)** **Instrument:** **HG04** **Method:** **MERCURY BY SW7470A**

MBLK Sample ID: **MBLK-201190** Units: **mg/L** Analysis Date: **29-Sep-2023 12:15**
Client ID: Run ID: **HG04_447769** SeqNo: **7575305** PrepDate: **29-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.000200								

LCS Sample ID: **LCS-201190** Units: **mg/L** Analysis Date: **29-Sep-2023 12:17**
Client ID: Run ID: **HG04_447769** SeqNo: **7575306** PrepDate: **29-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00478	0.000200	0.005	0	95.6	80 - 120				

MS Sample ID: **HS23090731-01MS** Units: **mg/L** Analysis Date: **29-Sep-2023 16:35**
Client ID: **PAS-AWS-091323** Run ID: **HG04_447769** SeqNo: **7575668** PrepDate: **29-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00238	0.000200	0.005	0.000003	47.5	75 - 125				S

MSD Sample ID: **HS23090731-01MSD** Units: **mg/L** Analysis Date: **29-Sep-2023 16:37**
Client ID: **PAS-AWS-091323** Run ID: **HG04_447769** SeqNo: **7575669** PrepDate: **29-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00243	0.000200	0.005	0.000003	48.5	75 - 125	0.00238	2.08	20	S

The following samples were analyzed in this batch: HS23090731-01

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
WorkOrder: HS23090731

QC BATCH REPORT

Batch ID: 200551 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-200551** Units: **ug/L** Analysis Date: **19-Sep-2023 11:16**
Client ID: Run ID: **SV-7_446794** SeqNo: **7554676** PrepDate: **18-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2,4-Dinitrotoluene	ND	0.20								
Surr: 2,4,6-Tribromophenol	*2.904*	*0.20*	*5*	*0*	*58.1*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.501*	*0.20*	*5*	*0*	*70.0*	*40 - 125*				
Surr: 2-Fluorophenol	*3.248*	*0.20*	*5*	*0*	*65.0*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.459*	*0.20*	*5*	*0*	*69.2*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.188*	*0.20*	*5*	*0*	*63.8*	*41 - 120*				
Surr: Phenol-d6	*3.429*	*0.20*	*5*	*0*	*68.6*	*20 - 120*				

LCS Sample ID: **LCS-200551** Units: **ug/L** Analysis Date: **19-Sep-2023 11:37**
Client ID: Run ID: **SV-7_446794** SeqNo: **7554677** PrepDate: **18-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2,4-Dinitrotoluene	3.892	0.20	5	0	77.8	50 - 122				
Surr: 2,4,6-Tribromophenol	*3.275*	*0.20*	*5*	*0*	*65.5*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.649*	*0.20*	*5*	*0*	*73.0*	*40 - 125*				
Surr: 2-Fluorophenol	*3.196*	*0.20*	*5*	*0*	*63.9*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.558*	*0.20*	*5*	*0*	*71.2*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.24*	*0.20*	*5*	*0*	*64.8*	*41 - 120*				
Surr: Phenol-d6	*3.485*	*0.20*	*5*	*0*	*69.7*	*20 - 120*				

MS Sample ID: **HS23090848-02MS** Units: **ug/L** Analysis Date: **19-Sep-2023 16:57**
Client ID: Run ID: **SV-7_446794** SeqNo: **7554681** PrepDate: **18-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2,4-Dinitrotoluene	4.348	0.20	5	0	87.0	50 - 122				
Surr: 2,4,6-Tribromophenol	*3.694*	*0.20*	*5*	*0*	*73.9*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.577*	*0.20*	*5*	*0*	*71.5*	*40 - 125*				
Surr: 2-Fluorophenol	*3.262*	*0.20*	*5*	*0*	*65.2*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.085*	*0.20*	*5*	*0*	*81.7*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.486*	*0.20*	*5*	*0*	*69.7*	*41 - 120*				
Surr: Phenol-d6	*3.395*	*0.20*	*5*	*0*	*67.9*	*20 - 120*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
WorkOrder: HS23090731

QC BATCH REPORT

Batch ID: 200551 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS23090848-02MSD** Units: **ug/L** Analysis Date: **19-Sep-2023 15:05**
Client ID: Run ID: **SV-7_446794** SeqNo: **7554680** PrepDate: **18-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2,4-Dinitrotoluene	4.256	0.20	5	0	85.1	50 - 122	4.348	2.14	20	
Surr: 2,4,6-Tribromophenol	*3.736*	*0.20*	*5*	*0*	*74.7*	*34 - 129*	*3.694*	*1.12*	*20*	
Surr: 2-Fluorobiphenyl	*3.57*	*0.20*	*5*	*0*	*71.4*	*40 - 125*	*3.577*	*0.201*	*20*	
Surr: 2-Fluorophenol	*3.107*	*0.20*	*5*	*0*	*62.1*	*20 - 120*	*3.262*	*4.85*	*20*	
Surr: 4-Terphenyl-d14	*4.067*	*0.20*	*5*	*0*	*81.3*	*40 - 135*	*4.085*	*0.433*	*20*	
Surr: Nitrobenzene-d5	*3.582*	*0.20*	*5*	*0*	*71.6*	*41 - 120*	*3.486*	*2.72*	*20*	
Surr: Phenol-d6	*3.411*	*0.20*	*5*	*0*	*68.2*	*20 - 120*	*3.395*	*0.485*	*20*	

The following samples were analyzed in this batch: HS23090731-01

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
WorkOrder: HS23090731

QC BATCH REPORT

Batch ID: 200973 (0) **Instrument: UV-2450** **Method: PHOSPHORUS BY E365.3-1978**

MBLK Sample ID: **MBLK-200973** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565644** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	ND	0.0500								

LCS Sample ID: **LCS-200973** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565643** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.222	0.0500	0.25	0	88.8	80 - 120				

MS Sample ID: **HS23090759-01MS** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565633** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.595	0.0500	0.25	0.362	93.2	80 - 120				

MS Sample ID: **HS23090759-03MS** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565637** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.396	0.0500	0.25	0.149	98.8	80 - 120				

MS Sample ID: **HS23090759-05MS** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565641** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.379	0.0500	0.25	0.147	92.8	80 - 120				

MS Sample ID: **HS23090759-04MS** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565639** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.487	0.0500	0.25	0.232	102	80 - 120				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
WorkOrder: HS23090731

QC BATCH REPORT

Batch ID: 200973 (0) **Instrument: UV-2450** **Method: PHOSPHORUS BY E365.3-1978**

MS Sample ID: **HS23090759-02MS** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565635** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.661	0.0500	0.25	0.416	98.0	80 - 120				

MS Sample ID: **HS23090732-04MS** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565631** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.382	0.0500	0.25	0.134	99.2	80 - 120				

MS Sample ID: **HS23090732-03MS** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565629** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.314	0.0500	0.25	0.091	89.2	80 - 120				

MS Sample ID: **HS23090732-02MS** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565627** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.27	0.0500	0.25	0.046	89.6	80 - 120				

MS Sample ID: **HS23090732-01MS** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565625** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.263	0.0500	0.25	0.029	93.6	80 - 120				

MSD Sample ID: **HS23090759-02MSD** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565636** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.661	0.0500	0.25	0.416	98.0	80 - 120	0.661	0	20	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
WorkOrder: HS23090731

QC BATCH REPORT

Batch ID: 200973 (0) **Instrument: UV-2450** **Method: PHOSPHORUS BY E365.3-1978**

MSD Sample ID: **HS23090759-03MSD** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565638** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.41	0.0500	0.25	0.149	104	80 - 120	0.396	3.47	20	

MSD Sample ID: **HS23090759-04MSD** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565640** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.495	0.0500	0.25	0.232	105	80 - 120	0.487	1.63	20	

MSD Sample ID: **HS23090759-05MSD** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565642** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.378	0.0500	0.25	0.147	92.4	80 - 120	0.379	0.264	20	

MSD Sample ID: **HS23090759-01MSD** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565634** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.605	0.0500	0.25	0.362	97.2	80 - 120	0.595	1.67	20	

MSD Sample ID: **HS23090732-03MSD** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565630** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.314	0.0500	0.25	0.091	89.2	80 - 120	0.314	0	20	

MSD Sample ID: **HS23090732-04MSD** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565632** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.38	0.0500	0.25	0.134	98.4	80 - 120	0.382	0.525	20	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
WorkOrder: HS23090731

QC BATCH REPORT

Batch ID: 200973 (0) **Instrument: UV-2450** **Method: PHOSPHORUS BY E365.3-1978**

MSD Sample ID: **HS23090732-02MSD** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565628** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.27	0.0500	0.25	0.046	89.6	80 - 120	0.27	0	20	

MSD Sample ID: **HS23090732-01MSD** Units: **mg/L** Analysis Date: **26-Sep-2023 15:15**
Client ID: Run ID: **UV-2450_447364** SeqNo: **7565626** PrepDate: **26-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.264	0.0500	0.25	0.029	94.0	80 - 120	0.263	0.38	20	

The following samples were analyzed in this batch: HS23090731-01

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
WorkOrder: HS23090731

QC BATCH REPORT

Batch ID: 201028 (0) **Instrument: UV-2450** **Method: AMMONIA AS N BY SM4500 NH3-B-F-2011**

MBLK Sample ID: **MBLK-201028** Units: **mg/L** Analysis Date: **27-Sep-2023 16:35**
Client ID: Run ID: **UV-2450_447504** SeqNo: **7568479** PrepDate: **27-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	ND	0.050								

LCS Sample ID: **LCS-201028** Units: **mg/L** Analysis Date: **27-Sep-2023 16:35**
Client ID: Run ID: **UV-2450_447504** SeqNo: **7568478** PrepDate: **27-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.493	0.050	0.5	0	98.6	85 - 115				

MS Sample ID: **HS23091435-01MS** Units: **mg/L** Analysis Date: **27-Sep-2023 16:35**
Client ID: Run ID: **UV-2450_447504** SeqNo: **7568476** PrepDate: **27-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.63	0.050	0.5	0.115	103	80 - 120				

MSD Sample ID: **HS23091435-01MSD** Units: **mg/L** Analysis Date: **27-Sep-2023 16:35**
Client ID: Run ID: **UV-2450_447504** SeqNo: **7568477** PrepDate: **27-Sep-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.614	0.050	0.5	0.115	99.8	80 - 120	0.63	2.57	20	

The following samples were analyzed in this batch: HS23090731-01

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
WorkOrder: HS23090731

QC BATCH REPORT

Batch ID: R446264 (0) **Instrument:** UV-2450 **Method:** HEXAVALENT CHROMIUM BY SW7196A

MBLK Sample ID: **MBLK-R446264** Units: **mg/L** Analysis Date: **13-Sep-2023 12:09**
Client ID: Run ID: **UV-2450_446264** SeqNo: **7542672** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	ND	0.0100								

LCS Sample ID: **LCS-R446264** Units: **mg/L** Analysis Date: **13-Sep-2023 12:09**
Client ID: Run ID: **UV-2450_446264** SeqNo: **7542671** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.231	0.0100	0.25	0	92.4	80 - 120				

MS Sample ID: **HS23090713-01MS** Units: **mg/L** Analysis Date: **13-Sep-2023 12:09**
Client ID: Run ID: **UV-2450_446264** SeqNo: **7542677** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.227	0.0100	0.25	0.001	90.4	86 - 117				

MSD Sample ID: **HS23090713-01MSD** Units: **mg/L** Analysis Date: **13-Sep-2023 12:09**
Client ID: Run ID: **UV-2450_446264** SeqNo: **7542676** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.228	0.0100	0.25	0.001	90.8	86 - 117	0.227	0.44	15	

The following samples were analyzed in this batch: HS23090731-01

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
WorkOrder: HS23090731

QC BATCH REPORT

Batch ID: R446606 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WMBLK-09152023** Units: **mg/L** Analysis Date: **15-Sep-2023 13:05**
Client ID: Run ID: **Balance1_446606** SeqNo: **7548906** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	ND	10.0								

LCS Sample ID: **WLCS-09512023** Units: **mg/L** Analysis Date: **15-Sep-2023 13:05**
Client ID: Run ID: **Balance1_446606** SeqNo: **7548905** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1044	10.0	1000	0	104	85 - 115				

DUP Sample ID: **HS23090797-01DUP** Units: **mg/L** Analysis Date: **15-Sep-2023 13:05**
Client ID: Run ID: **Balance1_446606** SeqNo: **7548904** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1304	10.0					1308	0.306	20	

DUP Sample ID: **HS23090706-01DUP** Units: **mg/L** Analysis Date: **15-Sep-2023 13:05**
Client ID: Run ID: **Balance1_446606** SeqNo: **7548899** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	240	10.0					242	0.83	20	

The following samples were analyzed in this batch: HS23090731-01

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
WorkOrder: HS23090731

QC BATCH REPORT

Batch ID: **R446696 (0)** **Instrument:** **Skalar 03** **Method:** **PH BY SW9040C**

DUP Sample ID: **HS23090731-01DUP** Units: **pH Units** Analysis Date: **18-Sep-2023 16:54**
Client ID: **PAS-AWS-091323** Run ID: **Skalar 03_446696** SeqNo: **7550918** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	1.91	0.100					1.91	0	10	
Temp Deg C @pH	20.8	0					20.8	0	10	

The following samples were analyzed in this batch: HS23090731-01

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
WorkOrder: HS23090731

QC BATCH REPORT

Batch ID: R446746 (0) **Instrument:** Balance1 **Method:** TOTAL SUSPENDED SOLIDS BY SM 2540D-2011

MBLK Sample ID: **WMBLK-09192023** Units: **mg/L** Analysis Date: **19-Sep-2023 07:00**
Client ID: Run ID: **Balance1_446746** SeqNo: **7551903** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Suspended Solids (Residue, Non-Filterable)	ND	2.50								

LCS Sample ID: **WLCS-09192023** Units: **mg/L** Analysis Date: **19-Sep-2023 07:00**
Client ID: Run ID: **Balance1_446746** SeqNo: **7551902** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Suspended Solids (Residue, Non-Filterable)	99	2.50	100	0	99.0	85 - 115				

DUP Sample ID: **HS23090737-01DUP** Units: **mg/L** Analysis Date: **19-Sep-2023 07:00**
Client ID: Run ID: **Balance1_446746** SeqNo: **7551888** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Suspended Solids (Residue, Non-Filterable)	41.6	2.50					41.4	0.482	20	

DUP Sample ID: **HS23090732-03DUP** Units: **mg/L** Analysis Date: **19-Sep-2023 07:00**
Client ID: Run ID: **Balance1_446746** SeqNo: **7551885** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Suspended Solids (Residue, Non-Filterable)	42.4	2.50					42.8	0.939	20	

The following samples were analyzed in this batch: HS23090731-01

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
WorkOrder: HS23090731

QC BATCH REPORT

Batch ID: R447398 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY E300.0, REV 2.1, 1993

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **26-Sep-2023 15:54**
Client ID: Run ID: **ICS-Integrion_447398** SeqNo: **7566270** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	0.500								
Fluoride	ND	0.100								
Sulfate	ND	0.500								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **26-Sep-2023 16:06**
Client ID: Run ID: **ICS-Integrion_447398** SeqNo: **7566271** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.37	0.500	20	0	102	90 - 110				
Fluoride	3.956	0.100	4	0	98.9	90 - 110				
Sulfate	20.22	0.500	20	0	101	90 - 110				

MS Sample ID: **HS23091223-04MS** Units: **mg/L** Analysis Date: **26-Sep-2023 17:15**
Client ID: Run ID: **ICS-Integrion_447398** SeqNo: **7566279** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	28.28	0.500	10	18.46	98.1	80 - 120				
Fluoride	1.984	0.100	2	0.2086	88.8	80 - 120				
Sulfate	432.5	0.500	10	428.9	35.6	80 - 120				SEO

MS Sample ID: **HS23090185-08MS** Units: **mg/L** Analysis Date: **26-Sep-2023 20:38**
Client ID: Run ID: **ICS-Integrion_447398** SeqNo: **7566307** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	9.971	0.500	10	0.195	97.8	80 - 120				
Fluoride	1.432	0.100	2	0	71.6	80 - 120				S
Sulfate	9.738	0.500	10	0	97.4	80 - 120				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
WorkOrder: HS23090731

QC BATCH REPORT

Batch ID: **R447398 (0)** **Instrument:** **ICS-Integrion** **Method:** **ANIONS BY E300.0, REV 2.1, 1993**

MSD Sample ID: **HS23091223-04MSD** Units: **mg/L** Analysis Date: **26-Sep-2023 17:21**
Client ID: Run ID: **ICS-Integrion_447398** SeqNo: **7566280** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	28.24	0.500	10	18.46	97.7	80 - 120	28.28	0.142	20	
Fluoride	2.005	0.100	2	0.2086	89.8	80 - 120	1.984	1.04	20	
Sulfate	433	0.500	10	428.9	40.8	80 - 120	432.5	0.12	20	SEO

MSD Sample ID: **HS23090185-08MSD** Units: **mg/L** Analysis Date: **26-Sep-2023 20:43**
Client ID: Run ID: **ICS-Integrion_447398** SeqNo: **7566308** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	10	0.500	10	0.195	98.0	80 - 120	9.971	0.29	20	
Fluoride	1.529	0.100	2	0	76.4	80 - 120	1.432	6.52	20	S
Sulfate	9.837	0.500	10	0	98.4	80 - 120	9.738	1.01	20	

The following samples were analyzed in this batch: HS23090731-01

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ARCADIS U.S., Inc.
Project: 2023 Annual Waste Sample
WorkOrder: **HS23090731**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

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CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	88-00356	27-Mar-2024
California	2919; 2024	30-Apr-2024
Dept of Defense	L23-358	31-May-2025
Florida	E87611-38	30-Jun-2024
Illinois	2000322023-11	30-Jun-2024
Kansas	E-10352 2023-2024	31-Jul-2024
Louisiana	03087 2023-2024	30-Jun-2024
Maryland	343; 2023-2024	30-Jun-2024
North Carolina	624-2023	31-Dec-2023
North Dakota	R-193 2023-2024	30-Apr-2024
Texas	T104704231-23-31	30-Apr-2024
Utah	TX026932023-14	31-Jul-2024

RIGHT SOLUTIONS | RIGHT PARTNER

Sample Receipt Checklist

Work Order ID: HS23090731 **Date/Time Received:** **13-Sep-2023 10:57**

Client Name: AGM-HOU **Received by:** **Corey Grandits**

Completed By: /S/ Paresh M. Giga (eSignature) 13-Sep-2023 14:08 (Date/Time) **Reviewed by:** /S/ Bernadette A. Fini (eSignature) 14-Sep-2023 11:25 (Date/Time)

Matrices: **Water** Carrier name: **Client**

	Yes	No	Not Present
Shipping container/cooler in good condition?	☑	☐	☐
Custody seals intact on shipping container/cooler?	☐	☐	☑
Custody seals intact on sample bottles?	☐	☐	☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	☐	☐	☑
Chain of custody present?	☑	☐	1 Page(s)
Chain of custody signed when relinquished and received?	☑	☐	COC IDs:307729
Samplers name present on COC?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s):	5.1C/5.0C U/C	IR31
Cooler(s)/Kit(s):	Blue	
Date/Time sample(s) sent to storage:	9/13/23 14:20	

	Yes	No	
Water - VOA vials have zero headspace?	☐	☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐

pH adjusted by:

Login Notes: All labels have varied times 10:57 to 11:03.
Logged in using earliest time.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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Cincinnati, OH +1 513 733 5336 | Fort Collins, CO +1 970 490 1511 | Houston, TX +1 281 530 5656 | Spring City, PA +1 610 948 4903 | South Charleston, WV

Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070 | Middletown, PA +1 717 944 5541 | Salt Lake City, UT +1 801 266 7700

Chain of Custody Form

Page ____ of ____

COC ID: 307729

SHORT HOLDING TIME

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	[illegible]	Project Name	[illegible]	A	[illegible]
Work Order		Project Number	[illegible]	B	[illegible]
Company Name	[illegible]	Bill To Company	[illegible]	C	[illegible]
Send Report To	[illegible]	Invoice Attn	[illegible]	D	[illegible]
Address	[illegible]	Address	[illegible]	E	[illegible]
				F	[illegible]
City/State/Zip	[illegible]	City/State/Zip	[illegible]	G	[illegible]
Phone	[illegible]	Phone	[illegible]	H	[illegible]
Fax	[illegible]	Fax	[illegible]	I	[illegible]
e-Mail Address	[illegible]	e-Mail Address	[illegible]	J	[illegible]

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	PAS-AWS-091323	9/13/23		Water		7	X	X	X	X	X	X	X	X	X	X	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

HS23090731

ARCADIS U.S., Inc.

2023 Annual Waste Sample

Sampler(s) Please Print & Sign: Brady Ethridge

Shipment Method:

Required Turnaround Time: (Check Box) [X] [illegible]

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Brady Ethridge	09/13/23		
Relinquished by:	Date:	Time:	Received by (Laboratory): CA 9-13-23 1255
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: [illegible]

Cooler ID	Cooler Temp.
BWE	5.1°
1231	

QC Package: (Check One Box Below)

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

CLF-0-1

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Copyright 2011 by ALS Environmental.

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02-Oct-2023

Bernadette Fini
ALS Environmental
10450 Stancliff Rd
Suite 210
Houston, TX 77099

Re: **HS23090731** Work Order: **23091379**

Dear Bernadette,

ALS Environmental received 1 sample on 15-Sep-2023 09:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 9.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Chelsey Cook

Electronically approved by: Chelsey Cook

Chelsey Cook
Project Manager

ALS Group, USA

Date: 02-Oct-23

Client: ALS Environmental
Project: HS23090731
Work Order: **23091379**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
23091379-01	PAS-AWS-091323	Water	HS23090731-01	9/13/2023 10:57	9/15/2023 09:00	☐

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ALS Environmental
Project: HS23090731
WorkOrder: **23091379**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Analyte accreditation is not offered
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
mg/L	Milligrams per Liter

RIGHT SOLUTIONS | RIGHT PARTNER

Client: ALS Environmental
Project: HS23090731
Work Order: 23091379

Case Narrative

Samples for the above noted Work Order were received on 09/15/2023. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No deviations or anomalies were noted.

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ALS Group, USA

Date: *02-Oct-2023*

Client: ALS Environmental
Project: HS23090731
Sample ID: PAS-AWS-091323
Collection Date: 9/13/2023 10:57 AM

Work Order: 23091379
Lab ID: 23091379-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-AES			**SW6010D**		Prep: SW3015A 9/29/23 09:01	Analyst: **DSC**
Arsenic	**1.2**		**0.0050**	**mg/L**	1	9/29/2023 01:03 PM
Cadmium	**0.74**		**0.010**	**mg/L**	1	9/29/2023 01:03 PM
Calcium	**1,000**		**50**	**mg/L**	100	9/29/2023 03:17 PM
Copper	**0.34**		**0.010**	**mg/L**	1	9/29/2023 01:03 PM
Lithium	**0.29**		**0.010**	**mg/L**	1	9/29/2023 01:03 PM
Magnesium	**86**		**0.20**	**mg/L**	1	9/29/2023 01:03 PM
Nickel	**0.94**		**0.0050**	**mg/L**	1	9/29/2023 01:03 PM
Sodium	**1,300**		**50**	**mg/L**	100	9/29/2023 03:17 PM
Zinc	**5.5**		**1.0**	**mg/L**	100	9/29/2023 03:17 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

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ALS Group, USA

Client: ALS Environmental
Work Order: 23091379
Project: HS23090731

Date: 02-Oct-23

QC BATCH REPORT

Batch ID: **225449** Instrument ID **ICP2** Method: **SW6010D**

MBLK Sample ID: **MBLK-225449-225449** Units: **mg/L** Analysis Date: **9/29/2023 11:48 AM**

Client ID: Run ID: **ICP2_230929A** SeqNo: **10033957** Prep Date: **9/29/2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.0050								
Cadmium	ND	0.010								
Calcium	ND	0.50								
Copper	ND	0.010								
Lithium	ND	0.010								
Magnesium	ND	0.20								
Nickel	ND	0.0050								
Sodium	ND	0.50								
Zinc	ND	0.010								

LCS Sample ID: **LCS-225449-225449** Units: **mg/L** Analysis Date: **9/29/2023 11:54 AM**

Client ID: Run ID: **ICP2_230929A** SeqNo: **10033958** Prep Date: **9/29/2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1023	0.0050	0.1	0	102	80-120	0			
Cadmium	0.1041	0.010	0.1	0	104	80-120	0			
Calcium	10.4	0.50	10	0	104	80-120	0			
Copper	0.1134	0.010	0.1	0	113	80-120	0			
Lithium	0.1057	0.010	0.1	0	106	80-120	0			
Magnesium	10.25	0.20	10	0	102	80-120	0			
Nickel	0.1089	0.0050	0.1	0	109	80-120	0			
Sodium	10.02	0.50	10	0	100	80-120	0			
Zinc	0.1042	0.010	0.1	0	104	80-120	0			

MS Sample ID: **23091379-01AMS** Units: **mg/L** Analysis Date: **9/29/2023 01:09 PM**

Client ID: **PAS-AWS-091323** Run ID: **ICP2_230929A** SeqNo: **10033971** Prep Date: **9/29/2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	1.265	0.0050	0.1	1.202	63.2	75-125	0			SO
Cadmium	0.8165	0.010	0.1	0.7372	79.3	75-125	0			O
Copper	0.4425	0.010	0.1	0.3368	106	75-125	0			
Lithium	0.3944	0.010	0.1	0.2859	109	75-125	0			
Magnesium	94.08	0.20	10	85.78	82.9	75-125	0			O
Nickel	1.005	0.0050	0.1	0.945	60.1	75-125	0			SO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

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Client: ALS Environmental
Work Order: 23091379
Project: HS23090731

QC BATCH REPORT

Batch ID: **225449** Instrument ID **ICP2** Method: **SW6010D**

MS Sample ID: **23091379-01AMS** Units: **mg/L** Analysis Date: **9/29/2023 03:23 PM**

Client ID: **PAS-AWS-091323** Run ID: **ICP2_230929A** SeqNo: **10033994** Prep Date: **9/29/2023** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	811	50	10	1009	-1980	75-125	0			SO
Sodium	1085	50	10	1338	-2520	75-125	0			SO
Zinc	4.389	1.0	0.1	5.5	-1110	75-125	0			SO

MSD Sample ID: **23091379-01AMSD** Units: **mg/L** Analysis Date: **9/29/2023 01:32 PM**

Client ID: **PAS-AWS-091323** Run ID: **ICP2_230929A** SeqNo: **10033975** Prep Date: **9/29/2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	1.267	0.0050	0.1	1.202	64.6	75-125	1.265	0.111	20	SO
Cadmium	0.8189	0.010	0.1	0.7372	81.7	75-125	0.8165	0.295	20	O
Copper	0.4408	0.010	0.1	0.3368	104	75-125	0.4425	0.39	20	
Lithium	0.3803	0.010	0.1	0.2859	94.4	75-125	0.3944	3.63	20	
Magnesium	93.59	0.20	10	85.78	78.1	75-125	94.08	0.514	20	O
Nickel	1.008	0.0050	0.1	0.945	63	75-125	1.005	0.289	20	SO

MSD Sample ID: **23091379-01AMSD** Units: **mg/L** Analysis Date: **9/29/2023 03:28 PM**

Client ID: **PAS-AWS-091323** Run ID: **ICP2_230929A** SeqNo: **10033995** Prep Date: **9/29/2023** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	896.1	50	10	1009	-1130	75-125	811	9.97	20	SO
Sodium	1222	50	10	1338	-1160	75-125	1085	11.8	20	SO
Zinc	5.022	1.0	0.1	5.5	-478	75-125	4.389	13.5	20	SO

The following samples were analyzed in this batch: 23091379-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

23091379

ALS - HOUSTON: ALS Environmental
Project: HS23090731

)450 Stancliff Rd, Ste 210
ɔuston, TX 77099
: +1 281 530 5656
: +1 281 530 5887
/ww.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Texas**

COC ID: **23151**

SUBCONTRACT TO:

ALS Laboratory Group
3352 128th Ave.
Holland, MI 494249263

Phone: +1 616 399 6070

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	Bernadette A. Fini
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	Bernadette.fini@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS23090731
TSR:	Houston House Acct

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS23090731-01**	**PAS-AWS-091323**	**Water**	**13 Sep 2023 10:57**
	6010-Ca,Na,Mg,As,Cd,Cu,Ni,Zn,Li. Need EDD xEQuIS-Arcadis, reporting units mg/l			27 Sep 2023

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: STD (Laboratory Standard QC: method blank and LCS required)

Relinquished By: Zia — Date/Time: 9-14-23 1800

FEDEX Received By: Kathryn Lalwanse — Date/Time: 9/15/23 0900

Cooler ID(s): IR3 — Temperature(s): 1.8°C

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ALS Group, USA
Holland, Michigan

Sample Receipt Checklist

Client Name: **ALS - HOUSTON** Date/Time Received: **15-Sep-23 09:00**

Work Order: **23091379** Received by: **KYB**

Checklist completed by Karly Yablonski (eSignature) 15-Sep-23 (Date) Reviewed by: Jodi Blouw (eSignature) 15-Sep-23 (Date)

Matrices: Water
Carrier name: FedEx

	Yes	No	Not Present
Shipping container/cooler in good condition?	☑	☐	☐
Custody seals intact on shipping container/cooler?	☑	☐	☐
Custody seals intact on sample bottles?	☐	☐	☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	
Sample(s) received on ice?	☑	☐	

Temperature(s)/Thermometer(s): 1.8/2.8C IR3

Cooler(s)/Kit(s):

Date/Time sample(s) sent to storage: 9/15/2023 2:35:54 PM

	Yes	No	No VOA vials submitted	
Water - VOA vials have zero headspace?	☐	☐		☑
Water - pH acceptable upon receipt?	☑	☐	N/A	☐
pH adjusted?	☐	☑	N/A	☐

pH adjusted by: -

Login Notes: pH<2

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

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