Technical Package Cover Page

This file contains the following documents:

1. Summary of application (in plain language)
2. First notice (NORI-Notice of Receipt of Application and Intent to Obtain a Permit)
3. Second notice (NAPD-Notice of Preliminary Decision)
4. Application materials
5. Draft permit
6. Technical summary or fact sheet

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

PLAIN LANGUAGE SUMMARY FOR TPDES OR TLAP PERMIT APPLICATIONS

Plain Language Summary Template and Instructions for Texas Pollutant Discharge Elimination System (TPDES) and Texas Land Application (TLAP) Permit Applications

Applicants should use this template to develop a plain language summary as required by Title 30, Texas Administrative Code (30 TAC), Chapter 39, Subchapter H. Applicants may modify the template as necessary to accurately describe their facility as long as the summary includes the following information: (1) the function of the proposed plant or facility; (2) the expected output of the proposed plant or facility; (3) the expected pollutants that may be emitted or discharged by the proposed plant or facility; and (4) how the applicant will control those pollutants, so that the proposed plant will not have an adverse impact on human health or the environment.

Fill in the highlighted areas below to describe your facility and application in plain language. Instructions and examples are provided below. Make any other edits necessary to improve readability or grammar and to comply with the rule requirements.

If you are subject to the alternative language notice requirements in 30 TAC Section 39.426, **you must provide a translated copy of the completed plain language summary in the appropriate alternative language as part of your application package**. For your convenience, a Spanish template has been provided below.

ENGLISH TEMPLATE FOR TPDES or TLAP NEW/RENEWAL/AMENDMENT APPLICATIONS DOMESTIC WASTEWATER/STORMWATER

The following summary is provided for this pending water quality permit application being reviewed by the Texas Commission on Environmental Quality as required by 30 TAC Chapter 39. The information provided in this summary may change during the technical review of the application and is not a federal enforceable representation of the permit application.

City of Abilene (CN600242671) operates the Hamby Water Reclamation Facility (RN101611788), a domestic wastewater treatment plant. The facility is located at 19000 COUNTY ROAD 309, in Abilene, Jones County, Texas 79601. The City of Abilene has applied for a minor amendment with renewal of the existing permit, WQ0010334004, which authorizes the discharge of treated domestic wastewater at an annual average flow not to exceed 18,000,000 gallons per day via Outfall 001, an annual average flow of 4,000,000 gallons per day via Outfall 002, and an annual average flow of 7,000,000 gallons per day via Outfall 003. The current permit also authorizes the surface disposal of sewage sludge on 64 acres, and the disposal of treated domestic wastewater via irrigation on 1,960 acres of off-site properties and 335 acres of on-site properties. The minor amendment application provides information that the next active sewage sludge disposal site (SDS) will be SDS-E4 which is currently permitted but is only listed as a future site.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

NOTICE OF RECEIPT OF APPLICATION AND INTENT TO OBTAIN WATER QUALITY PERMIT RENEWAL

PERMIT NO. WQ0010334004

APPLICATION. City of Abilene, P.O. Box 60, Abilene, Texas 79604, has applied to the Texas Commission on Environmental Quality (TCEQ) to renew Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0010334004 (EPA I.D. No. TX0023973) to authorize a combined discharge of treated wastewater via Outfalls 001, 002, and 003 shall not exceed the annual flow of 22,000,000 gallons per day. The current permit also authorizes the surface disposal of sewage sludge on 64 acres, and the disposal of treated domestic wastewater via irrigation on 1,960 acres of off-site properties and an additional 335 acres of on-site properties. The domestic wastewater treatment facility and on-site disposal areas are located at 19000 County Road 309, in the City of Abilene, in Jones County, Texas 79601. The discharge route is from the plant site to via Outfall 001 to Freewater Creek; thence to Deadman Creek; thence to the Clear Fork Brazos River; via Outfall 002 to Kirby Lake; thence to Cedar Creek; thence to Fort Phantom Hill Reservoir; and via Outfall 003 directly to Fort Phantom Hill Reservoir. TCEQ received this application on May 28, 2024. The permit application will be available for viewing and copying at City of Abilene City Hall, Water Administration Conference Room, 555 Walnut Street, Abilene, in Taylor County, Texas and at Hamby Water Reclamation Facility, Conference Room, 19000 County Road 309, Abilene, in Jones County, Texas prior to the date this notice is published in the newspaper. The application, including any updates, and associated notices are available electronically at the following webpage: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications. This link to an electronic map of the site or facility's general location is provided as a public courtesy and not part of the application or notice. For the exact location, refer to the application. https://gisweb.tceq.texas.gov/LocationMapper/?marker=-99.622777,32.540277&level=18

ADDITIONAL NOTICE. TCEQ's Executive Director has determined the application is administratively complete and will conduct a technical review of the application. After technical review of the application is complete, the Executive Director may prepare a draft permit and will issue a preliminary decision on the application. **Notice of the Application and Preliminary Decision will be published and mailed to those who are on the county-wide mailing list and to those who are on the mailing list for this application. That notice will contain the deadline for submitting public comments.**

PUBLIC COMMENT / PUBLIC MEETING. You may submit public comments or request a public meeting on this application. The purpose of a public meeting is to provide the opportunity to submit comments or to ask questions about the application. TCEQ will hold a public meeting if the Executive Director determines that there is a significant degree of public

interest in the application or if requested by a local legislator. A public meeting is not a contested case hearing.

OPPORTUNITY FOR A CONTESTED CASE HEARING. After the deadline for submitting public comments, the Executive Director will consider all timely comments and prepare a response to all relevant and material, or significant public comments. **Unless the application is directly referred for a contested case hearing, the response to comments, and the Executive Director's decision on the application, will be mailed to everyone who submitted public comments and to those persons who are on the mailing list for this application. If comments are received, the mailing will also provide instructions for requesting reconsideration of the Executive Director's decision and for requesting a contested case hearing.** A contested case hearing is a legal proceeding similar to a civil trial in state district court.

TO REQUEST A CONTESTED CASE HEARING, YOU MUST INCLUDE THE FOLLOWING ITEMS IN YOUR REQUEST: your name, address, phone number; applicant's name and proposed permit number; the location and distance of your property/activities relative to the proposed facility; a specific description of how you would be adversely affected by the facility in a way not common to the general public; a list of all disputed issues of fact that you submit during the comment period and, the statement "[I/we] request a contested case hearing." If the request for contested case hearing is filed on behalf of a group or association, the request must designate the group's representative for receiving future correspondence; identify by name and physical address an individual member of the group who would be adversely affected by the proposed facility or activity; provide the information discussed above regarding the affected member's location and distance from the facility or activity; explain how and why the member would be affected; and explain how the interests the group seeks to protect are relevant to the group's purpose.

Following the close of all applicable comment and request periods, the Executive Director will forward the application and any requests for reconsideration or for a contested case hearing to the TCEQ Commissioners for their consideration at a scheduled Commission meeting.

The Commission may only grant a request for a contested case hearing on issues the requestor submitted in their timely comments that were not subsequently withdrawn. **If a hearing is granted, the subject of a hearing will be limited to disputed issues of fact or mixed questions of fact and law relating to relevant and material water quality concerns submitted during the comment period.**

TCEQ may act on an application to renew a permit for discharge of wastewater without providing an opportunity for a contested case hearing if certain criteria are met.

MAILING LIST. If you submit public comments, a request for a contested case hearing or a reconsideration of the Executive Director's decision, you will be added to the mailing list for this specific application to receive future public notices mailed by the Office of the Chief Clerk. In addition, you may request to be placed on: (1) the permanent mailing list for a specific applicant name and permit number; and/or (2) the mailing list for a specific county. If you wish to be placed on the permanent and/or the county mailing list, clearly specify which list(s) and send your request to TCEQ Office of the Chief Clerk at the address below.

INFORMATION AVAILABLE ONLINE. For details about the status of the application, visit the Commissioners' Integrated Database at www.tceq.texas.gov/goto/cid. Search the database using the permit number for this application, which is provided at the top of this notice.

AGENCY CONTACTS AND INFORMATION. All public comments and requests must be submitted either electronically at **https://www14.tceq.texas.gov/epic/eComment/**, or in writing to the Texas Commission on Environmental Quality, Office of the Chief Clerk, MC-105, P.O. Box 13087, Austin, Texas 78711-3087. Please be aware that any contact information you provide, including your name, phone number, email address and physical address will become part of the agency's public record. For more information about this permit application or the permitting process, please call the TCEQ Public Education Program, Toll Free, at 1-800-687-4040 or visit their website at www.tceq.texas.gov/goto/pep. Si desea información en Español, puede llamar al 1-800-687-4040.

Further information may also be obtained from City of Abilene at the address stated above or by calling Mr. Rodney Taylor, Director of Water Utilities, at 325-676-6452.

Issuance Date: July 2, 2024

Texas Commission on Environmental Quality

COMBINED

NOTICE OF RECEIPT OF APPLICATION AND INTENT TO OBTAIN WATER QUALITY PERMIT (NORI)

AND

NOTICE OF APPLICATION AND PRELIMINARY DECISION FOR TPDES PERMIT FOR MUNICIPAL WASTEWATER

RENEWAL

PERMIT NO. WQ0010334004

APPLICATION AND PRELIMINARY DECISION. City of Abilene, P.O. Box 60, Abilene, Texas 79604, has applied to the Texas Commission on Environmental Quality (TCEQ) for a renewal of Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0010334004, which authorizes a combined discharge of treated wastewater via Outfalls 001, 002, and 003 not to exceed the annual average flow of 22,000,000 gallons per day. The current permit also authorizes the surface disposal of sewage sludge on 64 acres, and the disposal of treated domestic wastewater via irrigation on 1,960 acres of off-site properties and an additional 335 acres of on-site properties. TCEQ received this application on May 28, 2024.

This combined notice is being issued to correct the contact's name and contact phone number that were provided in the original NORI.

The facility and the on-site disposal areas are located at 19000 County Road 309, in Jones County, Texas 79601. The treated effluent is discharged via Outfall 001 to Freewater Creek, thence to Deadman Creek, thence to Clear Fork Brazos River in Segment No. 1232 of the Brazos River Basin; via Outfall 002 to Kirby Lake, thence to Cedar Creek, thence to Fort Phantom Hill Reservoir in Segment No. 1236 of the Brazos River Basin; and via Outfall 003 directly to Fort Phantom Hill Reservoir in Segment No. 1236 of the Brazos River Basin. The unclassified receiving water uses are minimal aquatic life use for Freewater Creek, intermediate aquatic life use for Deadman Creek, high aquatic life use for Kirby Lake, and limited aquatic life use for Cedar Creek. The designated uses for Segment 1232 are primary contact recreation and high aquatic life use. The designated uses for Segment No. 1236 are primary contact recreation,

public water supply, and high aquatic life use. This link to an electronic map of the site or facility's general location is provided as a public courtesy and is not part of the application or notice. For the exact location, refer to the application. https://gisweb.tceq.texas.gov/LocationMapper/?marker=-99.622777,32.540277&level=18

The TCEQ Executive Director has completed the technical review of the application and prepared a permit draft. The draft permit, if approved, would establish the conditions under which the facility must operate. The Executive Director has made a preliminary decision that this permit, if issued, meets all statutory and regulatory requirements. The permit application, Executive Director's preliminary decision, and draft permit are available for viewing and copying at City of Abilene City Hall, Water Administration Conference Room, 555 Walnut Street, Abilene, in Taylor County, Texas and Hamby Water Reclamation Facility, Conference Room, 19000 County Road 309, Abilene, in Jones County, Texas. The application, including any updates, and associated notices are available electronically at the following webpage: https://www.tceq.texas.gov/permitting/wastewater/tpdes-applications.

ALTERNATIVE LANGUAGE NOTICE. Alternative language notice in Spanish is available at https://www.tceq.texas.gov/permitting/wastewater/plain-language-summaries-and-public-notices. El aviso de idioma alternativo en español está disponible en https://www.tceq.texas.gov/permitting/wastewater/plain-language-summaries-and-public-notices.

PUBLIC COMMENT / PUBLIC MEETING.*:* You may submit public comments or request a public meeting about this application. The purpose of a public meeting is to provide the opportunity to submit comments or to ask questions about the application. TCEQ holds a public meeting if the Executive Director determines that there is a significant degree of public interest in the application or if requested by a local legislator. A public meeting is not a contested case hearing.

OPPORTUNITY FOR A CONTESTED CASE HEARING. After the deadline for submitting public comments, the Executive Director will consider all timely comments and prepare a response to all relevant and material, or significant public comments. **Unless the application is directly referred for a contested case hearing, the response to comments will be mailed to everyone who submitted public comments and to those persons who are on the mailing list for this application. If comments are received, the mailing will also provide instructions for requesting a contested case hearing or reconsideration of the Executive Director's decision.** A contested case hearing is a legal proceeding similar to a civil trial in a state district court.

TO REQUEST A CONTESTED CASE HEARING, YOU MUST INCLUDE THE FOLLOWING ITEMS IN YOUR REQUEST: your name, address, phone number; applicant's name and proposed permit number; the location and distance of your property/activities relative to the proposed facility; a specific description of how you would be adversely affected by the facility in a way not common to the general public; a list of all disputed issues of fact that you submit during the comment period; and the statement "[I/we] request a contested case hearing." If the request for contested case hearing is filed on behalf of a group or association, the request must designate the group's representative for receiving future correspondence; identify by name and physical address an individual member of the group who would be adversely affected by the proposed facility or activity; provide the information discussed above regarding the affected member's location and distance from the facility or activity; explain how and why the member would be affected; and explain how the interests the group seeks to protect are relevant to the group's purpose.

Following the close of all applicable comment and request periods, the Executive Director will forward the application and any requests for reconsideration or for a contested case hearing to the TCEQ Commissioners for their consideration at a scheduled Commission meeting.

The Commission may only grant a request for a contested case hearing on issues the requestor submitted in their timely comments that were not subsequently withdrawn. **If a hearing is granted, the subject of a hearing will be limited to disputed issues of fact or mixed questions of fact and law relating to relevant and material water quality concerns submitted during the comment period. TCEQ may act on an application to renew a permit for discharge of wastewater without providing an opportunity for a contested case hearing if certain criteria are met.**

EXECUTIVE DIRECTOR ACTION. The Executive Director may issue final approval of the application unless a timely contested case hearing request or request for reconsideration is filed. If a timely hearing request or request for reconsideration is filed, the Executive Director will not issue final approval of the permit and will forward the application and request to the TCEQ Commissioners for their consideration at a scheduled Commission meeting.

MAILING LIST. If you submit public comments, a request for a contested case hearing or a reconsideration of the Executive Director's decision, you will be added to the mailing list for this specific application to receive future public notices mailed by the Office of the Chief Clerk. In addition, you may request to be placed on: (1) the permanent mailing list for a specific applicant name and permit number; and/or (2) the mailing list for a specific county. If you wish to be placed on the permanent and/or the county mailing list, clearly specify which list(s) and send your request to TCEQ Office of the Chief Clerk at the address below.

All written public comments and public meeting requests must be submitted to the Office of the Chief Clerk, MC 105, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, TX 78711-3087 or electronically at www.tceq.texas.gov/goto/comment **within 30 days from the date of newspaper publication of this notice.**

INFORMATION AVAILABLE ONLINE. For details about the status of the application, visit the Commissioners' Integrated Database at www.tceq.texas.gov/goto/cid. Search the database using the permit number for this application, which is provided at the top of this notice.

AGENCY CONTACTS AND INFORMATION. Public comments and requests must be submitted either electronically at www.tceq.texas.gov/goto/comment, or in writing to the Texas Commission on Environmental Quality, Office of the Chief Clerk, MC 105, P.O. Box 13087, Austin, Texas 78711-3087. Any personal information you submit to the TCEQ will become part of the agency's record; this includes email addresses. For more information about this permit application or the permitting process, please call the TCEQ Public Education Program, Toll Free, at 1-800-687-4040 or visit their website at www.tceq.texas.gov/goto/pep. Si desea información en Español, puede llamar al 1-800-687-4040.

Further information may also be obtained from City of Abilene at the address stated above or by calling **Mr. Matthew Dane, P.E. Director of Water Utilities, at 325-676-6474.**

Issuance Date: October 9, 2025

Enprotec | Hibbs & Todd

May 28, 2024

Via TCEQ FTP Server Upload (Share to WQDeCopy@tceq.texas.gov) and with Hard Copies to Follow

Executive Director
Applications Review and Processing Team (MC148)
Texas Commission on Environmental Quality
12100 Park 35 Circle
Austin, Texas 78753

Re: TPDES Permit Minor Amendment with Renewal Application
Applicant: City of Abilene (CN600242671)
Permit No.: WQ0010334004 (EPA I.D. No. TX0023973)
Site Name: Hamby Water Reclamation Facility (WRF) (RN101611788)

Dear Sir / Madam:

Enclosed with this letter are one original and two copies of the TCEQ Municipal Wastewater Permit Minor Amendment with Renewal Application and applicable attachments. A minor amendment is requested to indicate that the Sludge Disposal Site Zone E4 (SDS-E4) will transition to an active unit rather than a future unit when maintenance is conducted on the currently active unit, SDS-E3. The SDS-E4 unit has been shown as a future unit in all recent permit applications and was included as a future unit in the most-recent Major Amendment permit application with landowner notices with the appropriate buffer zone measure from its outside perimeter; therefore, only a minor amendment is warranted.

Per the new rule requirements under Title 30 Texas Administrative Code (TAC) Chapter 39 relating to public notices, the Plain Language Summary (PLS), Form TCEQ-20972 in Word format in English is attached as a separate file in the FTPS upload; the PLS hard copy is found in Attachment DAR 1.0-8.F. If there are any questions, please let me know at luci.dunn@e-ht.com or at (817) 694-8382.

Sincerely,

Enprotec / Hibbs & Todd, Inc.

Luci Dunn

Luci Dunn, P.E.
Senior Project Manager

LD/jd

c: Rodney Taylor, City of Abilene, via email to rodney.taylor@abilenetx.gov
Katherine Beeman, City of Abilene, via email to katherine.beeman@abilenetx.gov
Matthew Dane, City of Abilene, Via email to matthew.dane@abilenetx.gov
Peter Reale, Plummer, via email to preale@plummer.com
Jordan Hibbs, eHT, via email to jordan.hibbs@e-ht.com
Joshua Berryhill, eHT, via email joshua.berryhill@e-ht.com
Project File 8801 P:\Projects\TPDES Permit Applications\Abilene Hamby\8801 Hamby WRF Permit Minor Amend w Renewal 2024\1. Correspondence\TPDES Permit Minor Amend w Renewal Submittal Ltr to TCEQ.docx

TPDES PERMIT MINOR AMENDMENT APPLICATION WITH RENEWAL

CITY OF ABILENE HAMBY WATER RECLAMATION FACILITY

Permit No. WQ0010334004

MAY 2024

Abilene I Lubbock I Granbury
PE Firm Registration No. 1151
PG Firm Registration No. 50103
RPLS Firm Registration No. 10011900

Corporate Headquarters
402 Cedar Street
Abilene, Texas 79601
T: (325) 698-5560
F: (325) 690-3240

www.e-ht.com

Celebrating 35 years

Enprotec | Hibbs & Todd

City of Abilene
Hamby Water Reclamation Facility
TPDES Permit Minor Amendment with Renewal Application
Table of Contents

Domestic Administrative Report (DAR) (10053) 1.0
Domestic Technical Report (DTR) (10054) 1.0
DTR Worksheet (WS) 2.0 Outfall 001
DTR WS 2.0 Outfall 002
DTR WS 2.0 Outfall 003
DTR WS 3.0
DTR WS 4.0
DTR WS 5.0
DTR WS 6.0

Attachments

DAR 1.0-1	Fee Payment
DAR 1.0-3.C	Core Data Form
DAR 1.0-8.D	Public Viewing Information
DAR 1.0-8.F	Plain Language Summary
DAR 1.0-9.E.1	Owners of Effluent Disposal Site
DAR 1.0-9.E.2	Lawsuit Settlement and Reuse Water Obligations Information Summary Copy of APAI Letter to TCEQ, dated 12/12/2018 Copy of Related APAI-TCEQ Emails, dated 12/18/2018-10/23/2018 Cover Page of Referenced 2018 Submitted *Wastewater Plant Lawsuit Settlements & Reuse Water Obligations* Copy of APAI Letter to TCEQ, dated 08/08/2014 Copy of APAI Letter to TCEQ, dated 06/20/2014 Copy of APAI Letter to TCEQ, dated 01/05/2009 (Additional Application Reference (AAR) WS 3.0-2)
DAR 1.0-13	USGS Topographic Maps WRF & Outfall 001 Outfall 002 Outfall 003 (AAR WS 2.0-1)
SPIF	Supplemental Permit Information Form
SPIF 5 Maps	USGS Topographic Maps WRF & Outfall 001 Outfall 002 Outfall 003

SPIF 5 Photos	Photographs of Structures 50 Years or Older on the WRF
DTR 1.0-2.A	Description of the Treatment Process (AAR Sewage Sludge Technical Report (SSTR) 1.0-1.A)
DTR 1.0-2.B	Treatment Units (AAR SSTR 1.0-A)
DTR 1.0-2.C	Flow Diagram (AAR SSTR 1.0-A)
DTR 1.0-3	Site Drawing (AAR WS 6.0-1.E)
DTR 1.0-6.C	Status of Permit-Specific Requirements
DTR 1.0-7 & WS 4	Pollutant Analyses Analytical Results
DTR 1.0-8	Facility Operators
DTR 1.0-10.B	SSTR (10056) SSTR 1.0 – General Information SSTR 4.0 – Sewage Sludge Surface Disposal SSRT 1.0-1A Sludge Treatment Process Information (AARs: SSTR 1.0-2, SSTR 4.0-2.A-C, SSTR 4.0-3.D, SSTR 4.0-4.A-B) SSTR 4.0-1.A Sludge Location Information TxDOT Highway Map USDA Soil Survey Map SDS Site Plan SSTR 4.0-2.D Sewage Sludge TCLP Test Results & Pollutant/Metal Analyses SSTR 4.0-3.A Sludge Facility Information (Geology and Hydrology Report) (AAR: WS 3.0-7, SSTR 1.0-1.A, SSTR 4.0-4.B, SSTR 4.0-5.C-D) SSTR 4.0-4.B Site Development Plan (SDS-E3) Site Plan View Cross-Section View of the Disposal Copy of Deed SSTR 4.0-5.A Groundwater Monitoring Data SSTR 4.0-5.B Groundwater Monitoring Well Program (AAR: SSTR 1.0-1.A, SSTR 4.0-4.B)
WS 3.0-3.A	Storage and Evaporation Ponds Data Table and Map
WS 3.0-3.B	Liner Certifications RO Concentrate Evaporation Ponds EQ Storage Pond
WS 3.0-6.A	USGS Topographic Map – Well information

WS 3.0-6.B	Water Well Data
WS 3.0-8.A	Soil Survey Map
WS 3.0-8.B	Soil Analysis
WS 3.0-8.C	Soil Data
WS 6.0-2.C	Effluent Parameters above the MAL

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

DOMESTIC WASTEWATER PERMIT APPLICATION CHECKLIST

Complete and submit this checklist with the application.

APPLICANT NAME: City of Abilene

PERMIT NUMBER (If new, leave blank): WQ00 10334004

Indicate if each of the following items is included in your application.

	Y	N		Y	N
Administrative Report 1.0	☒	☐	Original USGS Map	☒	☐
Administrative Report 1.1	☐	☒	Affected Landowners Map	☐	☒
SPIF	☒	☐	Landowner Disk or Labels	☐	☒
Core Data Form	☒	☐	Buffer Zone Map	☐	☒
Public Involvement Plan Form	☐	☒	Flow Diagram	☒	☐
Technical Report 1.0	☒	☐	Site Drawing	☒	☐
Technical Report 1.1	☐	☒	Original Photographs	☐	☒
Worksheet 2.0	☒	☐	Design Calculations	☐	☒
Worksheet 2.1	☐	☒	Solids Management Plan	☐	☒
Worksheet 3.0	☒	☐	Water Balance	☐	☒
Worksheet 3.1	☐	☒			
Worksheet 3.2	☐	☒			
Worksheet 3.3	☐	☒			
Worksheet 4.0	☒	☐			
Worksheet 5.0	☒	☐			
Worksheet 6.0	☒	☐			
Worksheet 7.0	☐	☒			

For TCEQ Use Only

Segment Number _____County _____
Expiration Date _____Region_____
Permit Number _____

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

DOMESTIC WASTEWATER PERMIT APPLICATION ADMINISTRATIVE REPORT 1.0

For any questions about this form, please contact the Applications Review and Processing Team at 512-239-4671.

Section 1. Application Fees (Instructions Page 26)

Indicate the amount submitted for the application fee (check only one).

Flow	New/Major Amendment	Renewal
<0.05 MGD	$350.00 ☐	$315.00 ☐
≥0.05 but <0.10 MGD	$550.00 ☐	$515.00 ☐
≥0.10 but <0.25 MGD	$850.00 ☐	$815.00 ☐
≥0.25 but <0.50 MGD	$1,250.00 ☐	$1,215.00 ☐
≥0.50 but <1.0 MGD	$1,650.00 ☐	$1,615.00 ☐
≥1.0 MGD	$2,050.00 ☐	$2,015.00 ☒

Minor Amendment (for any flow) $150.00 ☐

Payment Information:

Mailed — Check/Money Order Number: 605605
Check/Money Order Amount: $2,015.00
Name Printed on Check: City of Abilene

EPAY — Voucher Number: Click to enter text.

Copy of Payment Voucher enclosed? Yes ☒

Section 2. Type of Application (Instructions Page 26)

a. Check the box next to the appropriate authorization type.

☒ Publicly-Owned Domestic Wastewater
☐ Privately-Owned Domestic Wastewater
☐ Conventional Wastewater Treatment

b. Check the box next to the appropriate facility status.

☒ Active ☐ Inactive

c. Check the box next to the appropriate permit type.

- ☐ TPDES Permit
- ☐ TLAP
- ☒ TPDES Permit with TLAP component
- ☐ Subsurface Area Drip Dispersal System (SADDS)

d. Check the box next to the appropriate application type

- ☐ New
- ☐ Major Amendment *with* Renewal
- ☐ Major Amendment *without* Renewal
- ☐ Renewal without changes
- ☒ Minor Amendment *with* Renewal
- ☐ Minor Amendment *without* Renewal
- ☐ Minor Modification of permit

e. For amendments or modifications, describe the proposed changes: The application provides information that the next active sewage sludge disposal site (SDS) will be SDS-E4 which is currently permitted but is only listed as a future SDS.

f. For existing permits:

Permit Number: WQ00 10334004

EPA I.D. (TPDES only): TX 0023973

Expiration Date: 11/27/2024

Section 3. Facility Owner (Applicant) and Co-Applicant Information (Instructions Page 26)

A. The owner of the facility must apply for the permit.

What is the Legal Name of the entity (applicant) applying for this permit?

City of Abilene

(The legal name must be spelled exactly as filed with the Texas Secretary of State, County, or in the legal documents forming the entity.)

If the applicant is currently a customer with the TCEQ, what is the Customer Number (CN)? You may search for your CN on the TCEQ website at http://www15.tceq.texas.gov/crpub/

CN: 600242671

What is the name and title of the person signing the application? The person must be an executive official meeting signatory requirements in *30 TAC § 305.44*.

Prefix: Mr. Last Name, First Name: Hanna, Robert

Title: City Manager Credential: N/A

B. Co-applicant information. Complete this section only if another person or entity is required to apply as a co-permittee.

What is the Legal Name of the co-applicant applying for this permit?

N/A

(The legal name must be spelled exactly as filed with the TX SOS, with the County, or in the legal documents forming the entity.)

If the co-applicant is currently a customer with the TCEQ, what is the Customer Number (CN)? You may search for your CN on the TCEQ website at: http://www15.tceq.texas.gov/crpub/

CN: N/A

What is the name and title of the person signing the application? The person must be an executive official meeting signatory requirements in *30 TAC § 305.44*.

Prefix: N/A Last Name, First Name: N/A

Title: N/A Credential: N/A

Provide a brief description of the need for a co-permittee: N/A

C. Core Data Form

Complete the Core Data Form for each customer and include as an attachment. If the customer type selected on the Core Data Form is **Individual**, complete **Attachment 1** of Administrative Report 1.0. Attachment DAR 1.0-3.C

Section 4. Application Contact Information (Instructions Page 27)

This is the person(s) TCEQ will contact if additional information is needed about this application. Provide a contact for administrative questions and technical questions.

A. Prefix: Ms. Last Name, First Name: Dunn, Luci

Title: Senior Project Manager Credential: PE

Organization Name: Enprotec / Hibbs & Todd, Inc.

Mailing Address: PO Box 3097 City, State, Zip Code: Abilene, TX 79604

Phone No.: 817-694-8382 E-mail Address: luci.dunn@e-ht.com

Check one or both: ☒ Administrative Contact ☒ Technical Contact

B. Prefix: Mr. Last Name, First Name: Taylor, Rodney

Title: Director of Water Utilities Credential: N/A

Organization Name: City of Abilene

Mailing Address: PO Box 60 City, State, Zip Code: Abilene, TX 79604

Phone No.: (325) 676-6452 E-mail Address: rodney.taylor@abilenetx.gov

Check one or both: ☒ Administrative Contact ☐ Technical Contact

Section 5. Permit Contact Information (Instructions Page 27)

Provide the names and contact information for two individuals that can be contacted throughout the permit term.

A. Prefix: Mr. Last Name, First Name: Taylor, Rodney

Title: Director of Water Utilities Credential: N/A

Organization Name: City of Abilene

Mailing Address: PO Box 60 City, State, Zip Code: Abilene, TX 79604

Phone No.: (325) 676-6452 E-mail Address: rodney.taylor@abilenetx.gov

B. Prefix: Mr. Last Name, First Name: Hanna, Robert

Title: City Manager Credential: N/A

Organization Name: City of Abilene

Mailing Address: PO Box 60 City, State, Zip Code: Abilene, TX 79604

Phone No.: (325) 676-6206 E-mail Address: robert.hanna@abilenetx.gov

Section 6. Billing Contact Information (Instructions Page 27)

The permittee is responsible for paying the annual fee. The annual fee will be assessed to permits ***in effect on September 1 of each year***. The TCEQ will send a bill to the address provided in this section. The permittee is responsible for terminating the permit when it is no longer needed (using form TCEQ-20029).

Prefix: Mr. Last Name, First Name: Taylor, Rodney

Title: Director of Water Utilities Credential: N/A

Organization Name: City of Abilene

Mailing Address: PO Box 60 City, State, Zip Code: Abilene, TX 79604

Phone No.: (325) 676-6452 E-mail Address: rodney.taylor@abilenetx.gov

Section 7. DMR/MER Contact Information (Instructions Page 27)

Provide the name and complete mailing address of the person delegated to receive and submit Discharge Monitoring Reports (DMR) (EPA 3320-1) or maintain Monthly Effluent Reports (MER).

Prefix: Mr. Last Name, First Name: Taylor, Rodney

Title: Director of Water Utilities Credential: N/A

Organization Name: City of Abilene

Mailing Address: PO Box 60 City, State, Zip Code: Abilene, TX 79604

Phone No.: (325) 676-6452 E-mail Address: rodney.taylor@abilenetx.gov

Section 8. Public Notice Information (Instructions Page 27)

A. Individual Publishing the Notices

Prefix: Ms. Last Name, First Name: Dunn, Luci

Title: Senior Project Manager Credential: PE

Organization Name: Enprotec / Hibbs & Todd, Inc. (eHT)

Mailing Address: PO Box 3097 City, State, Zip Code: Abilene, TX 79604

Phone No.: (817) 694-8382 E-mail Address: luci.dunn@e-ht.com

B. Method for Receiving Notice of Receipt and Intent to Obtain a Water Quality Permit Package

Indicate by a check mark the preferred method for receiving the first notice and instructions:

☒ E-mail Address

☐ Fax

☐ Regular Mail

C. Contact permit to be listed in the Notices

Prefix: Mr. Last Name, First Name: Taylor, Rodney

Title: Director of Water Utilities Credential: N/A

Organization Name: City of Abilene

Mailing Address: PO Box 60 City, State, Zip Code: Abilene, TX 79604

Phone No.: (325) 676-6452 E-mail Address: rodney.taylor@abilenetx.gov

D. Public Viewing Information

If the facility or outfall is located in more than one county, a public viewing place for each county must be provided.

Public building name: See Attachment DAR 1.0-8.D for the responses to all items.

Location within the building:

Physical Address of Building:

City: County:

Contact (Last Name, First Name):

Phone No.: Ext.:

E. Bilingual Notice Requirements

This information **is required** for **new, major amendment, minor amendment or minor modification, and renewal** applications.

This section of the application is only used to determine if alternative language notices will be needed. Complete instructions on publishing the alternative language notices will be in your public notice package.

Please call the bilingual/ESL coordinator at the nearest elementary and middle schools and obtain the following information to determine whether an alternative language notices are required.

1. Is a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility?

   ☐ Yes ☒ No

   If **no**, publication of an alternative language notice is not required; **skip to** Section 9 below.

2. Are the students who attend either the elementary school or the middle school enrolled in a bilingual education program at that school?

   ☐ Yes ☐ No

3. Do the students at these schools attend a bilingual education program at another location?

   ☐ Yes ☐ No

4. Would the school be required to provide a bilingual education program but the school has waived out of this requirement under 19 TAC §89.1205(g)?

   ☐ Yes ☐ No

5. If the answer is **yes** to **question 1, 2, 3, or 4**, public notices in an alternative language are required. Which language is required by the bilingual program?

F. Plain Language Summary Template

Complete the Plain Language Summary (TCEQ Form 20972) and include as an attachment.

Attachment: DAR 1.0-8.F

G. Public Involvement Plan Form

Complete the Public Involvement Plan Form (TCEQ Form 20960) for each application for a **new permit or major amendment to a permit** and include as an attachment.

Attachment: N/A

Section 9. Regulated Entity and Permitted Site Information (Instructions Page 29)

A. If the site is currently regulated by TCEQ, provide the Regulated Entity Number (RN) issued to this site. **RN** 101611788

Search the TCEQ's Central Registry at http://www15.tceq.texas.gov/crpub/ to determine if the site is currently regulated by TCEQ.

B. Name of project or site (the name known by the community where located):

Hamby Water Reclamation Facility

C. Owner of treatment facility: City of Abilene

Ownership of Facility: ☒ Public ☐ Private ☐ Both ☐ Federal

D. Owner of land where treatment facility is or will be:

Prefix: N/A Last Name, First Name: N/A

Title: N/A Credential: N/A

Organization Name: City of Abilene

Mailing Address: PO Box 60 City, State, Zip Code: Abilene, TX 79604

Phone No.: (325) 676-6452 E-mail Address: rodney.taylor@abilenetx.gov

If the landowner is not the same person as the facility owner or co-applicant, attach a lease agreement or deed recorded easement. See instructions.

Attachment: N/A

E. Owner of effluent disposal site:

Prefix: N/A Last Name, First Name: N/A

Title: N/A Credential: N/A

Organization Name: See Attachment DAR 1.0-9.E.1 for all owner items

Mailing Address: _ City, State, Zip Code:

Phone No.: __ E-mail Address:

If the landowner is not the same person as the facility owner or co-applicant, attach a lease agreement or deed recorded easement. See instructions.

Attachment: DAR 1.0-9.E.2

F. Owner sewage sludge disposal site (if authorization is requested for sludge disposal on property owned or controlled by the applicant)::

Prefix: N/A Last Name, First Name: N/A

Title: N/A Credential: N/A

Organization Name: City of Abilene

Mailing Address: PO Box 60 City, State, Zip Code: Abilene, TX 79604

Phone No.: (325) 676-6206 E-mail Address: robert.hanna@abilenetx.gov

If the landowner is not the same person as the facility owner or co-applicant, attach a lease agreement or deed recorded easement. See instructions.

Attachment: N/A

Section 10. TPDES Discharge Information (Instructions Page 31)

A. Is the wastewater treatment facility location in the existing permit accurate?

☒ Yes ☐ No

If **no**, **or a new permit application**, please give an accurate description:

N/A

B. Are the point(s) of discharge and the discharge route(s) in the existing permit correct?

☒ Yes ☐ No

If **no**, **or a new or amendment permit application**, provide an accurate description of the point of discharge and the discharge route to the nearest classified segment as defined in 30 TAC Chapter 307:

N/A

City nearest the outfall(s): Abilene

County in which the outfalls(s) is/are located: Outfall 001 & Outfall 003: Jones County; Outfall 002: Taylor County

C. Is or will the treated wastewater discharge to a city, county, or state highway right-of-way, or a flood control district drainage ditch?

☐ Yes ☒ No

If **yes**, indicate by a check mark if:

☐ Authorization granted ☐ Authorization pending

For **new and amendment** applications, provide copies of letters that show proof of contact and the approval letter upon receipt.

Attachment: N/A

D. For all applications involving an average daily discharge of 5 MGD or more, provide the names of all counties located within 100 statute miles downstream of the point(s) of discharge: Taylor, Jones, Shackelford, Haskell, Throckmorton

Section 11. TLAP Disposal Information (Instructions Page 32)

A. For TLAPs, is the location of the effluent disposal site in the existing permit accurate?

☒ Yes ☐ No

If **no, or a new or amendment permit application**, provide an accurate description of the disposal site location:

N/A

B. City nearest the disposal site: Abilene

C. County in which the disposal site is located: Jones County

D. For **TLAPs**, describe the routing of effluent from the treatment facility to the disposal site:

Treated effluent is routed after disinfection and post aeration to the on-site and off-site irrigation properties. The on-site properties are owned by the City of Abilene and the offsite properties are owned by private landowners. None of these properties are open to the public.

E. For **TLAPs**, please identify the nearest watercourse to the disposal site to which rainfall runoff might flow if not contained: Freewater Creek

Section 12. Miscellaneous Information (Instructions Page 32)

A. Is the facility located on or does the treated effluent cross American Indian Land?

☐ Yes ☒ No

B. If the existing permit contains an onsite sludge disposal authorization, is the location of the sewage sludge disposal site in the existing permit accurate?

☒ Yes ☐ No ☐ Not Applicable

If No, or if a new onsite sludge disposal authorization is being requested in this permit application, provide an accurate location description of the sewage sludge disposal site.

The location is correct in the current permit. The previous permit applications, including the most-recent Major Amendment, listed sludge disposal site (SDS) Zone E3 (SDS-E3) as the active unit and SDS-E4 as the future unit. The buffer zone boundaries used in the last Major Amendment with landowner notification were measured from the outer boundaries of SDS-E4; therefore, a minor amendment is warranted to update the progression from SDS-E3 (current) to near-future SDS-E4 The City intends to open SDS-E4 in the near future. The descriptions herein clarify the next active unit.

C. Did any person formerly employed by the TCEQ represent your company and get paid for service regarding this application?

☐ Yes ☒ No

If yes, list each person formerly employed by the TCEQ who represented your company and was paid for service regarding the application: N/A

D. Do you owe any fees to the TCEQ?

☐ Yes ☒ No

If **yes**, provide the following information:

Account number: N/A

Amount past due: N/A

E. Do you owe any penalties to the TCEQ?

☐ Yes ☒ No

If **yes**, please provide the following information:

Enforcement order number: N/A

Amount past due: N/A

Section 13. Attachments (Instructions Page 33)

Indicate which attachments are included with the Administrative Report. Check all that apply:

☒ Lease agreement or deed recorded easement, if the land where the treatment facility is located or the effluent disposal site are not owned by the applicant or co-applicant.

☒ Original full-size USGS Topographic Map with the following information:

- Applicant's property boundary
- Treatment facility boundary
- Labeled point of discharge for each discharge point (TPDES only)
- Highlighted discharge route for each discharge point (TPDES only)
- Onsite sewage sludge disposal site (if applicable)
- Effluent disposal site boundaries (TLAP only)
- New and future construction (if applicable)
- 1 mile radius information
- 3 miles downstream information (TPDES only)
- All ponds.

☐ Attachment 1 for Individuals as co-applicants

☒ Other Attachments. Please specify: See Table of Contents.

Section 14. Signature Page (Instructions Page 34)

If co-applicants are necessary, each entity must submit an original, separate signature page.

Permit Number: WQ0010334004

Applicant: City of Abilene

Certification:

I 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.

I further certify that I am authorized under 30 Texas Administrative Code § 305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signatory name (typed or printed): Robert Hanna

Signatory title: City Manager

Signature: Robert Hanna Date: 5/3/2024

(Use blue ink)

Subscribed and Sworn to before me by the said Robert Hanna

on this 3rd day of May, 20 24.

My commission expires on the 20th day of September, 20 25.

Notary Public

Taylor

County, Texas

[SEAL]

SHAYLEIGH ATKINSON
Notary Public State of Texas
My Comm. Exp 09-20-2025
NOTARY ID#: 13128759-7

DOMESTIC WASTEWATER PERMIT APPLICATION

SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF)

This form applies to TPDES permit applications only. Complete and attach the Supplemental Permit information Form (SPIF) (TCEQ Form 20971).

Attachment: SPIF

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

DOMESTIC WASTEWATER PERMIT APPLICATION TECHNICAL REPORT 1.0

For any questions about this form, please contact the Domestic Wastewater Permitting Team at 512-239-4671.

The following information is required for all renewal, new, and amendment applications.

Section 1. Permitted or Proposed Flows (Instructions Page 43)

A. Existing/Interim I Phase

Design Flow (MGD): Outfall 001: 18.0; Outfall 002: 4.0; Outfall 003: 7.0

2-Hr Peak Flow (MGD): Outfall 001: 24.0

Estimated construction start date: N/A

Estimated waste disposal start date: N/A

The combined discharge from Outfalls 001, 002, and 003 shall not exceed an annual average flow of 19.3 MGD.

B. Interim II Phase

Design Flow (MGD): N/A

2-Hr Peak Flow (MGD): N/A

Estimated construction start date: N/A

Estimated waste disposal start date: N/A

C. Final Phase

Design Flow (MGD): Outfall 001: 18.0; Outfall 002: 4.0; Outfall 003: 7.0. The combined discharge from Outfalls 001, 002, and 003 shall not exceed annual average flow of 22.0 MGD.

2-Hr Peak Flow (MGD): Outfall 001: 24.0

Estimated construction start date: TBD

Estimated waste disposal start date: TBD

D. Current Operating Phase

Provide the startup date of the facility: December 29, 2014

Section 2. Treatment Process (Instructions Page 43)

A. Current Operating Phase

Provide a detailed description of the treatment process. **Include the type of treatment plant, mode of operation, and all treatment units.** Start with the plant's head works and

finish with the point of discharge. Include all sludge processing and drying units. **If more than one phase exists or is proposed, a description of *each phase* must be provided**.

See Attachment DTR 1.0-2.A

B. Treatment Units

In Table 1.0(1), provide the treatment unit type, the number of units, and dimensions (length, width, depth) **of each treatment unit, accounting for *all* phases of operation.**

Table 1.0(1) - Treatment Units

Treatment Unit Type	Number of Units	Dimensions (L x W x D)
See Attachment DTR 1.0-2.B		

C. Process Flow Diagram

Provide flow diagrams for the existing facilities and **each** proposed phase of construction.

Attachment: See Attachment DTR 1.0-2.C

Section 3. Site Information and Drawing (Instructions Page 44)

Provide the TPDES discharge outfall latitude and longitude. Enter N/A if not applicable.

- Latitude: Outfall 001: 32.56055 | Outfall 002: 32.38527 | Outfall 003: 32.55722
- Longitude: Outfall 001: -99.62250 | Outfall 002: -99.73166 | Outfall 003: -99.69222

Provide the TLAP disposal site latitude and longitude. Enter N/A if not applicable.

- Latitude: 32.5741
- Longitude: -99.6355

Provide a site drawing for the facility that shows the following:

- The boundaries of the treatment facility;
- The boundaries of the area served by the treatment facility;
- If land disposal of effluent, the boundaries of the disposal site and all storage/holding ponds; and
- If sludge disposal is authorized in the permit, the boundaries of the land application or disposal site.

Attachment: DTR 1.0-3

Provide the name **and** a description of the area served by the treatment facility.

The areas served by the Hamby WRF include the City of Abilene, the City of Tye, the City of Tuscola, the City of Buffalo Gap, the Hawley Independent School District, and two prison units.

Collection System Information **for wastewater TPDES permits only**: Provide information for each **uniquely owned** collection system, existing and new, served by this facility, including satellite collection systems. **Please see the instructions for a detailed explanation and examples.**

Collection System Information

Collection System Name	Owner Name	Owner Type	Population Served
City of Abilene	City of Abilene	Publicly Owned	125,182
City of Tye	City of Tye	Publicly Owned	1,176
City of Tuscola	City of Tuscola	Publicly Owned	745
City of Buffalo Gap	City of Buffalo Gap	Publicly Owned	1,422

Section 4. Unbuilt Phases (Instructions Page 45)

Is the application for a renewal of a permit that contains an unbuilt phase or phases?

☒ Yes ☐ No

If yes, does the existing permit contain a phase that has not been constructed **within five years** of being authorized by the TCEQ?

☒ Yes ☐ No

If yes, provide a detailed discussion regarding the continued need for the unbuilt phase. **Failure to provide sufficient justification may result in the Executive Director recommending denial of the unbuilt phase or phases**.

The City's 2020 wastewater master plan focused on its collection system. The partial future flow data estimates the final capacity in 2040; however, it is unclear when the flow will exceed the current plant capacity.

Section 5. Closure Plans (Instructions Page 45)

Have any treatment units been taken out of service permanently, or will any units be taken out of service in the next five years?

☒ Yes ☐ No

If yes, was a closure plan submitted to the TCEQ?

☐ Yes ☒ No

If yes, provide a brief description of the closure and the date of plan approval.

The current Sludge Disposal Site (SDS)-E3 may be taken out of service after implementing SDS-E4 as the next active unit. It has not been determined if only maintenance on SDS-E3 will occur or if SDS-E3 will be closed. If closure is determined to be the best course of action for SDS-E3, a closure plan will be submitted prior to initiating closure activities.

Section 6. Permit Specific Requirements (Instructions Page 45)

For applicants with an existing permit, check the Other Requirements or Special Provisions of the permit.

A. Summary transmittal

Have plans and specifications been approved for the existing facilities and each proposed phase?

☒ Yes ☐ No

If yes, provide the date(s) of approval for each phase: Existing: 06/16/2014

Provide information, including dates, on any actions taken to meet a *requirement or provision* pertaining to the submission of a summary transmittal letter. **Provide a copy of an approval letter from the TCEQ, if applicable**.

Plans and specifications for the Existing/Interim I phase were submitted to the TCEQ on 04/28/2014 and subsequently approved on 06/16/2014. Plans and specifications for the Final phase will be submitted prior to construction.

B. Buffer zones

Have the buffer zone requirements been met?

☒ Yes ☐ No

Provide information below, including dates, on any actions taken to meet the conditions of the buffer zone. If available, provide any new documentation relevant to maintaining the buffer zones.

Note that implementation of SDS-E4 as the active unit does not require a change to the buffer zone. The buffer zone map attached to the back of the current permit as Attachment B clearly shows both Sludge Disposal Sites (SDSs) with appropriate buffer zones. The southern SDS is current SDS-E3 and the northern SDS is the SDS-E4 (proposed to become the next active SDS in this minor permit amendment).

C. Other actions required by the current permit

Does the *Other Requirements* or *Special Provisions* section in the existing permit require submission of any other information or other required actions? Examples include Notification of Completion, progress reports, soil monitoring data, etc.

☒ Yes ☐ No

If yes, provide information below on the status of any actions taken to meet the conditions of an *Other Requirement* or *Special Provision*.

See Attachment DTR 1.0-6.C

D. Grit and grease treatment

1. Acceptance of grit and grease waste

Does the facility have a grit and/or grease processing facility onsite that treats and decants or accepts transported loads of grit and grease waste that are discharged directly to the wastewater treatment plant prior to any treatment?

☐ Yes ☒ No

If No, stop here and continue with Subsection E. Stormwater Management.

2. Grit and grease processing

Describe below how the grit and grease waste is treated at the facility. In your description, include how and where the grit and grease is introduced to the treatment works and how it is separated or processed. Provide a flow diagram showing how grit and grease is processed at the facility.

3. *Grit disposal*

Does the facility have a Municipal Solid Waste (MSW) registration or permit for grit disposal?

☐ Yes ☐ No

If No, contact the TCEQ Municipal Solid Waste team at 512-239-2335. Note: A registration or permit is required for grit disposal. Grit shall not be combined with treatment plant sludge. See the instruction booklet for additional information on grit disposal requirements and restrictions.

Describe the method of grit disposal.

4. *Grease and decanted liquid disposal*

Note: A registration or permit is required for grease disposal. Grease shall not be combined with treatment plant sludge. For more information, contact the TCEQ Municipal Solid Waste team at 512-239-2335.

Describe how the decant and grease are treated and disposed of after grit separation.

E. Stormwater management

1. *Applicability*

Does the facility have a design flow of 1.0 MGD or greater in any phase?

☒ Yes ☐ No

Does the facility have an approved pretreatment program, under 40 CFR Part 403?

☒ Yes ☐ No

If no to both of the above, then skip to Subsection F, Other Wastes Received.

2. *MSGP coverage*

Is the stormwater runoff from the WWTP and dedicated lands for sewage disposal currently permitted under the TPDES Multi-Sector General Permit (MSGP), TXR050000?

☒ Yes ☐ No

If yes, please provide MSGP Authorization Number and skip to Subsection F, Other Wastes Received:

TXR05 V080 or TXRNE N/A

If no, do you intend to seek coverage under TXR050000?

☐ Yes ☐ No

3. *Conditional exclusion*

Alternatively, do you intend to apply for a conditional exclusion from permitting based TXR050000 (Multi Sector General Permit) Part II B.2 or TXR050000 (Multi Sector General Permit) Part V, Sector T 3(b)?

☐ Yes ☒ No

If yes, please explain below then proceed to Subsection F, Other Wastes Received:

N/A

4. Existing coverage in individual permit

Is your stormwater discharge currently permitted through this individual TPDES or TLAP permit?

☐ Yes ☒ No

If yes, provide a description of stormwater runoff management practices at the site that are authorized in the wastewater permit then skip to Subsection F, Other Wastes Received.

N/A

5. Zero stormwater discharge

Do you intend to have no discharge of stormwater via use of evaporation or other means?

☐ Yes ☒ No

If yes, explain below then skip to Subsection F. Other Wastes Received.

N/A

Note: If there is a potential to discharge any stormwater to surface water in the state as the result of any storm event, then permit coverage is required under the MSGP or an individual discharge permit. This requirement applies to all areas of facilities with treatment plants or systems that treat, store, recycle, or reclaim domestic sewage, wastewater or sewage sludge (including dedicated lands for sewage sludge disposal located within the onsite property boundaries) that meet the applicability criteria of above. You have the option of obtaining coverage under the MSGP for direct discharges, (recommended), or obtaining coverage under this individual permit.

6. Request for coverage in individual permit

Are you requesting coverage of stormwater discharges associated with your treatment plant under this individual permit?

☐ Yes ☒ No

If yes, provide a description of stormwater runoff management practices at the site for which you are requesting authorization in this individual wastewater permit and describe whether you intend to comingle this discharge with your treated effluent or discharge it via a separate dedicated stormwater outfall. Please also indicate if you intend to divert stormwater to the treatment plant headworks and indirectly discharge it to water in the state.

N/A

Note: Direct stormwater discharges to waters in the state authorized through this individual permit will require the development and implementation of a stormwater pollution prevention plan (SWPPP) and will be subject to additional monitoring and reporting requirements. Indirect discharges of stormwater via headworks recycling will require compliance with all individual permit requirements including 2-hour peak flow limitations. All stormwater discharge authorization requests will require additional information during the technical review of your application.

F. Discharges to the Lake Houston Watershed

Does the facility discharge in the Lake Houston watershed?

☐ Yes ☒ No

If yes, attach a Sewage Sludge Solids Management Plan. See Example 5 in the instructions.
N/A

G. Other wastes received including sludge from other WWTPs and septic waste

1. *Acceptance of sludge from other WWTPs*

Does or will the facility accept sludge from other treatment plants at the facility site?

☐ Yes ☒ No

If yes, attach sewage sludge solids management plan. See Example 5 of the instructions.

In addition, provide the date the plant started or is anticipated to start accepting sludge, an estimate of monthly sludge acceptance (gallons or millions of gallons), an estimate of the BOD_5 concentration of the sludge, and the design BOD_5 concentration of the influent from the collection system. Also note if this information has or has not changed since the last permit action.

N/A

Note: Permits that accept sludge from other wastewater treatment plants may be required to have influent flow and organic loading monitoring.

2. *Acceptance of septic waste*

Is the facility accepting or will it accept septic waste?

☐ Yes ☒ No

If yes, does the facility have a Type V processing unit?

☐ Yes ☐ No

If yes, does the unit have a Municipal Solid Waste permit?

☐ Yes ☐ No

If yes to any of the above, provide the date the plant started or is anticipated to start accepting septic waste, an estimate of monthly septic waste acceptance (gallons or millions of gallons), an estimate of the BOD_5 concentration of the septic waste, and the design BOD_5 concentration of the influent from the collection system. Also note if this information has or has not changed since the last permit action.

N/A

Note: Permits that accept sludge from other wastewater treatment plants may be required to have influent flow and organic loading monitoring.

3. *Acceptance of other wastes (not including septic, grease, grit, or RCRA, CERCLA or as discharged by IUs listed in Worksheet 6)*

Is or will the facility accept wastes that are not domestic in nature excluding the categories listed above?

☐ Yes ☒ No

If yes, provide the date that the plant started accepting the waste, an estimate how much waste is accepted on a monthly basis (gallons or millions of gallons), a description of the entities generating the waste, and any distinguishing chemical or other physical characteristic of the waste. Also note if this information has or has not changed since the last permit action.

N/A

Section 7. Pollutant Analysis of Treated Effluent (Instructions Page 50)

Is the facility in operation?

☒ Yes ☐ No

If no, this section is not applicable. Proceed to Section 8.

If yes, provide effluent analysis data for the listed pollutants. ***Wastewater treatment facilities*** complete Table 1.0(2). **W*ater treatment facilities*** discharging filter backwash water, complete Table 1.0(3). Provide copies of the laboratory results sheets. **These tables are not applicable for a minor amendment without renewal.** See the instructions for guidance.

Note: The sample date must be within 1 year of application submission.

Table1.0(2) – Pollutant Analysis for Wastewater Treatment Facilities

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
$CBOD_5$, mg/l	2.7	2.7	1	Composite	18-19Mar2024 0840-0820
Total Suspended Solids, mg/l	<2.50	<2.50	1	Composite	18-19Mar2024 0840-0820
Ammonia Nitrogen, mg/l	0.8	0.8	1	Composite	18-19Mar2024 0840-0820
Nitrate Nitrogen, mg/l	11.3	11.3	1	Composite	18-19Mar2024 0840-0820
Total Kjeldahl Nitrogen, mg/l	1.60	1.60	1	Composite	18-19Mar2024 0840-0820
Sulfate, mg/l	158	158	1	Composite	18-19Mar2024 0840-0820
Chloride, mg/l	240	240	1	Composite	18-19Mar2024 0840-0820
Total Phosphorus, mg/l	1.157	1.157	1	Composite	18-19Mar2024 0840-0820
pH, standard units	7.6	7.6	1	Grab	18Mar2024 0830
Dissolved Oxygen*, mg/l	7.8	7.8	1	Grab	18Mar2024 0830
Chlorine Residual, mg/l	<0.1	<0.1	1	Grab	18Mar2024 0830
E.coli (CFU/100ml) freshwater	<1	<1	1	Grab	18Mar2024 0915
Entercocci (CFU/100ml) saltwater	N/A	N/A	N/A	N/A	N/A
Total Dissolved Solids, mg/l	834	834	1	Composite	18Mar2024 0836
Electrical Conductivity, µmohs/cm, †	1540	1540	1	Composite	18Mar2024 0836
Oil & Grease, mg/l	<5.0	<5.0	1	Grab	18-19Mar2024 0840-0820

Alkalinity ($CaCO_3$)*, mg/l	130	130	1	Composite	18-19Mar2024 0840-0820

*TPDES permits only
†TLAP permits only

Table1.0(3) – Pollutant Analysis for Water Treatment Facilities

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
Total Suspended Solids, mg/l	N/A	N/A	N/A	N/A	N/A
Total Dissolved Solids, mg/l	N/A	N/A	N/A	N/A	N/A
pH, standard units	N/A	N/A	N/A	N/A	N/A
Fluoride, mg/l	N/A	N/A	N/A	N/A	N/A
Aluminum, mg/l	N/A	N/A	N/A	N/A	N/A
Alkalinity ($CaCO_3$), mg/l	N/A	N/A	N/A	N/A	N/A

Section 8. Facility Operator (Instructions Page 50)

Facility Operator Name: See Attachment DTR 1.0-8

Facility Operator's License Classification and Level: See Attachment DTR 1.0-8

Facility Operator's License Number: See Attachment DTR 1.0-8

Section 9. Sludge and Biosolids Management and Disposal (Instructions Page 51)

A. WWTP's Biosolids Management Facility Type

Check all that apply. See instructions for guidance

- ☒ Design flow>= 1 MGD
- ☒ Serves >= 10,000 people
- ☐ Class I Sludge Management Facility (per 40 CFR § 503.9)
- ☐ Biosolids generator
- ☐ Biosolids end user – land application (onsite)
- ☐ Biosolids end user – surface disposal (onsite)
- ☐ Biosolids end user – incinerator (onsite)

B. WWTP's Biosolids Treatment Process

Check all that apply. See instructions for guidance.

- ☐ Aerobic Digestion
- ☐ Air Drying (or sludge drying beds)
- ☐ Lower Temperature Composting
- ☐ Lime Stabilization

☐ Higher Temperature Composting

☐ Heat Drying

☐ Thermophilic Aerobic Digestion

☐ Beta Ray Irradiation

☐ Gamma Ray Irradiation

☐ Pasteurization

☐ Preliminary Operation (e.g. grinding, de-gritting, blending)

☐ Thickening (e.g. gravity thickening, centrifugation, filter press, vacuum filter)

☐ Sludge Lagoon

☐ Temporary Storage (< 2 years)

☐ Long Term Storage (>= 2 years)

☐ Methane or Biogas Recovery

☒ Other Treatment Process: **On-site Surface Disposal Site**

C. Biosolids Management

Provide information on the *intended* biosolids management practice. Do not enter every management practice that you want authorized in the permit, as the permit will authorize all biosolids management practices listed in the instructions. Rather indicate the management practice the facility plans to use.

Biosolids Management

Management Practice	Handler or Preparer Type	Bulk or Bag Container	Amount (dry metric tons)	Pathogen Reduction Options	Vector Attraction Reduction Option
Other	On-Site Owner or Operator	Not Applicable	3385	Class B: PSRP Aerobic Digestion	Option 11: Biosolids covered at end of each day

If "Other" is selected for Management Practice, please explain (e.g. monofill or transport to another WWTP): On-site Surface Disposal Site (SDS-E3 & SDS-E4)

D. Disposal site

Disposal site name: Hamby WRF Surface Disposal Site

TCEQ permit or registration number: WQ0010334004

County where disposal site is located: Jones County

E. Transportation method

Method of transportation (truck, train, pipe, other): Pipe

Name of the hauler: N/A

Hauler registration number: N/A

Sludge is transported as a:

Liquid ☒ semi-liquid ☐ semi-solid ☐ solid ☐

Section 10. Permit Authorization for Sewage Sludge Disposal (Instructions Page 53)

A. Beneficial use authorization

Does the existing permit include authorization for land application of sewage sludge for beneficial use?

☐ Yes ☒ No

If yes, are you requesting to continue this authorization to land apply sewage sludge for beneficial use?

☐ Yes ☐ No

If yes, is the completed **Application for Permit for Beneficial Land Use of Sewage Sludge (TCEQ Form No. 10451)** attached to this permit application (see the instructions for details)?

☐ Yes ☐ No

B. Sludge processing authorization

Does the existing permit include authorization for any of the following sludge processing, storage or disposal options?

Sludge Composting	☐ Yes	☒ No
Marketing and Distribution of sludge	☐ Yes	☒ No
Sludge Surface Disposal or Sludge Monofill	☒ Yes	☐ No
Temporary storage in sludge lagoons	☐ Yes	☒ No

If yes to any of the above sludge options and the applicant is requesting to continue this authorization, is the completed **Domestic Wastewater Permit Application: Sewage Sludge Technical Report (TCEQ Form No. 10056)** attached to this permit application?

☒ Yes ☐ No

Section 11. Sewage Sludge Lagoons (Instructions Page 53)

Does this facility include sewage sludge lagoons?

☐ Yes ☒ No

If yes, complete the remainder of this section. If no, proceed to Section 12.

A. Location information

The following maps are required to be submitted as part of the application. For each map, provide the Attachment Number.

- Original General Highway (County) Map:

  Attachment:
- USDA Natural Resources Conservation Service Soil Map:

  Attachment:

- Federal Emergency Management Map:

  Attachment:

- Site map:

  Attachment:

Discuss in a description if any of the following exist within the lagoon area. Check all that apply.

- ☐ Overlap a designated 100-year frequency flood plain
- ☐ Soils with flooding classification
- ☐ Overlap an unstable area
- ☐ Wetlands
- ☐ Located less than 60 meters from a fault
- ☐ None of the above

Attachment:

If a portion of the lagoon(s) is located within the 100-year frequency flood plain, provide the protective measures to be utilized including type and size of protective structures:

B. Temporary storage information

Provide the results for the pollutant screening of sludge lagoons. These results are in addition to pollutant results in *Section 7 of Technical Report 1.0.*

Nitrate Nitrogen, mg/kg:

Total Kjeldahl Nitrogen, mg/kg:

Total Nitrogen (=nitrate nitrogen + TKN), mg/kg:

Phosphorus, mg/kg:

Potassium, mg/kg:

pH, standard units:

Ammonia Nitrogen mg/kg:

Arsenic:

Cadmium:

Chromium:

Copper:

Lead:

Mercury:

Molybdenum:

Nickel:

Selenium:

Zinc:

Total PCBs:

Provide the following information:

Volume and frequency of sludge to the lagoon(s):

Total dry tons stored in the lagoons(s) per 365-day period:

Total dry tons stored in the lagoons(s) over the life of the unit:

C. Liner information

Does the active/proposed sludge lagoon(s) have a liner with a maximum hydraulic conductivity of $1x10^{-7}$ cm/sec?

☐ Yes ☐ No

If yes, describe the liner below. Please note that a liner is required.

D. Site development plan

Provide a detailed description of the methods used to deposit sludge in the lagoon(s):

Attach the following documents to the application.

- Plan view and cross-section of the sludge lagoon(s)

  Attachment:
- Copy of the closure plan

  Attachment:
- Copy of deed recordation for the site

  Attachment:
- Size of the sludge lagoon(s) in surface acres and capacity in cubic feet and gallons

  Attachment:
- Description of the method of controlling infiltration of groundwater and surface water from entering the site

  Attachment:
- Procedures to prevent the occurrence of nuisance conditions

  Attachment:

E. Groundwater monitoring

Is groundwater monitoring currently conducted at this site, or are any wells available for groundwater monitoring, or are groundwater monitoring data otherwise available for the sludge lagoon(s)?

☐ Yes ☐ No

If groundwater monitoring data are available, provide a copy. Provide a profile of soil types encountered down to the groundwater table and the depth to the shallowest groundwater as a separate attachment.

Attachment:

Section 12. Authorizations/Compliance/Enforcement (Instructions Page 55)

A. Additional authorizations

Does the permittee have additional authorizations for this facility, such as reuse authorization, sludge permit, etc?

☒ Yes ☐ No

If yes, provide the TCEQ authorization number and description of the authorization:

The City is authorized to use reclaimed water produced by the Hamby Water Reclamation Facility in accordance with authorization No. R10334004. The authorization was issued February 1, 2007.

B. Permittee enforcement status

Is the permittee currently under enforcement for this facility?

☐ Yes ☒ No

Is the permittee required to meet an implementation schedule for compliance or enforcement?

☐ Yes ☒ No

If yes to either question, provide a brief summary of the enforcement, the implementation schedule, and the current status:

N/A

Section 13. RCRA/CERCLA Wastes (Instructions Page 55)

A. RCRA hazardous wastes

Has the facility received in the past three years, does it currently receive, or will it receive RCRA hazardous waste?

☐ Yes ☒ No

B. Remediation activity wastewater

Has the facility received in the past three years, does it currently receive, or will it receive CERCLA wastewater, RCRA remediation/corrective action wastewater or other remediation activity wastewater?

☐ Yes ☒ No

C. Details about wastes received

If yes to either Subsection A or B above, provide detailed information concerning these wastes with the application.

Attachment: N/A

Section 14. Laboratory Accreditation (Instructions Page 56)

All laboratory tests performed must meet the requirements of *30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification*, which includes the following general exemptions from National Environmental Laboratory Accreditation Program (NELAP) certification requirements:

- The laboratory is an in-house laboratory and is:
  - periodically inspected by the TCEQ; or
  - located in another state and is accredited or inspected by that state; or
  - performing work for another company with a unit located in the same site; or
  - performing pro bono work for a governmental agency or charitable organization.
- The laboratory is accredited under federal law.
- The data are needed for emergency-response activities, and a laboratory accredited under the Texas Laboratory Accreditation Program is not available.
- The laboratory supplies data for which the TCEQ does not offer accreditation.

The applicant should review 30 TAC Chapter 25 for specific requirements.

The following certification statement shall be signed and submitted with every application. See the Signature Page section in the Instructions, for a list of designated representatives who may sign the certification.

CERTIFICATION:

I certify that all laboratory tests submitted with this application meet the requirements of *30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification.*

Printed Name: Robert Hanna

Title: City Manager

Signature: Robert Hanna

Date: 5/3/2024

DOMESTIC WASTEWATER PERMIT APPLICATION WORKSHEET 2.0: RECEIVING WATERS

The following information is required for all TPDES permit applications.

Section 1. Domestic Drinking Water Supply (Instructions Page 64)

Is there a surface water intake for domestic drinking water supply located within 5 miles downstream from the point or proposed point of discharge?

☐ Yes ☒ No

If **no**, proceed it Section 2. **If yes**, provide the following:

Owner of the drinking water supply: **N/A for Outfall 001**

Distance and direction to the intake: **N/A for Outfall 001**

Attach a USGS map that identifies the location of the intake.

Attachment: **N/A for Outfall 001.**

Section 2. Discharge into Tidally Affected Waters (Instructions Page 64)

Does the facility discharge into tidally affected waters?

☐ Yes ☒ No

If **no**, proceed to Section 3. **If yes**, complete the remainder of this section. If no, proceed to Section 3.

A. Receiving water outfall

Width of the receiving water at the outfall, in feet:

B. Oyster waters

Are there oyster waters in the vicinity of the discharge?

☐ Yes ☐ No

If yes, provide the distance and direction from outfall(s).

C. Sea grasses

Are there any sea grasses within the vicinity of the point of discharge?

☐ Yes ☐ No

If yes, provide the distance and direction from the outfall(s).

Section 3. Classified Segments (Instructions Page 64)

Is the discharge directly into (or within 300 feet of) a classified segment?

☐ Yes ☒ No

If yes, this Worksheet is complete.

If no, complete Sections 4 and 5 of this Worksheet.

Section 4. Description of Immediate Receiving Waters (Instructions Page 65)

Name of the immediate receiving waters: For Outfall 001: Freewater Creek.

A. Receiving water type

Identify the appropriate description of the receiving waters.

☒ Stream

☐ Freshwater Swamp or Marsh

☐ Lake or Pond

Surface area, in acres:

Average depth of the entire water body, in feet:

Average depth of water body within a 500-foot radius of discharge point, in feet: .

☐ Man-made Channel or Ditch

☐ Open Bay

☐ Tidal Stream, Bayou, or Marsh

☐ Other, specify:

B. Flow characteristics

If a stream, man-made channel or ditch was checked above, provide the following. For existing discharges, check one of the following that best characterizes the area *upstream* of the discharge. For new discharges, characterize the area *downstream* of the discharge (check one).

☒ Intermittent - dry for at least one week during most years

☐ Intermittent with Perennial Pools - enduring pools with sufficient habitat to maintain significant aquatic life uses

☐ Perennial - normally flowing

Check the method used to characterize the area upstream (or downstream for new dischargers).

☐ USGS flow records

☐ Historical observation by adjacent landowners

☒ Personal observation

☐ Other, specify:

C. Downstream perennial confluences

List the names of all perennial streams that join the receiving water within three miles downstream of the discharge point.

For Outfall 001 at Freewater Creek: Freewater Creek flows just over 3 miles into Deadman Creek, which is an intermittent stream.

D. Downstream characteristics

Do the receiving water characteristics change within three miles downstream of the discharge (e.g., natural or man-made dams, ponds, reservoirs, etc.)?

☐ Yes ☒ No

If yes, discuss how.

N/A

E. Normal dry weather characteristics

Provide general observations of the water body during normal dry weather conditions.

For Outfall 001: Freewater Creek was shallow with clear flowing water and abundant vegetation.

Date and time of observation: 04/09/2024 at 03:00 PM

Was the water body influenced by stormwater runoff during observations?

☐ Yes ☒ No

Section 5. General Characteristics of the Waterbody (Instructions Page 66)

A. Upstream influences

Is the immediate receiving water upstream of the discharge or proposed discharge site influenced by any of the following? Check all that apply.

☐ Oil field activities
☐ Urban runoff
☐ Upstream discharges
☒ Agricultural runoff
☐ Septic tanks
☐ Other(s), specify:

B. Waterbody uses

Observed or evidences of the following uses. Check all that apply.

☒ Livestock watering
☐ Contact recreation
☒ Irrigation withdrawal
☐ Non-contact recreation
☐ Fishing
☐ Navigation
☐ Domestic water supply
☐ Industrial water supply
☐ Park activities
☐ Other(s), specify:

C. Waterbody aesthetics

Check one of the following that best describes the aesthetics of the receiving water and the surrounding area.

- ☐ Wilderness: outstanding natural beauty; usually wooded or unpastured area; water clarity exceptional
- ☒ Natural Area: trees and/or native vegetation; some development evident (from fields, pastures, dwellings); water clarity discolored
- ☐ Common Setting: not offensive; developed but uncluttered; water may be colored or turbid
- ☐ Offensive: stream does not enhance aesthetics; cluttered; highly developed; dumping areas; water discolored

DOMESTIC WASTEWATER PERMIT APPLICATION WORKSHEET 2.0: RECEIVING WATERS

The following information is required for all TPDES permit applications.

Section 1. Domestic Drinking Water Supply (Instructions Page 64)

Is there a surface water intake for domestic drinking water supply located within 5 miles downstream from the point or proposed point of discharge?

☐ Yes ☒ No

If **no**, proceed it Section 2. **If yes**, provide the following:

Owner of the drinking water supply: N/A for Outfall 002

Distance and direction to the intake: N/A for Outfall 002

Attach a USGS map that identifies the location of the intake.

Attachment: N/A for Outfall 002

Section 2. Discharge into Tidally Affected Waters (Instructions Page 64)

Does the facility discharge into tidally affected waters?

☐ Yes ☒ No

If **no**, proceed to Section 3. **If yes**, complete the remainder of this section. If no, proceed to Section 3.

A. Receiving water outfall

Width of the receiving water at the outfall, in feet:

B. Oyster waters

Are there oyster waters in the vicinity of the discharge?

☐ Yes ☐ No

If yes, provide the distance and direction from outfall(s).

C. Sea grasses

Are there any sea grasses within the vicinity of the point of discharge?

☐ Yes ☐ No

If yes, provide the distance and direction from the outfall(s).

Section 3. Classified Segments (Instructions Page 64)

Is the discharge directly into (or within 300 feet of) a classified segment?

☐ Yes ☒ No

If yes, this Worksheet is complete.

If no, complete Sections 4 and 5 of this Worksheet.

Section 4. Description of Immediate Receiving Waters (Instructions Page 65)

Name of the immediate receiving waters: For Outfall 002: Kirby Lake.

A. Receiving water type

Identify the appropriate description of the receiving waters.

☐ Stream

☐ Freshwater Swamp or Marsh

☒ Lake or Pond

Surface area, in acres: Kirby Lake = 650 acres

Average depth of the entire water body, in feet: Kirby Lake = 8 feet

Average depth of water body within a 500-foot radius of discharge point, in feet: Kirby Lake = 15 feet

☐ Man-made Channel or Ditch

☐ Open Bay

☐ Tidal Stream, Bayou, or Marsh

☐ Other, specify:

B. Flow characteristics

If a stream, man-made channel or ditch was checked above, provide the following. For existing discharges, check one of the following that best characterizes the area *upstream* of the discharge. For new discharges, characterize the area *downstream* of the discharge (check one).

☐ Intermittent - dry for at least one week during most years

☐ Intermittent with Perennial Pools - enduring pools with sufficient habitat to maintain significant aquatic life uses

☐ Perennial - normally flowing

Check the method used to characterize the area upstream (or downstream for new dischargers).

☐ USGS flow records

☐ Historical observation by adjacent landowners

☐ Personal observation

☐ Other, specify:

C. Downstream perennial confluences

List the names of all perennial streams that join the receiving water within three miles downstream of the discharge point.

For Outfall 002 at Kirby Lake: Kirby Lake thence to Cedar Creek, which is an intermittent stream.

D. Downstream characteristics

Do the receiving water characteristics change within three miles downstream of the discharge (e.g., natural or man-made dams, ponds, reservoirs, etc.)?

☐ Yes ☒ No

If yes, discuss how.

N/A

E. Normal dry weather characteristics

Provide general observations of the water body during normal dry weather conditions.

For Outfall 002 at Kirby Lake: The lake was slightly turbid due to light wind with a greenish-brown hue.

Date and time of observation: 04/09/2024 at 3:30 PM

Was the water body influenced by stormwater runoff during observations?

☐ Yes ☒ No

Section 5. General Characteristics of the Waterbody (Instructions Page 66)

A. Upstream influences

Is the immediate receiving water upstream of the discharge or proposed discharge site influenced by any of the following? Check all that apply.

☐ Oil field activities
☐ Upstream discharges
☐ Septic tanks
☒ Urban runoff
☒ Agricultural runoff
☐ Other(s), specify:

B. Waterbody uses

Observed or evidences of the following uses. Check all that apply.

☐ Livestock watering
☒ Irrigation withdrawal
☒ Fishing
☐ Domestic water supply
☒ Park activities
☐ Contact recreation
☒ Non-contact recreation
☐ Navigation
☐ Industrial water supply
☐ Other(s), specify:

C. Waterbody aesthetics

Check one of the following that best describes the aesthetics of the receiving water and the surrounding area.

- ☐ Wilderness: outstanding natural beauty; usually wooded or unpastured area; water clarity exceptional
- ☐ Natural Area: trees and/or native vegetation; some development evident (from fields, pastures, dwellings); water clarity discolored
- ☒ Common Setting: not offensive; developed but uncluttered; water may be colored or turbid
- ☐ Offensive: stream does not enhance aesthetics; cluttered; highly developed; dumping areas; water discolored

DOMESTIC WASTEWATER PERMIT APPLICATION WORKSHEET 2.0: RECEIVING WATERS

The following information is required for all TPDES permit applications.

Section 1. Domestic Drinking Water Supply (Instructions Page 64)

Is there a surface water intake for domestic drinking water supply located within 5 miles downstream from the point or proposed point of discharge?

☒ Yes ☐ No

If **no**, proceed it Section 2. **If yes**, provide the following:

Owner of the drinking water supply: For Outfall 003: City of Abilene

Distance and direction to the intake: Outfall 003 discharges directly into Fort Phantom Hill Reservoir. An intake is located approximately 3 miles downstream/downgradient from the outfall.

Attach a USGS map that identifies the location of the intake.

Attachment: See Attachment DAR 1.0-13, Outfall 003

Section 2. Discharge into Tidally Affected Waters (Instructions Page 64)

Does the facility discharge into tidally affected waters?

☐ Yes ☒ No

If **no**, proceed to Section 3. **If yes**, complete the remainder of this section. If no, proceed to Section 3.

A. Receiving water outfall

Width of the receiving water at the outfall, in feet:

B. Oyster waters

Are there oyster waters in the vicinity of the discharge?

☐ Yes ☐ No

If yes, provide the distance and direction from outfall(s).

C. Sea grasses

Are there any sea grasses within the vicinity of the point of discharge?

☐ Yes ☐ No

If yes, provide the distance and direction from the outfall(s).

Section 3. Classified Segments (Instructions Page 64)

Is the discharge directly into (or within 300 feet of) a classified segment?

☒ Yes ☐ No

If yes, this Worksheet is complete.

If no, complete Sections 4 and 5 of this Worksheet.

Section 4. Description of Immediate Receiving Waters (Instructions Page 65)

Name of the immediate receiving waters: Section 3 above is Yes for Outfall 003: Discharge directly into Fort Phantom Hill Reservoir (Segment 1236). Worksheet 2.0 is complete for Outfall 003.

A. Receiving water type

Identify the appropriate description of the receiving waters.

☐ Stream

☐ Freshwater Swamp or Marsh

☐ Lake or Pond

Surface area, in acres:

Average depth of the entire water body, in feet:

Average depth of water body within a 500-foot radius of discharge point, in feet:

☐ Man-made Channel or Ditch

☐ Open Bay

☐ Tidal Stream, Bayou, or Marsh

☐ Other, specify:

B. Flow characteristics

If a stream, man-made channel or ditch was checked above, provide the following. For existing discharges, check one of the following that best characterizes the area *upstream* of the discharge. For new discharges, characterize the area *downstream* of the discharge (check one).

☐ Intermittent - dry for at least one week during most years

☐ Intermittent with Perennial Pools - enduring pools with sufficient habitat to maintain significant aquatic life uses

☐ Perennial - normally flowing

Check the method used to characterize the area upstream (or downstream for new dischargers).

☐ USGS flow records

☐ Historical observation by adjacent landowners

☐ Personal observation

☐ Other, specify:

C. Downstream perennial confluences

List the names of all perennial streams that join the receiving water within three miles downstream of the discharge point.

N/A

D. Downstream characteristics

Do the receiving water characteristics change within three miles downstream of the discharge (e.g., natural or man-made dams, ponds, reservoirs, etc.)?

☐ Yes ☐ No

If yes, discuss how.

N/A

E. Normal dry weather characteristics

Provide general observations of the water body during normal dry weather conditions.

N/A

Date and time of observation: N/A

Was the water body influenced by stormwater runoff during observations?

☐ Yes ☐ No

Section 5. General Characteristics of the Waterbody (Instructions Page 66)

A. Upstream influences

Is the immediate receiving water upstream of the discharge or proposed discharge site influenced by any of the following? Check all that apply.

☐ Oil field activities
☐ Upstream discharges
☐ Septic tanks
☐ Urban runoff
☐ Agricultural runoff
☐ Other(s), specify:

B. Waterbody uses

Observed or evidences of the following uses. Check all that apply.

☐ Livestock watering
☐ Irrigation withdrawal
☐ Fishing
☐ Domestic water supply
☐ Park activities
☐ Contact recreation
☐ Non-contact recreation
☐ Navigation
☐ Industrial water supply
☐ Other(s), specify:

C. Waterbody aesthetics

Check one of the following that best describes the aesthetics of the receiving water and the surrounding area.

- ☐ Wilderness: outstanding natural beauty; usually wooded or unpastured area; water clarity exceptional
- ☐ Natural Area: trees and/or native vegetation; some development evident (from fields, pastures, dwellings); water clarity discolored
- ☐ Common Setting: not offensive; developed but uncluttered; water may be colored or turbid
- ☐ Offensive: stream does not enhance aesthetics; cluttered; highly developed; dumping areas; water discolored

DOMESTIC WASTEWATER PERMIT APPLICATION WORKSHEET 3.0: LAND DISPOSAL OF EFFLUENT

The following is required for renewal, new, and amendment permit applications.

Section 1. Type of Disposal System (Instructions Page 68)

Identify the method of land disposal:

- ☐ Surface application
- ☒ Irrigation
- ☐ Drip irrigation system
- ☒ Evaporation
- ☐ Other (describe in detail):
- ☐ Subsurface application
- ☐ Subsurface soils absorption
- ☐ Subsurface area drip dispersal system
- ☐ Evapotranspiration beds

NOTE: All applicants without authorization or proposing new/amended subsurface disposal MUST complete and submit Worksheet 7.0.

For existing authorizations, provide Registration Number: N/A

Section 2. Land Application Site(s) (Instructions Page 68)

In table 3.0(1), provide the requested information for the land application sites. Include the agricultural or cover crop type (wheat, cotton, alfalfa, bermuda grass, native grasses, etc.), land use (golf course, hayland, pastureland, park, row crop, etc.), irrigation area, amount of effluent applied, and whether or not the public has access to the area. Specify the amount of land area and the amount of effluent that will be allotted to each agricultural or cover crop, if more than one crop will be used.

Table 3.0(1) – Land Application Site Crops

Crop Type & Land Use	Irrigation Area (acres)	Effluent Application (GPD)	Public Access? Y/N
On-site: agriculture; coastal bermuda, cotton, and wheat	335 on-site	Irrigation is demand driven and gallons used per day varies.	N
Off-site: Agriculture; coastal bermuda, haygrazer, and wheat	1,960 off-site		N
See Attachment DAR 1.0-9.E.2 for an explanation of the irrigation and detailed historical correspondence; within Attachment DAR 1.0-9.E.2, see the APAI letter, dated 06/20/2014, for an irrigation site map (referred to as Attachment A).			

Section 3. Storage and Evaporation Lagoons/Ponds (Instructions Page 68)

Table 3.0(2) – Storage and Evaporation Ponds

Pond Number	Surface Area (acres)	Storage Volume (acre-feet)	Dimensions	Liner Type
See Attachment WS 3.0-3.A.				

Attach a copy of a liner certification that was prepared, signed, and sealed by a Texas licensed professional engineer for each pond.

Attachment: WS 3.0-3.B

Section 4. Flood and Runoff Protection (Instructions Page 68)

Is the land application site within the 100-year frequency flood level?

☐ Yes ☒ No

If yes, describe how the site will be protected from inundation.

N/A

Provide the source used to determine the 100-year frequency flood level:

There is no FEMA map for this area and the area is not known to be prone to flooding.

Provide a description of tailwater controls and rainfall run-on controls used for the land application site.

On-site and off-site irrigators use industry-standard practices to control tailwater. The City routinely monitors the irrigation practices.

Section 5. Annual Cropping Plan (Instructions Page 68)

Attach an Annual Cropping Plan which includes a discussion of each of the following items. If not applicable, provide a detailed explanation indicating why. **Attachment**: N/A - a cropping plan is not needed for this demand driven agricultural irrigation; effluent is discharged primarily via outfalls (Outfall 001, Outfall 002, and Outfall 003).

- Soils map with crops
- Cool and warm season plant species
- Crop yield goals
- Crop growing season
- Crop nutrient requirements
- Additional fertilizer requirements
- Minimum/maximum harvest height (for grass crops)
- Supplemental watering requirements
- Crop salt tolerances
- Harvesting method/number of harvests
- Justification for not removing existing vegetation to be irrigated

Section 6. Well and Map Information (Instructions Page 69)

Attach a USGS map with the following information shown and labeled. If not applicable, provide a detailed explanation indicating why. **Attachment**: WS 3.0-6.A

- The boundaries of the land application site(s)
- Waste disposal or treatment facility site(s)
- On-site buildings
- Buffer zones
- Effluent storage and tailwater control facilities
- All water wells within 1-mile radius of the disposal site or property boundaries
- All springs and seeps onsite and within 500 feet of the property boundaries
- All surface waters in the state onsite and within 500 feet of the property boundaries
- All faults and sinkholes onsite and within 500 feet of the property

List and cross reference all water wells located within a half-mile radius of the disposal site or property boundaries shown on the USGS map in the following table. Attach additional pages as necessary to include all of the wells.

Table 3.0(3) – Water Well Data

Well ID	Well Use	Producing? Y/N	Open, cased, capped, or plugged?	Proposed Best Management Practice
See Attachment WS 3.0-6.B				

If water quality data or well log information is available please include the information in an attachment listed by Well ID.

Attachment: WS 3.0-6.B

Section 7. Groundwater Quality (Instructions Page 69)

Attach a Groundwater Quality Technical Report which assesses the impact of the wastewater disposal system on groundwater. This report shall include an evaluation of the water wells (including the information in the well table provided in Item 6. above), the wastewater application rate, and pond liners. Indicate by a check mark that this report is provided.

Attachment: SSTR 4.0-3.A (Geology and Hydrology Report)

Are groundwater monitoring wells available onsite? ☒ Yes ☐ No

Do you plan to install ground water monitoring wells or lysimeters around the land application site? ☐ Yes ☐ No

If yes, provide the proposed location of the monitoring wells or lysimeters on a site map.

Attachment:

Section 8. Soil Map and Soil Analyses (Instructions Page 70)

A. Soil map

Attach a USDA Soil Survey map that shows the area to be used for effluent disposal.

Attachment: WS 3.0-8.A

B. Soil analyses

Attach the laboratory results sheets from the soil analyses. **Note**: for renewal applications, the current annual soil analyses required by the permit are acceptable as long as the test date is less than one year prior to the submission of the application.

Attachment: WS 3.0-8.B

List all USDA designated soil series on the proposed land application site. Attach additional pages as necessary.

Table 3.0(4) – Soil Data

Soil Series	Depth from Surface	Permeability	Available Water Capacity	Curve Number
See Attachment WS 3.0-8.C				

Section 9. Effluent Monitoring Data (Instructions Page 71)

Is the facility in operation?

☒ Yes ☐ No

If no, this section is not applicable and the worksheet is complete.

If yes, provide the effluent monitoring data for the parameters regulated in the existing permit. If a parameter is not regulated in the existing permit, enter N/A.

Table 3.0(5) – Effluent Monitoring Data

Date	30 Day Avg Flow MGD	BOD5 mg/l	TSS mg/l	pH	Chlorine Residual mg/l	Acres irrigated
See Below.						

Provide a discussion of all persistent excursions above the permitted limits and any corrective actions taken.

Note from above: Effluent provided to irrigators is of the same quality as effluent discharged via Outfall 001, Outfall 002, and Outfall 003. Please refer to discharge monitoring reports for effluent quality. There are no excursions above the permitted irrigation effluent limits which are listed in the Other Requirements #10 as BOD5 of 100 mg/L (grab) and pH not less than 6 and not higher than 9 SU.

DOMESTIC WASTEWATER PERMIT APPLICATION WORKSHEET 4.0: POLLUTANT ANALYSIS REQUIREMENTS

The following **is required** for facilities with a permitted or proposed flow of **1.0 MGD or greater**, facilities with an approved **pretreatment** program, or facilities classified as a **major** facility. See instructions for further details.

This worksheet is not required minor amendments without renewal.

Section 1. Toxic Pollutants (Instructions Page 78)

For pollutants identified in Table 4.0(1), indicate the type of sample.

Grab ☒ Composite ☒

Date and time sample(s) collected: See Chain-of-custodies for sample type (Grab or Composite), collection dates & times.

Table 4.0(1) – Toxics Analysis

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Acrylonitrile	<50	<50	1	50
Aldrin	<0.01	<0.01	1	0.01
Aluminum	24.7	24.7	1	2.5
Anthracene	<10	<10	1	10
Antimony	<5	<5	1	5
Arsenic	1.87	1.87	1	0.5
Barium	76.2	76.2	1	3
Benzene	<10	<10	1	10
Benzidine	<50	<50	1	50
Benzo(a)anthracene	<5	<5	1	5
Benzo(a)pyrene	<5	<5	1	5
Bis(2-chloroethyl)ether	<10	<10	1	10
Bis(2-ethylhexyl)phthalate	<10	<10	1	10
Bromodichloromethane	12.1	12.1	1	10
Bromoform	4.82	4.82	1	10
Cadmium	<1	<1	1	1
Carbon Tetrachloride	<2	<2	1	2
Carbaryl	<5	<5	1	5
Chlordane*	<0.2	<0.2	1	0.2
Chlorobenzene	<10	<10	1	10

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Chlorodibromomethane	17.0	17.0	1	10
Chloroform	<10	<10	1	10
Chlorpyrifos	<0.05	<0.05	1	0.05
Chromium (Total)	<3	<3	1	3
Chromium (Tri) **(*1)**	<3	<3	1	N/A
Chromium (Hex)	<3	<3	1	3
Copper	18.3	18.3	1	2
Chrysene	<5	<5	1	5
p-Chloro-m-Cresol	<10	<10	1	10
4,6-Dinitro-o-Cresol	<50	<50	1	50
p-Cresol	<10	<10	1	10
Cyanide **(*2)**	<10	<10	1	10
4,4'- DDD	<0.1	<0.1	1	0.1
4,4'- DDE	<0.1	<0.1	1	0.1
4,4'- DDT	<0.02	<0.02	1	0.02
2,4-D	<0.7	<0.7	1	0.7
Demeton (O and S)	<0.20	<0.20	1	0.20
Diazinon	<0.4	<0.4	1	0.5/0.1
1,2-Dibromoethane	<10	<10	1	10
m-Dichlorobenzene	<10	<10	1	10
o-Dichlorobenzene	<10	<10	1	10
p-Dichlorobenzene	<10	<10	1	10
3,3'-Dichlorobenzidine	<5	<5	1	5
1,2-Dichloroethane	<10	<10	1	10
1,1-Dichloroethylene	<10	<10	1	10
Dichloromethane	<10	<10	1	20
1,2-Dichloropropane	<10	<10	1	10
1,3-Dichloropropene	<10	<10	1	10
Dicofol	<1	<1	1	1
Dieldrin	<0.02	<0.02	1	0.02
2,4-Dimethylphenol	<10	<10	1	10
Di-n-Butyl Phthalate	<10	<10	1	10
Diuron	<0.09	<0.09	1	0.09

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Endosulfan I (alpha)	<0.01	<0.01	1	0.01
Endosulfan II (beta)	<0.02	<0.02	1	0.02
Endosulfan Sulfate	<0.1	<0.1	1	0.1
Endrin	<0.02	<0.02	1	0.02
Ethylbenzene	<10	<10	1	10
Fluoride	915	915	1	500
Guthion	<0.1	<0.1	1	0.1
Heptachlor	<0.01	<0.01	1	0.01
Heptachlor Epoxide	<0.01	<0.01	1	0.01
Hexachlorobenzene	<5	<5	1	5
Hexachlorobutadiene	<10	<10	1	10
Hexachlorocyclohexane (alpha)	<0.05	<0.05	1	0.05
Hexachlorocyclohexane (beta)	<0.05	<0.05	1	0.05
gamma-Hexachlorocyclohexane (Lindane)	<0.05	<0.05	1	0.05
Hexachlorocyclopentadiene	<10	<10	1	10
Hexachloroethane	<20	<20	1	20
Hexachlorophene	<10	<10	1	10
Lead	<0.5	<0.5	1	0.5
Malathion	<0.1	<0.1	1	0.1
Mercury	<0.005	<0.005	1	0.005
Methoxychlor	<2	<2	1	2
Methyl Ethyl Ketone	<50	<50	1	50
Mirex	<0.02	<0.02	1	0.02
Nickel	3.82	3.82	1	2
Nitrate-Nitrogen	12,400	12,400	1	100
Nitrobenzene	<10	<10	1	10
N-Nitrosodiethylamine	<20	<20	1	20
N-Nitroso-di-n-Butylamine	<20	<20	1	20
Nonylphenol	<333	<333	1	333
Parathion (ethyl)	<0.1	<0.1	1	0.1
Pentachlorobenzene	<20	<20	1	20
Pentachlorophenol	<5	<5	1	5

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Phenanthrene	<10	<10	1	10
Polychlorinated Biphenyls (PCB's) **(*3)**	<0.2	<0.2	1	0.2
Pyridine	<20	<20	1	20
Selenium	<5	<5	1	5
Silver	<0.5	<0.5	1	0.5
1,2,4,5-Tetrachlorobenzene	<20	<20	1	20
1,1,2,2-Tetrachloroethane	<10	<10	1	10
Tetrachloroethylene	<10	<10	1	10
Thallium	<0.5	<0.5	1	0.5
Toluene	<10	<10	1	10
Toxaphene	<0.3	<0.3	1	0.3
2,4,5-TP (Silvex)	<0.3	<0.3	1	0.3
Tributyltin (see instructions for explanation)	N/A	N/A	N/A	0.01
1,1,1-Trichloroethane	<10	<10	1	10
1,1,2-Trichloroethane	<10	<10	1	10
Trichloroethylene	<10	<10	1	10
2,4,5-Trichlorophenol	<50	<50	1	50
TTHM (Total Trihalomethanes)	43.9	43.9	1	10
Vinyl Chloride	<10	<10	1	10
Zinc	50.7	50.7	1	5

(*1) Determined by subtracting hexavalent Cr from total Cr.

(*2) Cyanide, amenable to chlorination or weak-acid dissociable.

(*3) The sum of seven PCB congeners 1242, 1254, 1221, 1232, 1248, 1260, and 1016.

Section 2. Priority Pollutants

For pollutants identified in Tables 4.0(2)A-E, indicate type of sample.

Grab ☒ Composite ☒

Date and time sample(s) collected: See Chain-of-custodies for sample type (Grab or Composite), collection dates & times.

Table 4.0(2)A – Metals, Cyanide, and Phenols

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Antimony	<5	<5	1	5
Arsenic	1.87	1.87	1	0.5
Beryllium	<0.5	<0.5	1	0.5
Cadmium	<1	<1	1	1
Chromium (Total)	<3	<3	1	3
Chromium (Hex)	<3	<3	1	3
Chromium (Tri) **(*1)**	<3	<3	1	N/A
Copper	18.3	18.3	1	2
Lead	<0.5	<0.5	1	0.5
Mercury	<0.005	<0.005	1	0.005
Nickel	3.82	3.82	1	2
Selenium	<5	<5	1	5
Silver	<0.5	<0.5	1	0.5
Thallium	<0.5	<0.5	1	0.5
Zinc	50.7	50.7	1	5
Cyanide **(*2)**	<10	<10	1	10
Phenols, Total	<10	<10	1	10

(*1) Determined by subtracting hexavalent Cr from total Cr.

(*2) Cyanide, amenable to chlorination or weak-acid dissociable

Table 4.0(2)B – Volatile Compounds

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Acrolein	<50	<50	1	50
Acrylonitrile	<50	<50	1	50
Benzene	<10	<10	1	10
Bromoform	4.82	4.82	1	10
Carbon Tetrachloride	<2	<2	1	2
Chlorobenzene	<10	<10	1	10
Chlorodibromomethane	17.0	17.0	1	10
Chloroethane	<50	<50	1	50
2-Chloroethylvinyl Ether	<10	<10	1	10
Chloroform	<10	<10	1	10
Dichlorobromomethane [Bromodichloromethane]	12.1	12.1	1	10
1,1-Dichloroethane	<10	<10	1	10
1,2-Dichloroethane	<10	<10	1	10
1,1-Dichloroethylene	<10	<10	1	10
1,2-Dichloropropane	<10	<10	1	10
1,3-Dichloropropylene [1,3-Dichloropropene]	<10	<10	1	10
1,2-Trans-Dichloroethylene	<10	<10	1	10
Ethylbenzene	<10	<10	1	10
Methyl Bromide	<50	<50	1	50
Methyl Chloride	<50	<50	1	50
Methylene Chloride	<20	<20	1	20
1,1,2,2-Tetrachloroethane	<10	<10	1	10
Tetrachloroethylene	<10	<10	1	10
Toluene	<10	<10	1	10
1,1,1-Trichloroethane	<10	<10	1	10
1,1,2-Trichloroethane	<10	<10	1	10
Trichloroethylene	<10	<10	1	10
Vinyl Chloride	<10	<10	1	10

Table 4.0(2)C – Acid Compounds

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
2-Chlorophenol	<10	<10	1	10
2,4-Dichlorophenol	<10	<10	1	10
2,4-Dimethylphenol	<10	<10	1	10
4,6-Dinitro-o-Cresol	<50	<50	1	50
2,4-Dinitrophenol	<50	<50	1	50
2-Nitrophenol	<20	<20	1	20
4-Nitrophenol	<50	<50	1	50
P-Chloro-m-Cresol	<10	<10	1	10
Pentalchlorophenol	<5	<5	1	5
Phenol	<10	<10	1	10
2,4,6-Trichlorophenol	<10	<10	1	10

Table 4.0(2)D – Base/Neutral Compounds

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Acenaphthene	<10	<10	1	10
Acenaphthylene	<10	<10	1	10
Anthracene	<10	<10	1	10
Benzidine	<50	<50	1	50
Benzo(a)Anthracene	<5	<5	1	5
Benzo(a)Pyrene	<5	<5	1	5
3,4-Benzofluoranthene	<10	<10	1	10
Benzo(ghi)Perylene	<20	<20	1	20
Benzo(k)Fluoranthene	<5	<5	1	5
Bis(2-Chloroethoxy)Methane	<10	<10	1	10
Bis(2-Chloroethyl)Ether	<10	<10	1	10
Bis(2-Chloroisopropyl)Ether	<10	<10	1	10
Bis(2-Ethylhexyl)Phthalate	<10	<10	1	10
4-Bromophenyl Phenyl Ether	<10	<10	1	10
Butyl benzyl Phthalate	<10	<10	1	10
2-Chloronaphthalene	<10	<10	1	10

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
4-Chlorophenyl phenyl ether	<10	<10	1	10
Chrysene	<5	<5	1	5
Dibenzo(a,h)Anthracene	<5	<5	1	5
1,2-(o)Dichlorobenzene	<10	<10	1	10
1,3-(m)Dichlorobenzene	<10	<10	1	10
1,4-(p)Dichlorobenzene	<10	<10	1	10
3,3-Dichlorobenzidine	<5	<5	1	5
Diethyl Phthalate	<10	<10	1	10
Dimethyl Phthalate	<10	<10	1	10
Di-n-Butyl Phthalate	<10	<10	1	10
2,4-Dinitrotoluene	<10	<10	1	10
2,6-Dinitrotoluene	<10	<10	1	10
Di-n-Octyl Phthalate	<10	<10	1	10
1,2-Diphenylhydrazine (as Azo-benzene)	<20	<20	1	20
Fluoranthene	<10	<10	1	10
Fluorene	<10	<10	1	10
Hexachlorobenzene	<5	<5	1	5
Hexachlorobutadiene	<10	<10	1	10
Hexachlorocyclo-pentadiene	<10	<10	1	10
Hexachloroethane	<20	<20	1	20
Indeno(1,2,3-cd)pyrene	<5	<5	1	5
Isophorone	<10	<10	1	10
Naphthalene	<10	<10	1	10
Nitrobenzene	<10	<10	1	10
N-Nitrosodimethylamine	<50	<50	1	50
N-Nitrosodi-n-Propylamine	<20	<20	1	20
N-Nitrosodiphenylamine	<20	<20	1	20
Phenanthrene	<10	<10	1	10
Pyrene	<10	<10	1	10
1,2,4-Trichlorobenzene	<10	<10	1	10

Table 4.0(2)E - Pesticides

Pollutant	AVG Effluent Conc. (µg/l)	MAX Effluent Conc. (µg/l)	Number of Samples	MAL (µg/l)
Aldrin	<0.01	<0.01	1	0.01
alpha-BHC (Hexachlorocyclohexane)	<0.05	<0.05	1	0.05
beta-BHC (Hexachlorocyclohexane)	<0.05	<0.05	1	0.05
gamma-BHC (Hexachlorocyclohexane)	<0.05	<0.05	1	0.05
delta-BHC (Hexachlorocyclohexane)	<0.05	<0.05	1	0.05
Chlordane	<0.2	<0.2	1	0.2
4,4-DDT	<0.02	<0.02	1	0.02
4,4-DDE	<0.1	<0.1	1	0.1
4,4,-DDD	<0.1	<0.1	1	0.1
Dieldrin	<0.02	<0.02	1	0.02
Endosulfan I (alpha)	<0.01	<0.01	1	0.01
Endosulfan II (beta)	<0.02	<0.02	1	0.02
Endosulfan Sulfate	<0.1	<0.1	1	0.1
Endrin	<0.02	<0.02	1	0.02
Endrin Aldehyde	<0.1	<0.1	1	0.1
Heptachlor	<0.01	<0.01	1	0.01
Heptachlor Epoxide	<0.01	<0.01	1	0.01
PCB-1242	<0.2	<0.2	1	0.2
PCB-1254	<0.2	<0.2	1	0.2
PCB-1221	<0.2	<0.2	1	0.2
PCB-1232	<0.2	<0.2	1	0.2
PCB-1248	<0.2	<0.2	1	0.2
PCB-1260	<0.2	<0.2	1	0.2
PCB-1016	<0.2	<0.2	1	0.2
Toxaphene	<0.3	<0.3	1	0.3

* For PCBS, if all are non-detects, enter the highest non-detect preceded by a “<”.

Section 3. Dioxin/Furan Compounds

A. Indicate which of the following compounds from may be present in the influent from a contributing industrial user or significant industrial user. Check all that apply.

☐ 2,4,5-trichlorophenoxy acetic acid

Common Name 2,4,5-T, CASRN 93-76-5

☐ 2-(2,4,5-trichlorophenoxy) propanoic acid

Common Name Silvex or 2,4,5-TP, CASRN 93-72-1

☐ 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate

Common Name Erbon, CASRN 136-25-4

☐ 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothioate

Common Name Ronnel, CASRN 299-84-3

☐ 2,4,5-trichlorophenol

Common Name TCP, CASRN 95-95-4

☐ hexachlorophene

Common Name HCP, CASRN 70-30-4

For each compound identified, provide a brief description of the conditions of its/their presence at the facility.

N/A

B. Do you know or have any reason to believe that 2,3,7,8 Tetrachlorodibenzo-P-Dioxin (TCDD) or any congeners of TCDD may be present in your effluent?

☐ Yes ☒ No

If **yes**, provide a brief description of the conditions for its presence.

N/A

C. If any of the compounds in Subsection A **or** B are present, complete Table 4.0(2)F.

For pollutants identified in Table 4.0(2)F, indicate the type of sample.

Grab ☐ Composite ☐

Date and time sample(s) collected: N/A

Table 4.0(2)F – Dioxin/Furan Compounds

Compound	Toxic Equivalency Factors	Wastewater Concentration (ppq)	Wastewater Equivalents (ppq)	Sludge Concentration (ppt)	Sludge Equivalents (ppt)	MAL (ppq)
2,3,7,8 TCDD	1					10
1,2,3,7,8 PeCDD	0.5					50
2,3,7,8 HxCDDs	0.1					50

Compound	Toxic Equivalency Factors	Wastewater Concentration (ppq)	Wastewater Equivalents (ppq)	Sludge Concentration (ppt)	Sludge Equivalents (ppt)	MAL (ppq)
1,2,3,4,6,7,8 HpCDD	0.01					50
2,3,7,8 TCDF	0.1					10
1,2,3,7,8 PeCDF	0.05					50
2,3,4,7,8 PeCDF	0.5					50
2,3,7,8 HxCDFs	0.1					50
2,3,4,7,8 HpCDFs	0.01					50
OCDD	0.0003					100
OCDF	0.0003					100
PCB 77	0.0001					0.5
PCB 81	0.0003					0.5
PCB 126	0.1					0.5
PCB 169	0.03					0.5
Total						

DOMESTIC WASTEWATER PERMIT APPLICATION WORKSHEET 5.0: TOXICITY TESTING REQUIREMENTS

The following **is required** for facilities with a current operating design flow of**1.0 MGD or greater**, with an EPA-approved **pretreatment** program (or those required to have one under 40 CFR Part 403), or are required to perform Whole Effluent Toxicity testing. See instructions for further details.

This worksheet is not required minor amendments without renewal.

Section 1. Required Tests (Instructions Page 88)

Indicate the number of 7-day chronic or 48-hour acute Whole Effluent Toxicity (WET) tests performed in the four and one-half years prior to submission of the application.

7-day Chronic: Results of all Whole Effluent Toxicity Tests have been submitted to the TCEQ in accordance with the existing TPDES Permit.

48-hour Acute: N/A

Section 2. Toxicity Reduction Evaluations (TREs)

Has this facility completed a TRE in the past four and a half years? Or is the facility currently performing a TRE?

☐ Yes ☒ No

If yes, describe the progress to date, if applicable, in identifying and confirming the toxicant.

N/A

Section 3. Summary of WET Tests

If the required biomonitoring test information has not been previously submitted via both the Discharge Monitoring Reports (DMRs) and the Table 1 (as found in the permit), provide a summary of the testing results for all valid and invalid tests performed over the past four and one-half years. Make additional copies of this table as needed.

Table 5.0(1) Summary of WET Tests

Test Date	Test Species	NOEC Survival	NOEC Sub-lethal
N/A – all test information has been previously submitted via both the DMRs and permit tables.			

DOMESTIC WASTEWATER PERMIT APPLICATION WORKSHEET 6.0: INDUSTRIAL WASTE CONTRIBUTION

The following **is required** for **all publicly owned treatment works**.

Section 1. All POTWs (Instructions Page 89)

A. Industrial users (IUs)

Provide the number of each of the following types of industrial users (IUs) that discharge to your POTW and the daily flows from each user. See the Instructions for definitions of Categorical IUs, Significant IUs – non-categorical, and Other IUs.

If there are no users, enter 0 (zero).

Categorical IUs:

Number of IUs: 1

Average Daily Flows, in MGD: 0.0016

Significant IUs – non-categorical:

Number of IUs: 8

Average Daily Flows, in MGD: 0.748

Other IUs:

Number of IUs: 5

Average Daily Flows, in MGD: 0.0039

B. Treatment plant interference

In the past three years, has your POTW experienced treatment plant interference (see instructions)?

☐ Yes ☒ No

If yes, identify the dates, duration, description of interference, and probable cause(s) and possible source(s) of each interference event. Include the names of the IUs that may have caused the interference.

N/A

C. Treatment plant pass through

In the past three years, has your POTW experienced pass through (see instructions)?

☐ Yes ☒ No

If yes, identify the dates, duration, a description of the pollutants passing through the treatment plant, and probable cause(s) and possible source(s) of each pass through event. Include the names of the IUs that may have caused pass through.

N/A

D. Pretreatment program

Does your POTW have an approved pretreatment program?

☒ Yes ☐ No

If yes, complete Section 2 only of this Worksheet.

Is your POTW required to develop an approved pretreatment program?

☐ Yes ☒ No

If yes, complete Section 2.c. and 2.d. only, and skip Section 3.

If no to either question above, skip Section 2 and complete Section 3 for each significant industrial user and categorical industrial user.

E. Service Area Map

Attach a map indicating the service area of the POTW. The map should include the applicant's service area boundaries and the location of any known industrial users discharging to the POTW. Please see the instructions for guidance.

Attachment: DTR 1.0-3

Section 2. POTWs with Approved Programs or Those Required to Develop a Program (Instructions Page 90)

A. Substantial modifications

Have there been any **substantial modifications** to the approved pretreatment program that have not been submitted to the TCEQ for approval according to *40 CFR §403.18*?

☐ Yes ☒ No

If yes, identify the modifications that have not been submitted to TCEQ, including the purpose of the modification.

N/A

B. Non-substantial modifications

Have there been any **non-substantial modifications** to the approved pretreatment program that have not been submitted to TCEQ for review and acceptance?

☐ Yes ☒ No

If yes, identify all non-substantial modifications that have not been submitted to TCEQ, including the purpose of the modification.

N/A

C. Effluent parameters above the MAL

In Table 6.0(1), list all parameters measured above the MAL in the POTW's effluent monitoring during the last three years. Submit an attachment if necessary.

Table 6.0(1) – Parameters Above the MAL

Pollutant	Concentration	MAL	Units	Date
See Attachment WS 6.0-2.C				

D. Industrial user interruptions

Has any SIU, CIU, or other IU caused or contributed to any problems (excluding interferences or pass throughs) at your POTW in the past three years?

☐ Yes ☒ No

If yes, identify the industry, describe each episode, including dates, duration, description of the problems, and probable pollutants.

N/A

Section 3. Significant Industrial User (SIU) Information and Categorical Industrial User (CIU) (Instructions Page 90)

A. General information

Company Name: N/A

SIC Code: N/A

Contact name: N/A

Address: N/A

City, State, and Zip Code: N/A

Telephone number: N/A

Email address: N/A

B. Process information

Describe the industrial processes or other activities that affect or contribute to the SIU(s) or CIU(s) discharge (i.e., process and non-process wastewater).

N/A

C. Product and service information

Provide a description of the principal product(s) or services performed.

N/A

D. Flow rate information

See the Instructions for definitions of “process” and “non-process wastewater.”

Process Wastewater:

Discharge, in gallons/day: N/A

Discharge Type: ☐ Continuous ☐ Batch ☐ Intermittent

Non-Process Wastewater:

Discharge, in gallons/day: N/A

Discharge Type: ☐ Continuous ☐ Batch ☐ Intermittent

E. Pretreatment standards

Is the SIU or CIU subject to technically based local limits as defined in the *i*nstructions?

☐ Yes ☐ No

Is the SIU or CIU subject to categorical pretreatment standards found in *40 CFR Parts 405-471*?

☐ Yes ☐ No

If subject to categorical pretreatment standards, indicate the applicable category and subcategory for each categorical process.

Category: Subcategories: N/A

Click or tap here to enter text. N/A

Category: N/A

Subcategories: N/A

Category: N/A

Subcategories: N/A

Category: N/A

Subcategories: N/A

Category: N/A

Subcategories: N/A

F. Industrial user interruptions

Has the SIU or CIU caused or contributed to any problems (e.g., interferences, pass through, odors, corrosion, blockages) at your POTW in the past three years?

☐ Yes ☒ No

If yes, identify the SIU, describe each episode, including dates, duration, description of problems, and probable pollutants.

N/A

Attachment DAR 1.0-1
Fee Payment

Enprotec | Hibbs & Todd

May 15, 2024

Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office (MC 214)
P.O. Box 13088
Austin, Texas 78711-3088

Re: TPDES Permit Minor Amendment with Renewal Application
Applicant: City of Abilene (CN600242671)
Permit No.: WQ0010334004 (EPA I.D. No. TX0023973)
Site Name: Hamby Water Reclamation Facility (RN101611788)
Fee Code: WQP

Dear Sir / Madam:

The enclosed check is submitted on behalf of the City of Abilene. The check, made payable to the Texas Commission on Environmental Quality, is the required permit minor amendment with renewal application fee for the Hamby Water Reclamation Facility (RN101611788). The permit application has been or will soon be submitted to the Water Quality Application Team.

If you have any questions, please contact me at 817-694-8382.

Sincerely,

Enprotec / Hibbs & Todd, Inc.

Luci Dunn

Luci Dunn, P.E.
Senior Project Manager

LD/jd

c: Project File 8801
P:\Projects\TPDES Permit Applications\Abilene Hamby\8801 Hamby WRF Permit Minor Amend w Renewal 2024\1. Correspondence\Fee Transmittal Letter to TCEQ.docx

Attachment DAR 1.0-3.C
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 600242671		**RN 101611788**

SECTION II: Customer Information

4. General Customer Information | **5. Effective Date for Customer Information Updates** (mm/dd/yyyy)

☐ 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:*

City of Abilene

7. TX SOS/CPA Filing Number	**8. TX State Tax ID** (11 digits)	**9. Federal Tax ID** (9 digits)	**10. DUNS Number** *(if applicable)*

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
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant ☐ Other:

15. Mailing Address:

PO Box 60

City	Abilene	**State**	TX	**ZIP**	79604	**ZIP + 4**	

16. Country Mailing Information *(if outside USA)*	**17. E-Mail Address** *(if applicable)*
	robert.hanna@abilenetx.gov

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(325) 676-6206		( ) -

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.)*

Hamby Water Reclamation Facility

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	19000 County Road 309							
	City	Abilene	**State**	TX	**ZIP**	79601	**ZIP + 4**	
24. County	Jones							

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:	

26. Nearest City	**State**	**Nearest ZIP Code**
Abilene	TX	79601

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:	32.540277		**28. Longitude (W) In Decimal:**	99.622777	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
32	32	25	99	37	22

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)
4952		22132	

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

Domestic wastewater treatment

34. Mailing Address:	**City of Abilene**							
	PO Box 60							
	City	**Abilene**	**State**	**TX**	**ZIP**	**79604**	**ZIP + 4**	
35. E-Mail Address:	**rodney.taylor@abilenetx.gov**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(325) 676-6452		( ) -

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
☐ 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:
	WQ0010334004			

SECTION IV: Preparer Information

40. Name:	Luci Dunn, PE, with eHT	**41. Title:**	Senior Project Manager

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(325) 698-5560		( ) -	luci.dunn@e-ht.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:	City of Abilene	**Job Title:**	City Manager	
Name *(In Print):*	Robert Hanna		**Phone:**	(325) 676- **6206**
Signature:	Robert Hanna		**Date:**	5/3/2024

Attachment DAR 1.0-8.D
Public Viewing Information

City of Abilene
Hamby Water Reclamation Facility
TPDES Permit Minor Amendment with Renewal Application
Attachment DAR 1.0-8.D

PUBLIC VIEWING INFORMATION

1. Taylor County Public Notice Viewing Location:
Public building name: City of Abilene City Hall
Location within the building: Water Administration Conference Room
Physical Address of Building: 555 Walnut Street
City: Abilene County: Taylor
Contact (Last Name, First Name): Taylor, Rodney
Phone No.: (325) 676-6452 Ext.: N/A

2. Jones County Public Notice Viewing Location:
Public building name: Hamby Water Reclamation Facility
Location within the building: Conference Room
Physical Address of Building: 19000 County Road 309
City: Abilene County: Jones
Contact (Last Name, First Name): Taylor, Rodney
Phone No.: (325) 676-6452 Ext.: N/A

Attachment DAR 1.0-8.F

Plain Language Summary

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

PLAIN LANGUAGE SUMMARY FOR TPDES OR TLAP PERMIT APPLICATIONS

Plain Language Summary Template and Instructions for Texas Pollutant Discharge Elimination System (TPDES) and Texas Land Application (TLAP) Permit Applications

Applicants should use this template to develop a plain language summary as required by Title 30, Texas Administrative Code (30 TAC), Chapter 39, Subchapter H. Applicants may modify the template as necessary to accurately describe their facility as long as the summary includes the following information: (1) the function of the proposed plant or facility; (2) the expected output of the proposed plant or facility; (3) the expected pollutants that may be emitted or discharged by the proposed plant or facility; and (4) how the applicant will control those pollutants, so that the proposed plant will not have an adverse impact on human health or the environment.

Fill in the highlighted areas below to describe your facility and application in plain language. Instructions and examples are provided below. Make any other edits necessary to improve readability or grammar and to comply with the rule requirements.

If you are subject to the alternative language notice requirements in 30 TAC Section 39.426, **you must provide a translated copy of the completed plain language summary in the appropriate alternative language as part of your application package**. For your convenience, a Spanish template has been provided below.

ENGLISH TEMPLATE FOR TPDES or TLAP NEW/RENEWAL/AMENDMENT APPLICATIONS DOMESTIC WASTEWATER/STORMWATER

The following summary is provided for this pending water quality permit application being reviewed by the Texas Commission on Environmental Quality as required by 30 TAC Chapter 39. The information provided in this summary may change during the technical review of the application and is not a federal enforceable representation of the permit application.

City of Abilene (CN600242671) operates the Hamby Water Reclamation Facility (RN101611788), a domestic wastewater treatment plant. The facility is located at 19000 COUNTY ROAD 309, in Abilene, Jones County, Texas 79601. The City of Abilene has applied for a minor amendment with renewal of the existing permit, WQ0010334004, which authorizes the discharge of treated domestic wastewater at an annual average flow not to exceed 18,000,000 gallons per day via Outfall 001, an annual average flow of 4,000,000 gallons per day via Outfall 002, and an annual average flow of 7,000,000 gallons per day via Outfall 003. The current permit also authorizes the surface disposal of sewage sludge on 64 acres, and the disposal of treated domestic wastewater via irrigation on 1,960 acres of off-site properties and 335 acres of on-site properties. The minor amendment application provides information that the next active sewage sludge disposal site (SDS) will be SDS-E4 which is currently permitted but is only listed as a future site.

Discharges from the facility are expected to contain Carbonaceous Biological Oxygen Demand 5-day, Total Suspended Solids, Ammonia Nitrogen, Total Phosphorus, and E. Coli. Domestic wastewater is treated by a biological nutrient removal (BNR) system and a membrane bioreactor (MBR) system.

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PLANTILLA EN ESPAÑOL PARA SOLICITUDES NUEVAS/RENOVACIONES/ENMIENDAS DE TPDES o TLAP

AGUAS RESIDUALES Introduzca 'INDUSTRIALES' o 'DOMÉSTICAS' aquí **/AGUAS PLUVIALES**

El siguiente resumen se proporciona para esta solicitud de permiso de calidad del agua pendiente que está siendo revisada por la Comisión de Calidad Ambiental de Texas según lo requerido por el Capítulo 39 del Código Administrativo de Texas 30. La información proporcionada en este resumen puede cambiar durante la revisión técnica de la solicitud y no es una representación ejecutiva fedérale de la solicitud de permiso.

1. Introduzca el nombre del solicitante aquí (2. Introduzca el número de cliente aquí (es decir, CN6########).) 3. Elija del menú desplegable 4. Introduzca el nombre de la instalación aquí 5. Introduzca el número de entidad regulada aquí (es decir, RN1########), 6. Elija del menú desplegable 7. Introduzca la descripción de la instalación aquí. La instalación 8. Elija del menú desplegable. ubicada en 9. Introduzca la ubicación aquí, en 10. Introduzca el nombre de la ciudad aquí, Condado de 11. Introduzca el nombre del condado aquí, Texas 12. Introduzca el código postal aquí. 13. Introduzca el resumen de la petición de solicitud aquí. *<<Para las solicitudes de TLAP incluya la siguiente oración, de lo contrario, elimine:>>* Este permiso no autorizará una descarga de contaminantes en el agua en el estado.

Se espera que las descargas de la instalación contengan 14. Liste todos los contaminantes esperados aquí. 15. Introduzca los tipos de aguas residuales descargadas aquí. 16. Elija del menú desplegable tratado por 17. Introduzca una descripción del tratamiento de aguas residuales utilizado en la instalación aquí.

Attachment DAR 1.0-9.E.1
Owners of Effluent Disposal Site

ATTACHMENT DAR 1.0-9.E.1

CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY
TPDES PERMIT MINOR AMENDMENT WITH RENEWAL APPLICATION
OWNERS OF EFFLUENT DISPOSAL SITE

Effluent Disposal Site	Landowner Name	Mailing Address	Phone Number	Email Address
On-site Landowner	City of Abilene	P.O. BOX 60 Abilene, TX 79604	(325) 676-6206	robert.hanna@abilenetx.gov
Off-site Landowner	234 HAMBY LLC	PO BOX 2575 Albany, TX 76430	JC IDs 25261, 26260, 10836	
Off-site Landowner	J. M. Crawford, Est.	20406 Laverton Drive Katy, TX 77450	JC IDs 13606, 13607, 53691, 53692	
Off-site Landowner	BRH Investments	PO BOX 6328 Abilene, TX 79608	JC IDs 11087, 53713	
Off-site Landowner	Debra Richardson	1450 CR 154 Abilene, TX 79601	SC IDs 11742, 13517	
Off-site Landowner	Charles & Whitney Allumbaugh Logan	1210 CR 275 Tuscola, TX 79562	SC ID 214968	
Off-site Landowner	Thomas H Caton	17620 FM 1082 Abilene, TX 79601	JC ID 12771, 12772, 12775	
Off-site Landowner	Linda K Caton	17620 FM 1082 Abilene, TX 79601	JC IDs 53690, 53693, 10934, 10936, 15287	
Off-site Landowner	Judy Ann Rutledge	14451 CR 421 Merkel, TX 79536	JC ID 25031, 25032, 25033, 53689, 53694, 538405	
Off-site Landowner	Clyde H Ent Emmons	13349 Lime Ridge Drive Frisco, TX 75033	JC 14680, 14681, 14682	
Off-site Landowner	Lucas Pugh	17766 FM 1082 Abilene, TX 79601	JC 16276	
Off-site Landowner	Donald Dee Powers	28 Sendero Point Fair Oaks Ranch, TX 78105	JC 23093, 23095	
Off-site Landowner	Victor & Johnelle Hicks	20842 CR 309 Abilene, TX 79601	JC 23775	

Note: No Phone Numbers or Email Addresses are known for the Off-site Landowners, so Jones County and Shackelford County (SC) Central Appraisal District Property IDs are provided instead.

Attachment DAR 1.0-9.E.2

Lawsuit Settlement and Reuse Water Obligations Information Summary

Copy of APAI Letter to TCEQ, dated 12/12/2018

Copy of Related APAI-TCEQ Emails, dated 12/18/2018-10/23/2018

Cover Page of Referenced 2018 Submitted *Wastewater Plant Lawsuit Settlements & Reuse Water Obligations*

Copy of APAI Letter to TCEQ, dated 08/08/2014

Copy of APAI Letter to TCEQ, dated 06/20/2014

Copy of APAI Letter to TCEQ, dated 01/05/2009

(AAR WS 3.0-2)

Attachment DAR 1.0-9.E.2
City of Abilene
Hamby Water Reclamation Facility
TPDES Permit Minor Amendment with Renewal Application

Lawsuit Settlement and Reuse Water Obligations Information Summary

Current TPDES Permit, WQ0010334004, issued on 12/22/2022, Other Requirements, Item #10, states, "The permittee is authorized to use effluent to irrigate 1,960 acres off-site properties and 335 acres of on-site properties…" Additional provisions related to the effluent irrigation practices are included throughout the permit Other Requirements. Other than the most-recent TCEQ-initiated minor amendment in 2022 to incorporate Pretreatment Program substantial modifications into the permit (without changes), the irrigation practices that have been on-going for decades have caused confusion during the permitting process. In an attempt to clarify the irrigation practices associated with the Hamby Water Reclamation Facility (WRF), a summary is provided along with the clarification letters previously provided to the TCEQ during the 2008, 2014, and 2018 application processes.

Although effluent irrigation occurs, the City of Abilene (City) does not rely on land application of any acreage for disposal of effluent. Off-site irrigation is not required as an effluent disposal method, and all effluent may be discharged through the three TPDES-permitted outfalls.

Due to a court order, the City is obligated to transfer effluent to the off-site effluent irrigation sites. There are no lease agreements between the City and the landowners of the off-site irrigation sites because this court order describes the conditions under which the City has use of these properties for effluent irrigation. A lease agreement, therefore, would contradict requirements covered under the prior court order. In addition, the traditional lease agreement required between a permittee and an effluent disposal site landowner, ensures that sufficient land is available for effluent disposal throughout the term of the permit (Texas Land Application Permit (TLAP)). As noted herein, no land is required for effluent disposal, rather the lawsuit settlement agreement with the landowners as memorialized in the court order transfers treated effluent to the landowners. The agreements between the City and the landowners have not changed or been altered since executed in the 1980's and early 1990's.

Details of the agreements between the City and the off-site landowners were described in the attached letter from Alan Plummer Associates Inc. (APAI) (currently known as Plummer), dated 12/12/2018, to TCEQ's Michael Parr, Attorney. Emails between APAI (Ashley Lewis) and TCEQ (Mr. Parr & the permit writer (Laura Mitchell)) between 10/23/2018 and 12/18/2018 are attached. The emails include references to the electronic transmittal (and CD submittal) from APAI to the TCEQ of the requested and referenced document entitled *Wastewater Treatment Plant Lawsuit Settlements and Reuse Water Obligations*; a copy of the cover page from the referenced document is also attached herein. The entire 321-page document was submitted in 2018 but is available upon TCEQ's request for inclusion in this application, if needed.

The 2018 permit renewal application included the Domestic Technical Report Worksheet (WS) 3.0. WS 3.0 is also included herein for the Minor Amendment Application with Renewal. WS 3.0 was not initially included in the 2014 Major Amendment application but was added to the application per the attached APAI Letters, dated June 20, 2014 and dated August 8, 2024, as requested by TCEQ. The 2014 approach to exclude WS 3.0 was based on the 2008 permit renewal application clarification as described in the attached APAI letter,

dated 01/05/2009. Since methodology has evolved over time and as stated above, WS 3.0 is included as an attachment to this application, although the irrigation of effluent by the off-site irrigators is not a traditional TLAP since disposal is not intended; the transfer of treated effluent to the off-site irrigators to fulfil the stipulations of the court order is the goal.

Attachments
Copy of APAI Letter to TCEQ, dated 12/12/2018
Copy of Related APAI-TCEQ Emails, dated 12/18/2018-10/23/2018
Cover Page of Referenced 2018 Submitted *Wastewater Plant Lawsuit Settlements Reuse Water Obligations*
Copy of APAI Letter to TCEQ, dated 08/08/2014
Copy of APAI Letter to TCEQ, dated 06/20/2014
Copy of APAI Letter to TCEQ, dated 01/05/2009

ALAN PLUMMER ASSOCIATES, INC.
ENVIRONMENTAL ENGINEERS AND SCIENTISTS

0922-016-01

December 12, 2018

Mr. Michael Parr
Staff Attorney
Water Quality Section
Environmental Law Division
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Re: Application to Renew Permit No. WQ0010334004 (EPA I.D. TX0023973)
City of Abilene (CN600242671)
Hamby Water Reclamation Facility (RN101611788)
Response to Notice of Deficiency

Dear Mr. Parr:

On behalf of the City of Abilene (City), Alan Plummer Associates, Inc. (APAI), submits a response to your email dated October 26, 2018, which requests additional information to the response APAI provided Laura Mitchell via email on October 24, 2018. The following information is provided regarding the obligation of the City with respect to the transfer of effluent to 11 off-site effluent irrigation sites.

The document entitled Wastewater Treatment Plant Lawsuit Settlements and Reuse Water Obligations was sent to Laura Mitchell on October 24, 2018. This document provides the court ordered agreements to provide landowners with effluent for irrigation. It should be noted that the off-site effluent irrigation is due to these court order obligations and is not required as an effluent disposal method; all effluent may be discharged through permitted Outfalls 001, 002, and 003. Two examples of the obligations may be found on pages 44 and 58 of 321 of the PDF file, where it states:

> Grantor reserves the right to remove up to four hundred (400) acre feet of secondarily treated sewer effluent water annually from the City of Abilene irrigation Farm for irrigation of the above described lands, for so long a time as the secondary treatment plant of the City of Abilene remains in operation.

Similar obligation wording is found in the referenced document for the other effluent irrigation sites. The landowners identified in this document have historically asserted that this provision provides for their right to this effluent. The City does not hold separate lease agreements with the lawsuit settlement landowners.

Thank you for your attention to this matter. If you should have any questions regarding this submittal, please contact me at (512) 452-5905, alewis@apaienv.com.

Sincerely,

ALAN PLUMMER ASSOCIATES, INC.
TBPE Firm Registration No. F-13

Ashley Lewis
Project Scientist

cc: Rodney Taylor, City of Abilene
Scott Hibbs, Enprotec / Hibbs & Todd
Luci Dunn, Enprotec / Hibbs & Todd
Rex Hunt, Alan Plummer Associates, Inc.
Chris Pasch, Alan Plummer Associates, Inc.

6300 LA CALMA
SUITE 400
AUSTIN, TEXAS 78752-3825
PHONE 512.452.5905
FAX 512.452.2325
www.apaienv.com

From:	Lewis,Ashley
To:	Michael Parr
Cc:	Deirdre Shepphard; Laura Mitchell; Hunt, Rex; Pasch, Chris; Luci Dunn; Scott Hibbs; Taylor, Rodney
Subject:	RE: Application to Renew Permit No. WQ0010334004
Date:	Tuesday, December 18, 2018 4:33:57 PM
Attachments:	image001.png

We are not sure what you mean by the "TLAP portion of the permit." As I think you would agree, a Texas Land Application Permit (TLAP) would be needed if the City was required to use land application of effluent in order to dispose of all or a portion of their effluent. However, the City does not rely on land application to any acreage for disposal of effluent. As stated in the letter, the off-site irrigation is not required as an effluent disposal method, and all effluent may be discharged through the three permitted outfalls. In the previous permit amendment, the City was required by TCEQ to submit land disposal of effluent information (Worksheet 3.0) in order for the TCEQ to continue authorization of effluent irrigation to the off-site properties. Please advise if you do not believe it to be necessary that the application includes the TLAP information.

We would like to call you tomorrow to further discuss this information. Please let us know if there is a good time to call.

Thank you,

Ashley Lewis
Alan Plummer Associates, Inc.
512.687.2154 (direct)
512.452.5905 (main)

From: Michael Parr <michael.parr@tceq.texas.gov>
Sent: Monday, December 17, 2018 2:25 PM
To: Lewis,Ashley <alewis@apaienv.com>
Cc: Deirdre Shepphard <deirdre.shepphard@tceq.texas.gov>; Laura Mitchell <Laura.Mitchell@Tceq.Texas.Gov>
Subject: RE: Application to Renew Permit No. WQ0010334004

Hi Ashley,

I reviewed your letter and have further questions. The example of language provided in your letter allows the landowner to remove 400 acre feet of water annually for irrigation, however, that same language does not give any rights related to the City using the property for TLAP purposes. You also stated in your letter that the off-site irrigation is not required as an effluent disposal method. What acreage does the City rely on for the TLAP portion of the permit?

Thanks,
-Michael

From: Lewis,Ashley <alewis@apaienv.com>
Sent: Thursday, December 13, 2018 10:20 AM
To: Michael Parr <Michael.Parr@tceq.texas.gov>
Subject: RE: Application to Renew Permit No. WQ0010334004

Thanks Michael. We look forward to your response.

Best,

Ashley Lewis
Alan Plummer Associates, Inc.
512.687.2154 (direct)
512.452.5905 (main)

From: Michael Parr <michael.parr@tceq.texas.gov>
Sent: Thursday, December 13, 2018 7:34 AM
To: Lewis,Ashley <alewis@apaienv.com>
Subject: RE: Application to Renew Permit No. WQ0010334004

Hi Ashley,

I'm out of the office Thursday and Friday of this week but will review your letter on Monday when I return to the office.

Thanks,
-Michael T. Parr II
Staff Attorney, Water Quality Section
Environmental Law Division
Texas Commission on Environmental Quality
(512) 239-0611 *Office*
(512) 239-0626 *FAX*



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Please note that the information contained in this response is provided as general information with respect to the question you asked and may not be a comprehensive list. The information contained in this response is not a substitute for professional advice you would receive from an attorney. The information provided does not constitute legal advice or a legal opinion. You should seek the advice of an attorney who can assess all the facts and provide you with a legal opinion.

From: Lewis,Ashley <alewis@apaienv.com>
Sent: Wednesday, December 12, 2018 3:24 PM
To: Michael Parr <Michael.Parr@tceq.texas.gov>

Cc: Hunt, Rex <rhunt@apaienv.com>; Pasch, Chris <cpasch@apaienv.com>; Luci Dunn <luci.dunn@e-ht.com>; Scott Hibbs <scott.hibbs@e-ht.com>; Taylor, Rodney <rodney.taylor@abilenetx.gov>; Mickey Chaney <mickey.chaney@abilenetx.gov>
Subject: RE: Application to Renew Permit No. WQ0010334004

Hi Mr. Parr,

Please see the attached letter which provides a response to your email. Feel free to contact me if you have any questions.

Thank you,

Ashley Lewis
Alan Plummer Associates, Inc.
512.687.2154 (direct)
512.452.5905 (main)

From: Michael Parr <michael.parr@tceq.texas.gov>
Sent: Friday, October 26, 2018 2:20 PM
To: Lewis,Ashley <alewis@apaienv.com>
Subject: RE: Application to Renew Permit No. WQ0010334004

Hi Ms. Lewis,

I am the attorney for the TCEQ reviewing the information you provided to Laura Mitchell as seen below. Can you send me the page numbers that address the obligations of the City with respect to the 11 off-site effluent disposal sites?

Thank you,
-Michael T. Parr II
Staff Attorney, Water Quality Section
Environmental Law Division
Texas Commission on Environmental Quality
(512) 239-0611 *Office*
(512) 239-0626 *FAX*



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Please note that the information contained in this response is provided as general information with respect to the question you asked and may not be a comprehensive list. The information contained in this response is not a substitute for professional advice you would receive from an attorney. The

information provided does not constitute legal advice or a legal opinion. You should seek the advice of an attorney who can assess all the facts and provide you with a legal opinion.

From: Lewis,Ashley <alewis@apaienv.com>
Sent: Wednesday, October 24, 2018 3:49 PM
To: Laura Mitchell <Laura.Mitchell@Tceq.Texas.Gov>
Cc: Pasch, Chris <cpasch@apaienv.com>; Hunt, Rex <rhunt@apaienv.com>
Subject: RE: Application to Renew Permit No. WQ0010334004

Laura,

Our response to the notice of deficiency (NOD) letter included Enclosure J (attached as a CD). Enclosure J is a copy of a document entitled Wastewater Treatment Plant Lawsuit Settlements and Reuse Water Obligations. A copy of this document is also attached as a link at the end of this email (the file is too large to send as an attachment). The document addresses the obligations of the City of Abilene (City) with respect to the transfer of effluent to the 11 off-site effluent disposal sites. There are no lease agreements between the City and the landowners of the off-site disposal sites because this court order describes the conditions under which the City has use of these properties for effluent disposal. A lease agreement, therefore, would contradict requirements covered under the prior court order and would not be allowed. Please let me know if you have any questions.

Enclosure J: https://files.apaienv.com/owncloud/index.php/s/XAoacpg1CRiGny0

Thanks,

Ashley Lewis
Alan Plummer Associates, Inc.
512.687.2154 (direct)
512.452.5905 (main)

From: Laura Mitchell [mailto:Laura.Mitchell@Tceq.Texas.Gov]
Sent: Tuesday, October 23, 2018 9:56 AM
To: Lewis,Ashley
Cc: Pasch, Chris
Subject: Application to Renew Permit No. WQ0010334004

Good morning,

We received the response to the deficiency letter for the above referenced permit application. However, there is additional information that must be addressed.

- The attachment that was provided indicates that there are 11 off-site effluent disposal site landowners. However, we did not receive lease agreements between the city and the landowners. If the owner of the land is not the same as the applicant, a long-term lease agreement must be provided. The lease agreement must give the facility owner use of the land for effluent disposal. Please provide such lease agreements between the City of Abilene and the disposal site owners.

Please let me know if you have any questions.

Thank you,

Laura Mitchell
Applications Review and Processing
Water Quality Division (MC-148)
Texas Commission on Environmental Quality (TCEQ)
Phone: 512-239-6717

CITY OF ABILENE

Source:
Cover Page of the 321-page document entitled *Wastewater Treatment Plant Lawsuit Settlements and Reuse Water Obligations.* This document was submitted in its entirety in the 2018 renewal application via email with link and via CD.

Wastewater Plant Lawsuit Settlements & Reuse Water Obligations

ALAN PLUMMER
ASSOCIATES, INC.
ENVIRONMENTAL
ENGINEERS AND SCIENTISTS

0456-026-01

August 8, 2014

Mr. Julian Centeno, Jr., P.E., Permit Coordinator
Municipal Permits Team
Wastewater Permitting Section (MC 148)
Water Quality Division
Texas Commission on Environmental Quality
Austin, Texas 78711-3087

Re: City of Abilene – TPDES Permit No. WQ0010334004, (TX0023973)
Permit Amendment Application — Domestic Worksheet 3.0

Dear Mr. Centeno:

This letter is provided on behalf of the City of Abilene (City) by Alan Plummer Associates, Inc. (APAI). The letter includes information to assist the Texas Commission on Environmental Quality (TCEQ) in preparing a draft permit for the Hamby Wastewater Treatment Facility (Hamby Plant), which is operated by the City under the above-referenced Texas Pollutant Discharge Elimination System (TPDES) permit issued by the TCEQ.

On August 27, 2013, the City submitted an application for a major amendment of the TPDES permit for the Hamby Plant to the TCEQ. On November 13, 2013, the TCEQ declared the application administratively complete and began a technical review. In your July 30, 2014 email, you requested that the City complete Domestic Worksheet 3.0 – Land Disposal of Effluent in order for the TCEQ to continue authorization of effluent irrigation of onsite and offsite agricultural properties. The completed worksheet is provided with this letter.

Attachment A provides a map suitable for inclusion in the permit. This map is identical to the map included in Attachment A of the current permit, issued on July 29, 2009.

Please do not hesitate to contact me at 512-687-2162, if you have any questions. Thank you for your attention to this important matter.

Sincerely,

ALAN PLUMMER ASSOCIATES, INC.

Chris Pasch
Project Manager

RECEIVED
AUG 08 2014
WATER QUALITY DIVISION
TCEQ

Enclosures (2)

cc: Mr. Tommy O'Brien, P.E., City of Abilene
Mr. Scott Hibbs, P.E., Enprotec Hibbs & Todd
Mr. Cristina Ramage, Lloyd Gosselink Rochelle & Townsend, P.C.
Mr. Martin Rochelle, Lloyd Gosselink Rochelle & Townsend, P.C.

6300 LA CALMA
SUITE 400
AUSTIN, TEXAS 78752-3825
PHONE 512.452.5905
FAX 512.452.2325
www.apaienv.com
TBPE Firm No. 13

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ENGINEERS AND SCIENTISTS

Celebrating 35 Years of Service
1978 - 2013

0456-026-01

June 20, 2014

RECEIVED
JUN 20 2014
WATER QUALITY DIVISION
TCEQ

Mr. Julian Centeno, Jr., P.E., Permit Coordinator
Municipal Permits Team
Wastewater Permitting Section (MC 148)
Water Quality Division
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Re: City of Abilene – TPDES Permit No. WQ0010334004, (TX0023973)
Permit Amendment Application
Domestic Worksheet 3.0

Dear Mr. Centeno:

This letter is provided on behalf of the City of Abilene (City) by Alan Plummer Associates, Inc. (APAI). The letter includes information to assist the Texas Commission on Environmental Quality (TCEQ) in preparing a draft permit for the Hamby Wastewater Treatment Facility (Hamby Plant), which is operated by the City under the above-referenced Texas Pollutant Discharge Elimination System (TPDES) permit issued by the TCEQ.

On August 27, 2013, the City submitted an application for a major amendment of the TPDES permit for the Hamby Plant to the TCEQ. On November 13, 2013, the TCEQ declared the application administratively complete and began a technical review. During a June 4th, 2014, meeting with TCEQ staff and APAI, TCEQ requested additional technical information related to the Hamby Plant TPDES application with regard to the City's request for continued authorization of effluent irrigation of onsite and offsite agricultural properties. This letter provides a general description of the irrigation activities associated with the Hamby Plant and the additional information requested.

Historically, the City has been authorized in its TPDES permit to provide effluent for irrigation if the effluent has received treatment such that the five-day biochemical oxygen demand (BOD_5) in a grab sample does not exceed 100 milligrams per liter (mg/L). The treated effluent distributed to the onsite and offsite properties has historically been consistently of this quality or better.

All of the properties receiving irrigation water pursuant to the TPDES permit are shown on the map provided in Attachment A, On-site and Off-site Areas Authorized for Effluent Irrigation. The "On-site" properties are those owned by the City and the "Off-site" properties are owned by private landowners. None of these properties are open to the public. This map is identical to the map included in Attachment A of the current permit, issued on July 29, 2009.

6330 LA CALMA
SUITE 400
AUSTIN, TEXAS 78752-3825
PHONE 512.452.5905
FAX 512.452.2325
www.apaienv.com
TBPE Firm No. 13

Attachment B is a photocopy of the Domestic Worksheet 3.0 – Land Disposal of Effluent. Domestic Worksheet 3.0 submitted in June 2003. Table 3.A has been updated.

We will contact you to discuss this supplemental information, after you had time to review it. In the meantime, please do not hesitate to contact me at 512-452-5905, if you have any questions. Thank you for your attention to this important matter.

Sincerely,

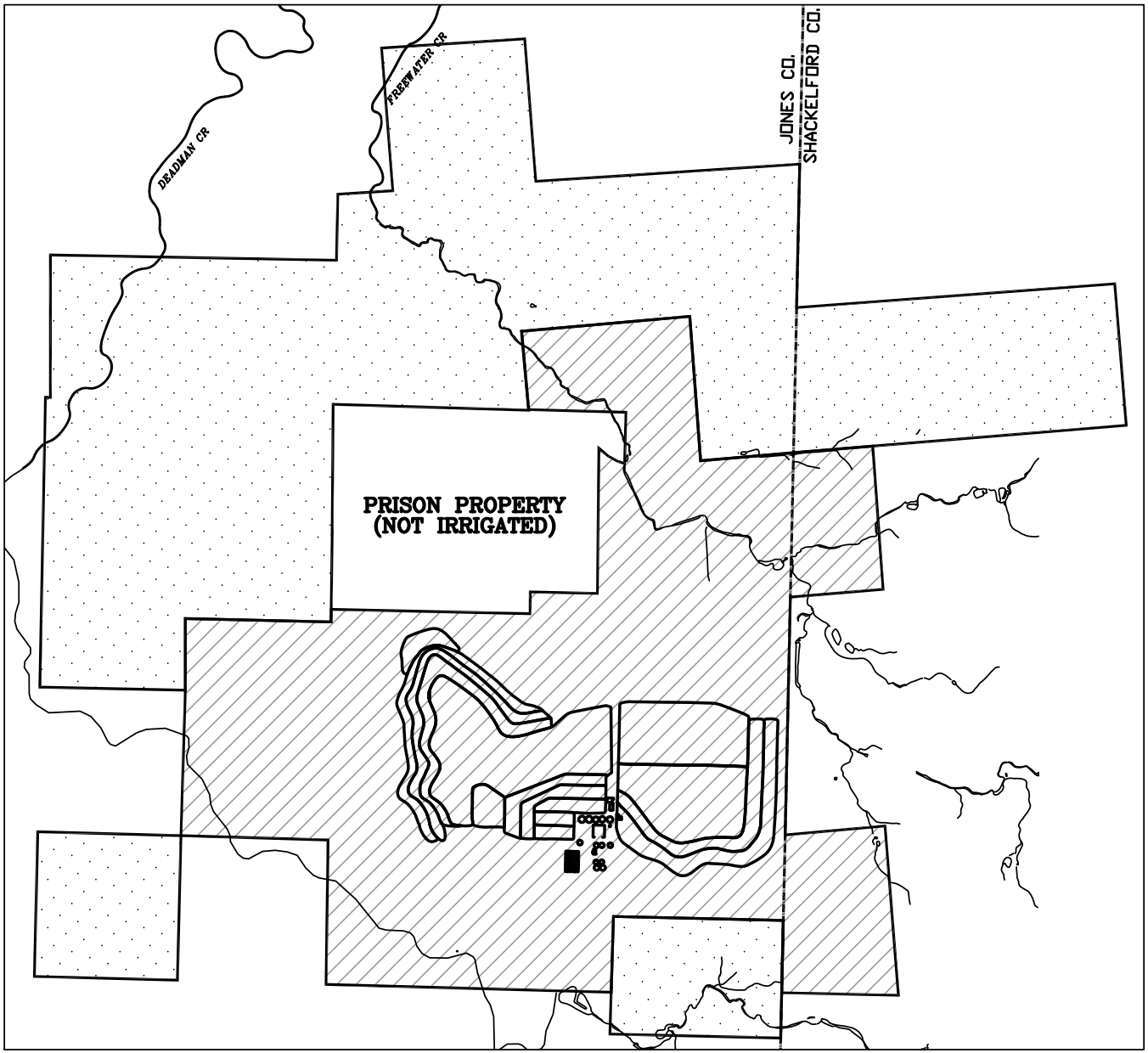
ALAN PLUMMER ASSOCIATES, INC.



Chris Pasch
Project Manager

Enclosures (2)

cc: Mr. Tommy O'Brien, P.E., City of Abilene
Mr. Scott Hibbs, P.E., Enprotec Hibbs & Todd
Mr. Christina Ramage, Lloyd Gosselink Rochelle & Townsend, P.C.
Mr. Martin Rochelle, Lloyd Gosselink Rochelle & Townsend, P.C.



NOTES:

1. ON–SITE PROPERTY INCLUDES ALL CITY–OWNED PROPERTY COMPRISING THE HAMBY WASTEWATER TREATMENT PLANT SITE.

2. OFF–SITE PROPERTY INCLUDES PROPERTY NOT OWNED BY THE CITY OF ABILENE THAT RECEIVES EFFLUENT FOR IRRIGATION UNDER THE AUTHORITY OF TPDES PERMIT No. WQ0010334–004.

CITY OF ABILENE

TPDES PERMIT NO. WQ0010334–004

HAMBY WASTEWATER TREATMENT PLANT

ATTACHMENT A

ON–SITE AND OFF–SITE AREAS AUTHORIZED FOR EFFLUENT IRRIGATION

DATE: JUNE 6, 2005

08/12/05–11:25 M:\Projects\456\1801\ACAD\Property Figure.dwg Tony B

ALAN PLUMMER ASSOCIATES, INC.
ENVIRONMENTAL ENGINEERS • DESIGNERS • SCIENTISTS

JAMES L. ALTSTAETTER, PE
STEPHEN J. COONAN, PE
JOHN M. D'ANTONI, DE, PE
PEGGY W. GLASS, PhD
DAVID A. GUDAL, PE
REX H. HUNT, PE
BETTY L. JORDAN, PE
ELLEN T. McDONALD, PhD, PE
JOHN R. MINAHAN, PE
TIMOTHY J. NOACK, PE
ALAN H. PLUMMER, JR., PE, BCEE
RICHARD H. SMITH, PE
ALAN R. TUCKER, PE

0456-021-01

January 5, 2009

Mrs. Amewusika Clara Dake
Municipal Permits Team (MC-148)
Water Quality Division
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Re: City of Abilene Hamby Wastewater Treatment Facility
Texas Pollutant Discharge Elimination System
Permit Number WQ0010334-004
Response to Request for Additional Information

Dear Mrs. Dake:

The City of Abilene (City) has received two facsimiles dated December 10, 2008, in which you requested additional information for the permit renewal application of the above-referenced permit. The following five items were requested:

1. Additional sampling and testing for Dieldrin.
2. Verification of effluent analyses data for Hexachlorobutadiene, Chloroethane, 1,4-Dichlorobenzene, and Chlordane.
3. Information regarding treatment mode of the facility.
4. Acknowledgement that the facility must be operated by a chief operator holding a Category A license or higher.
5. Completion of Domestic Worksheets 3.0 and 3.1 for irrigation with effluent.

A revised Worksheet 4.0 was sent to you via email on December 12, 2008, in response to Items 1 and 2 above. Based on that e-mail, you determined that additional testing is not now required.

In response to Item 3, above, the treatment mode for the Hamby Wastewater Treatment Facility is "complete mix." With regard to Item 4, the City acknowledges this requirement. The facility will continue to be operated by a chief operator holding a Category A license or higher.

63[illegible] ALMA
SUITE 400
AUSTIN, TEXAS 78752-3825
PHONE 512.452.5905
FAX 512.452.2325
www.apalenv.com

Regarding Item 5, the City understands that Worksheets 3.0 and 3.1 are not required for this application. This understanding is based on the fact that the effluent irrigation method being practiced on agricultural areas near the plant is optional and not effluent disposal. All effluent could be discharged to Outfall 001, if desired. Worksheets 3.0 and 3.1 are only required if effluent irrigation is required in the permit as the means of disposal. Mr. Firoj Vahora confirmed that Worksheets 3.0 and 3.1 are not required during a December 11, 2008, telephone conversation. This was also verified by you in a subsequent e-mail.

You had requested that the City respond to these items by January 7, 2009. It is our understanding that all items have been resolved and that you have the necessary information to draft the permit.

We appreciate your attention to this application. Please feel free to contact me at (512) 452-5905 or Tommy O'Brien at (325) 676-6416, if you have any questions.

Sincerely,

ALAN PLUMMER ASSOCIATES, INC.

Rex H. Hunt, P. E.
Principal

RHH/jl

cc: Mr. Tommy O'Brien, City of Abilene
Mr. Mickey Chaney, City of Abilene
Mr. Bill Drake, City of Abilene
Mr. Rodney Taylor, City of Abilene
Mr. Michael Michaud, City of Abilene
Mr. Scott Hibbs, Enprotec/Hibbs and Todd
Ms. Michelle Maddox Smith, Lloyd, Gosselink, Blevins, Rochelle, and Townsend, P.C.

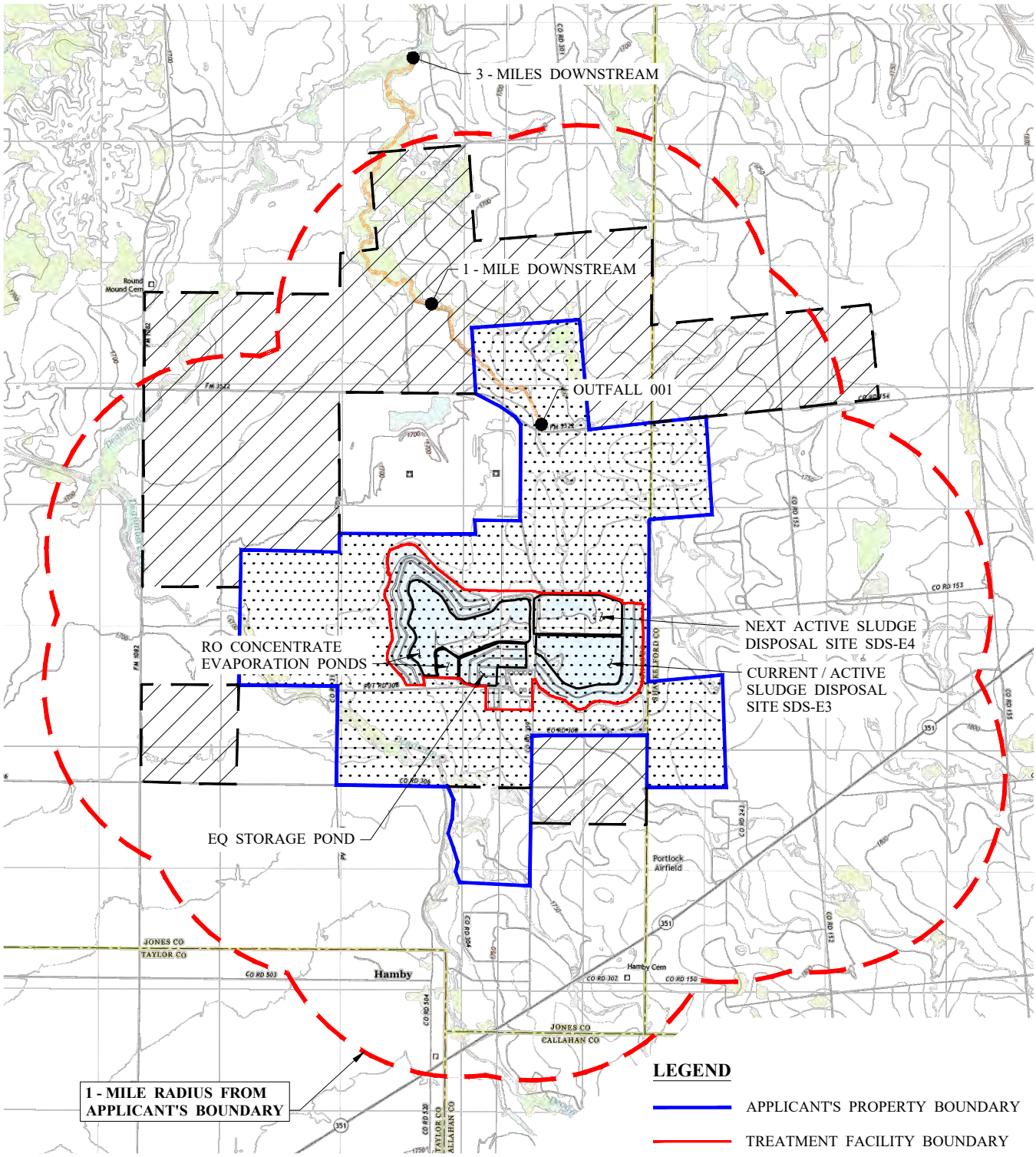
Attachment DAR 1.0-13
USGS Topographic Maps

WRF & Outfall 001

Outfall 002

Outfall 003

(AAR WS 2.0-1)

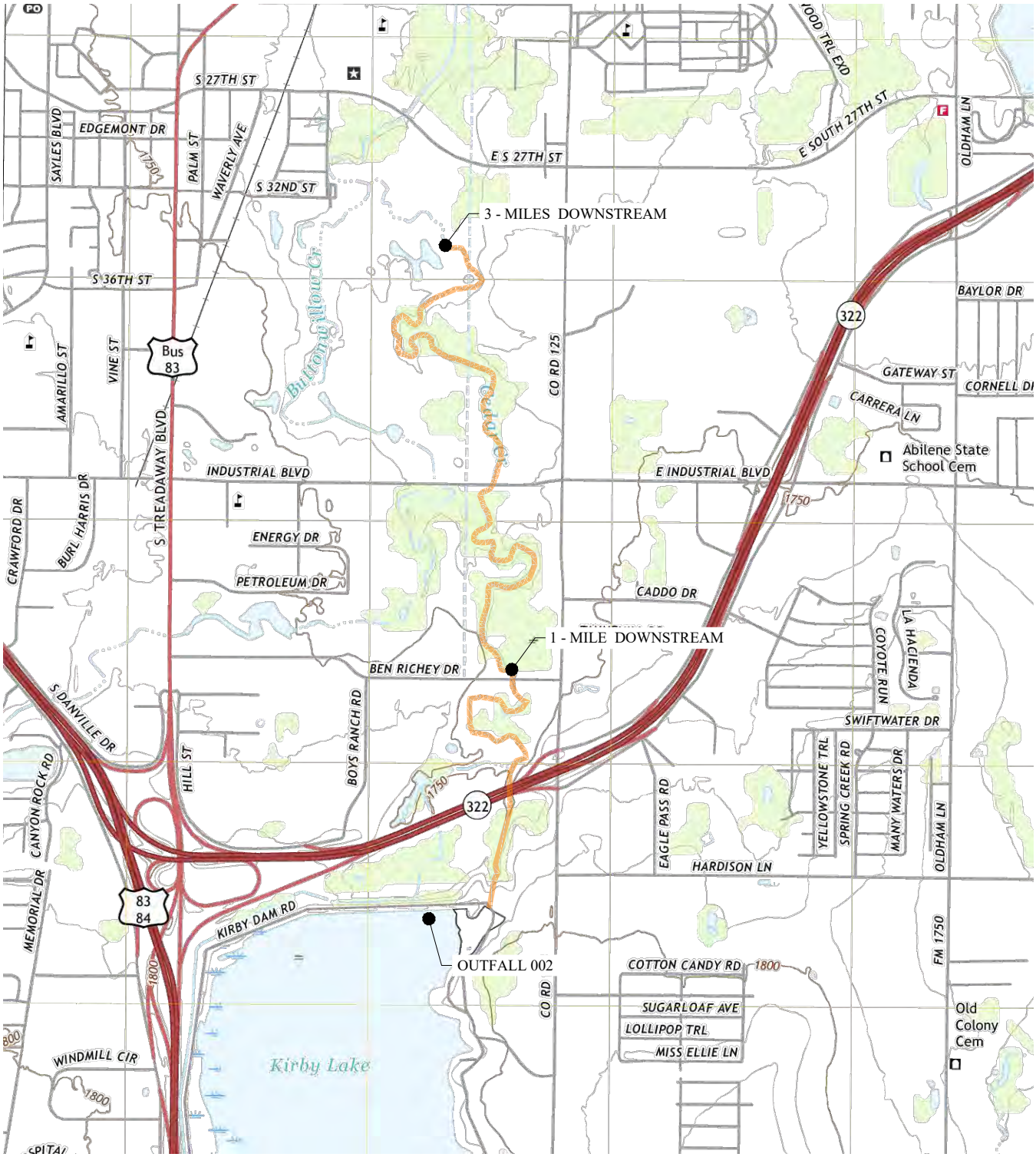


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PE Firm Registration No. 1151 • PG Firm Registration No. 50103 • RPLS Firm Registration No. 10011900

CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY
WQ0010334004

USGS TOPOGRAPHIC MAP
8801 WRF & OUTFALL 001 04/12/2024



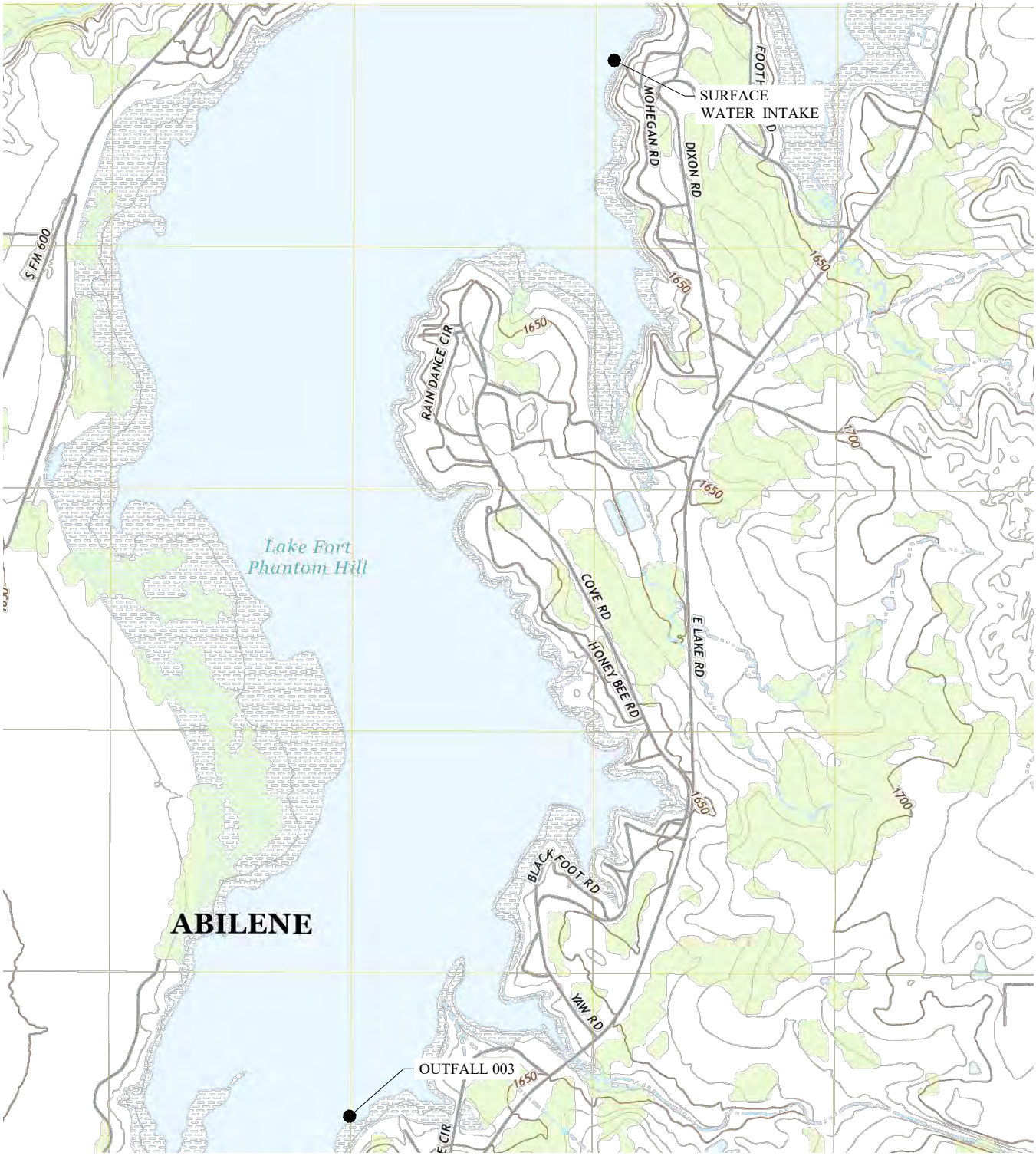
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CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY
WQ0010334004

USGS TOPOGRAPHIC MAP
KIRBY LAKE

8801 04/12/2024

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N

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SCALE IN FEET

NOTES

1. OUTFALL 003 DISCHARGES DIRECTLY TO LAKE FORT PHANTOM HILL

CITY OF ABILENE
HAMBY WATER
RECLAMATION FACILITY
WQ0010334004

USGS TOPOGRAPHIC MAP
FORT PHANTOM LAKE

8801 04/09/2024

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Attachment SPIF
Supplemental Permit Information Form

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF)

FOR AGENCIES REVIEWING DOMESTIC OR INDUSTRIAL TPDES WASTEWATER PERMIT APPLICATIONS

TCEQ USE ONLY:

Application type: ____Renewal ____Major Amendment ____Minor Amendment ____New

County: _____ Segment Number: _____

Admin Complete Date: _____

Agency Receiving SPIF:

_____ Texas Historical Commission _____ U.S. Fish and Wildlife

_____ Texas Parks and Wildlife Department _____ U.S. Army Corps of Engineers

This form applies to TPDES permit applications only. (Instructions, Page 53)

Complete this form as a separate document. TCEQ will mail a copy to each agency as required by our agreement with EPA. If any of the items are not completely addressed or further information is needed, we will contact you to provide the information before issuing the permit. Address each item completely.

Do not refer to your response to any item in the permit application form. Provide each attachment for this form separately from the Administrative Report of the application. The application will not be declared administratively complete without this SPIF form being completed in its entirety including all attachments. Questions or comments concerning this form may be directed to the Water Quality Division's Application Review and Processing Team by email at WQ-ARPTeam@tceq.texas.gov or by phone at (512) 239-4671.

The following applies to all applications:

1. Permittee: City of Abilene

   Permit No. WQ00 10334004 EPA ID No. TX 0023973

   Address of the project (or a location description that includes street/highway, city/vicinity, and county):

   19000 COUNTY ROAD 309, ABILENE, JONES COUNTY, TX, 79601

Provide the name, address, phone and fax number of an individual that can be contacted to answer specific questions about the property.

Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Rodney Taylor

Credential (P.E, P.G., Ph.D., etc.): N/A

Title: Director of Water Utilities

Mailing Address: PO Box 60

City, State, Zip Code: Abilene, TX 79604

Phone No.: (325) 676-6452 Ext.: N/A Fax No.: N/A

E-mail Address: rodney.taylor@abilenetx.gov

2. List the county in which the facility is located: Facility and Outfalls 001 & 003: Jones County. Outfall 002: Taylor County
3. If the property is publicly owned and the owner is different than the permittee/applicant, please list the owner of the property.

N/A

4. Provide a description of the effluent discharge route. The discharge route must follow the flow of effluent from the point of discharge to the nearest major watercourse (from the point of discharge to a classified segment as defined in 30 TAC Chapter 307). If known, please identify the classified segment number.

Via Outfall 001: to Freewater Creek; thence to Deadman Creek; thence to Clear Fork Brazos River in Segment No. 1232 of the Brazos River Basin. Via Outfall 002: to Lake Kirby; thence to Cedar Creek; thence to Fort Phantom Hill Reservoir in Segment No. 1236 of the Brazos River Basin. Via Outfall 003: directly to Fort Phantom Hill Reservoir in Segment No. 1236.

5. Please provide a separate 7.5-minute USGS quadrangle map with the project boundaries plotted and a general location map showing the project area. Please highlight the discharge route from the point of discharge for a distance of one mile downstream. (This map is required in addition to the map in the administrative report).

Provide original photographs of any structures 50 years or older on the property.

Does your project involve any of the following? Check all that apply.

- ☐ Proposed access roads, utility lines, construction easements
- ☐ Visual effects that could damage or detract from a historic property's integrity
- ☐ Vibration effects during construction or as a result of project design
- ☐ Additional phases of development that are planned for the future

☐ Sealing caves, fractures, sinkholes, other karst features

☐ Disturbance of vegetation or wetlands

1. List proposed construction impact (surface acres to be impacted, depth of excavation, sealing of caves, or other karst features):

N/A

2. Describe existing disturbances, vegetation, and land use:

The facility is an operational wastewater treatment plant with active sludge disposal units.

THE FOLLOWING ITEMS APPLY ONLY TO APPLICATIONS FOR NEW TPDES PERMITS AND MAJOR AMENDMENTS TO TPDES PERMITS

3. List construction dates of all buildings and structures on the property:

N/A

4. Provide a brief history of the property, and name of the architect/builder, if known.

N/A

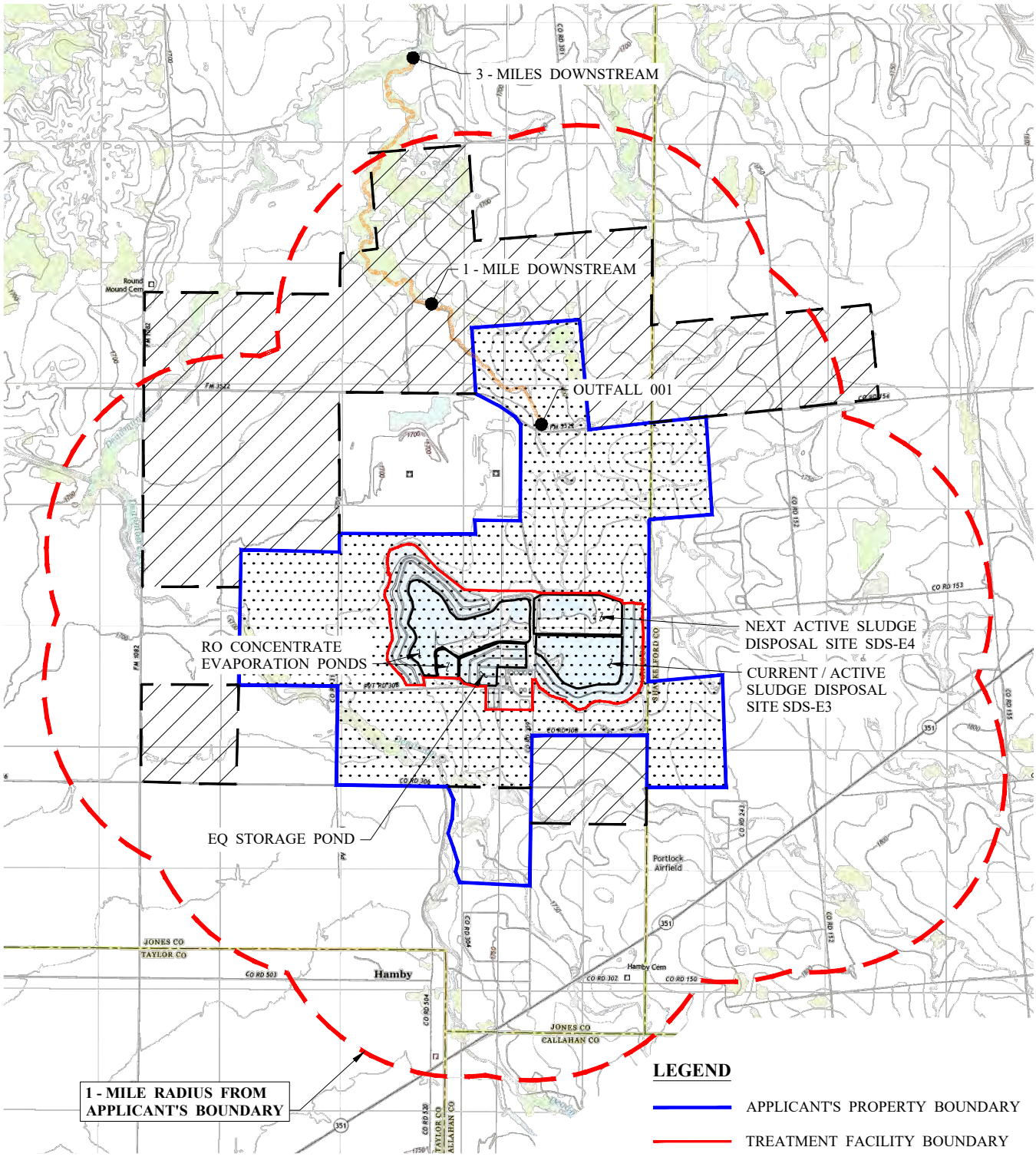
Attachment SPIF 5 Maps

USGS Topographic Maps

WRF & Outfall 001

Outfall 002

Outfall 003

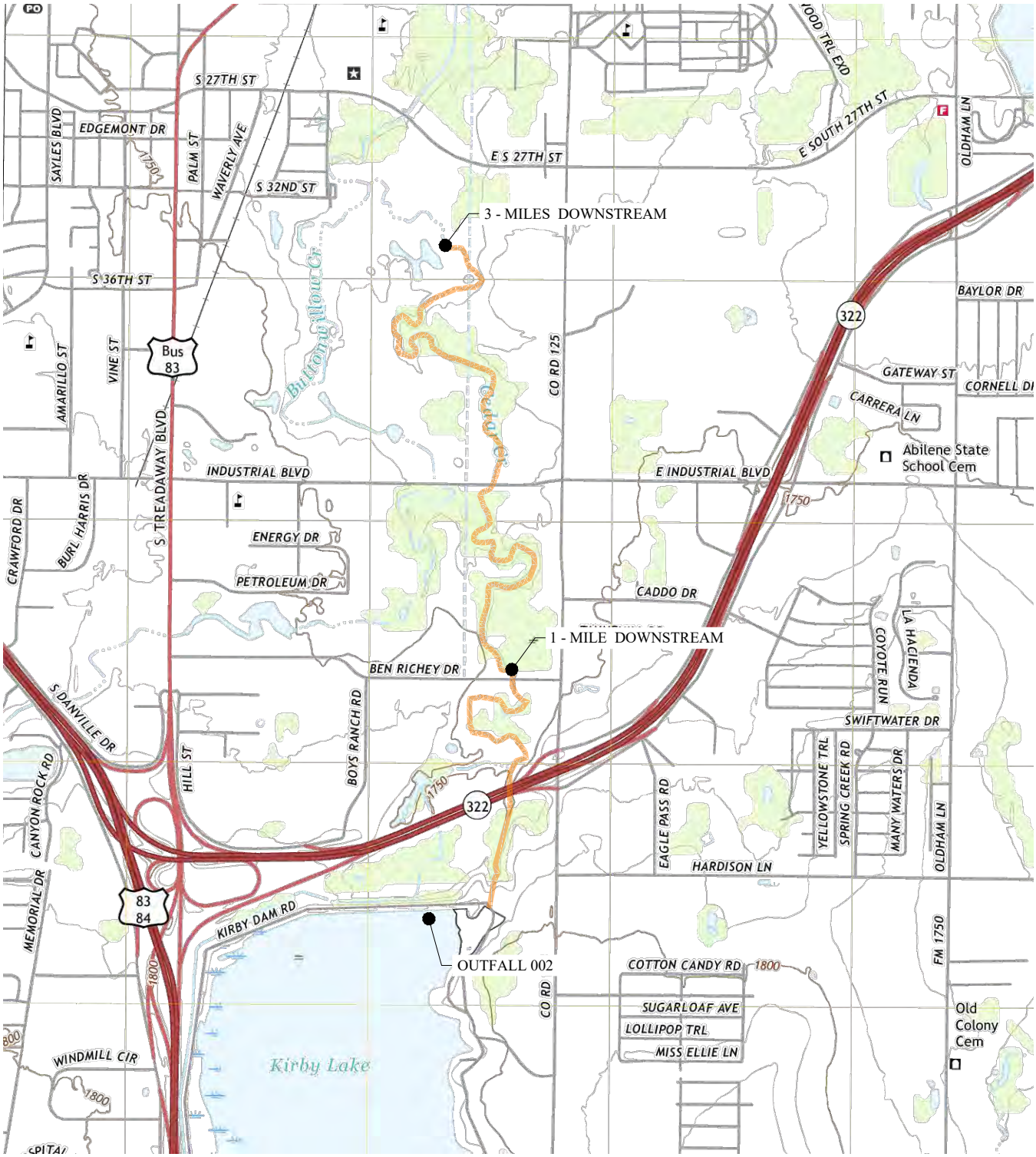


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PE Firm Registration No. 1151 • PG Firm Registration No. 50103 • RPLS Firm Registration No. 10011900

CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY
WQ0010334004

USGS TOPOGRAPHIC MAP
8801 WRF & OUTFALL 001 04/12/2024



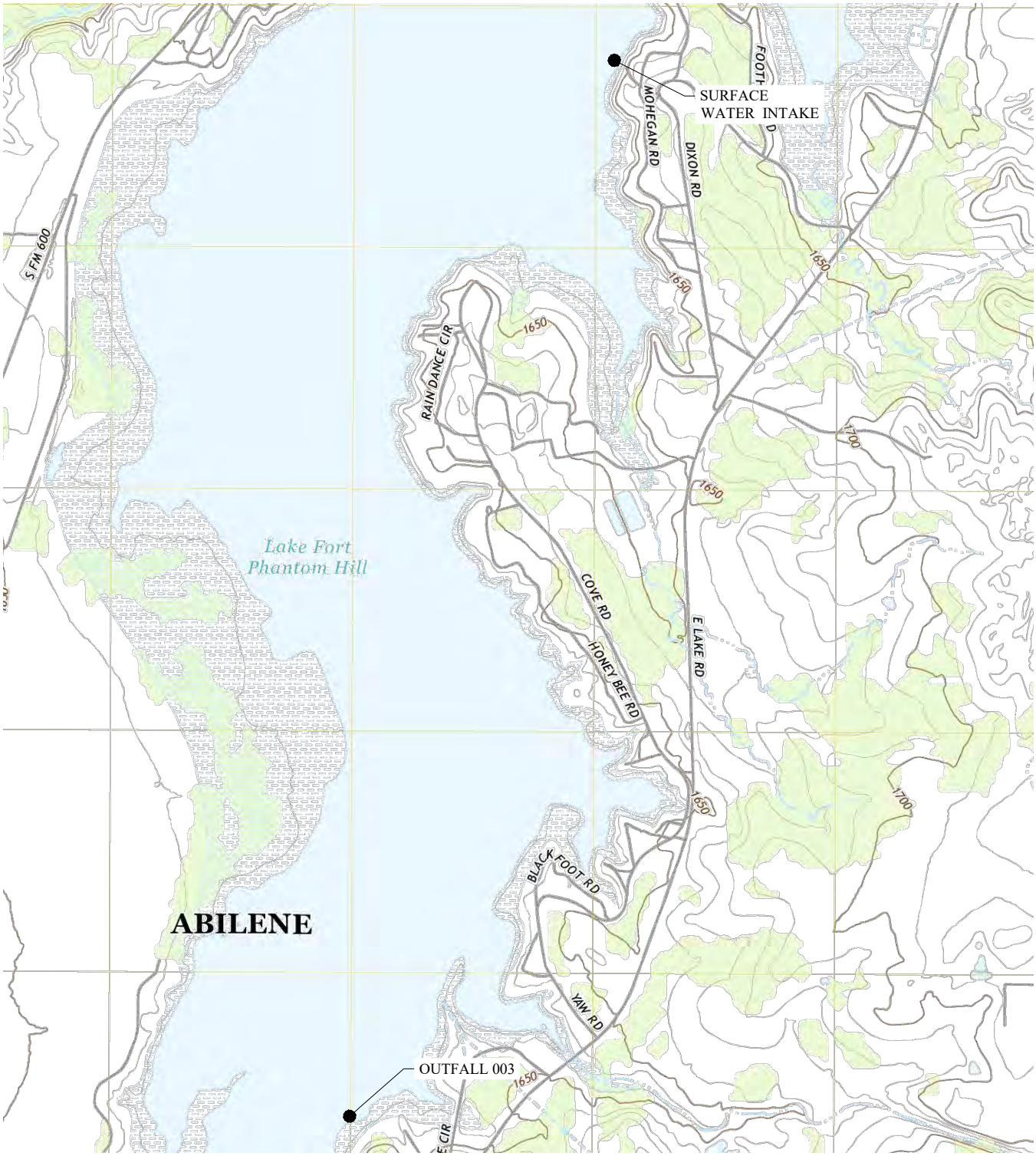
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CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY
WQ0010334004

USGS TOPOGRAPHIC MAP
KIRBY LAKE

8801 04/12/2024

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PE Firm Registration No. 1151 • PG Firm Registration No. 50103 • RPLS Firm Registration No. 10011900



N

1000 0 2000

SCALE IN FEET

NOTES

1. OUTFALL 003 DISCHARGES DIRECTLY TO LAKE FORT PHANTOM HILL

CITY OF ABILENE
HAMBY WATER
RECLAMATION FACILITY
WQ0010334004

USGS TOPOGRAPHIC MAP
FORT PHANTOM LAKE

8801 04/09/2024

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Attachment SPIF 5 Photos
Photographs of Structures 50 Years or Older on the WRF



1956:
Primary Clarifiers #1 and #2

By: Mickey Chaney
Date: 08/16/2018



1963:
Old Operations – Blower Building

By: Mickey Chaney
Date: 08/16/2018



1963:
Aeration Basins

By: Mickey Chaney
Date: 08/16/2018



1963:
Drying Beds
(2 remaining)

By: Mickey Chaney
Date: 08/16/2018

Attachment DTR 1.0-2.A
Description of the Treatment Process

(AAR SSTR 1.0-1.A)

ATTACHMENT DTR 1.0-2.A

CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY
TPDES PERMIT MINOR AMENDMENT WITH RENEWAL APPLICATION

DESCRIPTION OF TREATMENT PROCESS

The City of Abilene owns and operates the Hamby Water Reclamation Facility (WRF). The following provides the treatment process description for each of the permitted phases.

EXISTING/INTERIM I

The Hamby WRF includes biological nutrient removal (BNR) and a membrane bioreactor (MBR) system. Influent from the Buck Creek Pump Station and the two state prison facilities is combined at the head of a multi-tray vortex grit removal unit. Flows in excess of the Existing/Interim I WRF capacity are diverted temporarily to an on-site, lined earthen flow equalization basin prior to entering the grit removal unit. Return flow from the flow equalization basin is combined with Buck Creek pump station and Prison pump station influent at the head of the vortex grit removal unit. Screening follows grit removal using three fine screening units (2 mm). Collectively the flow equalization basin, vortex grit unit and fine screens provide preliminary treatment for WRF influent flows.

Secondary treatment is provided using a BNR process with an MBR system for solids separation. Biological treatment is based on the University of Capetown (UCT) process with the following process units:

- Influent Flow Splitting Structure receives fine screened effluent flow from the preliminary treatment units and the anoxic recycle flow, combines the flow streams, and splits the flows to the two anaerobic selector zone process units.
- BNR control structure receives flow from the anaerobic selector zone process units and mixed liquor from the aerobic selector zone process units, combines the flow streams, and splits the flows to the two anoxic selector zone process units.
- Flows from the anoxic selector zone process units and returned activated sludge flow from the MBR system is combined in a flow splitting structure before splitting into the four aeration basins.
- Mixed liquor from the aeration basins is pumped to the eight MBR basins for solids separation and membrane filtering.

- Waste sludge is disposed in the sludge surface disposal unit, or lime stabilized and disposed in the stabilized sludge surface disposal unit.
- Effluent from the MBR system is routed via pipeline to a covered MBR effluent storage tank (advanced treatment storage basin), and discharged via Outfall 001, 002 and/or 003 as described below.

Outfalls 001 and 002

From the covered MBR effluent storage tank, MBR effluent flows by gravity to the dual chlorine contact basin used for disinfection. Dechlorination occurs after the chlorine contact basins, with reaeration provided prior to discharge via Outfall 001. Effluent is discharged to Outfall 001 through a 36-inch gravity line. Effluent is discharged to Outfall 002 through a combination of gravity and pumped flow in pipelines, with a line size of 20-inches at Outfall 002.

Outfall 003

From the covered MBR effluent storage tank, MBR effluent is pumped to the advanced treatment facilities before discharge via Outfall 003. The advanced treatment processes include two treatment trains. One advanced treatment train doses the MBR effluent with ozone prior to a 4-cell biologically active contactor filter system. Backwash from the contactors is sent to the on- site equalization basin and returned to the head of the WRF for treatment. The second advanced treatment train includes three reverse osmosis units. Concentrate from the reverse osmosis units is sent to an on-site evaporation basin or to the sludge surface disposal unit for cover water. Concentrate can be discharged as a part of the effluent stream via Outfall 001 according to Other Requirement No. 26.

Effluent flows from the biologically active contactors and the reverse osmosis treatment units are recombined prior to disinfection within a chlorine contact basin dedicated to Outfall 003. Dechlorination occurs after the chlorine contact basin, with reaeration provided prior to discharge via Outfall 003. Effluent is discharged to Outfall 003 through a 24-inch gravity line.

FINAL PHASE

For the Final Phase of the permit, the facilities described under the Existing/Interim I Phase will continue to be utilized as described, with the addition of two MBR basins for a total of ten basins.

Attachment DTR 1.0-2.B
Treatment Units

(AAR SSTR 1.0-A)

ATTACHMENT DTR 1.0-2.B
CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY
TPDES PERMIT MINOR AMENDMENT WITH RENEWAL APPLICATION

TREATMENT UNIT LIST

Hamby Water Reclamation Facility – Existing/Interim I Phase

Type of Unit	Number of Units	Dimensions
Lined Earthen Equalization (Retention) Basin	1	60 million gallons
Grit Removal Unit, Multi-Tray Vortex Type	1	Hydraulic capacity of 24 mgd
Fine Screens, Rotary Drum Type	3	Capacity of 8 mgd/screen
Anaerobic Zones	2	85’ Diameter x 10’ SWD
Anoxic Zones	2	85’ Diameter x 9’ SWD
Aeration Basins (Aerobic Zones)	4	208’ Long x 51’ Wide x 15.2’ SWD
MBR Basins	8	64’ Long x 9’ Wide x 10’ SWD
Outfalls 001 and 002:		
Chlorine Contact Basins	2	103’-4” Long x 28’ Wide x 9’ Deep
Post-aeration Basin	1	32’ Long x 10’ Wide x 12’ SWD (Outfall 001 only)
Outfall 003:		
Cartridge Filters	2	2,816 gpm/vessel
Reverse Osmosis Trains	3	975 gpm/train
Ozone Contact Chambers	2	22’ Long x 8’-3” Wide x 15’-6” SWD
Biologically Active Contactors	4	18’ Long x 15’ Wide with 4’ initial GAC bed depth and 8’ GAC maximum bed depth
Chlorine Contact Chamber	1	55’-2” Long x 15’-9” Wide x 22’-9” SWD
Post-aeration Basin	1	20’ Long x 9’ Wide x 22’-4” SWD
Waste Handling		
Lime Stabilization System	1	Lime Feed System with a 100,000 gallon batching tank
RO Concentrate Evaporation Pond	1	200 Acres

ATTACHMENT DTR 1.0-2.B
CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY
TPDES PERMIT MINOR AMENDMENT WITH RENEWAL APPLICATION

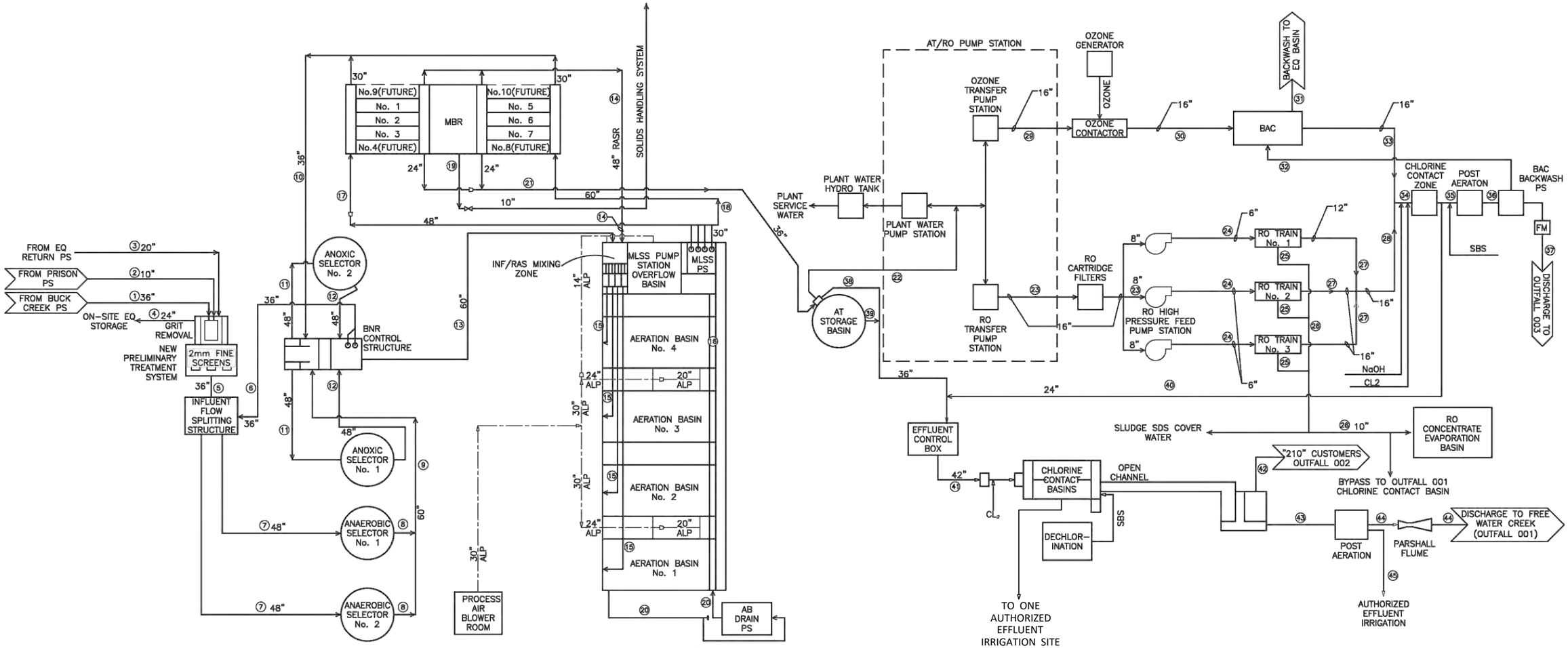
TREATMENT UNIT LIST

Hamby Water Reclamation Facility – Final Phase

Type of Unit	Number of Units	Dimensions
Lined Earthen Equalization (Retention) Basin	1	60 million gallons
Grit Removal Unit, Multi-Tray Vortex Type	1	Hydraulic capacity of 24 mgd
Fine Screens, Rotary Drum Type	3	Capacity of 8 mgd/screen
Anaerobic Zones	2	85’ Diameter x 10’ SWD
Anoxic Zones	2	85’ Diameter x 9’ SWD
Aeration Basins (Aerobic Zones)	4	208’ Long x 51’ Wide x 15.2’ SWD
MBR Basins	10	64’ Long x 9’ Wide x 10’ SWD
Outfalls 001 and 002:		
Chlorine Contact Basins	2	103’-4” Long x 28’ Wide x 9’ Deep
Post-aeration Basin	1	32’ Long x 10’ Wide x 12’ SWD (Outfall 001 only)
Outfall 003:		
Cartridge Filters	2	2,816 gpm/vessel
Reverse Osmosis Trains	3	975 gpm/train
Ozone Contact Chambers	2	22’ Long x 8’-3” Wide x 15’-6” SWD
Biologically Active Contactors	4	18’ Long x 15’ Wide with 4’ initial GAC bed depth and 8’ GAC maximum bed depth
Chlorine Contact Chamber	1	55’-2” Long x 15’-9” Wide x 22’-9” SWD
Post-aeration Basin	1	20’ Long x 9’ Wide x 22’-4” SWD
Waste Handling		
Lime Stabilization System	1	Lime Feed System with a 100,000 gallon batching tank
RO Concentrate Evaporation Pond	1	200 Acres

Attachment DTR 1.0-2.C
Flow Diagram

(AAR SSTR 1.0-A)

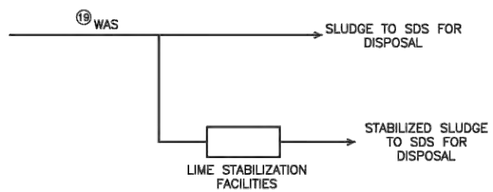


LIQUIDS PFD

STREAM NO.	STREAM DESCRIPTION
1	PLANT INFLUENT FROM BUCK CREEK PS
2	PLANT INFLUENT FROM PRISON PS
3	EQ RETURN FLOW
4	OVERFLOW TO EQ
5	COMBINED PLANT INFLUENT
6	ANOXIC RECYCLE LINE
7	INFLUENT TO ANAEROBIC SELECTOR BASINS
8	EFFLUENT FROM EACH ANAEROBIC SELECTOR
9	COMBINED ANAEROBIC SELECTOR EFFLUENT
10	MLSS TO BNR CONTROL STRUCTURE
11	INFLUENT TO ANOXIC SELECTOR BASINS
12	EFFLUENT FROM EACH ANOXIC SELECTOR
13	INFLUENT TO INF/RAS MIXING ZONE
14	MBR RAS TO BNR SYSTEM
15	INFLUENT/RAS FEED TO EACH AERATION BASIN
16	MIXED LIQUOR FROM BNR SYSTEM TO MBR SYSTEM

STREAM NO.	STREAM DESCRIPTION
17	MLSS TO MBR SECTION 1
18	MLSS TO MBR SECTION 2
19	WAS/DRAIN FROM MBR SYSTEM TO LIME STABILIZATION
20	AB DRAIN
21	MBR FILTRATE TO ADVANCED TRTM. (AT) STORAGE BASIN
22	MBR FILTRATE TO AT TRANSFER PS
23	AT TRANSFER PS TO RO SYSTEM
24	MBR FILTRATE TO AT TRANSFER PS
25	HIGH PRESSURE FEED TO EACH RO TRAIN
26	COMBINED RO CONCENTRATE
27	RO PERMEATE FROM EACH RO TRAIN
28	COMBINED RO PERMEATE
29	AT TRANSFER PS TO OZONE SYSTEM
30	OZONATED FEED TO BAC SYSTEM
31	BAC BACKWASH WASTE
32	BAC BACKWASH FEED

STREAM NO.	STREAM DESCRIPTION
33	BAC FILTRATE
34	COMBINED AT PROCESS WATER TO CHLORINE CONTACT
35	DISINFECTED AT EFFLUENT TO POST AERATION
36	AERATED AT EFFLUENT TO BAC BACKWASH PS
37	AT EFFLUENT TO DISCHARGE (OUTFALL NO. 003)
38	AT STORAGE BYPASS
39	OVERFLOW FROM AT STORAGE BASIN
40	AT CHLORINE CONTACT OVERFLOW
41	SE TO CHLORINE CONTACT BASIN
42	EFFLUENT TO 210 SYSTEM / OUTFALL NO. 002
43	DISINFECTED SE TO POST AERATION
44	EFFLUENT TO DISCHARGE (OUTFALL NO. 001)
45	SE TO IRRIGATION



SOLIDS PFD

SOURCE:

1. PLUMMER ATTACHMENT F, ABILENE HAMBY WRF PERMIT RENEWAL APPLICATION, DATED 09/04/2018, WITH FILE DATE: 03/18/2014

ENPROTEC/HIBBS & TODD, INC.
ENVIRONMENTAL AND CIVIL ENGINEERING
402 Cedar Street
Abilene, Texas 79601
325-698-8560
PE Firm Registration No. 1151
PG Firm Registration No. 50103
RPLS Firm Registration Nos. 10011900 & 10007300

ALAN PLUMMER ASSOCIATES, INC.
ENVIRONMENTAL ENGINEERS AND SCIENTISTS
1320 S. UNIVERSITY DRIVE
SUITE 300
FORT WORTH, TEXAS 76107-5764
TBPE FIRM REGISTRATION NO. 13

CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY
WQ0010334004

FLOW DIAGRAM

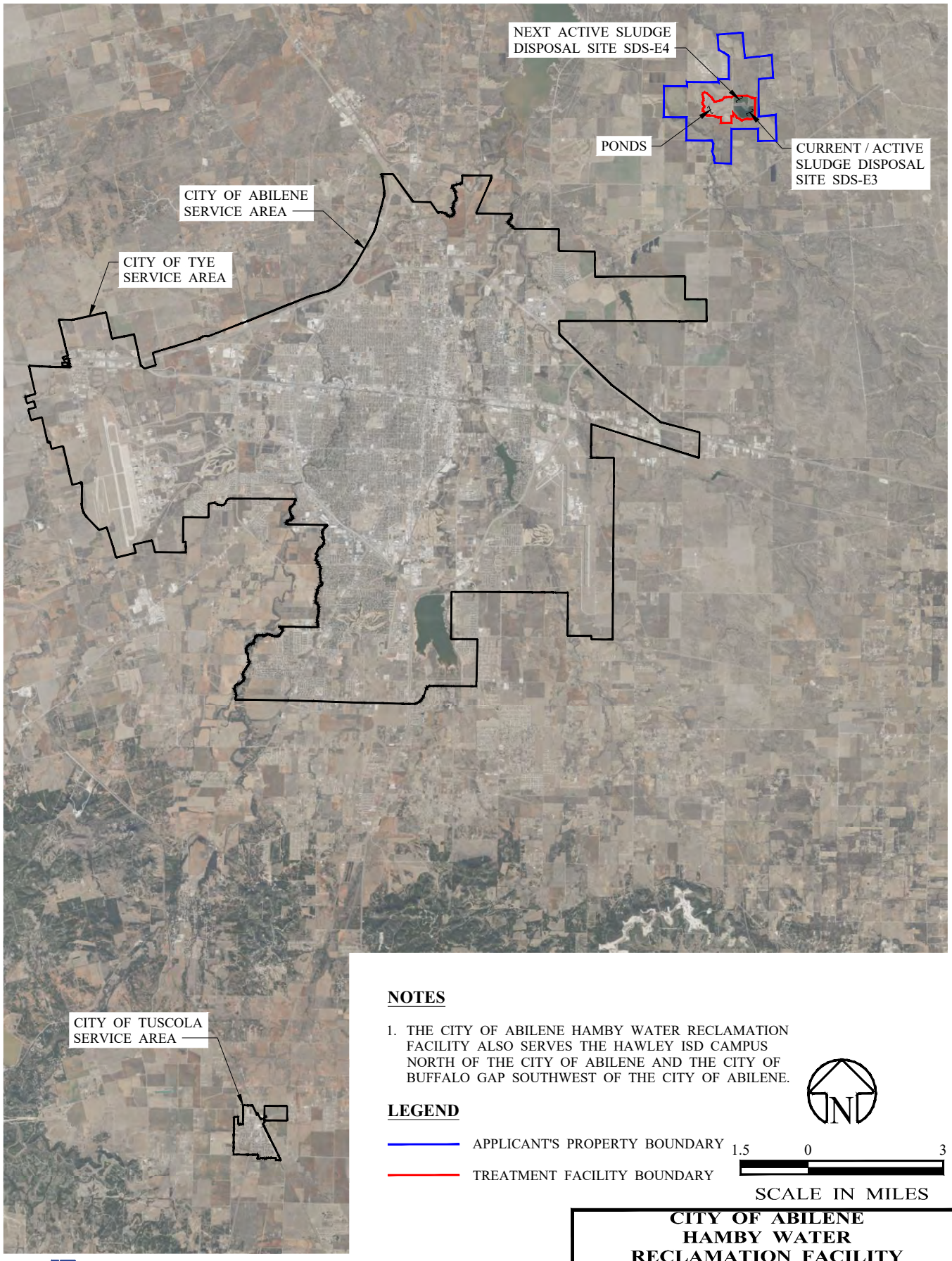
8801 04/09/2024

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Attachment DTR 1.0-3

Site Drawing

(AAR WS 6.0-1.E)



NOTES

1. THE CITY OF ABILENE HAMBY WATER RECLAMATION FACILITY ALSO SERVES THE HAWLEY ISD CAMPUS NORTH OF THE CITY OF ABILENE AND THE CITY OF BUFFALO GAP SOUTHWEST OF THE CITY OF ABILENE.

LEGEND

APPLICANT'S PROPERTY BOUNDARY

TREATMENT FACILITY BOUNDARY

1.5 0 3

SCALE IN MILES

CITY OF ABILENE
HAMBY WATER
RECLAMATION FACILITY
WQ0010334004

OVERALL SITE MAP

8801

04/09/2024

Enprotec | Hibbs & Todd
402 Cedar Street • Abilene, Texas 79601 • T: (325) 698-5560 • F: (325) 690-3240 • www.e-ht.com
PE Firm Registration No. 1151 • PG Firm Registration No. 50103 • RPLS Firm Registration No. 10011900

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Attachment DTR 1.0-6.C
Status of Permit-Specific Requirements

ATTACHMENT DTR 1.0-6.C

CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY
TPDES PERMIT MINOR AMENDMENT WITH RENEWAL APPLICATION

STATUS OF PERMIT-SPECIFIC REQUIREMENTS

The City of Abilene (City) owns and operates the Hamby Water Reclamation Facility (WRF), which is authorized by the Texas Commission on Environmental Quality (TCEQ) to treat and discharge wastewater under Texas Pollutant Discharge Elimination System (TPDES) permit No. WQ0010334004. The existing permit includes several Other Requirements provisions that require submission of information or other required actions. The following provides information on the status of any actions taken to meet the conditions of applicable Other Requirements provisions.

OTHER REQUIREMENTS NO. 1

Provision:
The permittee shall notify the TCEQ Regional Office (MC Region 3) and the Applications Review and Processing Team (MC 148) of the Water Quality Division, in writing at least forty- five (45) days prior to the completion of the new facilities for the Final phase on Notification of Completion Form 20007.

Status:
The facilities for the Final Phase of the Existing Permit have not yet been completed. Therefore, a notification of completion to the TCEQ Regional Office and the Applications Review and Processing Team of the Water Quality Division is not necessary at this time.

OTHER REQUIREMENT NO. 2

Provision:
Prior to construction of the Final phase treatment facilities, the permittee shall submit to the TCEQ Wastewater Permitting Section (MC 148) a summary transmittal letter in accordance with the requirements in 30 TAC Section 217.6(d). If requested by the Wastewater Permitting Section, the permittee shall submit plans, specifications and a final engineering design report which comply with 30 TAC Chapter 217, Design Criteria for Wastewater Treatment Systems. The permittee shall clearly show how the treatment system will meet the permitted effluent limitations required on Page 2c of this permit. A copy of the summary transmittal letter shall be available at the plant site for inspection by authorized representatives of the TCEQ.

Status:
Plans and specifications for the Final phase will be submitted accordingly prior to its construction.

OTHER REQUIREMENTS NO. 3

Provision:
Prior to introducing reverse osmosis reject water in the effluent stream to Outfall 001, the permittee shall submit a document to the Executive Director in care of the Wastewater Permitting Section (MC 148) of the Water Quality Division describing the water quality of and standard operating procedures for the disposal of reject water via Outfall 001.

The document shall provide data regarding the quality of the reject water as determined by samples collected and analyzed for those parameters listed in Tables 1 and 2 (see Attachment E), for a minimum of four (4) separate sampling events that are a minimum of one (1) week apart. The document shall include data regarding the quantity and quality of the final effluent proposed for discharge via Outfall 001, consisting of the comingled conventionally treated wastewater and the reject water. The document shall also provide the procedures proposed for monitoring and controlling reject water included in the treated effluent discharge via Outfall 001 in a manner that ensures that water quality standards in the receiving stream will continue to be maintained.

This permit may be reopened to require additional testing, and/ or other appropriate actions to address pollutants if the information provided in the document by the permittee demonstrates that the permittee's procedures for the reject water disposal via Outfall 001 may impair the receiving water quality as described in the Texas Surface Water Quality Standards, 30 TAC §307.

Status: Reverse osmosis reject water has not been introduced into the effluent stream of Outfall 001; therefore, a document describing the water quality of the reject water and the standard operating procedures of its disposal is not necessary at this time.

OTHER REQUIREMENTS NO. 16

Provision:
Permanent transmission lines shall be installed from the holding pond to each tract of land to be irrigated utilizing effluent from that pond.

Status: Note that there are no holding ponds for treated effluent since the irrigation for off-site landowners is not "disposal"; it is per the settlement agreement from the court order described in Attachment DAR 1.0-9.E.2. Permanent transmission lines have been installed for some time from the chlorine contact chamber (for one irrigator) and from the post-aeration basin for the remaining off-site irrigators. It is requested that the language be changed as follows:

Permanent transmission lines shall be maintained from the facility to each tract of land to be irrigated.

OTHER REQUIREMENTS NO. 22

Provision:
The permittee shall obtain representative soil samples from the root zones of the land application area receiving wastewater… If wastewater is not applied in a particular year, the permittee shall notify the same TCEQ offices and indicate that soil analysis results are not required to be submitted because wastewater has not been applied on the approved land irrigation site(s) during that year.

Status: Annual soil samples and/or reports are submitted as required.

Attachment DTR 1.0-7 & WS 4
Pollutant Analyses Analytical Results

City of Abilene
Environmental Laboratory Report

4209 East Lake Road
Phone: (325) 676-6043

Abilene, TX 79601
Fax: (325) 676-6044

Report To

Larry Bailey
INDUSTRIAL WASTE OFFICE
4209 E. Lake Rd.
Abilene, TX 79601

Sample Information

Project: Hamby WRF
Project Number: [none]
Collector:
Collector Phone: 676-6041
Date Received: 03/19/24 12:11
Received By:
Report Date: 04/03/2024

Effluent 001 **C4C1905-01** **Date Sample: 19-Mar-2024 8:40**

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Chloride	**240**	mg/L	1.0	EPA 300.0	CC42110	TJH	3/20/24 16:09	QM-11
Nitrate as N	**11.3**	mg/L	0.3	EPA 300.0	CC42110	TJH	3/20/24 16:09	O-04
Sulfate	**158**	mg/L	3.0	EPA 300.0	CC42110	TJH	3/20/24 16:09	
Alkalinity (P)	ND	mg/L	20.0	SM 2320 B	CC42503	AGS	3/25/24 10:00	AP-01
Alkalinity (T)	**130**	mg/L	20.0	SM 2320 B	CC42503	AGS	3/25/24 10:00	AT-01
Ammonia as N	**0.8**	mg/L	0.1	SM 4500-NH3-	CC42004	DC	3/20/24 12:30	
CBOD	**2.7**	mg/L	0.2	SM 5210 B	CC42012	CE	3/20/24 12:34	B-07, QR-02
Phosphorus, Total as P	**1.157**	mg/L	0.050	SM 4500 P B-F	CC42609	KDW	3/26/24 13:26	
Total Dissolved Solids	**834**	mg/L	25.0	SM 2540 C	CC42113	AGS	3/21/24 14:35	
Total Kjeldahl Nitrogen	**1.60**	mg/L	0.50	SM 4500 N-org	CC42601	JH	3/28/24 12:00	
Total Suspended Solids	ND	mg/L	2.50	SM 2540 D	CC42010	CE	3/20/24 9:51	
Conductivity @ 25C	**1540**	umhos/cm	1.00	SM 2510 B	CC42501	AGS	3/25/24 9:30	

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

Convential Chemistry Parameters by Standard Methods - Quality Control

City of Abilene

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch CC42004 - Gen Prep - ISE									
Blank (CC42004-BLK1)				Prepared & Analyzed: 03/20/24					
Ammonia as N	ND	0.1	mg/L						
Blank (CC42004-BLK2)				Prepared & Analyzed: 03/20/24					
Ammonia as N	ND	0.1	mg/L						
LCS (CC42004-BS1)				Prepared & Analyzed: 03/20/24					
Ammonia as N	5.3	0.1	mg/L	5.00		107	90-110		
Duplicate (CC42004-DUP1)		Source: C4C1901-01		Prepared & Analyzed: 03/20/24					
Ammonia as N	0.3	0.1	mg/L		0.3			2.45	15
Matrix Spike (CC42004-MS1)		Source: C4C1901-01		Prepared & Analyzed: 03/20/24					
Ammonia as N	3.5	0.1	mg/L	3.00	0.3	107	90-110		
Batch CC42010 - Gen Prep - Wet Chem									
Blank (CC42010-BLK1)				Prepared & Analyzed: 03/20/24					
Total Suspended Solids	ND	2.50	mg/L						
LCS (CC42010-BS1)				Prepared & Analyzed: 03/20/24					
Total Suspended Solids	98.0	2.50	mg/L	100		98.0	90-110		
Duplicate (CC42010-DUP1)		Source: C4C2001-02		Prepared & Analyzed: 03/20/24					
Total Suspended Solids	148	2.50	mg/L		148			0.00	10
Batch CC42012 - General Prep-BOD									
Blank (CC42012-BLK1)				Prepared & Analyzed: 03/20/24					
CBOD	ND	0.2	mg/L						

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch CC42012 - General Prep-BOD									
LCS (CC42012-BS1)				Prepared & Analyzed: 03/20/24					
CBOD	142	0.2	mg/L	198		71.5	85-115		
Duplicate (CC42012-DUP1)		Source: C4C1901-02		Prepared & Analyzed: 03/20/24					
CBOD	112	0.2	mg/L		135			18.6	15.4
Batch CC42113 - Gen Prep - Wet Chem									
Blank (CC42113-BLK1)				Prepared & Analyzed: 03/21/24					
Total Dissolved Solids	ND	25.0	mg/L						
LCS (CC42113-BS1)				Prepared & Analyzed: 03/21/24					
Total Dissolved Solids	993	25.0	mg/L	1000		99.3	90-110		
Duplicate (CC42113-DUP1)		Source: C4C2116-01		Prepared & Analyzed: 03/21/24					
Total Dissolved Solids	882	25.0	mg/L		890			0.903	10
Batch CC42503 - Gen Prep - Wet Chem									
Blank (CC42503-BLK1)				Prepared & Analyzed: 03/25/24					
Alkalinity (P)	ND	20.0	mg/L						
Alkalinity (T)	ND	20.0	"						
LCS (CC42503-BS1)				Prepared & Analyzed: 03/25/24					
Alkalinity (T)	115	20.0	mg/L	118		97.5	90-110		
Duplicate (CC42503-DUP1)		Source: C4C2116-01		Prepared & Analyzed: 03/25/24					
Alkalinity (P)	ND	20.0	mg/L		ND				15
Alkalinity (T)	132	20.0	"		132			0.00	15

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch CC42503 - Gen Prep - Wet Chem									
Matrix Spike (CC42503-MS1)		**Source: C4C2116-01**		Prepared & Analyzed: 03/25/24					
Alkalinity (T)	268	20.0	mg/L	142	132	96.0	90-110		
Batch CC42601 - Gen Prep - ISE									
Blank (CC42601-BLK1)				Prepared: 03/26/24 Analyzed: 03/28/24					
Total Kjeldahl Nitrogen	ND	0.50	mg/L						
LCS (CC42601-BS1)				Prepared: 03/26/24 Analyzed: 03/28/24					
Total Kjeldahl Nitrogen	6.65	0.50	mg/L	6.67		99.8	85-115		
Duplicate (CC42601-DUP1)		**Source: C4C1905-01**		Prepared: 03/26/24 Analyzed: 03/28/24					
Total Kjeldahl Nitrogen	1.55	0.50	mg/L		1.60			3.22	15
Matrix Spike (CC42601-MS1)		**Source: C4C1905-01**		Prepared: 03/26/24 Analyzed: 03/28/24					
Total Kjeldahl Nitrogen	8.51	0.50	mg/L	6.67	1.60	104	85-115		
Batch CC42609 - Gen Prep - Wet Chem									
Blank (CC42609-BLK1)				Prepared & Analyzed: 03/26/24					
Phosphorus, Total as P	ND	0.050	mg/L						
Blank (CC42609-BLK2)				Prepared & Analyzed: 03/26/24					
Phosphorus, Total as P	ND	0.050	mg/L						
LCS (CC42609-BS1)				Prepared & Analyzed: 03/26/24					
Phosphorus, Total as P	1.054	0.050	mg/L	1.00		105	90-110		

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch CC42609 - Gen Prep - Wet Chem									
Duplicate (CC42609-DUP1)		**Source: C4C0411-01**		Prepared & Analyzed: 03/26/24					
Phosphorus, Total as P	0.050	0.050	mg/L		0.053			5.83	15
Matrix Spike (CC42609-MS1)		**Source: C4C0411-01**		Prepared & Analyzed: 03/26/24					
Phosphorus, Total as P	0.303	0.050	mg/L	0.250	0.053	100	90-110		

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

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Miscellaneous Physical/Chemicals Parameters by SM - Quality Control

City of Abilene

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch CC42501 - Gen Prep - Wet Chem									
Blank (CC42501-BLK1)				Prepared & Analyzed: 03/25/24					
Conductivity @ 25C	ND	1.00	umhos/cm						
LCS (CC42501-BS1)				Prepared & Analyzed: 03/25/24					
Conductivity @ 25C	1440	1.00	umhos/cm	1410		102	90-110		
Duplicate (CC42501-DUP1)		**Source: C4C2116-01**		Prepared & Analyzed: 03/25/24					
Conductivity @ 25C	1500	1.00	umhos/cm		1490			0.335	15

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch CC42110 - Gen Prep - IC									
Blank (CC42110-BLK1)				Prepared & Analyzed: 03/20/24					
Chloride	ND	1.0	mg/L						
Sulfate	ND	3.0	"						
Nitrate as N	ND	0.3	"						
Blank (CC42110-BLK2)				Prepared & Analyzed: 03/20/24					
Chloride	ND	1.0	mg/L						
Nitrate as N	ND	0.3	"						
Sulfate	ND	3.0	"						
LCS (CC42110-BS1)				Prepared & Analyzed: 03/20/24					
Chloride	3.2	1.0	mg/L	3.00		106	90-110		
Nitrate as N	0.3	0.3	"	0.300		89.7	90-110		
Sulfate	2.7	3.0	"	3.00		91.4	90-110		
Duplicate (CC42110-DUP1)		**Source: C4C1503-01**		Prepared & Analyzed: 03/20/24					
Chloride	292	1.0	mg/L		283			3.16	15
Nitrate as N	9.6	0.3	"		8.8			7.93	15
Sulfate	183	3.0	"		179			1.78	15
Matrix Spike (CC42110-MS1)		**Source: C4C1503-01**		Prepared & Analyzed: 03/20/24					
Chloride	407	1.0	mg/L	96.9	283	128	80-120		
Nitrate as N	19.7	0.3	"	9.69	8.8	113	80-120		
Sulfate	295	3.0	"	96.9	179	119	80-120		

Notes and Definitions

QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
QM-11	Matrix spike recovery should not be calculated (EPA 300.0 9.4.1.1)
O-04	This sample was analyzed outside the EPA recommended holding time.
B-07	Glucose-Glutamic Acid control is outside of acceptable limits (167.5mg/L to 228.5mg/L).
AT-01	Alkalinity to pH 4.4 (inflection point)
AP-01	Alkalinity to pH 8.3
ND	Analyte NOT DETECTED at or below the reporting limit
NR	Not Reported
RPD	Relative Percent Difference

We are an Approved Public Water System Laboratory (AL2210001) for: Alkalinity, Chlorine Dioxide (2 methods), Free and Total Chlorine (2 methods), pH, POE Chlorite, Temperature, Turbidity (2 methods).

We are an Approved Drinking Water Laboratory (T104704320) for: Alkalinity, Calcium, Chlorine Dioxide (2 methods), Chlorite, Conductivity, Hardness, pH, Phosphate, Silica, Temperature, TOC, Total Chlorine, Turbidity, UV254.

We are not NELAP accredited in the DW matrix for: Alkalinity, Ammonia, Beryllium, Bromide, Chlorine Dioxide, Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Molybdenum, pH, Phosphate, Silver, TOC, UV254

We are not NELAP accredited in the NPW matrix for: Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Silver. We are not a certified calibration laboratory.

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm
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Michael Michaud
Laboratory Manager

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ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

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CITY OF ABILENE ENVIRONMENTAL — LABORATORY CHAIN OF CUSTODY

CITY OF ABILENE
INDUSTRIAL WASTE OFFICE

4209 East Lake Road
(325) 676-6041

Abilene, TX 79601
Fax: (325) 676-6044

ACCREDITED TNI LABORATORY

PROJECT
Weekly Monitoring
Monthly Monitoring
Monthly Monitoring
Well

Project ID: Hamby WRF
Comments: Permit Application Conventional Pollutants Analysis List

Sampler Signature / Name: L. Z. Bailey / Larry L. Bailey

Lab Use Only				Lab Use Only - Preservative Write check mark for each appropriately preserved bottle. Note improper preservation in comments box.						Matrix Type	Grab/ Comp	Container Type (P/G)	# Bottles	A CBOD	A TSS	A Nitrate-N	A TDS	B Sulfate	B Chloride	B T-Alkalinity	C Ammonia-N	C TKN	C T-Phosphorus	B Cond				
Laboratory ID	Sample ID	Collection Date	Collection Time	Bottle	T obs	T cor	pH	Ice?	preserv.																			
CUC1905	Effluent 001	03/18/24-03/19/24	0840-0820	A	9.9	9.9		Y	NONE	W W	C	P	3	√	√	√	√	√	√	√	√	√	√	√				
				B	9.9	9.9		Y	NONE																			
				C	9.9	9.9		Y	H2SO4																			

Preservatives: Metals=HNO3, FOG/TPH=H2SO4, Cyanide=NaOH

Note: pH&Temp taken in field are on grab samples

Relinquished By: L. Z. Bailey — Date: 3/19/24 Time: 12:11

Received By: Dan Winn — Date: 3.19.24 Time: 12:11

Relinquished By: _____ — Date: _____ Time: _____

Received By: _____ — Date: _____ Time: _____

Comments

Password: _____
pH paper lot: FAOO3990
Thermometer number: 206
Correction Factor: 0.0°

Temperatures circled do not conform to federal regulations.
* On ice, but inadequate time to reach ≤6° C.
** Circle the metals to be analyzed Ag Al As Ba Be Ca Cd Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Se Si Sr Zn __ __ __(__ Total __ Dissolved)
*** Industrial Waste Metals

Revised 10/29/19

POLLUTANT ANALYSIS OF TREATED EFFLUENT [>1 MGD WWTP for Hamby WRF]

Provide an analysis of the effluent for all the constituents listed below, including those constituents that are not required to be monitored in the existing permit. Include the maximum sample analysis if more than one sample is taken. Provide the number of samples analyzed, the type of sample, whether grab or composite, and the date and time the sample(s) were collected. Collect the type of sample (grab or composite) as required in the permit, if specified*. Analytical data provided in the application must be sampled no later than one year prior to the date the application is submitted to the TCEQ. Provide copies of the laboratory results sheet(s), QA/QC sheet(s), and chain-of-custody.

All sampling and laboratory testing methods should be performed according to 30 TAC Chapter 319, General Regulations Incorporated into Permits and 30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification. All testing must conform to EPA approved methodologies for sample collection, preservation, analysis, and detection levels. In addition, this data must comply with the QA/QC requirements of *40 CFR Part 136* and other appropriate QA/QC requirements for standard and suggested methods for analytes not addressed by *40 CFR Part 136*.

Collect DO in the early morning, before 9:00 a.m. Sample Chlorine Residual at the same time as *E coli*. If the sample for the other parameters is not obtained at the same time as the DO sample, provide the additional time of sampling. For pH, provide minimum and maximum values. Field results for these constituents are acceptable.

POLLUTANT	CONCENTRATION AVG. MAX.	NUMBER OF SAMPLES	TYPE OF SAMPLE*	SAMPLE DATE/TIME
(1) CBOD5 mg/l	2.7	1	Composite*	18-19Mar2024 0840-0820
(2) Total Suspended Solids, mg/l	<2.50	1	Composite*	18-19Mar2024 0840-0820
(3) Ammonia-Nitrogen, mg/l	0.8	1	Composite*	18-19Mar2024 0840-0820
(4) Nitrate-Nitrogen, mg/l	11.3	1	Composite	18-19Mar2024 0840-0820
(5) Total Kjeldahl Nitrogen, mg/l	1.60	1	Composite	18-19Mar2024 0840-0820
(6) Sulfate, mg/l	158	1	Composite	18-19Mar2024 0840-0820
(7) Chloride, mg/l	240	1	Composite	18-19Mar2024 0840-0820
(8) Total Phosphorus, mg/l	1.157	1	Composite	18-19Mar2024 0840-0820
(9) pH, standard units	7.6	1	Grab*	18Mar2024 0830
(10) Dissolved Oxygen, mg/l	7.8	1	Grab*	18Mar2024 0830
(11) Chlorine Residual, mg/l	<0.1	1	Grab*	18Mar2024 0830
(12) *E. coli* (colonies/100ml)	<1	1	Grab*	18Mar2024 0915
(13) TDS, mg/l; Conductivity, umhos/cm	834;1540	1	Composite	18Mar2024 0836
(13) Oil & Grease, mg/l	<5.0	1	Grab	18-19Mar2024 0840-0820
(14) Alkalinity (CaCO3), mg/l	130	1	Composite	18-19Mar2024 0840-0820

* Sample Type denoted in current permit

Field Results Provided by From City via email on 04/11/2024

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Project
1096074

ABLN-W

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Printed 04/04/2024
16:10

TABLE OF CONTENTS

This report consists of this Table of Contents and the following pages:

Report Name	Description	Pages
1096074_r02_01_ProjectSamples	SPL Kilgore Project P:1096074 C:ABLN Project Sample Cross Reference t:304	2
1096074_r03_03_ProjectResults	SPL Kilgore Project P:1096074 C:ABLN Project Results t:304 PO: 41505	5
1096074_r10_05_ProjectQC	SPL Kilgore Project P:1096074 C:ABLN Project Quality Control Groups	9
1096074_r99_09_CoC__1_of_1	SPL Kilgore CoC ABLN 1096074_1_of_1	3
	Total Pages:	19

Email: Kilgore.ProjectManagement@spllabs.com

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1

SAMPLE CROSS REFERENCE

Project
1096074

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Sample	Sample ID	Taken	Time	Received
2282557	*Semi-Annual Grab EFF 001*	03/19/2024	17:00:00	03/20/2024

Bottle 01 Polyethylene 1/2 gal (White)
Bottle 02 HDPE - 500 ml unpreserved
Bottle 03 HDPE - 500 ml unpreserved
Bottle 04 HDPE - 500 ml unpreserved
Bottle 05 HDPE - 500 ml unpreserved
Bottle 06 H2SO4 to pH <2 Amber Glass 250 mL w/Teflon lined lid(4)
Bottle 07 H2SO4 to pH <2 Amber Glass 250 mL w/Teflon lined lid(4)
Bottle 08 H2SO4 to pH <2 Amber Glass 250 mL w/Teflon lined lid(4)
Bottle 09 H2SO4 to pH <2 Amber Glass 250 mL w/Teflon lined lid(4)
Bottle 10 NaOH to pH >12 Polyethylene 250 mL/amber
Bottle 11 NaOH to pH >12 Polyethylene 250 mL/amber
Bottle 12 NaOH to pH >12 Polyethylene 250 mL/amber
Bottle 13 NaOH to pH >12 Polyethylene 250 mL/amber
Bottle 14 Na2S2O3 (0.008%) Glass 40 mL vial w/Teflon lined lid (zero headspace)
Bottle 15 Na2S2O3 (0.008%) Glass 40 mL vial w/Teflon lined lid (zero headspace)
Bottle 16 Na2S2O3 (0.008%) Glass 40 mL vial w/Teflon lined lid (zero headspace)
Bottle 17 Na2S2O3 (0.008%) Glass 40 mL vial w/Teflon lined lid (zero headspace)
Bottle 18 Glass Vial 40 mL (Zero Headspace) w/Teflon lined lid
Bottle 19 Glass Vial 40 mL (Zero Headspace) w/Teflon lined lid
Bottle 20 Glass Vial 40 mL (Zero Headspace) w/Teflon lined lid
Bottle 21 Glass Vial 40 mL (Zero Headspace) w/Teflon lined lid
Bottle 22 Prepared Bottle: CN TRAACS Autosampler Vial (Batch 1110222) Volume: 10.00000 mL <== Derived from 10 (5 ml)
Bottle 23 Prepared Bottle: CN TRAACS Autosampler Vial (Batch 1110222) Volume: 10.00000 mL <== Derived from 10 (5 ml)
Bottle 24 Prepared Bottle: CN TRAACS Autosampler Vial (Batch 1110222) Volume: 10.00000 mL <== Derived from 10 (5 ml)
Bottle 25 Prepared Bottle: CN TRAACS Autosampler Vial (Batch 1110233) Volume: 10.00000 mL <== Derived from 10 (5 ml)
Bottle 26 Prepared Bottle: CN TRAACS Autosampler Vial (Batch 1110233) Volume: 10.00000 mL <== Derived from 10 (5 ml)
Bottle 27 Prepared Bottle: CN TRAACS Autosampler Vial (Batch 1110233) Volume: 10.00000 mL <== Derived from 10 (5 ml)
Bottle 28 Prepared Bottle: Phenol TRAACS Autosampler Vial (Batch 1110164) Volume: 6.00000 mL <== Derived from 06 (6 ml)
Bottle 29 HCl to pH <2 glass 40 mL vial (Zero Headspace)/3 (Batch 1110523) Volume: 1.00000 mL <== Derived from 14 (1 ml)
Bottle 30 HCl to pH <2 glass 40 mL vial (Zero Headspace)/3 (Batch 1110524) Volume: 1.00000 mL <== Derived from 14 (1 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
EPA 624.1	29	1110523	03/21/2024	1110690	03/21/2024
EPA 624.1	30	1110524	03/21/2024	1110920	03/22/2024
SM 4500-CN¯ G-2016			03/25/2024		03/25/2024
SM 4500-CN¯ G-2016	25	1110233	03/20/2024	1110902	03/22/2024
SM 4500-CN¯ E-2016	22	1110222	03/20/2024	1110899	03/22/2024
SM 3500-Cr B-2011	01	1110434	03/20/2024	1110434	03/20/2024
SM 3500-Cr B-2009			03/21/2024		03/21/2024
EPA 420.4 1	28	1110164	03/20/2024	1110500	03/21/2024

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1

SAMPLE CROSS REFERENCE

Project
1096074

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

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City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Project
1096074

Printed: 04/04/2024

RESULTS

Sample Results

2282557 **Semi-Annual Grab EFF 001** 4 part grab Received: 03/20/2024

Non-Potable Water Collected by: Client City of Abilene PO: 41505

Composite Stop 17:00 3/19/24 Taken: 03/19/2024 17:00:00

1. Date 3/18/24 Time 1700 Tech ZB
2. Date 3/18/24 Time 2300 Tech ZB
3. Date 3/19/24 Time 0500 Tech ZB
4. Date 3/19/24 Time 1100 Tech ZB

EPA 420.4 1 Prepared: 1110164 03/20/2024 14:15:00 Analyzed 1110500 03/21/2024 11:50:00 AMB

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Phenolics, Total Recoverable	<0.003	mg/L	0.003			28

EPA 624.1 Prepared: 1110523 03/21/2024 13:04:00 Analyzed 1110690 03/21/2024 13:04:00 PM1

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Acrolein	<4.00	ug/L	4.00	S	107-02-8	29
NELAC	Acrylonitrile	<2.00	ug/L	2.00		107-13-1	29

EPA 624.1 Prepared: 1110524 03/21/2024 10:10:00 Analyzed 1110920 03/22/2024 17:50:00 MR1

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	1,1,1-Trichloroethane	<1.00	ug/L	1.00	X	71-55-6	30
NELAC	1,1,2,2-Tetrachloroethane	<1.00	ug/L	1.00		79-34-5	30
NELAC	1,1,2-Trichloroethane	<1.00	ug/L	1.00		79-00-5	30
NELAC	1,1-Dichloroethane	<1.00	ug/L	1.00		75-34-3	30
NELAC	1,1-Dichloroethylene	<1.00	ug/L	1.00		75-35-4	30
NELAC	1,2-Dibromoethane (EDB)	<1.00	ug/L	1.00		106-93-4	30
NELAC	1,2-Dichloroethane	<1.00	ug/L	1.00	X	107-06-2	30
NELAC	1,2-Dichloropropane	<1.00	ug/L	1.00		78-87-5	30
NELAC	2-Chloroethylvinyl ether	<1.00	ug/L	1.00		110-75-8	30
NELAC	Benzene	<1.00	ug/L	1.00		71-43-2	30
NELAC	Bromodichloromethane	12.1	ug/L	1.00		75-27-4	30
NELAC	Bromoform	4.82	ug/L	1.00		75-25-2	30
NELAC	Bromomethane (Methyl Bromi	<1.00	ug/L	1.00		74-83-9	30
NELAC	Carbon Tetrachloride	<1.00	ug/L	1.00	X	56-23-5	30
NELAC	Chlorobenzene	<1.00	ug/L	1.00		108-90-7	30
NELAC	Chloroethane	<1.12	ug/L	1.12		75-00-3	30
NELAC	Chloroform	9.98	ug/L	1.00		67-66-3	30

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City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Printed: 04/04/2024

2282557 **Semi-Annual Grab EFF 001** 4 part grab Received: 03/20/2024

Non-Potable Water Collected by: Client City of Abilene PO: 41505
Composite Stop 17:00 3/19/24 Taken: 03/19/2024 17:00:00

1. Date 3/18/24 Time 1700 Tech ZB
2. Date 3/18/24 Time 2300 Tech ZB
3. Date 3/19/24 Time 0500 Tech ZB
4. Date 3/19/24 Time 1100 Tech ZB

EPA 624.1 Prepared: 1110524 03/21/2024 10:10:00 Analyzed 1110920 03/22/2024 17:50:00 MR1

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Chloromethane (Methyl Chloride)	<1.00	ug/L	1.00		74-87-3	30
NELAC	cis-1,3-Dichloropropene	<1.00	ug/L	1.00		10061-01-5	30
NELAC	Dibromochloromethane	17.0	ug/L	1.00		124-48- 1	30
NELAC	Dichloromethane	<1.02	ug/L	1.02		75-09-2	30
NELAC	Ethylbenzene	<1.00	ug/L	1.00		100-41-4	30
NELAC	Hexachlorobutadiene	<2.00	ug/L	2.00		87-68-3	30
NELAC	m-Dichlorobenzene (1,3-DCB)	<1.00	ug/L	1.00		541-73-1	30
NELAC	Methyl ethyl ketone (Butanone)	<1.00	ug/L	1.00	X	78-93-3	30
NELAC	o-Dichlorobenzene (1,2-DCB)	<1.00	ug/L	1.00		95-50-1	30
NELAC	p-Dichlorobenzene (1,4-DCB)	<1.00	ug/L	1.00		106-46-7	30
NELAC	Tetrachloroethylene	<1.00	ug/L	1.00		127-18-4	30
NELAC	Toluene	<1.00	ug/L	1.00		108-88-3	30
NELAC	trans-1,2-Dichloroethylene	<1.00	ug/L	1.00		156-60-5	30
NELAC	trans-1,3-Dichloropropene	<1.00	ug/L	1.00		10061-02-6	30
NELAC	Trichloroethylene	<1.00	ug/L	1.00		79-01-6	30
NELAC	Vinyl chloride	<1.00	ug/L	1.00		75-01-4	30

EPA 624.1 Prepared: 1110524 03/21/2024 10:10:00 Calculated 1110920 03/27/2024 13:38:39 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Trihalomethanes	0.0439	mg/L	0.001			30

SM 3500-Cr B-2009 Prepared: 03/21/2024 09:14:54 Calculated 03/21/2024 09:14:54 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Hexavalent Chromium/Comp	Verified				18540-29-9	

SM 3500-Cr B-2011 Prepared: 1110434 03/20/2024 10:35:00 Analyzed 1110434 03/20/2024 10:35:00 ALB

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Hexavalent Chromium	<3.00	ug/L	3.00		18540-29-9	01

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1096074

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Printed: 04/04/2024

2282557 **Semi-Annual Grab EFF 001** 4 part grab Received: 03/20/2024

Non-Potable Water Collected by: Client City of Abilene PO: 41505
Composite Stop 17:00 3/19/24 Taken: 03/19/2024 17:00:00

1. Date 3/18/24 Time 1700 Tech ZB
2. Date 3/18/24 Time 2300 Tech ZB
3. Date 3/19/24 Time 0500 Tech ZB
4. Date 3/19/24 Time 1100 Tech ZB

SM 4500-CN⁻ E-2016 Prepared: 1110222 03/20/2024 12:50:50 Analyzed 1110899 03/22/2024 08:15:00 AMB

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Cyanide, total	<0.00238	mg/L	0.00238			22

SM 4500-CN⁻ G-2016 Prepared: 03/25/2024 11:07:53 Calculated 03/25/2024 11:07:53 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Cyanide - Available/Amenable	<0.00238	mg/L	0.00238			

SM 4500-CN⁻ G-2016 Prepared: 1110233 03/20/2024 13:22:46 Analyzed 1110902 03/22/2024 08:15:00 AMB

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Cyanide After Chlorination	<0.00238	mg/L	0.00238			25

Sample Preparation

2282557 **Semi-Annual Grab EFF 001** 4 part grab Received: 03/20/2024

41505

Composite Stop 17:00 3/19/24 03/19/2024

Prepared: 03/21/2024 09:14:54 Calculated 03/21/2024 09:14:54 CAL

z	Environmental Fee (per Project)	Verified					

Prepared: 1110524 03/21/2024 10:10:00 Analyzed 1110524 03/21/2024 10:10:00 CCH

NELAC	Composite VOA vial pre-injection	1/1	ml				14
NELAC	Composite VOA vial pre-injection	1/1	ml				14

Composite Sample Prepared: 1110169 03/20/2024 10:20:00 Analyzed 1110169 03/20/2024 10:20:00 RDT

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1096074

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Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Printed: 04/04/2024

2282557 **Semi-Annual Grab EFF 001** 4 part grab Received: 03/20/2024

41505

Composite Stop 17:00 3/19/24 03/19/2024

Composite Sample			*Prepared:*	*1110169*	*03/20/2024*	*10:20:00*	*Analyzed*	*1110169*	*03/20/2024*	*10:20:00*	*RDT*
	Composite Sample	**MIXED**	**4 BOTTLES**								
EPA 420.4 1			*Prepared:*	*1110164*	*03/20/2024*	*14:15:00*	*Analyzed*	*1110164*	*03/20/2024*	*14:15:00*	*SRJ*
NELAC	**Phenol Distillation**	**6/6**	**ml**								06
EPA 624.1			*Prepared:*	*1110523*	*03/21/2024*	*13:04:00*	*Analyzed*	*1110690*	*03/21/2024*	*13:04:00*	*PM1*
NELAC	**Acrolein/Acrylonitrile Exp.**	**Entered**									29
EPA 624.1			*Prepared:*	*1110524*	*03/21/2024*	*10:10:00*	*Analyzed*	*1110920*	*03/22/2024*	*17:50:00*	*MR1*
NELAC	**Volatile Permit Renewal**	**Entered**									30
SM 4500-CN⁻C-2016			*Prepared:*	*1110222*	*03/20/2024*	*12:50:50*	*Analyzed*	*1110222*	*03/20/2024*	*12:50:50*	*MEG*
NELAC	**Cyanide Distillation**	**10/5**	**ml**								10
SM 4500-CN⁻C-2016			*Prepared:*	*1110233*	*03/20/2024*	*13:22:46*	*Analyzed*	*1110233*	*03/20/2024*	*13:22:46*	*MEG*
NELAC	**CN Dist After Chlorination**	**10/5**	**ml**								10

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ABLN-W

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Project
1096074

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Qualifiers:

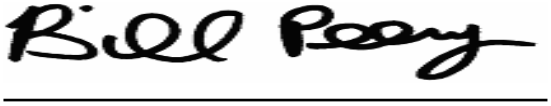
X - Standard reads higher than desired. S - Standard reads lower than desired

We report results on an As Received (or Wet) basis unless marked Dry Weight.

Unless otherwise noted, testing was performed at SPL, Inc.- Kilgore laboratory which holds International, Federal, and state accreditations. Please see our Websites for details.

(N)ELAC - Covered in our NELAC scope of accreditation
z -- Not covered by our NELAC scope of accreditation

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of SPL Kilgore. Unless otherwise specified, these test results meet the requirements of NELAC.
RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.



Bill Peery, MS, VP Technical Services

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Analytical Set 1110500 — EPA 420.4 1

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Phenolics, Total Recoverable	1110164	ND	0.003	0.005	mg/L	126123151

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phenolics, Total Recoverable	0.195	0.200	mg/L	97.5	90.0 - 110	126123116
Phenolics, Total Recoverable	0.200	0.200	mg/L	100	90.0 - 110	126123124
Phenolics, Total Recoverable	0.200	0.200	mg/L	100	90.0 - 110	126123135
Phenolics, Total Recoverable	0.195	0.200	mg/L	97.5	90.0 - 110	126123146
Phenolics, Total Recoverable	0.200	0.200	mg/L	100	90.0 - 110	126123153
Phenolics, Total Recoverable	0.188	0.200	mg/L	94.0	90.0 - 110	126123163

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD		Limit%
Phenolics, Total Recoverable	2282239	0.011	0.015	mg/L	30.8	*	20.0

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phenolics, Total Recoverable	0.202	0.200	mg/L	101	90.0 - 110	126123115

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Phenolics, Total Recoverable	1110164	0.185	0.194	0.200	90.0 - 110	92.5	97.0	mg/L	4.75	20.0

Mat. Spike

Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Phenolics, Total Recoverable	2282239	0.203	0.015	0.200	mg/L	94.0	90.0 - 110	126123157

Analytical Set 1110899 — SM 4500-CN⁻ E-2016

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Cyanide, total	1110222	ND	0.00238	0.005	mg/L	126133470

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Cyanide, total	0.539	0.500	mg/L	108	90.0 - 110	126133469
Cyanide, total	0.546	0.500	mg/L	109	90.0 - 110	126133479
Cyanide, total	0.533	0.500	mg/L	107	90.0 - 110	126133489
Cyanide, total	0.539	0.500	mg/L	108	90.0 - 110	126133494
Cyanide, total	0.546	0.500	mg/L	109	90.0 - 110	126133499

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Cyanide, total	2282557	ND	ND	mg/L		20.0

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File

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ICV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Cyanide, total	0.209	0.200	mg/L	104	90.0 - 110	126133468

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Cyanide, total	1110222	0.430	0.420	0.400	90.0 - 110	108	105	mg/L	2.35	20.0

Mat. Spike

Parameter	*Sample*	*Spike*	*Unknown*	*Known*	*Units*	*Recovery %*	*Limits %*	*File*
Cyanide, total	2282557	0.426	ND	0.400	mg/L	106	90.0 - 110	126133475

Analytical Set 1110902 — SM 4500-CN⁻ G-2016

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Cyanide After Chlorination	1110233	ND	0.00119	0.0025	mg/L	126133504

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Cyanide After Chlorination	0.539	0.500	mg/L	108	90.0 - 110	126133501
Cyanide After Chlorination	0.546	0.500	mg/L	109	90.0 - 110	126133502
Cyanide After Chlorination	0.533	0.500	mg/L	107	90.0 - 110	126133503
Cyanide After Chlorination	0.539	0.500	mg/L	108	90.0 - 110	126133507
Cyanide After Chlorination	0.546	0.500	mg/L	109	90.0 - 110	126133513

Duplicate

Parameter	*Sample*	*Result*	*Unknown*	*Unit*	*RPD*	*Limit%*
Cyanide After Chlorination	2282557	ND	ND	mg/L		20.0

ICV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Cyanide After Chlorination	0.209	0.200	mg/L	104	90.0 - 110	126133500

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Cyanide After Chlorination	1110233	0.217	0.209	0.200	90.0 - 110	108	104	mg/L	3.76	20.0

Mat. Spike

Parameter	*Sample*	*Spike*	*Unknown*	*Known*	*Units*	*Recovery %*	*Limits %*	*File*
Cyanide After Chlorination	2282557	0.404	ND	0.400	mg/L	101	90.0 - 110	126133510

Analytical Set 1110434 — SM 3500-Cr B-2011

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Hexavalent Chromium	1110434	ND	0.550	3.00	ug/L	126121834
Hexavalent Chromium	1110434	ND	0.550	3.00	ug/L	126121843

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*

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CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Hexavalent Chromium	75.0	80.0	ug/L	93.8	90.0 - 110	126121835
Hexavalent Chromium	75.3	80.0	ug/L	94.1	90.0 - 110	126121844

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Hexavalent Chromium	1110434	73.4	74.8	80.0	85.0 - 115	91.8	93.5	ug/L	1.89	15.0

MSD

Parameter	*Sample*	*MS*	*MSD*	*UNK*	*Known*	*Limits*	*MS%*	*MSD%*	*Units*	*RPD*	*Limit%*
Hexavalent Chromium	2282463	63.4	62.3	ND	80.0	70.0 - 130	79.2	77.9	ug/L	1.75	20.0

Analytical Set 1110690 — EPA 624.1

BFB

Parameter	*Sample*	*RefMass*	*Reading*	*%*	*Limits%*	*File*
BFB Mass 173	1110690	174	5	1.4	0 - 2.00	126127706
BFB Mass 174	1110690	95.0	355	70.1	50.0 - 100	126127706
BFB Mass 175	1110690	174	24	6.8	5.00 - 9.00	126127706
BFB Mass 176	1110690	174	339	95.7	95.0 - 101	126127706
BFB Mass 177	1110690	176	17	5.1	5.00 - 9.00	126127706
BFB Mass 50	1110690	95.0	84	16.7	15.0 - 40.0	126127706
BFB Mass 75	1110690	95.0	246	48.6	30.0 - 60.0	126127706
BFB Mass 95	1110690	95.0	506	100.0	100 - 100	126127706
BFB Mass 96	1110690	95.0	26	5.2	5.00 - 9.00	126127706

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Acrolein	1110690	ND	3.14	4.00	ug/L	126127710
Acrylonitrile	1110690	ND	1.43	2.00	ug/L	126127710

IS Areas

Parameter	*Sample*	*Type*	*Reading*	*CCVISM*	*Low*	*High*	*File*	*PrepSet*
1,4-DichlorobenzeneD4 (ISTD)	1110690	LCS	76150	67870	33930	101800	126127708	1110690
1,4-DichlorobenzeneD4 (ISTD)	1110690	LCS Dup	75120	67870	33930	101800	126127709	1110690
1,4-DichlorobenzeneD4 (ISTD)	1110690	Blank	65330	67870	33930	101800	126127710	1110690
ChlorobenzeneD5 (ISTD)	1110690	LCS	139000	126500	63240	189700	126127708	1110690
ChlorobenzeneD5 (ISTD)	1110690	LCS Dup	138300	126500	63240	189700	126127709	1110690
ChlorobenzeneD5 (ISTD)	1110690	Blank	133800	126500	63240	189700	126127710	1110690
1,4-DichlorobenzeneD4 (ISTD)	2282497	MS	69090	67870	33930	101800	126127714	1110690
1,4-DichlorobenzeneD4 (ISTD)	2282497	MSD	66620	67870	33930	101800	126127715	1110690
ChlorobenzeneD5 (ISTD)	2282497	MS	128700	126500	63240	189700	126127714	1110690
ChlorobenzeneD5 (ISTD)	2282497	MSD	122300	126500	63240	189700	126127715	1110690
1,4-DichlorobenzeneD4 (ISTD)	2282557	Unknown	59990	67870	33930	101800	126127711	1110523
ChlorobenzeneD5 (ISTD)	2282557	Unknown	123800	126500	63240	189700	126127711	1110523

IS RetTime

Parameter	*Sample*	*Type*	*Reading*	*CCVISM*	*Low*	*High*	*File*	*PrepSet*

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IS RetTime

Parameter	*Sample*	*Type*	*Reading*	*CCVISM*	*Low*	*High*	*File*	*PrepSet*
1,4-DichlorobenzeneD4 (ISTD)	1110690	LCS	11.10	11.10	11.04	11.16	126127708	1110690
1,4-DichlorobenzeneD4 (ISTD)	1110690	LCS Dup	11.10	11.10	11.04	11.16	126127709	1110690
1,4-DichlorobenzeneD4 (ISTD)	1110690	Blank	11.10	11.10	11.04	11.16	126127710	1110690
ChlorobenzeneD5 (ISTD)	1110690	LCS	8.735	8.736	8.676	8.796	126127708	1110690
ChlorobenzeneD5 (ISTD)	1110690	LCS Dup	8.735	8.736	8.676	8.796	126127709	1110690
ChlorobenzeneD5 (ISTD)	1110690	Blank	8.735	8.736	8.676	8.796	126127710	1110690
1,4-DichlorobenzeneD4 (ISTD)	2282497	MS	11.10	11.10	11.04	11.16	126127714	1110690
1,4-DichlorobenzeneD4 (ISTD)	2282497	MSD	11.10	11.10	11.04	11.16	126127715	1110690
ChlorobenzeneD5 (ISTD)	2282497	MS	8.735	8.736	8.676	8.796	126127714	1110690
ChlorobenzeneD5 (ISTD)	2282497	MSD	8.735	8.736	8.676	8.796	126127715	1110690
1,4-DichlorobenzeneD4 (ISTD)	2282557	Unknown	11.10	11.10	11.04	11.16	126127711	1110523
ChlorobenzeneD5 (ISTD)	2282557	Unknown	8.735	8.736	8.676	8.796	126127711	1110523

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Acrolein	1110690	26.4	23.9	40.0	60.0 - 140	66.0	59.8 *	ug/L	9.86	30.0
Acrylonitrile	1110690	33.9	29.2	40.0	60.0 - 140	84.8	73.0	ug/L	15.0	30.0

MSD

Parameter	*Sample*	*MS*	*MSD*	*UNK*	*Known*	*Limits*	*MS%*	*MSD%*	*Units*	*RPD*	*Limit%*
Acrolein	2282497	31.7	15.5	ND	400	40.0 - 160	7.92 *	3.88 *	ug/L	68.6 *	60.0
Acrylonitrile	2282497	240	224	ND	400	40.0 - 160	60.0	56.0	ug/L	6.90	60.0

Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
1,2-DCA-d4 (SURR)	1110690	LCS	18.1	20.0	ug/L	90.5	70.0 - 130	126127708
1,2-DCA-d4 (SURR)	1110690	LCS Dup	18.5	20.0	ug/L	92.5	70.0 - 130	126127709
1,2-DCA-d4 (SURR)	1110690	Blank	18.4	20.0	ug/L	92.0	70.0 - 130	126127710
Bromofluorobenzene (SURR)	1110690	LCS	20.9	20.0	ug/L	104	70.0 - 130	126127708
Bromofluorobenzene (SURR)	1110690	LCS Dup	20.6	20.0	ug/L	103	70.0 - 130	126127709
Bromofluorobenzene (SURR)	1110690	Blank	20.3	20.0	ug/L	102	70.0 - 130	126127710
Dibromofluoromethane (SURR)	1110690	LCS	19.2	20.0	ug/L	96.0	70.0 - 130	126127708
Dibromofluoromethane (SURR)	1110690	LCS Dup	18.8	20.0	ug/L	94.0	70.0 - 130	126127709
Dibromofluoromethane (SURR)	1110690	Blank	18.6	20.0	ug/L	93.0	70.0 - 130	126127710
TolueneD8 (SURR)	1110690	LCS	18.6	20.0	ug/L	93.0	70.0 - 130	126127708
TolueneD8 (SURR)	1110690	LCS Dup	18.4	20.0	ug/L	92.0	70.0 - 130	126127709
TolueneD8 (SURR)	1110690	Blank	17.9	20.0	ug/L	89.5	70.0 - 130	126127710
1,2-DCA-d4 (SURR)	2282497	MS	18.8	20.0	ug/L	94.0	70.0 - 130	126127714
1,2-DCA-d4 (SURR)	2282497	MSD	19.2	20.0	ug/L	96.0	70.0 - 130	126127715
Bromofluorobenzene (SURR)	2282497	MS	21.1	20.0	ug/L	106	70.0 - 130	126127714
Bromofluorobenzene (SURR)	2282497	MSD	20.9	20.0	ug/L	104	70.0 - 130	126127715
Dibromofluoromethane (SURR)	2282497	MS	19.0	20.0	ug/L	95.0	70.0 - 130	126127714
Dibromofluoromethane (SURR)	2282497	MSD	19.2	20.0	ug/L	96.0	70.0 - 130	126127715
TolueneD8 (SURR)	2282497	MS	18.8	20.0	ug/L	94.0	70.0 - 130	126127714
TolueneD8 (SURR)	2282497	MSD	18.5	20.0	ug/L	92.5	70.0 - 130	126127715
1,2-DCA-d4 (SURR)	2282557	Unknown	18.8	20.0	ug/L	94.0	70.0 - 130	126127711

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ABLN-W

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Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Bromofluorobenzene (SURR)	2282557	Unknown	20.1	20.0	ug/L	100	70.0 - 130	126127711
Dibromofluoromethane (SURR)	2282557	Unknown	19.0	20.0	ug/L	95.0	70.0 - 130	126127711
TolueneD8 (SURR)	2282557	Unknown	18.2	20.0	ug/L	91.0	70.0 - 130	126127711

Analytical Set 1110920 EPA 624.1

BFB

Parameter	*Sample*	*RefMass*	*Reading*	*%*	*Limits%*	*File*
BFB Mass 173	1110920	174	0	0.0	0 - 2.00	126133763
BFB Mass 174	1110920	95.0	6173	53.0	50.0 - 100	126133763
BFB Mass 175	1110920	174	498	8.1	5.00 - 9.00	126133763
BFB Mass 176	1110920	174	6074	98.4	95.0 - 101	126133763
BFB Mass 177	1110920	176	409	6.7	5.00 - 9.00	126133763
BFB Mass 50	1110920	95.0	2215	19.0	15.0 - 40.0	126133763
BFB Mass 75	1110920	95.0	5844	50.2	30.0 - 60.0	126133763
BFB Mass 95	1110920	95.0	11650	100.0	100 - 100	126133763
BFB Mass 96	1110920	95.0	817	7.0	5.00 - 9.00	126133763

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
1,1,1-Trichloroethane	1110920	ND	0.531	1.00	ug/L	126133767
1,1,2-Trichloroethane	1110920	ND	0.563	1.00	ug/L	126133767
1,1-Dichloroethane	1110920	ND	0.593	1.00	ug/L	126133767
1,1-Dichloroethylene	1110920	ND	0.574	1.00	ug/L	126133767
1,2-Dibromoethane (EDB)	1110920	ND	0.562	1.00	ug/L	126133767
1,2-Dichloroethane	1110920	ND	0.590	1.00	ug/L	126133767
1,2-Dichloropropane	1110920	ND	0.615	1.00	ug/L	126133767
Benzene	1110920	ND	0.453	1.00	ug/L	126133767
Bromodichloromethane	1110920	ND	0.409	1.00	ug/L	126133767
Bromoform	1110920	ND	0.500	1.00	ug/L	126133767
Carbon Tetrachloride	1110920	ND	0.299	1.00	ug/L	126133767
Chlorobenzene	1110920	ND	0.558	1.00	ug/L	126133767
Chloroethane	1110920	ND	1.12	1.12	ug/L	126133767
Chloroform	1110920	ND	0.463	1.00	ug/L	126133767
Chloromethane (Methyl Chloride)	1110920	ND	0.811	1.00	ug/L	126133767
cis-1,3-Dichloropropene	1110920	ND	0.660	1.00	ug/L	126133767
Dibromochloromethane	1110920	ND	0.311	1.00	ug/L	126133767
Dichloromethane	1110920	ND	1.02	1.02	ug/L	126133767
Ethylbenzene	1110920	ND	0.498	1.00	ug/L	126133767
m-Dichlorobenzene (1,3-DCB)	1110920	ND	0.619	1.00	ug/L	126133767
Methyl ethyl ketone (Butanone)	1110920	ND	0.742	1.00	ug/L	126133767
o-Dichlorobenzene (1,2-DCB)	1110920	ND	0.532	1.00	ug/L	126133767
p-Dichlorobenzene (1,4-DCB)	1110920	ND	0.837	1.00	ug/L	126133767
Tetrachloroethylene	1110920	ND	0.607	1.00	ug/L	126133767
Toluene	1110920	ND	0.655	1.00	ug/L	126133767
trans-1,2-Dichloroethylene	1110920	ND	0.701	1.00	ug/L	126133767

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Abilene, TX 79601

Project
1096074

Printed 04/04/2024

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
trans-1,3-Dichloropropene	1110920	ND	0.627	1.00	ug/L	126133767
Trichloroethylene	1110920	ND	0.521	1.00	ug/L	126133767
Vinyl chloride	1110920	ND	0.702	1.00	ug/L	126133767

IS Areas

Parameter	*Sample*	*Type*	*Reading*	*CCVISM*	*Low*	*High*	*File*	*PrepSet*
1,4-DichlorobenzeneD4 (ISTD)	1110920	LCS	57090	55160	27580	82730	126133765	1110920
1,4-DichlorobenzeneD4 (ISTD)	1110920	LCS Dup	58160	55160	27580	82730	126133766	1110920
1,4-DichlorobenzeneD4 (ISTD)	1110920	Blank	55150	55160	27580	82730	126133767	1110920
ChlorobenzeneD5 (ISTD)	1110920	LCS	120600	113000	56480	169500	126133765	1110920
ChlorobenzeneD5 (ISTD)	1110920	LCS Dup	119400	113000	56480	169500	126133766	1110920
ChlorobenzeneD5 (ISTD)	1110920	Blank	121600	113000	56480	169500	126133767	1110920
1,4-DichlorobenzeneD4 (ISTD)	2279963	MS	60490	55160	27580	82730	126133771	1110920
1,4-DichlorobenzeneD4 (ISTD)	2279963	MSD	61620	55160	27580	82730	126133772	1110920
ChlorobenzeneD5 (ISTD)	2279963	MS	123800	113000	56480	169500	126133771	1110920
ChlorobenzeneD5 (ISTD)	2279963	MSD	129700	113000	56480	169500	126133772	1110920
1,4-DichlorobenzeneD4 (ISTD)	2282557	Unknown	63890	55160	27580	82730	126133768	1110524
ChlorobenzeneD5 (ISTD)	2282557	Unknown	141000	113000	56480	169500	126133768	1110524

IS RetTime

Parameter	*Sample*	*Type*	*Reading*	*CCVISM*	*Low*	*High*	*File*	*PrepSet*
1,4-DichlorobenzeneD4 (ISTD)	1110920	LCS	11.97	11.97	11.91	12.03	126133765	1110920
1,4-DichlorobenzeneD4 (ISTD)	1110920	LCS Dup	11.97	11.97	11.91	12.03	126133766	1110920
1,4-DichlorobenzeneD4 (ISTD)	1110920	Blank	11.97	11.97	11.91	12.03	126133767	1110920
ChlorobenzeneD5 (ISTD)	1110920	LCS	9.597	9.591	9.531	9.651	126133765	1110920
ChlorobenzeneD5 (ISTD)	1110920	LCS Dup	9.597	9.591	9.531	9.651	126133766	1110920
ChlorobenzeneD5 (ISTD)	1110920	Blank	9.597	9.591	9.531	9.651	126133767	1110920
1,4-DichlorobenzeneD4 (ISTD)	2279963	MS	11.97	11.97	11.91	12.03	126133771	1110920
1,4-DichlorobenzeneD4 (ISTD)	2279963	MSD	11.97	11.97	11.91	12.03	126133772	1110920
ChlorobenzeneD5 (ISTD)	2279963	MS	9.597	9.591	9.531	9.651	126133771	1110920
ChlorobenzeneD5 (ISTD)	2279963	MSD	9.597	9.591	9.531	9.651	126133772	1110920
1,4-DichlorobenzeneD4 (ISTD)	2282557	Unknown	11.97	11.97	11.91	12.03	126133768	1110524
ChlorobenzeneD5 (ISTD)	2282557	Unknown	9.597	9.591	9.531	9.651	126133768	1110524

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
1,1,1-Trichloroethane	1110920	26.6	26.8	20.0	70.0 - 130	133 *	134 *	ug/L	0.749	21.0
1,1,2,2-Tetrachloroethane	1110920	23.7	24.0	20.0	60.0 - 140	118	120	ug/L	1.68	36.0
1,1,2-Trichloroethane	1110920	23.6	24.3	20.0	70.0 - 130	118	122	ug/L	3.33	27.0
1,1-Dichloroethane	1110920	24.4	24.3	20.0	70.0 - 130	122	122	ug/L	0	24.0
1,1-Dichloroethylene	1110920	23.6	24.1	20.0	50.0 - 150	118	120	ug/L	1.68	40.0
1,2-Dibromoethane (EDB)	1110920	22.8	23.8	20.0	78.4 - 122	114	119	ug/L	4.29	30.0
1,2-Dichloroethane	1110920	26.4	26.5	20.0	70.0 - 130	132 *	132 *	ug/L	0	29.0
1,2-Dichloropropane	1110920	25.6	25.3	20.0	35.0 - 165	128	126	ug/L	1.57	69.0
Benzene	1110920	25.7	25.2	20.0	65.0 - 135	128	126	ug/L	1.57	33.0
Bromodichloromethane	1110920	22.9	22.6	20.0	65.0 - 135	114	113	ug/L	0.881	34.0

Email: Kilgore.ProjectManagement@spllabs.com

QUALITY CONTROL

ABLN-W

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Project
1096074

Printed 04/04/2024

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromoform	1110920	20.6	20.6	20.0	70.0 - 130	103	103	ug/L	0	25.0
Bromomethane (Methyl Bromi	1110920	15.0	15.6	20.0	15.0 - 185	75.0	78.0	ug/L	3.92	90.0
Carbon Tetrachloride	1110920	26.2	25.4	20.0	70.0 - 130	131 *	127	ug/L	3.10	26.0
Chlorobenzene	1110920	23.9	23.5	20.0	65.0 - 135	120	118	ug/L	1.68	29.0
Chloroethane	1110920	19.9	19.1	20.0	40.0 - 160	99.5	95.5	ug/L	4.10	47.0
Chloroform	1110920	26.6	26.3	20.0	70.0 - 135	133	132	ug/L	0.755	32.0
Chloromethane (Methyl Chloride)	1110920	20.8	20.9	20.0	0.100 - 205	104	104	ug/L	0	472
cis-1,3-Dichloropropene	1110920	23.4	23.2	20.0	25.0 - 175	117	116	ug/L	0.858	79.0
Dibromochloromethane	1110920	23.8	23.2	20.0	70.0 - 135	119	116	ug/L	2.55	30.0
Dichloromethane	1110920	23.0	23.2	20.0	60.0 - 140	115	116	ug/L	0.866	192
Ethylbenzene	1110920	24.9	24.6	20.0	60.0 - 140	124	123	ug/L	0.810	34.0
Hexachlorobutadiene	1110920	18.2	18.8	20.0	79.5 - 130	91.0	94.0	ug/L	3.24	30.0
m-Dichlorobenzene (1,3-DCB)	1110920	21.8	21.4	20.0	70.0 - 130	109	107	ug/L	1.85	24.0
Methyl ethyl ketone (Butanone)	1110920	26.4	27.4	20.0	62.3 - 136	132	137 *	ug/L	3.72	30.0
o-Dichlorobenzene (1,2-DCB)	1110920	22.2	22.1	20.0	65.0 - 135	111	110	ug/L	0.905	31.0
p-Dichlorobenzene (1,4-DCB)	1110920	22.0	21.6	20.0	65.0 - 135	110	108	ug/L	1.83	31.0
Tetrachloroethylene	1110920	21.8	20.6	20.0	70.0 - 130	109	103	ug/L	5.66	23.0
Toluene	1110920	24.2	24.0	20.0	70.0 - 130	121	120	ug/L	0.830	22.0
trans-1,2-Dichloroethylene	1110920	23.7	23.5	20.0	70.0 - 130	118	118	ug/L	0	27.0
trans-1,3-Dichloropropene	1110920	24.7	25.3	20.0	50.0 - 150	124	126	ug/L	1.60	52.0
Trichloroethylene	1110920	23.2	23.4	20.0	65.0 - 135	116	117	ug/L	0.858	29.0
Vinyl chloride	1110920	21.4	20.9	20.0	5.00 - 195	107	104	ug/L	2.84	100

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
1,1,1-Trichloroethane	2279963	124	116	11.6	100	52.0 - 162	112	104	ug/L	7.38	36.0
1,1,2,2-Tetrachloroethane	2279963	113	107	11.6	100	46.0 - 157	101	95.4	ug/L	6.10	61.0
1,1,2-Trichloroethane	2279963	114	106	11.6	100	52.0 - 150	102	94.4	ug/L	8.13	45.0
1,1-Dichloroethane	2279963	116	109	11.6	100	59.0 - 155	104	97.4	ug/L	6.94	40.0
1,1-Dichloroethylene	2279963	107	103	11.6	100	0.100 - 234	95.4	91.4	ug/L	4.28	32.0
1,2-Dibromoethane (EDB)	2279963	116	103	11.6	100	49.3 - 120	104	91.4	ug/L	13.3	30.0
1,2-Dichloroethane	2279963	124	117	11.6	100	49.0 - 155	112	105	ug/L	6.43	49.0
1,2-Dichloropropane	2279963	122	112	11.6	100	0.100 - 210	110	100	ug/L	9.49	55.0
Benzene	2279963	122	112	11.6	100	37.0 - 151	110	100	ug/L	9.49	61.0
Bromodichloromethane	2279963	117	107	4.80	100	35.0 - 155	112	102	ug/L	9.33	56.0
Bromoform	2279963	94.8	88.4	11.6	100	45.0 - 169	83.2	76.8	ug/L	8.00	42.0
Bromomethane (Methyl Bromi	2279963	37.4	40.6	11.6	100	0.100 - 242	25.8	29.0	ug/L	11.7	61.0
Carbon Tetrachloride	2279963	122	114	11.6	100	70.0 - 140	110	102	ug/L	7.52	41.0
Chlorobenzene	2279963	113	105	11.6	100	37.0 - 160	101	93.4	ug/L	8.21	53.0
Chloroethane	2279963	96.6	95.2	11.6	100	14.0 - 230	85.0	83.6	ug/L	1.66	78.0
Chloroform	2279963	138	130	11.6	100	51.0 - 138	126	118	ug/L	6.54	54.0
Chloromethane (Methyl Chloride)	2279963	85.2	77.7	11.6	100	0.100 - 273	73.6	66.1	ug/L	10.7	60.0
cis-1,3-Dichloropropene	2279963	108	101	11.6	100	0.100 - 227	96.4	89.4	ug/L	7.53	58.0
Dibromochloromethane	2279963	114	107	11.6	100	53.0 - 149	102	95.4	ug/L	7.08	50.0
Dichloromethane	2279963	113	104	11.6	100	0.100 - 221	101	92.4	ug/L	9.29	28.0

Email: Kilgore.ProjectManagement@spllabs.com

QUALITY CONTROL

ABLN-W

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Project
1096074

Printed 04/04/2024

MSD

Parameter	*Sample*	*MS*	*MSD*	*UNK*	*Known*	*Limits*	*MS%*	*MSD%*	*Units*	*RPD*	*Limit%*
Ethylbenzene	2279963	118	109	11.6	100	37.0 - 162	106	97.4	ug/L	8.83	63.0
Hexachlorobutadiene	2279963	74.5	74.6	11.6	100	0.100 - 153	62.9	63.0	ug/L	0.159	30.0
m-Dichlorobenzene (1,3-DCB)	2279963	100	97.2	11.6	100	59.0 - 156	88.4	85.6	ug/L	3.22	43.0
Methyl ethyl ketone (Butanone)	2279963	145	128	11.6	100	0.100 - 211	133	116	ug/L	13.6	30.0
o-Dichlorobenzene (1,2-DCB)	2279963	100	97.4	11.6	100	18.0 - 190	88.4	85.8	ug/L	2.99	57.0
p-Dichlorobenzene (1,4-DCB)	2279963	102	97.3	11.6	100	18.0 - 190	90.4	85.7	ug/L	5.34	57.0
Tetrachloroethylene	2279963	102	96.1	11.6	100	64.0 - 148	90.4	84.5	ug/L	6.75	39.0
Toluene	2279963	115	105	11.6	100	47.0 - 150	103	93.4	ug/L	10.2	41.0
trans-1,2-Dichloroethylene	2279963	112	101	11.6	100	54.0 - 156	100	89.4	ug/L	11.6	45.0
trans-1,3-Dichloropropene	2279963	116	109	11.6	100	17.0 - 183	104	97.4	ug/L	6.94	86.0
Trichloroethylene	2279963	112	103	11.6	100	70.0 - 157	100	91.4	ug/L	9.38	48.0
Vinyl chloride	2279963	97.0	88.6	11.6	100	0.100 - 251	85.4	77.0	ug/L	10.3	66.0

Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
1,2-DCA-d4 (SURR)	1110920	LCS	20.2	20.0	ug/L	101	70.0 - 130	126133765
1,2-DCA-d4 (SURR)	1110920	LCS Dup	20.4	20.0	ug/L	102	70.0 - 130	126133766
1,2-DCA-d4 (SURR)	1110920	Blank	20.6	20.0	ug/L	103	70.0 - 130	126133767
Bromofluorobenzene (SURR)	1110920	LCS	20.3	20.0	ug/L	102	70.0 - 130	126133765
Bromofluorobenzene (SURR)	1110920	LCS Dup	20.4	20.0	ug/L	102	70.0 - 130	126133766
Bromofluorobenzene (SURR)	1110920	Blank	20.8	20.0	ug/L	104	70.0 - 130	126133767
Dibromofluoromethane (SURR)	1110920	LCS	19.1	20.0	ug/L	95.5	70.0 - 130	126133765
Dibromofluoromethane (SURR)	1110920	LCS Dup	19.0	20.0	ug/L	95.0	70.0 - 130	126133766
Dibromofluoromethane (SURR)	1110920	Blank	18.3	20.0	ug/L	91.5	70.0 - 130	126133767
ToluneneD8 (SURR)	1110920	LCS	18.6	20.0	ug/L	93.0	70.0 - 130	126133765
ToluneneD8 (SURR)	1110920	LCS Dup	18.9	20.0	ug/L	94.5	70.0 - 130	126133766
ToluneneD8 (SURR)	1110920	Blank	18.4	20.0	ug/L	92.0	70.0 - 130	126133767
1,2-DCA-d4 (SURR)	2279963	MS	20.4	20.0	ug/L	102	70.0 - 130	126133771
1,2-DCA-d4 (SURR)	2279963	MSD	19.9	20.0	ug/L	99.5	70.0 - 130	126133772
Bromofluorobenzene (SURR)	2279963	MS	20.2	20.0	ug/L	101	70.0 - 130	126133771
Bromofluorobenzene (SURR)	2279963	MSD	20.6	20.0	ug/L	103	70.0 - 130	126133772
Dibromofluoromethane (SURR)	2279963	MS	19.5	20.0	ug/L	97.5	70.0 - 130	126133771
Dibromofluoromethane (SURR)	2279963	MSD	19.0	20.0	ug/L	95.0	70.0 - 130	126133772
ToluneneD8 (SURR)	2279963	MS	18.8	20.0	ug/L	94.0	70.0 - 130	126133771
ToluneneD8 (SURR)	2279963	MSD	18.8	20.0	ug/L	94.0	70.0 - 130	126133772
1,2-DCA-d4 (SURR)	2282557	Unknown	19.2	20.0	ug/L	96.0	70.0 - 130	126133768
Bromofluorobenzene (SURR)	2282557	Unknown	20.4	20.0	ug/L	102	70.0 - 130	126133768
Dibromofluoromethane (SURR)	2282557	Unknown	19.2	20.0	ug/L	96.0	70.0 - 130	126133768
ToluneneD8 (SURR)	2282557	Unknown	18.7	20.0	ug/L	93.5	70.0 - 130	126133768

* Out RPD is Relative Percent Difference: abs(r1-r2) / mean(r1,r2) * 100%

Recover% is Recovery Percent: result / known * 100%

Email: Kilgore.ProjectManagement@spllabs.com

QUALITY CONTROL

ABLN-W

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Project
1096074

Printed 04/04/2024

Blank - Method Blank (reagent water or other blank matrices that contains all reagents except standard(s) and is processed simultaneously with and under the same conditions as samples; carried through preparation and analytical procedures exactly like a sample; monitors); CCV - Continuing Calibration Verification (same standard used to prepare the curve; typically a mid-range concentration; verifies the continued validity of the calibration curve); MSD - Matrix Spike Duplicate (replicate of the matrix spike; same solution and amount of target analyte added to the MS is added to a third aliquot of sample; quantifies matrix bias and precision.); LCS Dup - Laboratory Control Sample Duplicate (replicate LCS; analyzed when there is insufficient sample for duplicate or MSD; quantifies accuracy and precision.); ICV - Initial Calibration Verification; BFB - Bromofluorobenzene, GC/MS Tuning Compound (mass intensity used as tuning acceptance criteria.); Surrogate - Surrogate (mimics the analyte of interest but is unlikely to be found in environmental samples; added to analytical samples for QC purposes. **ANSI/ASQC E4 1994 Ref #4 TRADE QA Resources Guide.); IS Areas - Internal Standard Area (The area of the internal stadard relative to a check standard. Internal Standard is a known concentration of an analyte(s) that is not a sample component or standard that is added to the sample and standard and is used to measure the relative responses of other analytes in the same sample or standard.); IS RetTime - Internal Standard Retention Time (the time the internal standard comes off the column. Internal Stardard is a known concentration of an analyte(s) that is not a sample component or standard that is added to the sample and standard and is used to measure the relative responses of other analytes in the same sample or standard.)

Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

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Empowered Owners Integrity Caring Continual Improvement

Chain of Custody

COC Printed 05/22/2018 Page 1 of 2

ABLN-N

113

Lab Number 2282557

PO Number

Report To

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Phone 325/676-6042
Fax 325/676-6044

Semi-Annual Grab EFF001

4 part grab

1 Date 3/18/24 Time 1706 Tech ZB
2 Date 3/18/24 Time 2300 Tech ZB
3 Date 3/19/24 Time 0500 Tech ZB
4 Date 3/19/24 Time 1106 Tech ZB

Matrix: Non-Potable Water

Sample Collection Start

Date: 3/18/24 Time: 1700

Sampler Printed Name: Larry L. Bailey

Sampler Affiliation: ABLN

Sampler Signature: L. L. Bailey

1 On Site Testing

ClCk Field Cl2 Check for CNa

Field Cl2 Check for CNa Quality Control

Collected By ZB Date 3/18/24 Time 1700 Analyzed By ZB Date 3/18/24 Time 1701

Results Neg Units ___ Temp. ___ C Duplicate ___ Units ___ Temp. ___ C

S2Ck Field Sulfide Check for CNa

Field Sulfide Check for CNa Quality Control

Collected By ZB Date 3/18/24 Time 1700 Analyzed By ZB Date 3/18/24 Time 1701

Results Neg Units ___ Temp ___ C Duplicate ___ Units ___ Temp. ___ C

2 Glass Vial 40 mL (Zero Headspace) w/Teflon lined lid

N Short Hold SAAE Acrolein/Acrylonitrile Exp. EPA 624 (3.00 days)

1 H2SO4 to pH <2 Amber Glass 250 mL w/Teflon lined lid

N Phna Phenolics, Total Recoverable EPA 420.4 1 (28.0 days)

2 2 – No bottle required

mix Composite Sample Composite Sample

N mixv Composite VOA vial pre-injection

Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

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Employee Owned Integrity Caring Continual Improvement

COC Printed 05/22/2018 Page 2 of 2

Chain of Custody

ABLN-N

113

Report To

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Phone 325/676-6042
Fax 325/676-6044

	3	Na2S2O3 (0.008%) Glass 40 mL vial w/Teflon lined lid (zero headspace)		
N	Short Hold	!VPR	Volatile Permit Renewal	EPA 624 (3.00 days)
	4	HDPE - 250 ml unpreserved		
N	Short Hold	HCR6	Hexavalent Chromium/Comp	SM 3500-Cr B-2009 CAS:18540-29-9 (1.00 days)
	2	NaOH to pH >12 Polyethylene 250 mL/amber		
N		CNa	Cyanide, total	SM 4500-CN⁻ E-2011 (14.0 days)
N		CN-A	Cyanide - Available/Amenable	SM 4500-CN⁻ G-2011 (14.0 days)
N		CNCl	Cyanide After Chlorination	SM 4500-CN⁻ E-2011 (14.0 days)

Ambient Conditions/Comments

Date	Time	Relinquished		Received	
3/19/24	1414	Printed Name: Larry L. Bailey	Affiliation: ABLN	Printed Name: Brie Wallace	Affiliation: SPL
		Signature: L-L Bail		Signature: B Wallace	
3/19/24	1800	Printed Name: Brie Wallace	Affiliation: SPL	Printed Name: xps	Affiliation
		Signature: B Wallace		Signature	
3/20/24	0820	Printed Name: XPS	Affiliation	Printed Name: Rayshawn Thompson	Affiliation: SPL, Inc.
		Signature		Signature	
		Printed Name	Affiliation	Printed Name	Affiliation
		Signature		Signature	

Sample Received on Ice? [X] Yes [ ] No **Method of Shipment:** [ ] UPS [ ] Bus [ ] FedEx [ ] Lone Star [ ] Hand Delivered [ ] Other

Cooler/Sample Secure? [X] Yes [ ] No **If Shipped: Tracking Number & Temp - See Attached**

The accredited column designates accreditation by A - A2LA, N - NELAC, or 2 - not listed under scope of accreditation. Unless otherwise specified, ANA-LAB shall provide these ordered services pursuant to our Standard Terms & Conditions Agreement (available for download from the welcome page at http://www.ana-lab.com/). Ana-Lab personnel collect samples as specified by Ana-Lab SOP #000323

Comments

XPS# 7

From: SPL
Abilene

To: SPL
Kilgore

1

3/20 0850 JL6
Date Time Tech
Temp: 0.9/1.0 C
Therm#: 6443 Corr Fact: 0.1 C

2600 Dudley Rd. Kilgore, Texas 75662
24 Waterway Avenue, Suite 375 The Woodlands, TX 77380
Office: 903-984-0551 * Fax: 903-984-5914

Project
1096154

ABLN-W

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Printed 04/10/2024
12:08

TABLE OF CONTENTS

This report consists of this Table of Contents and the following pages:

Report Name	Description	Pages
1096154_r02_01_ProjectSamples	SPL Kilgore Project P:1096154 C:ABLN Project Sample Cross Reference t:304	1
1096154_r03_03_ProjectResults	SPL Kilgore Project P:1096154 C:ABLN Project Results t:304 PO: 41505	9
1096154_r10_05_ProjectQC	SPL Kilgore Project P:1096154 C:ABLN Project Quality Control Groups	19
1096154_r99_09_CoC__1_of_1	SPL Kilgore CoC ABLN 1096154_1_of_1	3
	Total Pages:	32

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1

SAMPLE CROSS REFERENCE

Project
1096154

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Sample	Sample ID	Taken	Time	Received
2282723	*Semi-Annual Comp EFF 001*	03/19/2024	08:20:00	03/20/2024

Bottle 01 Unpreserved 1000ml w/graduated
Bottle 02 Amber 32 Oz
Bottle 03 Amber 32 Oz
Bottle 04 Amber 32 Oz
Bottle 05 Amber 32 Oz
Bottle 06 Amber 32 Oz
Bottle 07 Amber 32 Oz
Bottle 08 Amber 32 Oz
Bottle 09 H2SO4 to pH <2 Glass Qt w/Teflon lined lid
Bottle 10 H2SO4 to pH <2 Glass Qt w/Teflon lined lid
Bottle 11 16 oz HNO3 Metals Plastic
Bottle 12 Prepared Bottle: ICP Preparation for Metals (Batch 1110432) Volume: 50.00000 mL <== Derived from 11 (50 ml)
Bottle 13 Prepared Bottle: 632L\632S 2 mL Autosampler Vial (Batch 1110709) Volume: 1.00000 mL <== Derived from 03 (915 ml)
Bottle 14 Prepared Bottle: GCXL\GCXS 2 mL Autosampler Vial (Batch 1110710) Volume: 1.00000 mL <== Derived from 03 (915 ml)
Bottle 15 Prepared Bottle: OPXL/OPXS 2 mL Autosampler Vial (Batch 1110711) Volume: 1.00000 mL <== Derived from 03 (915 ml)
Bottle 16 Prepared Bottle:PCBL 2 mL Autosampler Vial (Batch 1110712) Volume: 1.00000 mL <== Derived from 03 (915 ml)
Bottle 17 Prepared Bottle: 2 mL Autosampler Vial (Batch 1111139) Volume: 5.00000 mL <== Derived from 02 (977 ml)
Bottle 18 Prepared Bottle: 2 mL Autosampler Vial (Batch 1111195) Volume: 1.00000 mL <== Derived from 06 (953 ml)
Bottle 19 Prepared Bottle: 2 mL Autosampler Vial (Batch 1111208) Volume: 10.00000 mL <== Derived from 04 (966 ml)
Bottle 20 Prepared Bottle: 2 mL Autosampler Vial (Batch 1111749) Volume: 1.00000 mL <== Derived from 10 (882 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
EPA 608.3	14	1110710	03/22/2024	1112859	04/05/2024
EPA 608.3	16	1110712	03/22/2024	1111683	03/28/2024
EPA 615	19	1111208	03/26/2024	1111706	03/28/2024
EPA 632	13	1110709	03/22/2024	1112285	04/01/2024
EPA 300.0 2.1	01	1110444	03/20/2024	1110444	03/20/2024
EPA 604.1	17	1111139	03/25/2024	1111820	03/27/2024
EPA 617	14	1110710	03/22/2024	1112857	04/05/2024
EPA 625.1	18	1111195	03/26/2024	1112973	04/05/2024
EPA 614	15	1110711	03/22/2024	1112753	03/25/2024
ASTM D7065-11	20	1111749	03/28/2024	1112707	04/03/2024
EPA 200.8 5.4	12	1110432	03/21/2024	1110866	03/22/2024
EPA 200.8 5.4	12	1110432	03/21/2024	1110593	03/21/2024
Calculation			04/10/2024		04/10/2024
EPA 622	15	1110711	03/22/2024	1112751	03/25/2024

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City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Project
1096154

Printed: 04/10/2024

RESULTS

Sample Results

2282723 **Semi-Annual Comp EFF 001** COMP 3/18 0840-3/19 0820 Received: 03/20/2024

Non-Potable Water Collected by: Client City of Abilene PO: 41505
Composite Stop 08:20 3/19/24 Taken: 03/19/2024 08:20:00

ASTM D7065-11 Prepared: 1111749 03/28/2024 08:30:00 Analyzed 1112707 04/03/2024 16:09:00 DWL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
z	**Nonylphenol**	**<34.0**	**ug/L**	34.0		**25154-52-3**	20

Calculation Prepared: 04/10/2024 00:00:00 Calculated 04/10/2024 00:00:00 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	**Trivalent Chromium**	**<0.003**	**mg/L**	0.003		**16065-83-1**	

EPA 200.8 5.4 Prepared: 1110432 03/21/2024 09:30:00 Analyzed 1110593 03/21/2024 16:36:00 JC2

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	**Aluminum, Total**	**0.0247**	**mg/L**	0.005		**7429-90-5**	12
NELAC	**Antimony, Total**	**0.000872**	**mg/L**	0.003	J	**7440-36-0**	12
NELAC	**Arsenic, Total**	**0.00187**	**mg/L**	0.001		**7440-38-2**	12
NELAC	**Barium, Total**	**0.0762**	**mg/L**	0.005		**7440-39-3**	12
NELAC	**Beryllium, Total**	**<0.000162**	**mg/L**	0.000162		**7440-41-7**	12
NELAC	**Cadmium, Total**	**<0.00012**	**mg/L**	0.00012		**7440-43-9**	12
NELAC	**Chromium, Total**	**0.00117**	**mg/L**	0.001		**7440-47-3**	12
NELAC	**Copper, Total**	**0.0183**	**mg/L**	0.001		**7440-50-8**	12
NELAC	**Lead, Total**	**<0.0005**	**mg/L**	0.0005		**7439-92-1**	12
NELAC	**Manganese, Total**	**0.025**	**mg/L**	0.001		**7439-96-5**	12
NELAC	**Nickel, Total**	**0.00382**	**mg/L**	0.001		**7440-02-0**	12
NELAC	**Selenium, Total**	**0.00342**	**mg/L**	0.005	J	**7782-49-2**	12
NELAC	**Zinc, Total**	**0.0507**	**mg/L**	0.001		**7440-66-6**	12

EPA 200.8 5.4 Prepared: 1110432 03/21/2024 09:30:00 Analyzed 1110866 03/22/2024 13:07:00 JC2

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	**Silver, Total**	**<0.0000628**	**mg/L**	0.0000628		**7440-22-4**	12
NELAC	**Thallium, Total**	**<0.00025**	**mg/L**	0.00025		**7440-28-0**	12

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Printed: 04/10/2024

2282723 **Semi-Annual Comp EFF 001** COMP 3/18 0840-3/19 0820 Received: 03/20/2024

Non-Potable Water Collected by: Client City of Abilene PO: 41505
Composite Stop 08:20 3/19/24 Taken: 03/19/2024 08:20:00

EPA 300.0 2.1 Prepared: 1110444 03/20/2024 17:48:00 Analyzed 1110444 03/20/2024 17:48:00 NAZ

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Fluoride	0.915	mg/L	0.500			01
NELAC	Nitrate-Nitrogen Total	12.4	mg/L	0.113		14797-55-8	01

EPA 604.1 Prepared: 1111139 03/25/2024 15:00:00 Analyzed 1111820 03/27/2024 20:31:00 BRU

	Parameter	Results	Units	RL	Flags	CAS	Bottle
z	Hexachlorophene	<1.28	ug/L	1.28		70-30-4	17

EPA 608.3 Prepared: 1110710 03/22/2024 13:00:00 Analyzed 1112859 04/05/2024 00:13:00 KAP

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	4,4-DDD	<0.0109	ug/L	0.0109		72-54-8	14
NELAC	4,4-DDE	<0.0109	ug/L	0.0109		72-55-9	14
NELAC	4,4-DDT	<0.0109	ug/L	0.0109		50-29-3	14
NELAC	Aldrin	<0.010	ug/L	0.010		309-00-2	14
NELAC	Alpha-BHC(hexachlorocyclohexane)	<0.0109	ug/L	0.0109		319-84-6	14
NELAC	Beta-BHC(hexachlorocyclohexane)	<0.0109	ug/L	0.0109		319-85-7	14
NELAC	Chlordane	<0.109	ug/L	0.109		57-74-9	14
NELAC	Delta-BHC(hexachlorocyclohexane)	<0.0109	ug/L	0.0109		319-86-8	14
NELAC	Dieldrin	<0.0109	ug/L	0.0109		60-57-1	14
NELAC	Endosulfan I (alpha)	<0.010	ug/L	0.010		959-98-8	14
NELAC	Endosulfan II (beta)	<0.0111	ug/L	0.0111		33213-65-9	14
NELAC	Endosulfan sulfate	<0.0109	ug/L	0.0109		1031-07-8	14
NELAC	Endrin	<0.0109	ug/L	0.0109		72-20-8	14
NELAC	Endrin aldehyde	<0.0109	ug/L	0.0109		7421-93-4	14
NELAC	Gamma-BHC(Lindane)	<0.0109	ug/L	0.0109		58-89-9	14
NELAC	Heptachlor	<0.010	ug/L	0.010		76-44-8	14
NELAC	Heptachlor epoxide	<0.010	ug/L	0.010		1024-57-3	14
NELAC	Toxaphene	<0.219	ug/L	0.219		8001-35-2	14

EPA 608.3 Prepared: 1110712 03/22/2024 13:00:00 Analyzed 1111683 03/28/2024 01:54:00 KAP

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	PCB-1016	<0.200	ug/L	0.200		12674-11-2	16
NELAC	PCB-1221	<0.200	ug/L	0.200		11104-28-2	16
NELAC	PCB-1232	<0.200	ug/L	0.200		11141-16-5	16

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Printed: 04/10/2024

2282723 **Semi-Annual Comp EFF 001** COMP 3/18 0840-3/19 0820 Received: 03/20/2024

Non-Potable Water Collected by: Client City of Abilene PO: 41505
Composite Stop 08:20 3/19/24 Taken: 03/19/2024 08:20:00

EPA 608.3 Prepared: 1110712 03/22/2024 13:00:00 Analyzed 1111683 03/28/2024 01:54:00 KAP

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	PCB-1242	<0.200	ug/L	0.200		53469-21-9	16
NELAC	PCB-1248	<0.200	ug/L	0.200		12672-29-6	16
NELAC	PCB-1254	<0.200	ug/L	0.200		11097-69-1	16
NELAC	PCB-1260	<0.200	ug/L	0.200	X	11096-82-5	16
NELAC	PCB-1262	<0.219	ug/L	0.219		37324-23-5	16
NELAC	PCB-1268	<0.219	ug/L	0.219		11100-14-4	16

EPA 614 Prepared: 1110711 03/22/2024 13:00:00 Analyzed 1112753 03/25/2024 17:00:00 KAP

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Azinphos-methyl (Guthion)	<0.0546	ug/L	0.0546	D	86-50-0	15
NELAC	Demeton	<0.0546	ug/L	0.0546		8065-48-3	15
NELAC	Diazinon	<0.0546	ug/L	0.0546		333-41-5	15
NELAC	Malathion	<0.0546	ug/L	0.0546		121-75-5	15
NELAC	Parathion, ethyl	<0.0546	ug/L	0.0546		56-38-2	15
NELAC	Parathion, methyl	<0.050	ug/L	0.050		298-00-0	15

EPA 615 Prepared: 1111208 03/26/2024 13:40:00 Analyzed 1111706 03/28/2024 01:08:00 KAP

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	2,4 Dichlorophenoxyacetic acid	<0.518	ug/L	0.518		94-75-7	19
NELAC	2,4,5-TP (Silvex)	<0.300	ug/L	0.300		93-72-1	19

EPA 617 Prepared: 1110710 03/22/2024 13:00:00 Analyzed 1112857 04/05/2024 00:13:00 KAP

	Parameter	Results	Units	RL	Flags	CAS	Bottle
z	Kelthane (Dicofol)	<0.0546	ug/L	0.0546		115-32-2	14
z	Methoxychlor	<0.0109	ug/L	0.0109		72-43-5	14
z	Mirex	<0.0109	ug/L	0.0109		2385-85-5	14

EPA 622 Prepared: 1110711 03/22/2024 13:00:00 Analyzed 1112751 03/25/2024 17:00:00 KAP

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Chlorpyrifos	<0.050	ug/L	0.050		2921-88-2	15

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City of Abilene
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4209 East Lake Rd.
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Printed: 04/10/2024

2282723 **Semi-Annual Comp EFF 001** COMP 3/18 0840-3/19 0820 *Received:* 03/20/2024

Non-Potable Water *Collected by:* Client City of Abilene *PO:* 41505
Composite Stop 08:20 3/19/24 *Taken:* 03/19/2024 08:20:00

EPA 625.1 *Prepared:* 1111195 03/26/2024 13:20:00 *Analyzed* 1112973 04/05/2024 02:32:00 *DWL*

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	1,2,4,5-Tetrachlorobenzene	<1.05	ug/L	1.05		95-94-3	18
NELAC	1,2,4-Trichlorobenzene	<1.05	ug/L	1.05	S	120-82-1	18
NELAC	1,2-DPH (as azobenzene)	<1.05	ug/L	1.05		122-66-7	18
NELAC	2,4,5-Trichlorophenol	<1.05	ug/L	1.05		95-95-4	18
NELAC	2,4,6-Trichlorophenol	<1.05	ug/L	1.05		88-06-2	18
NELAC	2,4-Dichlorophenol	<1.05	ug/L	1.05		120-83-2	18
NELAC	2,4-Dimethylphenol	<2.52	ug/L	2.52	S	105-67-9	18
NELAC	2,4-Dinitrophenol	<9.44	ug/L	9.44		51-28-5	18
NELAC	2,4-Dinitrotoluene	<3.67	ug/L	3.67		121-14-2	18
NELAC	2,6-Dinitrotoluene	<1.05	ug/L	1.05		606-20-2	18
NELAC	2-Chloronaphthalene	<1.05	ug/L	1.05	S	91-58-7	18
NELAC	2-Chlorophenol	<1.05	ug/L	1.05		95-57-8	18
NELAC	2-Methylphenol (o-Cresol)	<5.46	ug/L	5.46		95-48-7	18
NELAC	2-Nitrophenol	<1.05	ug/L	1.05		88-75-5	18
NELAC	3&4-Methylphenol (m&p-Cresol)	<6.51	ug/L	6.51		MEPH34	18
NELAC	3,3'-Dichlorobenzidine	<5.00	ug/L	5.00		91-94-1	18
NELAC	4,6-Dinitro-2-methylphenol	<8.39	ug/L	8.39		534-52-1	18
NELAC	4-Bromophenyl phenyl ether	<1.05	ug/L	1.05		101-55-3	18
NELAC	4-Chlorophenyl phenyl ethe	<1.05	ug/L	1.05		7005-72-3	18
NELAC	4-Nitrophenol	<1.05	ug/L	1.05		100-02-7	18
NELAC	Acenaphthene	<1.05	ug/L	1.05		83-32-9	18
NELAC	Acenaphthylene	<1.05	ug/L	1.05		208-96-8	18
NELAC	Anthracene	<1.05	ug/L	1.05		120-12-7	18
NELAC	Benzidine	<21.0	ug/L	21.0	S	92-87-5	18
NELAC	Benzo(a)anthracene	<1.05	ug/L	1.05		56-55-3	18
NELAC	Benzo(a)pyrene	<1.05	ug/L	1.05		50-32-8	18
NELAC	Benzo(b)fluoranthene	<1.05	ug/L	1.05		205-99-2	18
NELAC	Benzo(ghi)perylene	<1.05	ug/L	1.05		191-24-2	18
NELAC	Benzo(k)fluoranthene	<1.05	ug/L	1.05		207-08-9	18
NELAC	Benzyl Butyl phthalate	1.29	ug/L	7.87	J	85-68-7	18
NELAC	Bis(2-chloroethoxy)methane	<1.05	ug/L	1.05		111-91-1	18
NELAC	Bis(2-chloroethyl)ether	<1.05	ug/L	1.05		111-44-4	18
NELAC	Bis(2-chloroisopropyl)ether	<1.05	ug/L	1.05		108-60-1	18
NELAC	Bis(2-ethylhexyl)phthalate	1.73	ug/L	7.87	J	117-81-7	18
NELAC	Chrysene (Benzo(a)phenanthrene)	<1.05	ug/L	1.05		218-01-9	18
NELAC	Dibenz(a,h)anthracene	<1.05	ug/L	1.05		53-70-3	18

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Printed: 04/10/2024

2282723 **Semi-Annual Comp EFF 001** COMP 3/18 0840-3/19 0820 Received: 03/20/2024

Non-Potable Water Collected by: Client City of Abilene PO: 41505
Composite Stop 08:20 3/19/24 Taken: 03/19/2024 08:20:00

EPA 625.1 Prepared: 1111195 03/26/2024 13:20:00 Analyzed 1112973 04/05/2024 02:32:00 DWL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Diethyl phthalate	<5.98	ug/L	5.98	X	84-66-2	18
NELAC	Dimethyl phthalate	<5.04	ug/L	5.04		131-11-3	18
NELAC	Di-n-butylphthalate	<7.87	ug/L	7.87		84-74-2	18
NELAC	Di-n-octylphthalate	<1.05	ug/L	1.05		117-84-0	18
NELAC	Fluoranthene(Benzo(j,k)fluorene)	<1.05	ug/L	1.05		206-44-0	18
NELAC	Fluorene	<1.05	ug/L	1.05		86-73-7	18
NELAC	Hexachlorobenzene	<1.05	ug/L	1.05		118-74-1	18
NELAC	Hexachlorobutadiene	<1.05	ug/L	1.05		87-68-3	18
NELAC	Hexachlorocyclopentadiene	<9.44	ug/L	9.44		77-47-4	18
NELAC	Hexachloroethane	<1.05	ug/L	1.05		67-72-1	18
NELAC	Indeno(1,2,3-cd)pyrene	<1.05	ug/L	1.05		193-39-5	18
NELAC	Isophorone	<1.05	ug/L	1.05		78-59-1	18
NELAC	Naphthalene	<1.05	ug/L	1.05		91-20-3	18
NELAC	Nitrobenzene	<1.05	ug/L	1.05		98-95-3	18
NELAC	n-Nitrosodiethylamine	<1.05	ug/L	1.05		55-18-5	18
NELAC	N-Nitrosodimethylamine	<7.35	ug/L	7.35		62-75-9	18
NELAC	n-Nitroso-di-n-butylamine	<1.05	ug/L	1.05		924-16-3	18
NELAC	N-Nitrosodi-n-propylamine	<1.05	ug/L	1.05		621-64-7	18
NELAC	N-Nitrosodiphenylamine (as DPA	<1.05	ug/L	1.05		86-30-6	18
NELAC	p-Chloro-m-Cresol (4-Chloro-3-me	<2.52	ug/L	2.52		59-50-7	18
NELAC	Pentachlorobenzene	<1.05	ug/L	1.05		608-93-5	18
NELAC	Pentachlorophenol	<1.05	ug/L	1.05		87-86-5	18
NELAC	Phenanthrene	<1.05	ug/L	1.05		85-01-8	18
NELAC	Phenol	<1.57	ug/L	1.57	X	108-95-2	18
NELAC	Pyrene	<1.05	ug/L	1.05		129-00-0	18
NELAC	Pyridine	<5.67	ug/L	5.67		110-86-1	18

EPA 625.1 Prepared: 1111195 03/26/2024 13:20:00 Calculated 1112973 04/08/2024 07:07:47 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Cresols Total	<6.51	ug/L	6.51		1319-77-3, etc.	18

EPA 632 Prepared: 1110709 03/22/2024 13:00:00 Analyzed 1112285 04/01/2024 18:34:00 BRU

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Carbaryl (Sevin)	<2.73	ug/L	2.73		63-25-2	13

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Abilene, TX 79601

Printed: 04/10/2024

2282723 **Semi-Annual Comp EFF 001** COMP 3/18 0840-3/19 0820 *Received:* 03/20/2024

Non-Potable Water *Collected by:* Client City of Abilene *PO:* 41505
Composite Stop 08:20 3/19/24 *Taken:* 03/19/2024 08:20:00

EPA 632 *Prepared:* 1110709 03/22/2024 13:00:00 *Analyzed* 1112285 04/01/2024 18:34:00 BRU

	Parameter	Results	Units	RL	Flags	CAS	Bottle
z	**Diuron**	**<0.0492**	**ug/L**	0.0492		**330-54-1**	13

Sample Preparation

2282723 **Semi-Annual Comp EFF 001** COMP 3/18 0840-3/19 0820 *Received:* 03/20/2024

41505

Composite Stop 08:20 3/19/24 03/19/2024

Prepared: 03/20/2024 14:40:30 *Calculated* 03/20/2024 14:40:30 CAL

z	**Environmental Fee (per Project)**	**Verified**						

ASTM D7065-11 *Prepared:* 1111749 03/28/2024 08:30:00 *Analyzed* 1112707 04/03/2024 16:09:00 DWL

z	**Nonyl Phenol Expansion**	**Entered**						20

EPA 200.2 2.8 *Prepared:* 1110432 03/21/2024 09:30:00 *Analyzed* 1110432 03/21/2024 09:30:00 HLT

z	**Liquid Metals Digestion**	**50/50**	**ml**					11

EPA 604.1 *Prepared:* 1111139 03/25/2024 15:00:00 *Analyzed* 1111139 03/25/2024 15:00:00 MCC

	Hexachlorophene Extraction	**5/977**	**ml**					02

EPA 604.1 *Prepared:* 1111139 03/25/2024 15:00:00 *Analyzed* 1111820 03/27/2024 20:31:00 BRU

	Hexachlorophene Expansion	**Entered**				**70-30-4**		17

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ABLN-W

Project
1096154

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Printed: 04/10/2024

2282723 **Semi-Annual Comp EFF 001** COMP 3/18 0840-3/19 0820 Received: 03/20/2024

41505

Composite Stop 08:20 3/19/24 03/19/2024

	EPA 608.3	*Prepared:*	*1110710*	*03/22/2024*	*13:00:00*	*Analyzed*	*1110710*	*03/22/2024*	*13:00:00*	*MCC*	
	Liquid-Liquid Extr. W/Hex Ex	**1/915**		**ml**							03
	EPA 608.3	*Prepared:*	*1110710*	*03/22/2024*	*13:00:00*	*Analyzed*	*1112859*	*04/05/2024*	*00:13:00*	*KAP*	
NELAC	**TTO Pesticides**	**Entered**									14
	EPA 608.3	*Prepared:*	*1110711*	*03/22/2024*	*13:00:00*	*Analyzed*	*1110711*	*03/22/2024*	*13:00:00*	*MCC*	
	Solvent Extraction	**1/915**		**ml**							03
	EPA 608.3	*Prepared:*	*1110712*	*03/22/2024*	*13:00:00*	*Analyzed*	*1110712*	*03/22/2024*	*13:00:00*	*MCC*	
	PCB Liq-Liq Extr. W/Hex Exch.	**1/915**		**ml**							03
	EPA 608.3	*Prepared:*	*1110712*	*03/22/2024*	*13:00:00*	*Analyzed*	*1111683*	*03/28/2024*	*01:54:00*	*KAP*	
NELAC	**Polychlorinated Biphenyls**	**Entered**									16
	EPA 614	*Prepared:*	*1110711*	*03/22/2024*	*13:00:00*	*Analyzed*	*1112753*	*03/25/2024*	*17:00:00*	*KAP*	
z	**Permit Organophos. Pesticides**	**Entered**									15
	EPA 615	*Prepared:*	*1111208*	*03/26/2024*	*13:40:00*	*Analyzed*	*1111208*	*03/26/2024*	*13:40:00*	*MCC*	
NELAC	**Esterification of Sample**	**10/966**		**ml**							04
	EPA 615	*Prepared:*	*1111208*	*03/26/2024*	*13:40:00*	*Analyzed*	*1111706*	*03/28/2024*	*01:08:00*	*KAP*	
NELAC	**Herbicides by GC**	**Entered**									19

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Abilene, TX 79601

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Printed: 04/10/2024

2282723 **Semi-Annual Comp EFF 001** COMP 3/18 0840-3/19 0820 *Received:* 03/20/2024

41505

Composite Stop 08:20 3/19/24 03/19/2024

	EPA 617	*Prepared:*	*1110710*	*03/22/2024*	*13:00:00*	*Analyzed*	*1112857*	*04/05/2024*	*00:13:00*	*KAP*
z	**For use with !PPR only**	**Entered**								14
	EPA 622	*Prepared:*	*1110711*	*03/22/2024*	*13:00:00*	*Analyzed*	*1112751*	*03/25/2024*	*17:00:00*	*KAP*
NELAC	**For use with EXP !CPP only**	**Entered**								15
	EPA 625.1	*Prepared:*	*1111195*	*03/26/2024*	*13:20:00*	*Analyzed*	*1111195*	*03/26/2024*	*13:20:00*	*MCC*
	Liquid-Liquid Extraction, BNA	**1/953**	**ml**							06
	EPA 625.1	*Prepared:*	*1111195*	*03/26/2024*	*13:20:00*	*Analyzed*	*1112973*	*04/05/2024*	*02:32:00*	*DWL*
NELAC	**ABN Permit Renewal List**	**Entered**								18
	EPA 625.1	*Prepared:*	*1111749*	*03/28/2024*	*08:30:00*	*Analyzed*	*1111749*	*03/28/2024*	*08:30:00*	*CRS*
	Nonylphenol Liq-Liq Extract	**1/882**	**ml**							10
	EPA 632	*Prepared:*	*1110709*	*03/22/2024*	*13:00:00*	*Analyzed*	*1110709*	*03/22/2024*	*13:00:00*	*MCC*
	Liquid-Liquid Extr. W/Hex Ex	**1/915**	**ml**							03
	EPA 632	*Prepared:*	*1110709*	*03/22/2024*	*13:00:00*	*Analyzed*	*1112285*	*04/01/2024*	*18:34:00*	*BRU*
NELAC	**Carbaryl/Diuron**	**Entered**								13

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Qualifiers:

J - Analyte detected below quantitation limit
D - Duplicate RPD was higher than expected
X - Standard reads higher than desired.
S - Standard reads lower than desired

We report results on an As Received (or Wet) basis unless marked Dry Weight.

Unless otherwise noted, testing was performed at SPL, Inc.- Kilgore laboratory which holds International, Federal, and state accreditations. Please see our Websites for details.

(N)ELAC - Covered in our NELAC scope of accreditation
z -- Not covered by our NELAC scope of accreditation

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of SPL Kilgore. Unless otherwise specified, these test results meet the requirements of NELAC.
RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

Bill Peery

Bill Peery, MS, VP Technical Services

QUALITY CONTROL

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City of Abilene
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4209 East Lake Rd.
Abilene, TX 79601

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Printed 04/10/2024

Analytical Set 1110444 — EPA 300.0 2.1

AWRL/LOQ C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Fluoride	0.113	0.100	mg/L	113	70.0 - 130	126121974
Nitrate-Nitrogen Total	0.0217	0.0226	mg/L	96.0	70.0 - 130	126121974

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Fluoride	1110444	ND	0.010	0.100	mg/L	126121975
Nitrate-Nitrogen Total	1110444	ND	0.00745	0.0226	mg/L	126121975

CCB

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Fluoride	1110444	0	0.010	0.100	mg/L	126121971
Fluoride	1110444	0	0.010	0.100	mg/L	126121991
Fluoride	1110444	0	0.010	0.100	mg/L	126122003
Nitrate-Nitrogen Total	1110444	0.00271	0.00745	0.0226	mg/L	126121971
Nitrate-Nitrogen Total	1110444	0	0.00745	0.0226	mg/L	126121991
Nitrate-Nitrogen Total	1110444	0.00361	0.00745	0.0226	mg/L	126122003

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Fluoride	10.0	10.0	mg/L	100	90.0 - 110	126121970
Fluoride	10.0	10.0	mg/L	100	90.0 - 110	126121990
Fluoride	10.0	10.0	mg/L	100	90.0 - 110	126122002
Nitrate-Nitrogen Total	2.20	2.26	mg/L	97.3	90.0 - 110	126121970
Nitrate-Nitrogen Total	2.24	2.26	mg/L	99.1	90.0 - 110	126121990
Nitrate-Nitrogen Total	2.21	2.26	mg/L	97.8	90.0 - 110	126122002

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Fluoride	1110444	5.44	5.45	5.00	88.0 - 115	109	109	mg/L	0.184	20.0
Nitrate-Nitrogen Total	1110444	1.13	1.12	1.13	88.0 - 116	100	99.1	mg/L	0.889	20.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Fluoride	2282617	116	117	ND	100	80.0 - 120	116	117	mg/L	0.858	20.0
Nitrate-Nitrogen Total	2282617	24.9	25.1	1.31	22.6	80.0 - 120	104	105	mg/L	0.844	20.0
Fluoride	2282618	114	114	ND	100	80.0 - 120	114	114	mg/L	0	20.0
Nitrate-Nitrogen Total	2282618	23.6	24.0	0.113	22.6	80.0 - 120	104	106	mg/L	1.69	20.0

Analytical Set 1110593 — EPA 200.8 5.4

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Aluminum, Total	1110432	ND	0.0039	0.005	mg/L	126124770
Antimony, Total	1110432	ND	0.000847	0.003	mg/L	126124770
Arsenic, Total	1110432	ND	0.000902	0.001	mg/L	126124770
Barium, Total	1110432	ND	0.00207	0.005	mg/L	126124770

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Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Beryllium, Total	1110432	ND	0.000162	0.001	mg/L	126124770
Cadmium, Total	1110432	ND	0.00012	0.001	mg/L	126124770
Chromium, Total	1110432	ND	0.000392	0.001	mg/L	126124770
Copper, Total	1110432	ND	0.000325	0.001	mg/L	126124770
Lead, Total	1110432	ND	0.000549	0.001	mg/L	126124770
Manganese, Total	1110432	ND	0.000168	0.001	mg/L	126124770
Nickel, Total	1110432	ND	0.000154	0.001	mg/L	126124770
Selenium, Total	1110432	ND	0.00294	0.005	mg/L	126124770
Thallium, Total	1110432	ND	0.000966	0.001	mg/L	126124770
Zinc, Total	1110432	ND	0.000844	0.001	mg/L	126124770

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Aluminum, Total	0.0525	0.05	mg/L	105	90.0 - 110	126124764
Aluminum, Total	0.0524	0.05	mg/L	105	90.0 - 110	126124776
Aluminum, Total	0.0515	0.05	mg/L	103	90.0 - 110	126124788
Aluminum, Total	0.0527	0.05	mg/L	105	90.0 - 110	126124799
Aluminum, Total	0.0525	0.05	mg/L	105	90.0 - 110	126124810
Aluminum, Total	0.0527	0.05	mg/L	105	90.0 - 110	126124822
Aluminum, Total	0.0525	0.05	mg/L	105	90.0 - 110	126124833
Antimony, Total	0.0478	0.05	mg/L	95.6	90.0 - 110	126124776
Antimony, Total	0.046	0.05	mg/L	92.0	90.0 - 110	126124788
Arsenic, Total	0.050	0.05	mg/L	100	90.0 - 110	126124764
Arsenic, Total	0.0494	0.05	mg/L	98.8	90.0 - 110	126124776
Arsenic, Total	0.0496	0.05	mg/L	99.2	90.0 - 110	126124788
Arsenic, Total	0.048	0.05	mg/L	96.0	90.0 - 110	126124799
Arsenic, Total	0.0494	0.05	mg/L	98.8	90.0 - 110	126124810
Arsenic, Total	0.0486	0.05	mg/L	97.2	90.0 - 110	126124822
Barium, Total	0.0486	0.05	mg/L	97.2	90.0 - 110	126124776
Barium, Total	0.0478	0.05	mg/L	95.6	90.0 - 110	126124788
Barium, Total	0.0474	0.05	mg/L	94.8	90.0 - 110	126124810
Barium, Total	0.048	0.05	mg/L	96.0	90.0 - 110	126124822
Beryllium, Total	0.0514	0.05	mg/L	103	90.0 - 110	126124776
Beryllium, Total	0.0499	0.05	mg/L	99.8	90.0 - 110	126124788
Cadmium, Total	0.0483	0.05	mg/L	96.6	90.0 - 110	126124776
Cadmium, Total	0.0478	0.05	mg/L	95.6	90.0 - 110	126124788
Cadmium, Total	0.0472	0.05	mg/L	94.4	90.0 - 110	126124810
Cadmium, Total	0.0472	0.05	mg/L	94.4	90.0 - 110	126124822
Chromium, Total	0.0516	0.05	mg/L	103	90.0 - 110	126124776
Chromium, Total	0.0508	0.05	mg/L	102	90.0 - 110	126124788
Chromium, Total	0.0513	0.05	mg/L	103	90.0 - 110	126124799
Chromium, Total	0.0512	0.05	mg/L	102	90.0 - 110	126124810
Chromium, Total	0.0515	0.05	mg/L	103	90.0 - 110	126124822
Chromium, Total	0.0508	0.05	mg/L	102	90.0 - 110	126124844
Copper, Total	0.0527	0.05	mg/L	105	90.0 - 110	126124742

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QUALITY CONTROL

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CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Copper, Total	0.0519	0.05	mg/L	104	90.0 - 110	126124753
Copper, Total	0.0515	0.05	mg/L	103	90.0 - 110	126124764
Copper, Total	0.0513	0.05	mg/L	103	90.0 - 110	126124776
Copper, Total	0.0507	0.05	mg/L	101	90.0 - 110	126124788
Copper, Total	0.0516	0.05	mg/L	103	90.0 - 110	126124799
Copper, Total	0.0511	0.05	mg/L	102	90.0 - 110	126124810
Copper, Total	0.0517	0.05	mg/L	103	90.0 - 110	126124822
Copper, Total	0.0515	0.05	mg/L	103	90.0 - 110	126124833
Copper, Total	0.0508	0.05	mg/L	102	90.0 - 110	126124844
Lead, Total	0.0478	0.05	mg/L	95.6	90.0 - 110	126124764
Lead, Total	0.0485	0.05	mg/L	97.0	90.0 - 110	126124776
Lead, Total	0.0474	0.05	mg/L	94.8	90.0 - 110	126124788
Lead, Total	0.0475	0.05	mg/L	95.0	90.0 - 110	126124799
Lead, Total	0.0473	0.05	mg/L	94.6	90.0 - 110	126124810
Lead, Total	0.0479	0.05	mg/L	95.8	90.0 - 110	126124822
Manganese, Total	0.0517	0.05	mg/L	103	90.0 - 110	126124764
Manganese, Total	0.0519	0.05	mg/L	104	90.0 - 110	126124776
Manganese, Total	0.0508	0.05	mg/L	102	90.0 - 110	126124788
Manganese, Total	0.0509	0.05	mg/L	102	90.0 - 110	126124810
Manganese, Total	0.0515	0.05	mg/L	103	90.0 - 110	126124822
Nickel, Total	0.0519	0.05	mg/L	104	90.0 - 110	126124764
Nickel, Total	0.0518	0.05	mg/L	104	90.0 - 110	126124776
Nickel, Total	0.0516	0.05	mg/L	103	90.0 - 110	126124788
Nickel, Total	0.051	0.05	mg/L	102	90.0 - 110	126124810
Nickel, Total	0.0514	0.05	mg/L	103	90.0 - 110	126124822
Selenium, Total	0.0548	0.05	mg/L	110	90.0 - 110	126124742
Selenium, Total	0.0536	0.05	mg/L	107	90.0 - 110	126124753
Selenium, Total	0.0502	0.05	mg/L	100	90.0 - 110	126124776
Selenium, Total	0.0506	0.05	mg/L	101	90.0 - 110	126124788
Selenium, Total	0.0487	0.05	mg/L	97.4	90.0 - 110	126124799
Selenium, Total	0.0493	0.05	mg/L	98.6	90.0 - 110	126124810
Selenium, Total	0.0524	0.05	mg/L	105	90.0 - 110	126124822
Selenium, Total	0.0549	0.05	mg/L	110	90.0 - 110	126124833
Zinc, Total	0.051	0.05	mg/L	102	90.0 - 110	126124764
Zinc, Total	0.0519	0.05	mg/L	104	90.0 - 110	126124776
Zinc, Total	0.050	0.05	mg/L	100	90.0 - 110	126124788
Zinc, Total	0.0492	0.05	mg/L	98.4	90.0 - 110	126124799
Zinc, Total	0.0506	0.05	mg/L	101	90.0 - 110	126124810
Zinc, Total	0.0507	0.05	mg/L	101	90.0 - 110	126124822
Zinc, Total	0.0512	0.05	mg/L	102	90.0 - 110	126124833

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.0516	0.05	mg/L	103	90.0 - 110	126124696
Antimony, Total	0.0471	0.05	mg/L	94.2	90.0 - 110	126124696

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QUALITY CONTROL

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ICV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Arsenic, Total	0.0484	0.05	mg/L	96.8	90.0 - 110	126124696
Barium, Total	0.049	0.05	mg/L	98.0	90.0 - 110	126124696
Beryllium, Total	0.0494	0.05	mg/L	98.8	90.0 - 110	126124696
Cadmium, Total	0.0491	0.05	mg/L	98.2	90.0 - 110	126124696
Chromium, Total	0.052	0.05	mg/L	104	90.0 - 110	126124696
Copper, Total	0.0516	0.05	mg/L	103	90.0 - 110	126124696
Lead, Total	0.0495	0.05	mg/L	99.0	90.0 - 110	126124696
Manganese, Total	0.0518	0.05	mg/L	104	90.0 - 110	126124696
Nickel, Total	0.0518	0.05	mg/L	104	90.0 - 110	126124696
Selenium, Total	0.0498	0.05	mg/L	99.6	90.0 - 110	126124696
Zinc, Total	0.0519	0.05	mg/L	104	90.0 - 110	126124696

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Aluminum, Total	1110432	0.537	0.519	0.500	85.0 - 115	107	104	mg/L	3.41	20.0
Antimony, Total	1110432	0.458	0.454	0.500	85.0 - 115	91.6	90.8	mg/L	0.877	20.0
Arsenic, Total	1110432	0.478	0.479	0.500	85.0 - 115	95.6	95.8	mg/L	0.209	20.0
Barium, Total	1110432	0.481	0.473	0.500	85.0 - 115	96.2	94.6	mg/L	1.68	20.0
Beryllium, Total	1110432	0.204	0.202	0.200	85.0 - 115	102	101	mg/L	0.985	20.0
Cadmium, Total	1110432	0.238	0.236	0.250	85.0 - 115	95.2	94.4	mg/L	0.844	20.0
Chromium, Total	1110432	0.530	0.519	0.500	85.0 - 115	106	104	mg/L	2.10	20.0
Copper, Total	1110432	0.517	0.502	0.500	85.0 - 115	103	100	mg/L	2.94	20.0
Lead, Total	1110432	0.475	0.470	0.500	85.0 - 115	95.0	94.0	mg/L	1.06	20.0
Manganese, Total	1110432	0.522	0.515	0.500	85.0 - 115	104	103	mg/L	1.35	20.0
Nickel, Total	1110432	0.518	0.502	0.500	85.0 - 115	104	100	mg/L	3.14	20.0
Selenium, Total	1110432	0.487	0.485	0.500	85.0 - 115	97.4	97.0	mg/L	0.412	20.0
Thallium, Total	1110432	0.490	0.485	0.500	85.0 - 115	98.0	97.0	mg/L	1.03	20.0
Zinc, Total	1110432	0.512	0.501	0.500	85.0 - 115	102	100	mg/L	2.17	20.0

MRL Check

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Copper, Total	0.00101	0.001	mg/L	101	25.0 - 175	126124698
Lead, Total	0.000983	0.001	mg/L	98.3	25.0 - 175	126124698
Manganese, Total	0.00101	0.001	mg/L	101	25.0 - 175	126124698

MSD

Parameter	*Sample*	*MS*	*MSD*	*UNK*	*Known*	*Limits*	*MS%*	*MSD%*	*Units*	*RPD*	*Limit%*
Aluminum, Total	2282717	0.566	0.562	0.0411	0.500	70.0 - 130	105	104	mg/L	0.765	20.0
Antimony, Total	2282717	0.463	0.465	ND	0.500	70.0 - 130	92.6	93.0	mg/L	0.431	20.0
Arsenic, Total	2282717	0.478	0.483	ND	0.500	70.0 - 130	95.6	96.6	mg/L	1.04	20.0
Barium, Total	2282717	0.489	0.492	0.0135	0.500	70.0 - 130	95.1	95.7	mg/L	0.629	20.0
Beryllium, Total	2282717	0.210	0.212	0.000371	0.200	70.0 - 130	105	106	mg/L	0.950	20.0
Cadmium, Total	2282717	0.235	0.236	ND	0.250	70.0 - 130	94.0	94.4	mg/L	0.425	20.0
Chromium, Total	2282717	0.518	0.514	0.00082	0.500	70.0 - 130	103	103	mg/L	0.776	20.0
Copper, Total	2282717	0.657	0.656	0.162	0.500	70.0 - 130	99.0	98.8	mg/L	0.202	20.0
Lead, Total	2282717	0.465	0.464	0.00174	0.500	70.0 - 130	92.7	92.5	mg/L	0.216	20.0

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ABLN-W

City of Abilene
Larry L. Bailey
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MSD

Parameter	*Sample*	*MS*	*MSD*	*UNK*	*Known*	*Limits*	*MS%*	*MSD%*	*Units*	*RPD*	*Limit%*
Manganese, Total	2282717	0.514	0.514	0.00234	0.500	70.0 - 130	102	102	mg/L	0	20.0
Nickel, Total	2282717	0.494	0.491	0.00262	0.500	70.0 - 130	98.3	97.7	mg/L	0.612	20.0
Selenium, Total	2282717	0.467	0.469	ND	0.500	70.0 - 130	93.4	93.8	mg/L	0.427	20.0
Thallium, Total	2282717	0.476	0.475	ND	0.500	70.0 - 130	95.2	95.0	mg/L	0.210	20.0
Zinc, Total	2282717	0.497	0.494	0.00683	0.500	70.0 - 130	98.0	97.4	mg/L	0.614	20.0

Analytical Set 1110866 — EPA 200.8 5.4

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Selenium, Total	1110432	0.000744	0.000728	0.002	mg/L	126132764
Silver, Total	1110432	ND	0.0000628	0.0002	mg/L	126132764
Thallium, Total	1110432	ND	0.00025	0.0005	mg/L	126132764

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Silver, Total	0.0476	0.05	mg/L	95.2	90.0 - 110	126132762
Silver, Total	0.0472	0.05	mg/L	94.4	90.0 - 110	126132772
Silver, Total	0.0522	0.05	mg/L	104	90.0 - 110	126132801
Silver, Total	0.0474	0.05	mg/L	94.8	90.0 - 110	126132809
Silver, Total	0.0467	0.05	mg/L	93.4	90.0 - 110	126132816
Silver, Total	0.0471	0.05	mg/L	94.2	90.0 - 110	126132826
Thallium, Total	0.0499	0.05	mg/L	99.8	90.0 - 110	126132762
Thallium, Total	0.0491	0.05	mg/L	98.2	90.0 - 110	126132772
Thallium, Total	0.0487	0.05	mg/L	97.4	90.0 - 110	126132809
Thallium, Total	0.0491	0.05	mg/L	98.2	90.0 - 110	126132816
Thallium, Total	0.0496	0.05	mg/L	99.2	90.0 - 110	126132826

ICV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Silver, Total	0.0482	0.05	mg/L	96.4	90.0 - 110	126132741
Thallium, Total	0.0484	0.05	mg/L	96.8	90.0 - 110	126132741

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Selenium, Total	1110432	0.495	0.501	0.500	85.0 - 115	99.0	100	mg/L	1.20	20.0
Silver, Total	1110432	0.0968	0.0974	0.100	85.0 - 115	96.8	97.4	mg/L	0.618	20.0
Thallium, Total	1110432	0.573	0.564	0.500	85.0 - 115	115	113	mg/L	1.58	20.0

MSD

Parameter	*Sample*	*MS*	*MSD*	*UNK*	*Known*	*Limits*	*MS%*	*MSD%*	*Units*	*RPD*	*Limit%*
Selenium, Total	2282380	0.489	0.493	ND	0.500	70.0 - 130	97.8	98.6	mg/L	0.815	20.0
Silver, Total	2282380	0.0985	0.0977	ND	0.100	70.0 - 130	98.5	97.7	mg/L	0.815	20.0
Thallium, Total	2282380	0.561	0.550	ND	0.500	70.0 - 130	112	110	mg/L	1.98	20.0

Analytical Set 1111533 — EPA 608.3

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Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
4,4-DDD	1110710	ND	0.731	1.00	ug/L	126155892
4,4-DDE	1110710	ND	0.361	1.00	ug/L	126155892
4,4-DDT	1110710	ND	0.862	1.00	ug/L	126155892
Aldrin	1110710	ND	0.260	1.00	ug/L	126155892
Alpha-BHC(hexachlorocyclohexane)	1110710	ND	0.280	1.00	ug/L	126155892
Beta-BHC(hexachlorocyclohexane)	1110710	ND	0.579	1.00	ug/L	126155892
Delta-BHC(hexachlorocyclohexane)	1110710	ND	0.898	1.00	ug/L	126155892
Dieldrin	1110710	ND	0.162	1.00	ug/L	126155892
Endosulfan I (alpha)	1110710	ND	0.679	1.00	ug/L	126155892
Endosulfan II (beta)	1110710	ND	0.356	1.00	ug/L	126155892
Endosulfan sulfate	1110710	ND	0.588	1.00	ug/L	126155892
Endrin	1110710	ND	0.538	1.00	ug/L	126155892
Endrin aldehyde	1110710	ND	0.699	1.00	ug/L	126155892
Gamma-BHC(Lindane)	1110710	ND	0.385	1.00	ug/L	126155892
Heptachlor	1110710	ND	0.207	1.00	ug/L	126155892
Heptachlor epoxide	1110710	ND	0.660	1.00	ug/L	126155892
Toxaphene	1110710	ND	0.169	0.200	ug/L	126155892

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
4,4-DDD	1110710	67.9	57.1	100	31.0 - 141	67.9	57.1	ug/L	17.3	39.0
4,4-DDE	1110710	57.8	53.8	100	30.0 - 145	57.8	53.8	ug/L	7.17	35.0
4,4-DDT	1110710	45.0	39.5	100	25.0 - 160	45.0	39.5	ug/L	13.0	42.0
Aldrin	1110710	52.4	50.7	100	42.0 - 140	52.4	50.7	ug/L	3.30	35.0
Alpha-BHC(hexachlorocyclohexane)	1110710	57.9	56.4	100	37.0 - 140	57.9	56.4	ug/L	2.62	36.0
Beta-BHC(hexachlorocyclohexane)	1110710	65.2	62.1	100	17.0 - 147	65.2	62.1	ug/L	4.87	44.0
Delta-BHC(hexachlorocyclohexane)	1110710	63.1	59.1	100	19.0 - 140	63.1	59.1	ug/L	6.55	52.0
Dieldrin	1110710	57.9	55.0	100	36.0 - 146	57.9	55.0	ug/L	5.14	49.0
Endosulfan I (alpha)	1110710	52.7	50.5	100	45.0 - 153	52.7	50.5	ug/L	4.26	28.0
Endosulfan II (beta)	1110710	57.7	52.8	100	0.100 - 202	57.7	52.8	ug/L	8.87	53.0
Endosulfan sulfate	1110710	57.8	53.9	100	26.0 - 144	57.8	53.9	ug/L	6.98	38.0
Endrin	1110710	62.6	57.5	100	30.0 - 147	62.6	57.5	ug/L	8.49	48.0
Endrin aldehyde	1110710	62.2	60.0	100	37.6 - 158	62.2	60.0	ug/L	3.60	30.0
Gamma-BHC(Lindane)	1110710	60.8	57.5	100	32.0 - 140	60.8	57.5	ug/L	5.58	39.0
Heptachlor	1110710	47.7	45.8	100	34.0 - 140	47.7	45.8	ug/L	4.06	43.0
Heptachlor epoxide	1110710	58.1	55.0	100	37.0 - 142	58.1	55.0	ug/L	5.48	26.0

Analytical Set 1111683 **EPA 608.3**

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
PCB-1016	1110712	ND	0.202	0.202	ug/L	126157579
PCB-1221	1110712	ND	0.143	0.200	ug/L	126157579
PCB-1232	1110712	ND	0.143	0.200	ug/L	126157579
PCB-1242	1110712	ND	0.192	0.200	ug/L	126157579
PCB-1248	1110712	ND	0.143	0.200	ug/L	126157579

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Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*		*File*
PCB-1254	1110712	ND	0.143	0.200	ug/L		126157579
PCB-1260	1110712	ND	0.161	0.200	ug/L		126157579
PCB-1262	1110712	ND	0.198	0.200	ug/L		126157579
PCB-1268	1110712	ND	0.143	0.200	ug/L		126157579

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*		*File*
PCB-1016	924	1000	ug/L	92.4	80.0 - 115		126157572
PCB-1016	1030	1000	ug/L	103	80.0 - 115		126157578
PCB-1016	1060	1000	ug/L	106	80.0 - 115		126157590
PCB-1260	1150	1000	ug/L	115	80.0 - 115		126157572
PCB-1260	1240	1000	ug/L	124	80.0 - 115	*	126157578
PCB-1260	1240	1000	ug/L	124	80.0 - 115	*	126157590

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
PCB-1016	1110712	524	560	1000	39.8 - 135	52.4	56.0	ug/L	6.64	30.0
PCB-1260	1110712	785	809	1000	36.1 - 134	78.5	80.9	ug/L	3.01	30.0

Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Decachlorobiphenyl	1110712	Blank	66.3	100	ug/L	66.3	10.0 - 200	126157579
Tetrachloro-m-Xylene (Surr)	1110712	Blank	49.6	100	ug/L	49.6	10.0 - 200	126157579
Decachlorobiphenyl	2282723	Unknown	0.0794	0.109	ug/L	72.8	10.0 - 200	126157583
Tetrachloro-m-Xylene (Surr)	2282723	Unknown	0.0378	0.109	ug/L	34.7	10.0 - 200	126157583

Analytical Set 1111706 — EPA 615

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*		*File*
2,4 Dichlorophenoxyacetic acid	1111208	ND	0.159	0.500	ug/L		126158099
2,4,5-TP (Silvex)	1111208	ND	0.0893	0.300	ug/L		126158099

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*		*File*
2,4 Dichlorophenoxyacetic acid	120	150	ug/L	80.1	80.0 - 115		126158098
2,4 Dichlorophenoxyacetic acid	124	150	ug/L	82.7	80.0 - 115		126158108
2,4,5-TP (Silvex)	121	150	ug/L	80.5	80.0 - 115		126158098
2,4,5-TP (Silvex)	121	150	ug/L	80.5	80.0 - 115		126158108

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
2,4 Dichlorophenoxyacetic acid	1111208	0.845	0.853	1.00	0.100 - 319	84.5	85.3	ug/L	0.942	30.0
2,4,5-TP (Silvex)	1111208	0.613	0.652	1.00	0.100 - 244	61.3	65.2	ug/L	6.17	30.0

Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
2,4-Dichlorophenylacetic Acid		CCV	134	200	ug/L	67.0	0.100 - 313	126158098

QUALITY CONTROL

ABLN-W

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Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
2,4-Dichlorophenylacetic Acid		CCV	140	200	ug/L	70.0	0.100 - 313	126158108
2,4-Dichlorophenylacetic Acid	1111208	Blank	34.1	200	ug/L	17.0	0.100 - 313	126158099
2,4-Dichlorophenylacetic Acid	1111208	LCS	113	200	ug/L	56.5	0.100 - 313	126158100
2,4-Dichlorophenylacetic Acid	1111208	LCS Dup	67.0	200	ug/L	33.5	0.100 - 313	126158101
2,4-Dichlorophenylacetic Acid	2282723	Unknown	0.829	2.07	ug/L	40.0	0.100 - 313	126158103

Analytical Set 1111820 — EPA 604.1

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Hexachlorophene	1111139	ND	0.890	1.25	ug/L	126160452

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Hexachlorophene	4920	5000	ug/L	98.5	70.0 - 130	126160451
Hexachlorophene	4880	5000	ug/L	97.6	70.0 - 130	126160457
Hexachlorophene	4920	5000	ug/L	98.4	70.0 - 130	126160460
Hexachlorophene	5030	5000	ug/L	101	70.0 - 130	126160463

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Hexachlorophene	1111139	52.1	47.5	50.0	25.5 - 145	104	95.0	ug/L	9.05	50.0

Analytical Set 1112285 — EPA 632

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Carbaryl (Sevin)	1110709	ND	66.1	2500	ug/L	126171282
Diuron	1110709	50.0	44.4	45.0	ug/L	126171282

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Carbaryl (Sevin)	1090	1000	ug/L	109	70.0 - 130	126171281
Carbaryl (Sevin)	1100	1000	ug/L	110	70.0 - 130	126171285
Carbaryl (Sevin)	1100	1000	ug/L	110	70.0 - 130	126171288
Carbaryl (Sevin)	1110	1000	ug/L	111	70.0 - 130	126171292
Diuron	1090	1000	ug/L	109	70.0 - 130	126171281
Diuron	1080	1000	ug/L	108	70.0 - 130	126171285
Diuron	1080	1000	ug/L	108	70.0 - 130	126171288
Diuron	1100	1000	ug/L	110	70.0 - 130	126171292

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Carbaryl (Sevin)	1110709	878	954	1000	17.1 - 131	87.8	95.4	ug/L	8.30	30.0
Diuron	1110709	767	793	1000	0.100 - 138	76.7	79.3	ug/L	3.33	30.0

Analytical Set 1112707 — ASTM D7065-11

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QUALITY CONTROL

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Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Nonylphenol	1111749	ND	5.00	30.0	ug/L	126181237

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Nonylphenol	305000	300000	ug/L	102	70.0 - 130	126181236

IS Areas

Parameter	*Sample*	*Type*	*Reading*	*CCVISM*	*Low*	*High*	*File*	*PrepSet*
Acenaphthene-d10-ISTD	623252	CCV	137000	137000	68510	205500	126181236	623252
Phenanthrene-d10-ISTD	623252	CCV	199800	199800	99890	299700	126181236	623252
Acenaphthene-d10-ISTD	1111749	Blank	95470	137000	68510	205500	126181237	1111749
Acenaphthene-d10-ISTD	1111749	LCS	94580	137000	68510	205500	126181238	1111749
Acenaphthene-d10-ISTD	1111749	LCS Dup	89490	137000	68510	205500	126181239	1111749
Phenanthrene-d10-ISTD	1111749	Blank	141700	199800	99890	299700	126181237	1111749
Phenanthrene-d10-ISTD	1111749	LCS	140000	199800	99890	299700	126181238	1111749
Phenanthrene-d10-ISTD	1111749	LCS Dup	131900	199800	99890	299700	126181239	1111749
Acenaphthene-d10-ISTD	2282723	Unknown	96990	137000	68510	205500	126181240	1111749
Phenanthrene-d10-ISTD	2282723	Unknown	145800	199800	99890	299700	126181240	1111749

IS RetTime

Parameter	*Sample*	*Type*	*Reading*	*CCVISM*	*Low*	*High*	*File*	*PrepSet*
Acenaphthene-d10-ISTD	623252	CCV	5.930	5.930	5.870	5.990	126181236	623252
Phenanthrene-d10-ISTD	623252	CCV	7.098	7.098	7.038	7.158	126181236	623252
Acenaphthene-d10-ISTD	1111749	Blank	5.924	5.930	5.870	5.990	126181237	1111749
Acenaphthene-d10-ISTD	1111749	LCS	5.930	5.930	5.870	5.990	126181238	1111749
Acenaphthene-d10-ISTD	1111749	LCS Dup	5.924	5.930	5.870	5.990	126181239	1111749
Phenanthrene-d10-ISTD	1111749	Blank	7.098	7.098	7.038	7.158	126181237	1111749
Phenanthrene-d10-ISTD	1111749	LCS	7.103	7.098	7.038	7.158	126181238	1111749
Phenanthrene-d10-ISTD	1111749	LCS Dup	7.098	7.098	7.038	7.158	126181239	1111749
Acenaphthene-d10-ISTD	2282723	Unknown	5.924	5.930	5.870	5.990	126181240	1111749
Phenanthrene-d10-ISTD	2282723	Unknown	7.098	7.098	7.038	7.158	126181240	1111749

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Nonylphenol	1111749	119	114	150	56.0 - 112	79.3	76.0	ug/L	4.25	30.0

Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
4-Nonylphenol-SURR	623252	CCV	48000	50000	ug/L	96.0	50.0 - 130	126181236
4-Nonylphenol-SURR	1111749	Blank	14000	25000	ug/L	56.0	50.0 - 130	126181237
4-Nonylphenol-SURR	1111749	LCS	15700	25000	ug/L	62.8	50.0 - 130	126181238
4-Nonylphenol-SURR	1111749	LCS Dup	16200	25000	ug/L	64.8	50.0 - 130	126181239
4-Nonylphenol-SURR	2282723	Unknown	5.12	28.3	ug/L	18.1 *	50.0 - 130	126181240

Analytical Set 1112751 EPA 622

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Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Chlorpyrifos	1110711	ND	0.0904	50.0	ug/L	126181743

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Chlorpyrifos	1030	1000	ug/L	103	48.0 - 150	126181742
Chlorpyrifos	1100	1000	ug/L	110	48.0 - 150	126181751

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Chlorpyrifos	1110711	463	587	1000	0.100 - 128	46.3	58.7	ug/L	23.6	30.0

Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Tributylphosphate		CCV	1020	1000	ug/L	102	0.100 - 115	126181742
Tributylphosphate		CCV	1110	1000	ug/L	111	0.100 - 115	126181751
Triphenylphosphate		CCV	1090	1000	ug/L	109	0.100 - 115	126181742
Triphenylphosphate		CCV	1080	1000	ug/L	108	0.100 - 115	126181751
Tributylphosphate	1110711	Blank	466	1000	ug/L	46.6	0.100 - 115	126181743
Tributylphosphate	1110711	LCS	439	1000	ug/L	43.9	0.100 - 115	126181744
Tributylphosphate	1110711	LCS Dup	590	1000	ug/L	59.0	0.100 - 115	126181745
Triphenylphosphate	1110711	Blank	412	1000	ug/L	41.2	0.100 - 115	126181743
Triphenylphosphate	1110711	LCS	389	1000	ug/L	38.9	0.100 - 115	126181744
Triphenylphosphate	1110711	LCS Dup	497	1000	ug/L	49.7	0.100 - 115	126181745

Analytical Set 1112753 — EPA 614

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Azinphos-methyl (Guthion)	1110711	ND	41.4	50.0	ug/L	126181760
Demeton	1110711	ND	31.9	50.0	ug/L	126181760
Diazinon	1110711	ND	19.7	50.0	ug/L	126181760
Malathion	1110711	ND	24.8	50.0	ug/L	126181760
Parathion, ethyl	1110711	ND	23.9	50.0	ug/L	126181760
Parathion, methyl	1110711	ND	27.4	50.0	ug/L	126181760

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Azinphos-methyl (Guthion)	1050	1000	ug/L	105	37.5 - 164	126181759
Azinphos-methyl (Guthion)	1270	1000	ug/L	127	37.5 - 164	126181768
Demeton	1010	1000	ug/L	101	58.6 - 150	126181759
Demeton	1090	1000	ug/L	109	58.6 - 150	126181768
Diazinon	1060	1000	ug/L	106	65.4 - 138	126181759
Diazinon	1210	1000	ug/L	121	65.4 - 138	126181768
Malathion	1020	1000	ug/L	102	49.5 - 160	126181759
Malathion	1130	1000	ug/L	113	49.5 - 160	126181768
Parathion, ethyl	1020	1000	ug/L	102	56.0 - 142	126181759
Parathion, ethyl	1210	1000	ug/L	121	56.0 - 142	126181768

ABLN-W

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Project
1096154

Printed 04/10/2024

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Parathion, methyl	1030	1000	ug/L	103	12.6 - 194	126181759
Parathion, methyl	1170	1000	ug/L	117	12.6 - 194	126181768

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Azinphos-methyl (Guthion)	1110711	345	554	1000	0.100 - 155	34.5	55.4	ug/L	46.5 *	30.0
Demeton	1110711	369	450	1000	0.100 - 109	36.9	45.0	ug/L	19.8	30.0
Diazinon	1110711	392	503	1000	0.100 - 125	39.2	50.3	ug/L	24.8	30.0
Malathion	1110711	583	745	1000	0.100 - 130	58.3	74.5	ug/L	24.4	30.0
Parathion, ethyl	1110711	603	778	1000	0.100 - 122	60.3	77.8	ug/L	25.3	30.0
Parathion, methyl	1110711	460	606	1000	0.100 - 131	46.0	60.6	ug/L	27.4	30.0

Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Tributylphosphate		CCV	1020	2000	ug/L	51.0	0.100 - 106	126181759
Tributylphosphate		CCV	1110	2000	ug/L	55.5	0.100 - 106	126181768
Triphenylphosphate		CCV	1090	2000	ug/L	54.5	0.100 - 172	126181759
Triphenylphosphate		CCV	1080	2000	ug/L	54.0	0.100 - 172	126181768
Tributylphosphate	1110711	Blank	466	2000	ug/L	23.3	0.100 - 106	126181760
Tributylphosphate	1110711	LCS	439	2000	ug/L	22.0	0.100 - 106	126181761
Tributylphosphate	1110711	LCS Dup	590	2000	ug/L	29.5	0.100 - 106	126181762
Triphenylphosphate	1110711	Blank	412	2000	ug/L	20.6	0.100 - 172	126181760
Triphenylphosphate	1110711	LCS	389	2000	ug/L	19.4	0.100 - 172	126181761
Triphenylphosphate	1110711	LCS Dup	497	2000	ug/L	24.8	0.100 - 172	126181762
Tributylphosphate	2282723	Unknown	0.574	2.19	ug/L	26.2	0.100 - 106	126181764
Triphenylphosphate	2282723	Unknown	0.518	2.19	ug/L	23.7	0.100 - 172	126181764

Analytical Set 1112857 — EPA 617

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Kelthane (Dicofol)	1110712	ND	3.52	5.00	ug/L	126183318
Methoxychlor	1110712	ND	0.897	1.00	ug/L	126183318
Mirex	1110712	ND	0.905	1.00	ug/L	126183318

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Kelthane (Dicofol)	48.5	50.0	ug/L	97.0	70.0 - 130	126183317
Kelthane (Dicofol)	50.1	50.0	ug/L	100	70.0 - 130	126183326
Methoxychlor	47.3	50.0	ug/L	94.7	70.0 - 130	126183317
Methoxychlor	47.9	50.0	ug/L	95.9	70.0 - 130	126183326
Mirex	48.1	50.0	ug/L	96.3	70.0 - 130	126183317
Mirex	48.9	50.0	ug/L	97.8	70.0 - 130	126183326

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Kelthane (Dicofol)	1110712	40.3	37.7	100	0.100 - 137	40.3	37.7	ug/L	6.67	30.0

ABLN-W

City of Abilene
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1096154

Printed 04/10/2024

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Methoxychlor	1110712	41.3	38.9	100	21.5 - 151	41.3	38.9	ug/L	5.99	30.0
Mirex	1110712	42.3	40.8	100	11.6 - 140	42.3	40.8	ug/L	3.61	30.0

Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Decachlorobiphenyl	623803	CCV	46.8	100	ug/L	46.8	10.0 - 150	126183317
Decachlorobiphenyl	623803	CCV	48.0	100	ug/L	48.0	10.0 - 150	126183326
Tetrachloro-m-Xylene (Surr)	623803	CCV	46.4	100	ug/L	46.4	10.0 - 150	126183317
Tetrachloro-m-Xylene (Surr)	623803	CCV	47.7	100	ug/L	47.7	10.0 - 150	126183326
Decachlorobiphenyl	1110712	Blank	47.7	100	ug/L	47.7	10.0 - 150	126183318
Decachlorobiphenyl	1110712	LCS	59.9	100	ug/L	59.9	10.0 - 150	126183319
Decachlorobiphenyl	1110712	LCS Dup	57.8	100	ug/L	57.8	10.0 - 150	126183320
Tetrachloro-m-Xylene (Surr)	1110712	Blank	33.7	100	ug/L	33.7	10.0 - 150	126183318
Tetrachloro-m-Xylene (Surr)	1110712	LCS	40.3	100	ug/L	40.3	10.0 - 150	126183319
Tetrachloro-m-Xylene (Surr)	1110712	LCS Dup	42.3	100	ug/L	42.3	10.0 - 150	126183320
Decachlorobiphenyl	2282723	Unknown	0.0466	0.109	ug/L	42.8	10.0 - 150	126183321
Tetrachloro-m-Xylene (Surr)	2282723	Unknown	0.0293	0.109	ug/L	26.9	10.0 - 150	126183321

Analytical Set 1112859 EPA 608.3

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
4,4-DDD	1110712	ND	0.941	1.00	ug/L	126183334
4,4-DDE	1110712	ND	0.570	1.00	ug/L	126183334
4,4-DDT	1110712	ND	0.718	1.00	ug/L	126183334
Aldrin	1110712	ND	0.980	1.00	ug/L	126183334
Alpha-BHC(hexachlorocyclohexane)	1110712	ND	0.545	1.00	ug/L	126183334
Beta-BHC(hexachlorocyclohexane)	1110712	ND	0.970	1.00	ug/L	126183334
Delta-BHC(hexachlorocyclohexane)	1110712	ND	0.309	1.00	ug/L	126183334
Dieldrin	1110712	ND	0.763	1.00	ug/L	126183334
Endosulfan I (alpha)	1110712	ND	0.653	1.00	ug/L	126183334
Endosulfan II (beta)	1110712	ND	1.02	1.02	ug/L	126183334
Endosulfan sulfate	1110712	ND	0.915	1.00	ug/L	126183334
Endrin	1110712	ND	0.756	1.00	ug/L	126183334
Endrin aldehyde	1110712	ND	0.477	1.00	ug/L	126183334
Gamma-BHC(Lindane)	1110712	ND	0.800	1.00	ug/L	126183334
Heptachlor	1110712	ND	0.720	1.00	ug/L	126183334
Heptachlor epoxide	1110712	ND	1.04	1.04	ug/L	126183334
Toxaphene	1110712	ND	0.00373	1.00	ug/L	126183334

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
4,4-DDD	55.2	50.0	ug/L	110	75.0 - 125	126183333
4,4-DDD	57.3	50.0	ug/L	115	75.0 - 125	126183342
4,4-DDE	52.6	50.0	ug/L	105	75.0 - 125	126183333
4,4-DDE	53.5	50.0	ug/L	107	75.0 - 125	126183342

QUALITY CONTROL

ABLN-W

City of Abilene
Larry L. Bailey
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1096154

Printed 04/10/2024

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
4,4-DDT	53.6	50.0	ug/L	107	75.0 - 125	126183333
4,4-DDT	53.9	50.0	ug/L	108	75.0 - 125	126183342
Aldrin	51.9	50.0	ug/L	104	75.0 - 125	126183333
Aldrin	52.0	50.0	ug/L	104	75.0 - 125	126183342
Alpha-BHC(hexachlorocyclohexane)	49.1	50.0	ug/L	98.2	75.0 - 125	126183333
Alpha-BHC(hexachlorocyclohexane)	50.5	50.0	ug/L	101	75.0 - 125	126183342
Beta-BHC(hexachlorocyclohexane)	49.1	50.0	ug/L	98.2	75.0 - 125	126183333
Beta-BHC(hexachlorocyclohexane)	51.7	50.0	ug/L	103	75.0 - 125	126183342
Delta-BHC(hexachlorocyclohexane)	52.6	50.0	ug/L	105	75.0 - 125	126183333
Delta-BHC(hexachlorocyclohexane)	54.2	50.0	ug/L	108	75.0 - 125	126183342
Dieldrin	53.4	50.0	ug/L	107	75.0 - 125	126183333
Dieldrin	52.8	50.0	ug/L	106	75.0 - 125	126183342
Endosulfan I (alpha)	50.3	50.0	ug/L	101	75.0 - 125	126183333
Endosulfan I (alpha)	50.4	50.0	ug/L	101	75.0 - 125	126183342
Endosulfan II (beta)	51.6	50.0	ug/L	103	75.0 - 125	126183333
Endosulfan II (beta)	51.4	50.0	ug/L	103	75.0 - 125	126183342
Endosulfan sulfate	54.1	50.0	ug/L	108	75.0 - 125	126183333
Endosulfan sulfate	55.3	50.0	ug/L	111	75.0 - 125	126183342
Endrin	51.3	50.0	ug/L	103	75.0 - 125	126183333
Endrin	59.4	50.0	ug/L	119	75.0 - 125	126183342
Endrin aldehyde	53.7	50.0	ug/L	107	75.0 - 125	126183333
Endrin aldehyde	54.5	50.0	ug/L	109	75.0 - 125	126183342
Gamma-BHC(Lindane)	51.0	50.0	ug/L	102	75.0 - 125	126183333
Gamma-BHC(Lindane)	51.5	50.0	ug/L	103	75.0 - 125	126183342
Heptachlor	50.2	50.0	ug/L	100	75.0 - 125	126183333
Heptachlor	50.4	50.0	ug/L	101	75.0 - 125	126183342
Heptachlor epoxide	50.4	50.0	ug/L	101	75.0 - 125	126183333
Heptachlor epoxide	50.4	50.0	ug/L	101	75.0 - 125	126183342

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
4,4-DDD	1110712	45.4	42.6	50.0	31.0 - 141	90.8	85.2	ug/L	6.36	39.0
4,4-DDE	1110712	44.0	41.5	50.0	30.0 - 145	88.0	83.0	ug/L	5.85	35.0
4,4-DDT	1110712	43.1	40.8	50.0	25.0 - 160	86.2	81.6	ug/L	5.48	42.0
Aldrin	1110712	41.4	41.2	50.0	42.0 - 140	82.8	82.4	ug/L	0.484	35.0
Alpha-BHC(hexachlorocyclohexane)	1110712	40.9	39.9	50.0	37.0 - 140	81.8	79.8	ug/L	2.48	36.0
Beta-BHC(hexachlorocyclohexane)	1110712	51.5	49.6	50.0	17.0 - 147	103	99.2	ug/L	3.76	44.0
Delta-BHC(hexachlorocyclohexane)	1110712	46.6	44.7	50.0	19.0 - 140	93.2	89.4	ug/L	4.16	52.0
Dieldrin	1110712	44.5	42.5	50.0	36.0 - 146	89.0	85.0	ug/L	4.60	49.0
Endosulfan I (alpha)	1110712	39.3	37.5	50.0	45.0 - 153	78.6	75.0	ug/L	4.69	28.0
Endosulfan II (beta)	1110712	41.4	39.6	50.0	0.100 - 202	82.8	79.2	ug/L	4.44	53.0
Endosulfan sulfate	1110712	45.6	43.7	50.0	26.0 - 144	91.2	87.4	ug/L	4.26	38.0
Endrin	1110712	47.2	45.3	50.0	30.0 - 147	94.4	90.6	ug/L	4.11	48.0
Endrin aldehyde	1110712	51.6	48.8	50.0	37.6 - 158	103	97.6	ug/L	5.38	30.0
Gamma-BHC(Lindane)	1110712	42.0	41.0	50.0	32.0 - 140	84.0	82.0	ug/L	2.41	39.0

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ABLN-W

City of Abilene
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1096154

Printed 04/10/2024

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Heptachlor	1110712	39.8	39.1	50.0	34.0 - 140	79.6	78.2	ug/L	1.77	43.0
Heptachlor epoxide	1110712	42.0	40.5	50.0	37.0 - 142	84.0	81.0	ug/L	3.64	26.0

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
Decachlorobiphenyl	623803	CCV	46.8	100	ug/L	46.8	0.100 - 144	126183333
Decachlorobiphenyl	623803	CCV	48.0	100	ug/L	48.0	0.100 - 144	126183342
Tetrachloro-m-Xylene (Surr)	623803	CCV	46.4	100	ug/L	46.4	0.100 - 107	126183333
Tetrachloro-m-Xylene (Surr)	623803	CCV	47.7	100	ug/L	47.7	0.100 - 107	126183342
Decachlorobiphenyl	1110712	Blank	47.7	100	ug/L	47.7	0.100 - 144	126183334
Decachlorobiphenyl	1110712	LCS	59.9	100	ug/L	59.9	0.100 - 144	126183335
Decachlorobiphenyl	1110712	LCS Dup	57.8	100	ug/L	57.8	0.100 - 144	126183336
Tetrachloro-m-Xylene (Surr)	1110712	Blank	33.7	100	ug/L	33.7	0.100 - 107	126183334
Tetrachloro-m-Xylene (Surr)	1110712	LCS	40.3	100	ug/L	40.3	0.100 - 107	126183335
Tetrachloro-m-Xylene (Surr)	1110712	LCS Dup	42.3	100	ug/L	42.3	0.100 - 107	126183336
Decachlorobiphenyl	2282723	Unknown	0.0466	0.109	ug/L	42.8	0.100 - 144	126183337
Tetrachloro-m-Xylene (Surr)	2282723	Unknown	0.0293	0.109	ug/L	26.9	0.100 - 107	126183337

Analytical Set 1112973 — EPA 625.1

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
1,2,4,5-Tetrachlorobenzene	1111195	ND	0.517	1.00	ug/L	126186623
1,2,4-Trichlorobenzene	1111195	ND	0.720	1.00	ug/L	126186623
1,2-DPH (as azobenzene)	1111195	ND	0.695	1.00	ug/L	126186623
2,4,5-Trichlorophenol	1111195	ND	0.734	1.00	ug/L	126186623
2,4,6-Trichlorophenol	1111195	ND	0.704	1.00	ug/L	126186623
2,4-Dichlorophenol	1111195	ND	0.567	1.00	ug/L	126186623
2,4-Dimethylphenol	1111195	ND	2.32	2.40	ug/L	126186623
2,4-Dinitrophenol	1111195	ND	8.07	9.00	ug/L	126186623
2,4-Dinitrotoluene	1111195	ND	3.35	3.50	ug/L	126186623
2,6-Dinitrotoluene	1111195	ND	0.675	1.00	ug/L	126186623
2-Chloronaphthalene	1111195	ND	0.333	1.00	ug/L	126186623
2-Chlorophenol	1111195	ND	0.367	1.00	ug/L	126186623
2-Methylphenol (o-Cresol)	1111195	ND	5.13	5.20	ug/L	126186623
2-Nitrophenol	1111195	ND	0.495	1.00	ug/L	126186623
3&4-Methylphenol (m&p-Cresol)	1111195	ND	6.15	6.20	ug/L	126186623
3,3'-Dichlorobenzidine	1111195	ND	4.79	5.00	ug/L	126186623
4,6-Dinitro-2-methylphenol	1111195	ND	7.88	8.00	ug/L	126186623
4-Bromophenyl phenyl ether	1111195	ND	0.311	1.00	ug/L	126186623
4-Chlorophenyl phenyl ethe	1111195	ND	0.281	1.00	ug/L	126186623
4-Nitrophenol	1111195	ND	0.932	1.00	ug/L	126186623
Acenaphthene	1111195	ND	0.139	1.00	ug/L	126186623
Acenaphthylene	1111195	ND	0.202	1.00	ug/L	126186623
Anthracene	1111195	ND	0.538	1.00	ug/L	126186623
Benzidine	1111195	ND	19.9	20.0	ug/L	126186623

ABLN-W

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Project
1096154

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Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Benzo(a)anthracene	1111195	ND	0.627	1.00	ug/L	126186623
Benzo(a)pyrene	1111195	ND	0.478	1.00	ug/L	126186623
Benzo(b)fluoranthene	1111195	ND	0.517	1.00	ug/L	126186623
Benzo(ghi)perylene	1111195	ND	0.750	1.00	ug/L	126186623
Benzo(k)fluoranthene	1111195	ND	0.763	1.00	ug/L	126186623
Benzyl Butyl phthalate	1111195	0.850	0.696	7.50	ug/L	126186623
Bis(2-chloroethoxy)methane	1111195	ND	0.312	1.00	ug/L	126186623
Bis(2-chloroethyl)ether	1111195	ND	0.434	1.00	ug/L	126186623
Bis(2-chloroisopropyl)ether	1111195	ND	0.448	1.00	ug/L	126186623
Bis(2-ethylhexyl)phthalate	1111195	ND	1.63	7.50	ug/L	126186623
Chrysene (Benzo(a)phenanthrene)	1111195	ND	0.575	1.00	ug/L	126186623
Dibenz(a,h)anthracene	1111195	ND	0.872	1.00	ug/L	126186623
Diethyl phthalate	1111195	ND	0.721	5.70	ug/L	126186623
Dimethyl phthalate	1111195	ND	0.497	4.80	ug/L	126186623
Di-n-butylphthalate	1111195	ND	0.834	7.50	ug/L	126186623
Di-n-octylphthalate	1111195	ND	0.782	1.00	ug/L	126186623
Fluoranthene(Benzo(j,k)fluorene)	1111195	ND	0.772	1.00	ug/L	126186623
Fluorene	1111195	ND	0.512	1.00	ug/L	126186623
Hexachlorobenzene	1111195	ND	0.187	1.00	ug/L	126186623
Hexachlorobutadiene	1111195	ND	0.618	1.00	ug/L	126186623
Hexachlorocyclopentadiene	1111195	ND	8.69	9.00	ug/L	126186623
Hexachloroethane	1111195	ND	0.789	1.00	ug/L	126186623
Indeno(1,2,3-cd)pyrene	1111195	ND	0.793	1.00	ug/L	126186623
Isophorone	1111195	ND	0.468	1.00	ug/L	126186623
Naphthalene	1111195	ND	0.387	1.00	ug/L	126186623
Nitrobenzene	1111195	ND	0.390	1.00	ug/L	126186623
n-Nitrosodiethylamine	1111195	ND	0.282	1.00	ug/L	126186623
N-Nitrosodimethylamine	1111195	ND	6.64	7.00	ug/L	126186623
n-Nitroso-di-n-butylamine	1111195	ND	0.403	1.00	ug/L	126186623
N-Nitrosodi-n-propylamine	1111195	ND	0.777	1.00	ug/L	126186623
N-Nitrosodiphenylamine (as DPA	1111195	ND	0.427	1.00	ug/L	126186623
p-Chloro-m-Cresol (4-Chloro-3-me	1111195	ND	2.35	2.40	ug/L	126186623
Pentachlorobenzene	1111195	ND	0.420	1.00	ug/L	126186623
Pentachlorophenol	1111195	ND	0.129	1.00	ug/L	126186623
Phenanthrene	1111195	ND	0.624	1.00	ug/L	126186623
Phenol	1111195	ND	1.50	1.50	ug/L	126186623
Pyrene	1111195	ND	0.587	1.00	ug/L	126186623
Pyridine	1111195	ND	5.33	5.40	ug/L	126186623

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
1,2,4,5-Tetrachlorobenzene	61000	50000	ug/L	122	60.0 - 140	126186619
1,2,4-Trichlorobenzene	56000	50000	ug/L	112	61.0 - 130	126186619
1,2-DPH (as azobenzene)	63400	50000	ug/L	127	60.0 - 140	126186619
2,4,5-Trichlorophenol	52100	50000	ug/L	104	69.0 - 130	126186619

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ABLN-W

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Printed 04/10/2024

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*		*File*
2,4,6-Trichlorophenol	56300	50000	ug/L	113	69.0 - 130		126186619
2,4-Dichlorophenol	53000	50000	ug/L	106	64.0 - 130		126186619
2,4-Dimethylphenol	45900	50000	ug/L	91.8	58.0 - 130		126186619
2,4-Dinitrophenol	43700	50000	ug/L	87.4	39.0 - 173		126186619
2,4-Dinitrotoluene	48400	50000	ug/L	96.8	53.0 - 130		126186619
2,6-Dinitrotoluene	50300	50000	ug/L	101	68.0 - 137		126186619
2-Chloronaphthalene	49200	50000	ug/L	98.4	70.0 - 130		126186619
2-Chlorophenol	52700	50000	ug/L	105	55.0 - 130		126186619
2-Methylphenol (o-Cresol)	49600	50000	ug/L	99.2	60.0 - 140		126186619
2-Nitrophenol	52600	50000	ug/L	105	61.0 - 163		126186619
3&4-Methylphenol (m&p-Cresol)	42700	50000	ug/L	85.4	60.0 - 140		126186619
3,3'-Dichlorobenzidine	46100	50000	ug/L	92.2	18.0 - 213		126186619
4,6-Dinitro-2-methylphenol	50800	50000	ug/L	102	56.0 - 130		126186619
4-Bromophenyl phenyl ether	50400	50000	ug/L	101	70.0 - 130		126186619
4-Chlorophenyl phenyl ethe	53300	50000	ug/L	107	57.0 - 145		126186619
4-Nitrophenol	44600	50000	ug/L	89.2	35.0 - 135		126186619
Acenaphthene	56300	50000	ug/L	113	70.0 - 130		126186619
Acenaphthylene	58500	50000	ug/L	117	60.0 - 130		126186619
Anthracene	55600	50000	ug/L	111	58.0 - 130		126186619
Benzidine	5040	50000	ug/L	10.1	20.0 - 180	*	126186619
Benzo(a)anthracene	59700	50000	ug/L	119	42.0 - 133		126186619
Benzo(a)pyrene	59300	50000	ug/L	119	32.0 - 148		126186619
Benzo(b)fluoranthene	46600	50000	ug/L	93.2	42.0 - 140		126186619
Benzo(ghi)perylene	60100	50000	ug/L	120	13.0 - 195		126186619
Benzo(k)fluoranthene	69400	50000	ug/L	139	25.0 - 146		126186619
Benzyl Butyl phthalate	56700	50000	ug/L	113	43.0 - 140		126186619
Bis(2-chloroethoxy)methane	56300	50000	ug/L	113	52.0 - 164		126186619
Bis(2-chloroethyl)ether	59700	50000	ug/L	119	52.0 - 130		126186619
Bis(2-chloroisopropyl)ether	66000	50000	ug/L	132	63.0 - 139		126186619
Bis(2-ethylhexyl)phthalate	51800	50000	ug/L	104	43.0 - 137		126186619
Chrysene (Benzo(a)phenanthrene)	49500	50000	ug/L	99.0	44.0 - 140		126186619
Dibenz(a,h)anthracene	51800	50000	ug/L	104	13.0 - 200		126186619
Diethyl phthalate	66100	50000	ug/L	132	47.0 - 130	*	126186619
Dimethyl phthalate	53600	50000	ug/L	107	50.0 - 130		126186619
Di-n-butylphthalate	56800	50000	ug/L	114	52.0 - 130		126186619
Di-n-octylphthalate	56800	50000	ug/L	114	21.0 - 132		126186619
Fluoranthene(Benzo(j,k)fluorene)	61900	50000	ug/L	124	47.0 - 130		126186619
Fluorene	61800	50000	ug/L	124	70.0 - 130		126186619
Hexachlorobenzene	64900	50000	ug/L	130	38.0 - 142		126186619
Hexachlorobutadiene	63600	50000	ug/L	127	68.0 - 130		126186619
Hexachlorocyclopentadiene	53600	50000	ug/L	107	60.0 - 140		126186619
Hexachloroethane	56800	50000	ug/L	114	55.0 - 130		126186619
Indeno(1,2,3-cd)pyrene	52500	50000	ug/L	105	13.0 - 151		126186619
Isophorone	67000	50000	ug/L	134	52.0 - 180		126186619
Naphthalene	56800	50000	ug/L	114	70.0 - 130		126186619

QUALITY CONTROL

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Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*		*File*
Nitrobenzene	66100	50000	ug/L	132	54.0 - 158		126186619
n-Nitrosodiethylamine	51900	50000	ug/L	104	60.0 - 140		126186619
N-Nitrosodimethylamine	57600	50000	ug/L	115	60.0 - 140		126186619
n-Nitroso-di-n-butylamine	52400	50000	ug/L	105	60.0 - 140		126186619
N-Nitrosodi-n-propylamine	66600	50000	ug/L	133	59.0 - 170		126186619
N-Nitrosodiphenylamine (as DPA	48900	50000	ug/L	97.8	60.0 - 140		126186619
p-Chloro-m-Cresol (4-Chloro-3-me	44700	50000	ug/L	89.4	68.0 - 130		126186619
Pentachlorobenzene	57000	50000	ug/L	114	60.0 - 140		126186619
Pentachlorophenol	53900	50000	ug/L	108	42.0 - 152		126186619
Phenanthrene	59400	50000	ug/L	119	67.0 - 130		126186619
Phenol	68900	50000	ug/L	138	48.0 - 130	*	126186619
Pyrene	63900	50000	ug/L	128	70.0 - 130		126186619
Pyridine	51000	50000	ug/L	102	60.0 - 140		126186619

DFTPP

Parameter		*RefMass*	*Reading*	*%*	*Limits%*	*File*
DFTPP Mass 127	623950	198	98818	60.0	40.0 - 60.0	126186617
DFTPP Mass 197	623950	198	0	0.0	0 - 1.00	126186617
DFTPP Mass 198	623950	198	164784	100.0	100 - 100	126186617
DFTPP Mass 199	623950	198	11252	6.8	5.00 - 9.00	126186617
DFTPP Mass 275	623950	198	45749	27.8	10.0 - 30.0	126186617
DFTPP Mass 365	623950	198	10512	6.4	1.00 - 100	126186617
DFTPP Mass 441	623950	443	21668	99.8	0 - 100	126186617
DFTPP Mass 442	623950	198	112418	68.2	40.0 - 100	126186617
DFTPP Mass 443	623950	442	21710	19.3	17.0 - 23.0	126186617
DFTPP Mass 51	623950	198	85122	51.7	30.0 - 60.0	126186617
DFTPP Mass 68	623950	69.0	0	0.0	0 - 2.00	126186617
DFTPP Mass 69	623950	198	118914	72.2	0 - 100	126186617
DFTPP Mass 70	623950	69.0	917	0.8	0 - 2.00	126186617

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
1,2,4,5-Tetrachlorobenzene	1111195	13.4	12.4	25.0	27.5 - 85.5	53.6	49.6	ug/L	7.75	50.0
1,2,4-Trichlorobenzene	1111195	12.0	10.8	25.0	44.0 - 142	48.0	43.2 *	ug/L	10.5	50.0
1,2-DPH (as azobenzene)	1111195	22.4	21.0	25.0	12.6 - 110	89.6	84.0	ug/L	6.45	50.0
2,4,5-Trichlorophenol	1111195	18.4	17.1	25.0	51.3 - 109	73.6	68.4	ug/L	7.32	50.0
2,4,6-Trichlorophenol	1111195	21.4	17.8	25.0	37.0 - 144	85.6	71.2	ug/L	18.4	58.0
2,4-Dichlorophenol	1111195	18.4	16.6	25.0	39.0 - 135	73.6	66.4	ug/L	10.3	50.0
2,4-Dimethylphenol	1111195	7.46	4.95	25.0	23.0 - 120	29.8	19.8 *	ug/L	40.3	68.0
2,4-Dinitrophenol	1111195	13.4	6.82	25.0	0.100 - 191	53.6	27.3	ug/L	65.0	132
2,4-Dinitrotoluene	1111195	19.4	16.8	25.0	39.0 - 139	77.6	67.2	ug/L	14.4	42.0
2,6-Dinitrotoluene	1111195	20.6	18.3	25.0	50.0 - 158	82.4	73.2	ug/L	11.8	48.0
2-Chloronaphthalene	1111195	13.3	12.6	25.0	60.0 - 120	53.2 *	50.4 *	ug/L	5.41	24.0
2-Chlorophenol	1111195	16.8	16.3	25.0	23.0 - 134	67.2	65.2	ug/L	3.02	61.0
2-Methylphenol (o-Cresol)	1111195	15.1	13.9	25.0	38.9 - 76.1	60.4	55.6	ug/L	8.28	50.0

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LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
2-Nitrophenol	1111195	18.0	16.0	25.0	29.0 - 182	72.0	64.0	ug/L	11.8	55.0
3&4-Methylphenol (m&p-Cresol)	1111195	11.1	10.5	25.0	33.0 - 70.4	44.4	42.0	ug/L	5.56	50.0
3,3'-Dichlorobenzidine	1111195	18.7	17.0	25.0	0.100 - 262	74.8	68.0	ug/L	9.52	108
4,6-Dinitro-2-methylphenol	1111195	16.7	11.5	25.0	0.100 - 181	66.8	46.0	ug/L	36.9	203
4-Bromophenyl phenyl ether	1111195	16.3	14.7	25.0	53.0 - 127	65.2	58.8	ug/L	10.3	43.0
4-Chlorophenyl phenyl ethe	1111195	16.5	15.4	25.0	25.0 - 158	66.0	61.6	ug/L	6.90	61.0
4-Nitrophenol	1111195	5.23	3.53	25.0	0.100 - 132	20.9	14.1	ug/L	38.9	131
Acenaphthene	1111195	15.5	14.3	25.0	47.0 - 145	62.0	57.2	ug/L	8.05	48.0
Acenaphthylene	1111195	16.4	15.3	25.0	33.0 - 145	65.6	61.2	ug/L	6.94	74.0
Anthracene	1111195	19.1	17.5	25.0	27.0 - 133	76.4	70.0	ug/L	8.74	66.0
Benzidine	1111195	3.27	2.55	25.0	0.100 - 36.9	13.1	10.2	ug/L	24.9	90.0
Benzo(a)anthracene	1111195	21.0	18.6	25.0	33.0 - 143	84.0	74.4	ug/L	12.1	53.0
Benzo(a)pyrene	1111195	22.0	18.3	25.0	17.0 - 163	88.0	73.2	ug/L	18.4	72.0
Benzo(b)fluoranthene	1111195	19.4	16.2	25.0	24.0 - 159	77.6	64.8	ug/L	18.0	71.0
Benzo(ghi)perylene	1111195	19.5	19.7	25.0	0.100 - 219	78.0	78.8	ug/L	1.02	97.0
Benzo(k)fluoranthene	1111195	22.5	19.0	25.0	11.0 - 162	90.0	76.0	ug/L	16.9	63.0
Benzyl Butyl phthalate	1111195	20.0	17.4	25.0	0.100 - 152	80.0	69.6	ug/L	13.9	60.0
Bis(2-chloroethoxy)methane	1111195	19.6	18.4	25.0	33.0 - 184	78.4	73.6	ug/L	6.32	54.0
Bis(2-chloroethyl)ether	1111195	20.2	18.7	25.0	12.0 - 158	80.8	74.8	ug/L	7.71	108
Bis(2-chloroisopropyl)ether	1111195	16.7	14.9	25.0	36.0 - 166	66.8	59.6	ug/L	11.4	76.0
Bis(2-ethylhexyl)phthalate	1111195	20.0	17.2	25.0	8.00 - 158	80.0	68.8	ug/L	15.1	82.0
Chrysene (Benzo(a)phenanthrene)	1111195	21.2	18.1	25.0	17.0 - 168	84.8	72.4	ug/L	15.8	87.0
Dibenz(a,h)anthracene	1111195	18.6	17.6	25.0	0.100 - 227	74.4	70.4	ug/L	5.52	126
Diethyl phthalate	1111195	22.4	19.8	25.0	0.100 - 120	89.6	79.2	ug/L	12.3	100
Dimethyl phthalate	1111195	21.0	18.7	25.0	0.100 - 120	84.0	74.8	ug/L	11.6	183
Di-n-butylphthalate	1111195	23.4	21.0	25.0	1.00 - 120	93.6	84.0	ug/L	10.8	47.0
Di-n-octylphthalate	1111195	23.2	17.7	25.0	4.00 - 146	92.8	70.8	ug/L	26.9	69.0
Fluoranthene(Benzo(j,k)fluorene)	1111195	24.0	20.9	25.0	26.0 - 137	96.0	83.6	ug/L	13.8	66.0
Fluorene	1111195	17.7	15.7	25.0	59.0 - 121	70.8	62.8	ug/L	12.0	38.0
Hexachlorobenzene	1111195	19.2	18.3	25.0	0.100 - 152	76.8	73.2	ug/L	4.80	55.0
Hexachlorobutadiene	1111195	12.4	11.2	25.0	24.0 - 120	49.6	44.8	ug/L	10.2	62.0
Hexachlorocyclopentadiene	1111195	8.06	6.79	25.0	3.97 - 68.7	32.2	27.2	ug/L	16.8	50.0
Hexachloroethane	1111195	11.7	10.4	25.0	40.0 - 120	46.8	41.6	ug/L	11.8	52.0
Indeno(1,2,3-cd)pyrene	1111195	18.6	18.3	25.0	0.100 - 171	74.4	73.2	ug/L	1.63	99.0
Isophorone	1111195	22.2	20.1	25.0	21.0 - 196	88.8	80.4	ug/L	9.93	93.0
Naphthalene	1111195	13.2	12.2	25.0	21.0 - 133	52.8	48.8	ug/L	7.87	65.0
Nitrobenzene	1111195	22.0	21.0	25.0	35.0 - 180	88.0	84.0	ug/L	4.65	62.0
n-Nitrosodiethylamine	1111195	17.6	16.7	25.0	18.0 - 100	70.4	66.8	ug/L	5.25	50.0
N-Nitrosodimethylamine	1111195	14.5	13.8	25.0	30.2 - 74.9	58.0	55.2	ug/L	4.95	50.0
n-Nitroso-di-n-butylamine	1111195	21.1	18.8	25.0	48.4 - 98.5	84.4	75.2	ug/L	11.5	50.0
N-Nitrosodi-n-propylamine	1111195	21.2	19.3	25.0	0.100 - 230	84.8	77.2	ug/L	9.38	87.0
N-Nitrosodiphenylamine (as DPA	1111195	19.3	17.2	25.0	49.3 - 94.2	77.2	68.8	ug/L	11.5	50.0
p-Chloro-m-Cresol (4-Chloro-3-me	1111195	17.7	16.1	25.0	22.0 - 147	70.8	64.4	ug/L	9.47	70.0
Pentachlorobenzene	1111195	16.6	15.2	25.0	39.3 - 93.7	66.4	60.8	ug/L	8.81	50.0
Pentachlorophenol	1111195	18.7	12.1	25.0	14.0 - 176	74.8	48.4	ug/L	42.9	86.0

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LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Phenanthrene	1111195	18.5	16.6	25.0	54.0 - 120	74.0	66.4	ug/L	10.8	39.0
Phenol	1111195	9.27	8.82	25.0	5.00 - 120	37.1	35.3	ug/L	4.97	64.0
Pyrene	1111195	19.8	17.0	25.0	52.0 - 120	79.2	68.0	ug/L	15.2	49.0
Pyridine	1111195	9.71	8.39	25.0	11.2 - 50.6	38.8	33.6	ug/L	14.4	50.0

Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
2,4,6-Tribromophenol	623306	CCV	48800	100000	ug/L	48.8	10.0 - 150	126186619
2-Fluorophenol-SURR	623306	CCV	53600	100000	ug/L	53.6	10.0 - 150	126186619
4-Terphenyl-d14-SURR	623306	CCV	61300	50000	ug/L	123	30.0 - 150	126186619
Nitrobenzene-d5-SURR	623306	CCV	51800	50000	ug/L	104	30.0 - 150	126186619
Phenol-d6-SURR	623306	CCV	62200	100000	ug/L	62.2	10.0 - 150	126186619
2,4,6-Tribromophenol	1111195	Blank	54.2	100	ug/L	54.2	10.0 - 150	126186623
2,4,6-Tribromophenol	1111195	LCS	72.8	100	ug/L	72.8	10.0 - 150	126186624
2,4,6-Tribromophenol	1111195	LCS Dup	59.8	100	ug/L	59.8	10.0 - 150	126186625
2-Fluorophenol-SURR	1111195	Blank	31500	100000	ug/L	31.5	10.0 - 150	126186623
2-Fluorophenol-SURR	1111195	LCS	40400	100000	ug/L	40.4	10.0 - 150	126186624
2-Fluorophenol-SURR	1111195	LCS Dup	38000	100000	ug/L	38.0	10.0 - 150	126186625
4-Terphenyl-d14-SURR	1111195	Blank	26800	50000	ug/L	53.6	30.0 - 150	126186623
4-Terphenyl-d14-SURR	1111195	LCS	39500	50000	ug/L	79.0	30.0 - 150	126186624
4-Terphenyl-d14-SURR	1111195	LCS Dup	33100	50000	ug/L	66.2	30.0 - 150	126186625
Nitrobenzene-d5-SURR	1111195	Blank	22400	50000	ug/L	44.8	30.0 - 150	126186623
Nitrobenzene-d5-SURR	1111195	LCS	34600	50000	ug/L	69.2	30.0 - 150	126186624
Nitrobenzene-d5-SURR	1111195	LCS Dup	32900	50000	ug/L	65.8	30.0 - 150	126186625
Phenol-d6-SURR	1111195	Blank	20000	100000	ug/L	20.0	10.0 - 150	126186623
Phenol-d6-SURR	1111195	LCS	27800	100000	ug/L	27.8	10.0 - 150	126186624
Phenol-d6-SURR	1111195	LCS Dup	26700	100000	ug/L	26.7	10.0 - 150	126186625
2,4,6-Tribromophenol	2282723	Unknown	97.4	105	ug/L	92.8	10.0 - 150	126186630
2-Fluorophenol-SURR	2282723	Unknown	38.3	105	ug/L	36.5	10.0 - 150	126186630
4-Terphenyl-d14-SURR	2282723	Unknown	56.5	52.5	ug/L	108	30.0 - 150	126186630
Nitrobenzene-d5-SURR	2282723	Unknown	35.3	52.5	ug/L	67.2	30.0 - 150	126186630
Phenol-d6-SURR	2282723	Unknown	20.2	105	ug/L	19.2	10.0 - 150	126186630

* Out RPD is Relative Percent Difference: abs(r1-r2) / mean(r1,r2) * 100% Recover% is Recovery Percent: result / known * 100%

Blank - Method Blank (reagent water or other blank matrices that contains all reagents except standard(s) and is processed simultaneously with and under the same conditions as samples; carried through preparation and analytical procedures exactly like a sample; monitors); CCB - Continuing Calibration Blank; CCV - Continuing Calibration Verification (same standard used to prepare the curve; typically a mid-range concentration; verifies the continued validity of the calibration curve); MSD - Matrix Spike Duplicate (replicate of the matrix spike; same solution and amount of target analyte added to the MS is added to a third aliquot of sample; quantifies matrix bias and precision.); LCS Dup - Laboratory Control Sample Duplicate (replicate LCS; analyzed when there is insufficient sample for duplicate or MSD; quantifies accuracy and precision.); AWRL/LOQ C - Ambient Water Reporting Limit/LOQ Check Std; ICV - Initial Calibration Verification; MRL Check - Minimum Reporting Limit Check Std; Surrogate - Surrogate (mimics the analyte of interest but is unlikely to be found in environmental samples; added to analytical samples for QC purposes. **ANSI/ASQC E4 1994 Ref #4 TRADE QA Resources Guide.); IS Areas - Internal Standard Area (The area of the internal stadard relative to a check standard. Internal Standard is a known concentration of an analyte(s) that is not a sample component or standard that is added to the sample and standard and is used to measure the relative responses of other analytes in the same sample or standard.); IS RetTime - Internal Standard Retention Time (the time the internal standard comes off the column. Internal Stardard is a known concentration of an analyte(s) that is not a sample component or standard that is added to the sample and standard and is used to measure the relative responses of other analytes in the same sample or standard.); DFTPP - GC/MS Tuning Compound

Email: Kilgore.ProjectManagement@spllabs.com

Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com LELAP-accredited #02008

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Chain of Custody

ABLN-N

103

COC Printed 05/22/2018 Page 1 of 2

Lab Number 2202723

PO Number

Phone 325/676-6042

Fax 325/676-6044

Report To

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Semi-Annual Comp EFF001

Matrix: Non-Potable Water

Sample Collection Start

Date: 3/18/24 Time: 0840

Sampler Printed Name: Larry L. Bailey

Sampler Affiliation: ABLN

Sampler Signature: L – L. Bl

Sample Collection Stop

Date: 3/19/24 Time: 0820

Sampler Printed Name: Larry L. Bailey

Sampler Affiliation: ABLN

Sampler Signature: L – L. Bl

	7	**Amber Glass Qt w/Teflon lined lid**		
N		!APR	ABN Permit Renewal List	EPA 625 (7.00 days)
N		!CPP	Permit Organophos. Pesticides	EPA 614 (7.00 days)
N		!HER	Herbicides by GC	EPA 615 (7.00 days)
N		!PCB	Polychlorinated Biphenyls	EPA 608 (7.00 days)
N		!PPR	TTO Pesticides	EPA 608 (7.00 days)
		#MDR	For use with !PPR only	EPA 617 (7.00 days)
N		402E	For use with EXP !CPP only	EPA 622 (7.00 days)
		HXPE	Hexachlorophene Expansion	EPA 604.1 CAS:70-30-4 (7.00 days)
N		TYLC	Carbaryl/Diuron	EPA 632 (7.00 days)
	2	**H2SO4 to pH <2 GlQt w/Tef-lined lid**		
		NYPE	Nonyl Phenol Expansion	ASTM D7065-06 (14.0 days)
	1	**Z – No bottle required**		
N	Short Hold	Cr+3	Trivalent Chromium	Calculation CAS:16065-83-1 (1.00 days)
	1	**HNO3 to pH <2 Polyethylene 500 mL for Metals**		
N		*AgM	Silver, Total	EPA 200.8 5.4 CAS:7440-22-4 (180 days)
N		*AlM	Aluminum, Total	EPA 200.8 5.4 CAS:7429-90-5 (180 days)
N		*AsM	Arsenic, Total	EPA 200.8 5.4 CAS:7440-38-2 (180 days)
N		*BaM	Barium, Total	EPA 200.8 5.4 CAS:7440-39-3 (180 days)
N		*BeM	Beryllium, Total	EPA 200.8 5.4 CAS:7440-41-7 (180 days)
N		*CdM	Cadmium, Total	EPA 200.8 5.4 CAS:7440-43-9 (180 days)

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COC Printed 05/22/2018 Page 2 of 2

Chain of Custody

ABLN-N

103

Report To

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Phone 325/676-6042
Fax 325/676-6044

N		*CrM	Chromium, Total	EPA 200.8 5.4 CAS:7440-47-3 (180 days)
N		*CuM	Copper, Total	EPA 200.8 5.4 CAS:7440-50-8 (180 days)
N		*MnM	Manganesc, Total	EPA 200.8 5.4 CAS:7439-96-5 (180 days)
N		*NiM	Nickel, Total	EPA 200.8 5.4 CAS:7440-02-0 (180 days)
N		*PbM	Lead, Total	EPA 200.8 5.4 CAS:7439-92-1 (180 days)
N		*SbM	Antimony, Total	EPA 200.8 5.4 CAS:7440-36-0 (180 days)
N		*SeM	Selenium, Total	EPA 200.8 5.4 CAS:7782-49-2 (180 days)
N		*TlM	Thallium, Total	EPA 200.8 5.4 CAS:7440-28-0 (180 days)
N		*ZnM	Zinc, Total	EPA 200.8 5.4 CAS:7440-66-6 (180 days)
N		301L	Liquid Metals Digestion	EPA 200.2 2.8 (180 days)
	1	Polyethylene Quart (White)		
N		!FIL	Fluoride	EPA 300.0 2.1 (28.0 days)
N	Short Hold	!N3L	Nitrate-Nitrogen Total	EPA 300.0 2.1 CAS:14797-55-8 (2.00 days)

Ambient Conditions/Comments

Date	Time	Relinquished	Received
3/19/24	1414	Printed Name: Larry L. Bailey Affiliation: ABLN Signature: L – L. Bail	Printed Name: Brie Wallace Affiliation: SPL Signature: BWallace
3/19/24	1800	Printed Name: Brie Wallace Affiliation: SPL Signature: BWallace	Printed Name: XPS Affiliation: Signature:
3/20/24	0820	Printed Name: XPS Affiliation: Signature:	Printed Name: Affiliation: McCabe Wheeler SPL, Inc. Signature: mccabe
		Printed Name: Affiliation: Signature:	Printed Name: Affiliation: Signature:

Sample Received on Ice? ☒ Yes ☐ No **Method of Shipment:** ☐ UPS ☐ Bus ☐ FedEx ☐ Lone Star ☐ Hand Delivered ☐ Other

Cooler/Sample Secure? ☒ Yes ☐ No **If Shipped: Tracking Number & Temp - See Attached**

The accredited column designates accreditation by A - A2LA, N - NELAC, or z - not listed under scope of accreditation. Unless otherwise specified, ANA-LAB shall provide these ordered services pursuant to our Standard Terms & Conditions Agreement (available for download from the welcome page at <http://www.ana-lab.com>). Ana-Lab personnel collect samples as specified by Ana-Lab SOP #000323.

Comments

XPS# 3

From: SPL
Abilene

To: SPL
Kilgore

3:20 0350 JLG

Date Time Tech

Temp: 1.2 1.3 C

Therm#: 6443 Corr Fact: 0.1 C

2600 Dudley Rd. Kilgore, Texas 75662
24 Waterway Avenue, Suite 375 The Woodlands, TX 77380
Office: 903-984-0551 * Fax: 903-984-5914

Project
1096253

ABLN-W

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Printed 03/26/2024
14:17

TABLE OF CONTENTS

This report consists of this Table of Contents and the following pages:

Report Name	Description	Pages
1096253_r02_01_ProjectSamples	SPL Kilgore Project P:1096253 C:ABLN Project Sample Cross Reference t:304	1
1096253_r03_03_ProjectResults	SPL Kilgore Project P:1096253 C:ABLN Project Results t:304 PO: 41505	3
1096253_r10_05_ProjectQC	SPL Kilgore Project P:1096253 C:ABLN Project Quality Control Groups	1
1096253_r99_09_CoC__1_of_1	SPL Kilgore CoC ABLN 1096253_1_of_1	2
	Total Pages:	7

Email: Kilgore.ProjectManagement@spllabs.com

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1

SAMPLE CROSS REFERENCE

Project
1096253

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Sample	Sample ID	Taken	Time	Received
2282935	*EFF 001*	03/19/2024	11:00:00	03/20/2024

Bottle 01 Glass /clean metals w/HCl
Bottle 02 Glass /clean metals w/HCl
Bottle 03 Glass /clean metals w/HCl
Bottle 04 Glass /clean metals w/HCl
Bottle 05 Prepared Bottle: Mercury Preparation for Metals (Batch 1110960) Volume: 50.00000 mL <== Derived from 01 (47 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
EPA 245.7 2	05	1110960	03/25/2024	1111174	03/25/2024

Sample	Sample ID	Taken	Time	Received
2282936	*EFF 001 DUP*	03/19/2024	11:00:00	03/20/2024

Bottle 01 Glass /clean metals w/HCl
Bottle 02 Glass /clean metals w/HCl
Bottle 03 Glass /clean metals w/HCl
Bottle 04 Glass /clean metals w/HCl
Bottle 05 Prepared Bottle: Mercury Preparation for Metals (Batch 1110960) Volume: 50.00000 mL <== Derived from 01 (47 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
EPA 245.7 2	05	1110960	03/25/2024	1111174	03/25/2024

Sample	Sample ID	Taken	Time	Received
2282937	*FIELD BLANK*	03/18/2024	17:00:00	03/20/2024

Bottle 01 Glass /clean metals w/HCl
Bottle 02 Prepared Bottle: Mercury Preparation for Metals (Batch 1110960) Volume: 50.00000 mL <== Derived from 01 (47 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
EPA 245.7 2	02	1110960	03/25/2024	1111174	03/25/2024

Email: Kilgore.ProjectManagement@spllabs.com

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24 Waterway Avenue, Suite 375 The Woodlands, TX 77380
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ABLN-W

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Project
1096253

Printed: 03/26/2024

RESULTS

Sample Results

2282935 EFF 001 COMP 3/18 1700-3/19 1100 Received: 03/20/2024

Non-Potable Water Collected by: Client City of Abilene PO: 41505
Composite Stop 11:00 3/19/24 Taken: 03/19/2024 11:00:00

1. Date 3/18/24 Time 1710 Tech LB/LS
2. Date 3/18/24 Time 2300 Tech LB/LS
3. Date 3/19/24 Time 0500 Tech LB/LS
4. Date 3/19/24 Time 1110 Tech LB/LS

EPA 245.7 2 Prepared: 1110960 03/25/2024 10:00:00 Analyzed 1111174 03/25/2024 14:32:00 MP1

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	**Mercury, Total (low level)**	**<1.28**	**ng/L**	1.28		**7439-97-6**	05

2282936 EFF 001 DUP COMP 3/18 1700-3/19 1100 Received: 03/20/2024

Non-Potable Water Collected by: Client City of Abilene PO: 41505
Composite Stop 11:00 3/19/24 Taken: 03/19/2024 11:00:00

1. Date 3/18/24 Time 1710 Tech LB/LS
2. Date 3/18/24 Time 2300 Tech LB/LS
3. Date 3/19/24 Time 0500 Tech LB/LS
4. Date 3/19/24 Time 1110 Tech LB/LS

EPA 245.7 2 Prepared: 1110960 03/25/2024 10:00:00 Analyzed 1111174 03/25/2024 14:35:00 MP1

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	**Mercury, Total (low level)**	**<1.28**	**ng/L**	1.28		**7439-97-6**	05

2282937 FIELD BLANK Received: 03/20/2024

Non-Potable Water Collected by: Client City of Abilene PO: 41505
Taken: 03/18/2024 17:00:00

1. Date 3/18/24 Time 1710 Tech LB/LS
2. Date 3/18/24 Time 2300 Tech LB/LS
3. Date 3/19/24 Time 0500 Tech LB/LS
4. Date 3/19/24 Time 1110 Tech LB/LS

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ABLN-W

Project
1096253

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Printed: 03/26/2024

2282937 **FIELD BLANK** Received: 03/20/2024

Non-Potable Water Collected by: Client City of Abilene PO: 41505
Taken: 03/18/2024 17:00:00

1. Date 3/18/24 Time 1710 Tech LB/LS
2. Date 3/18/24 Time 2300 Tech LB/LS
3. Date 3/19/24 Time 0500 Tech LB/LS
4. Date 3/19/24 Time 1110 Tech LB/LS

EPA 245.7 2 Prepared: 1110960 03/25/2024 10:00:00 Analyzed 1111174 03/25/2024 14:38:00 MP1

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	**Mercury, Total (low level)**	**<1.28**	**ng/L**	1.28		**7439-97-6**	02

Sample Preparation

2282935 **EFF 001** COMP 3/18 1700-3/19 1100 Received: 03/20/2024

41505

Composite Stop 11:00 3/19/24 03/19/2024

Prepared: 03/21/2024 09:16:55 Calculated 03/21/2024 09:16:55 CAL

z	**Environmental Fee (per Project)**	**Verified**						

EPA 245.7 2 Prepared: 1110960 03/25/2024 10:00:00 Analyzed 1110960 03/25/2024 10:00:00 MP1

NELAC	**Low Level Mercury Liquid Metals**	**50/47**	**ml**					01

2282936 **EFF 001 DUP** COMP 3/18 1700-3/19 1100 Received: 03/20/2024

41505

Composite Stop 11:00 3/19/24 03/19/2024

EPA 245.7 2 Prepared: 1110960 03/25/2024 10:00:00 Analyzed 1110960 03/25/2024 10:00:00 MP1

NELAC	**Low Level Mercury Liquid Metals**	**50/47**	**ml**					01

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Office: 903-984-0551 * Fax: 903-984-5914

SPL The Science of Sure

1
2

ABLN-W

Project
1096253

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Printed: 03/26/2024

2282937 **FIELD BLANK**

Received: 03/20/2024

41505

03/18/2024

EPA 245.7 2	*Prepared:*	*1110960*	*03/25/2024*	*10:00:00*	*Analyzed*	*1110960*	*03/25/2024*	*10:00:00*	*MP1*

NELAC	**Low Level Mercury Liquid Metals**	**50/47**	**ml**		01

Qualifiers:

We report results on an As Received (or Wet) basis unless marked Dry Weight.

Unless otherwise noted, testing was performed at SPL, Inc.- Kilgore laboratory which holds International, Federal, and state accreditations. Please see our Websites for details.

(N)ELAC - Covered in our NELAC scope of accreditation
z -- Not covered by our NELAC scope of accreditation

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of SPL Kilgore. Unless otherwise specified, these test results meet the requirements of NELAC.
RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

Trey Peery, MA, Project Manager

QUALITY CONTROL

ABLN-W

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Project
1096253

Printed 03/26/2024

Analytical Set 1111156 — EPA 245.7 2

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Mercury, Total (low level)	1110960	18.2	18.3	25.0	76.0 - 115	72.8	73.2 *	ng/L	0.548	50.0

Analytical Set 1111174 — EPA 245.7 2

AWRL/LOQ C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Mercury, Total (low level)	5.59	5.00	ng/L	112	70.0 - 130	126141322

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Mercury, Total (low level)	1110960	ND	1.20	5.00	ng/L	126141323

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Mercury, Total (low level)	24.2	25.0	ng/L	96.8	87.0 - 113	126141321
Mercury, Total (low level)	24.1	25.0	ng/L	96.4	87.0 - 113	126141331
Mercury, Total (low level)	25.1	25.0	ng/L	100	87.0 - 113	126141342
Mercury, Total (low level)	24.2	25.0	ng/L	96.8	87.0 - 113	126141350
Mercury, Total (low level)	24.1	25.0	ng/L	96.4	87.0 - 113	126141351
Mercury, Total (low level)	25.5	25.0	ng/L	102	87.0 - 113	126141354

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Mercury, Total (low level)	ND	50.0	ng/L	0	90.0 - 110	126141319

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Mercury, Total (low level)	27.4	25.0	ng/L	110	90.0 - 110	126141320

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Mercury, Total (low level)	1111174	24.7	23.9	25.0	76.0 - 115	98.8	95.6	ng/L	3.29	50.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Mercury, Total (low level)	2281616	14.8	14.9	ND	26.6	63.0 - 111	55.6 *	56.0 *	ng/L	0.673	18.0
Mercury, Total (low level)	2283029	29.5	32.3	11.6	26.6	63.0 - 111	67.3	77.8	ng/L	14.5	18.0

* Out RPD is Relative Percent Difference: abs(r1-r2) / mean(r1,r2) * 100% Recover% is Recovery Percent: result / known * 100%

LCS Dup - Laboratory Control Sample Duplicate (replicate LCS; analyzed when there is insufficient sample for duplicate or MSD; quantifies accuracy and precision.); Blank - Method Blank (reagent water or other blank matrices that contains all reagents except standard(s) and is processed simultaneously with and under the same conditions as samples; carried through preparation and analytical procedures exactly like a sample; monitors); CCV - Continuing Calibration Verification (same standard used to prepare the curve; typically a mid-range concentration; verifies the continued validity of the calibration curve); MSD - Matrix Spike Duplicate (replicate of the matrix spike; same solution and amount of target analyte added to the MS is added to a third aliquot of sample; quantifies matrix bias and precision.); ICV - Initial Calibration Verification; AWRL/LOQ C - Ambient Water Reporting Limit/LOQ Check Std

Email: Kilgore.ProjectManagement@spllabs.com

1096253 CoC Print Group 001 of 001

Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663
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Chain of Custody

05/22/2018 Page 1 of 2

ABLN -N

128

Report To

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Phone 325/676-6042
Fax 325/676-6044

Accredited	Test	Name	Method
		EFF Hg Grabs	

1. Date 3/18/24 Time 1700 Tech ZR/LS
2. Date 3/18/24 Time 2300 Tech ZR/LS
3. Date 3/19/24 Time 0500 Tech ZR/LS
4. Date 3/19/24 Time 1100 Tech ZR/LS

Matrix: Non-Potable Water

Sampler Printed Name Larry L. Bailey *Sampler Affiliation* ABLN *Sampler Signature* L – L. B

	:	Z – No bottle required		
N		mixh	Composite Low Level Hg Bottles	
	:	Glass /clean metals w/HCl		
N		245l	Low Level Mercury Liquid Metals	EPA 245.7 2 (28.0 days)
N		*Hgl	Mercury, Total (low level)	EPA 245.7 2 CAS:7439-97-6 (28.0 days)

Ana-Lab #	Sample ID	Bottles	Date	Time	Notes
22 92935	EFF001	4	3/18-3/19/24	1700-1100	
936	EFF001 DUP	4	3/18-3/19/24	1700-1100	
937	Field Blank	1	3/18/24	1700	

Ambient Conditions/Comments

Date	Time	Relinquished	Received
3/19/24	1414	Printed Name Larry L. Bailey Affiliation ABLN	Printed Name Brie Wallace Affiliation SPL
		Signature L – L. B	Signature BWallace
3/19/24	1800	Printed Name Brie Wallace Affiliation SPL	Printed Name XPS Affiliation
		Signature BWallace	Signature
3/20/24		Printed Name XPS Affiliation	Printed Name Rayshawn Thompson SPL, Inc. Affiliation
	0820	Signature	Signature
		Printed Name Affiliation	Printed Name Affiliation
		Signature	Signature

XPS# 5

From: SPL

Abilene

To: SPL

Kilgore

3/20 0850 JLG
Date Time Tech
Temp: 14.4/14.5 C
Therm#: 6448 Corr Fact: 0.1 C

2

Attachment DTR 1.0-8
Facility Operators

ATTACHMENT DTR 1.0-8

CITY OF ABILENE

HAMBY WATER RECLAMATION FACILITY

TPDES PERMIT MINOR AMENDMENT WITH RENEWAL APPLICATION

FACILITY OPERATORS

NAMES	CERTIFICATION	LICENSE No.
HOLTON, JOHN	WASTEWATER A	WW0037240
DOSS.KENNETH	WASTEWATER A	WW0034168
DALE, JONATHAN	WASTEWATER A	WW0056316
THARP, RANDY	WASTEWATER B	WW0034518
HOUGHTON, SETH	WASTEWATER B	WW0059514
PURDUM, BRANDUN	WASTEWATER B	WW0061156
BARTLETT, JERRY JR.	WASTEWATER B	WW0069739
FLORES, ISIDRO	WASTEWATER B	WW0071477
McCREARY, JACK	WASTEWATER B	WW0072113
CUSSON, DAVID	WASTEWATER C	WW0053752
ESCOBAR, JOE F.	WASTEWATER C	WW0055929
MARTINEZ, ERIC	WASTEWATER C	WW0060181
McCREARY, JACK	WASTEWATER C	WW0060220
PRIMUS, ERIC	WASTEWATER C	WW0071926
FIERRO, RICHARD	WASTEWATER D	WW0070633
MADDEN, TYLER	WASTEWATER D	WW0073108
HARVEY, JOSH	N/A	NEW EMPLOYEE
SILVA, PETE	N/A	NEW EMPLOYEE

Attachment DTR 1.0-10.B

SSTR (10056)

DOMESTIC WASTEWATER PERMIT APPLICATION:

SEWAGE SLUDGE TECHNICAL REPORT 1.0

GENERAL INFORMATION

If you have questions about completing this form please contact the Applications Review and Processing Team at 512-239-4671.

SECTION 1. TREATMENT PROCESSING INFORMATION

A. Attach the engineering report and/or plans and specifications for the proposed facility which must include the following:

- Description of the type of process facility: See Attachment SSTR 1.0-1.A
- Process flow diagram: See Attachment DTR 1.0-2.C

- Design calculations, features, and functional arrangements: See Attachment SSTR 1.0-1.A
- Site controls: See Attachment SSTR 1.0-1.A
- Groundwater protection: See Attachment SSTR 1.0-1.A for a brief summary. For details, see Attachment SSTR 4.0-3.A & Attachment SSTR 4.0-5.B.
- Odor, dust, and bio-aerosol management See Attachment SSTR 1.0-1.A
- Ultimate product: N/A

Attachment Number:

B. Is the facility located or proposed to be located above the 100-year frequency flood plain? Yes ☒ No ☐

If No, provide a separate site map indicating the location of the sludge units within the 100-year frequency flood plain and a detailed description of the type and size of protective measures.

N/A - site not located within the 100-year frequency flood plain.

SECTION 2. SOURCES OF SLUDGE

A. Provide the sources of generation, any water quality or public water supply permit number issued by TCEQ, and the quantity for each source.

Facility Name	**Permit Number**	**Annual Quantity**
Hamby Wastewater Treatment Facility	WQ0010334004	See Attachment SSTR 1.0-1.A

B. For each source of sludge, complete Table 1 located at the end of this form.

SECTION 3. PATHOGEN AND VECTOR ATTRACTION REDUCTION

A. For each source of sludge, complete Tables 2 and 3 located at the end of this form.

B. Indicate by a checkmark that all of the following are being followed for Class B land application. N/A

- ☐ Food crop harvesting restrictions
- ☐ Animal grazing restrictions
- ☐ Public access restrictions

SECTION 4. WELL INFORMATION

In the table below, provide information about each well located on-site and within 500 feet of the processing, application, and/or disposal area. Water well information is available from the Texas Water Development Board, 512-936-0837. Oil and gas well information is available from the Texas Railroad Commission, 512-463-6851.

Well Type (Water Well, Oil Well, Injection Well)	Producing or Non-Producing	Open, Cased, or Capped*	Protective Measures**
N/A – none of these well types are are located within 500 feet of surface sludge disposal site (SDS-E3 & SDS-E4)			

* Casing, capping, and plugging rules are located in 16 TAC Chapter 76.
** The following protective measures are required prior to initial sludge/septage application:

- If the well is producing and cased, no action is needed.
- If the well is producing and not cased, the well must be cased or describe other protective measures.
- If the well is non-producing and cased, the well must be plugged or capped.
- If the well is non-producing and not cased, the well must be plugged.

SECTION 5. ADDITIONAL TECHNICAL REPORTS

Identify which additional technical reports are submitted with this application.

- ☐ Technical Report 2.0, Sewage Sludge Composting
- ☐ Technical Report 3.0, Marketing and Distribution
- ☒ Technical Report 4.0, Sewage Sludge Surface Disposal

SITE OPERATOR SIGNATURE PAGE

If co-applicants are necessary, each co-applicant must submit an original, separate signature page.

Permit Number:

Applicant:

I understand that I am responsible for operating the site described in this permit application in accordance with the requirements in 30 TAC Chapter 312, the conditions set forth in this application, and any additional conditions as required by the Texas Commission on Environmental Quality.

I certify, under penalty of law, that all 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, imprisonment for violations, and revocation of this permit.

I further certify that I am authorized under 30 Texas Administrative Code §305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signatory Name: Robert Hanna

Title: City Manager

Signature (use blue ink): Robert Hanna Date: 5/3/2024

SUBSCRIBED AND SWORN to before me by the said Robert Hanna on this 3rd day of May, 20 24

My commission expires on the 20th day of September, 20 25

(Seal)

SHAWNA LEIGH ATKINSON
Notary Public, State of Texas
My Comm. Exp 09-20-2025
NOTARY ID#: 131287899-7

Notary Public

Taylor

County, Texas

Attachment SSTR 1.0
General Information

Attachment SSTR 4.0
Sewage Sludge Surface Disposal

DOMESTIC WASTEWATER PERMIT APPLICATION:

SEWAGE SLUDGE TECHNICAL REPORT 4.0

SEWAGE SLUDGE SURFACE DISPOSAL

SECTION 1. LOCATION INFORMATION

A. Attach the following maps. See instructions for information that must be displayed on each map.

- Original General Highway (County) map; Attachment SSTR 4.0-1.A
- USDA Natural Resources Conservation Service Soil Map; Attachment SSTR 4.0-1.A
- Federal Emergency Management Agency Map; and N/A – area is not mapped by FEMA
- Site Map. Attachment SSTR 4.0-1.A

Attachment Numbers: See Above

B. Indicate by checkmarks if the disposal unit contains any of the following:

☐ Overlaps a designated 100-year frequency floodplain

☐ Soils with flooding classification

☐ Wetlands

☐ Located less than 60 meters from a fault

☐ Overlaps an unstable area

☒ None of these

If the sludge disposal unit contains any of the above features, provide a detailed description of the type and size of protective measures.

N/A - site not located within the 100-year frequency flood plain.

SECTION 2. DISPOSAL INFORMATION

A. What is the volume and frequency of sludge disposal? See Attachment SSTR 1.0-1.A.

B. What is the total dry tons placed on the disposal unit per 365-day period? See Attachment SSTR 1.0-1.A.

C. What is the total dry tons placed on the disposal unit over the life of the unit? See Attachment SSTR 1.0-1.A.

D. Attach a current TCLP test result from each sludge source.
Attachment Number: SSTR 4.0-2.D.

SECTION 3. FACILITY INFORMATION

A. Does the disposal unit have a liner with a maximum hydraulic conductivity of $1X10^{-7}$ cm/sec? Yes ☐ No ☒

If yes, describe the liner.

Compliance with the liner requirements at this facility was addressed in an October 1993 Geology and Hydrogeology Report at the site, which was prepared by Hibbs & Todd, Inc. This report is included in Attachment SSTR 4.0-3.A. The Report clarifies the sludge disposal in current SDS-E3. However, prior to implementing sludge disposal in the next unit, SDS-E4, a liner with a hydraulic conductivity of 1x10-7 cm/sec will be installed. A liner installation report will be provided to the TCEQ.

B. Does the disposal unit have a leachate collection system?
Yes ☐ No ☒

If yes, describe the leachate collection system and the method used for leachate treatment and disposal.

N/A

C. If you answered No to A. and B., is the boundary of the disposal unit less than 150 meters from the nearest property boundary?
Yes ☐ No ☒

If you answered No to C., what is the actual distance to the nearest property boundary in meters? Approximately 213 meters (700 feet)

Click here to enter text.Yes ☐ No ☐

D. Do the design calculations for the disposal unit show that stormwater will not run-off of the disposal unit during a 25-year, 24-hour rainfall event?

Yes ☒ No ☐ See Attachment SSTR 1.0-1.A for SDS-E3. The design calculations for SDS-E4 will be provided to the TCEQ prior to unit implementation.

E. If sludge dewatering is used, describe the method of sludge dewatering and the average percent solids disposed of in the disposal unit.

N/A

F. Are crops grown or animals allowed to graze at the disposal site?

Yes ☐ No ☒

If yes, provide a detailed description of management practices that protect human health from accumulation of metals in the sewage sludge.

N/A

SECTION 4. SITE DEVELOPMENT PLAN

A. Provide a detailed description of the methods used to deposit sludge in the disposal unit.

See Attachment SSTR 1.0-1.A

B. Indicate by a checkmark that the following information is provided with this application.

☒ Plan view and cross-sectional view of the disposal unit See Attachment SSTR 4.0-4.B for SDS-E3. For SDS-E4: This information will be provided to TCEQ prior to implementation.

☐ Source and physical properties of the soil and/or other media for sludge bulking

☐ Locations of stockpiles of media and the area for sludge loading and unloading

☐ Operation procedures detailing mixing, ratio of mixture, handling of mixture, placement of the mixture, and daily cover

☐ Copy of the closure plan and post-closure maintenance requirements developed in accordance with 30 TAC §312.62(c) and (d)

☒ Copy of deed record for the site See Attachment SSTR 4.0-4.B for SDS-E3. For SDS-E4: This information will be provided to TCEQ prior to implementation.

☒ Description of the method of controlling infiltration of groundwater and surface water from entering the site See Attachment SSTR 4.0-5.B & Attachment SSTR 4.0-3.A for groundwater and Attachment SSTR 1.0-1.A (surface water).

☐ Financial assurances of proper operation and final closure of the disposal unit and storage in accordance with 30 TAC §312.62(g)

☐ Description of methane gas monitoring if cover is placed on the disposal unit

☒ Description of method to restrict public access to the site. The public is restricted access to the site via a fence.

SECTION 5. GROUNDWATER MONITORING

A. Is groundwater monitoring currently conducted at this disposal unit, or is groundwater monitoring data otherwise available?

Yes ☒ No ☐

If yes, attach a copy of available groundwater monitoring data.

Attachment Number: See Attachment SSTR 4.0-5.A

B. Has a groundwater monitoring program been prepared for this disposal unit?

Yes ☒ No ☐

If yes, attach a copy of the groundwater monitoring program.

Attachment Number: See Attachment SSTR 4.0-5.B

C. Provide a certification from a qualified groundwater scientist that the aquifer below the disposal unit will not be contaminated.

Attachment Number: See Attachment SSTR 4.0-3.A

D. Provide a profile of soil types encountered down to the groundwater table and the depth to the shallowest groundwater.

Attachment Number: See Attachment SSTR 4.0-3.A

Appendix A
Pollutant Concentrations in Sewage Sludge

Complete this table **for each source** of sludge.

Facility Name: Hamby Wastewater Treatment Facility
TCEQ Authorization Number: WQ0010334004
POLLUTANT/METAL ANALYSIS

Pollutant	Maximum Concentration, mg/kg dry weight	Test Results, mg/kg dry weight	Sample Date	Detection Level for Analysis	Sample Method
Arsenic (As)	75	2.76	01/09/2024	7.54	6020A
Cadmium (Cd)	85	0.476	01/09/2024	1.51	6020A
Chromium (Cr)	3000	20.5	01/09/2024	1.51	6020A
Copper (Cu)	4300	241	01/09/2024	1.51	6020A
Lead (Pb)	840	16.4	01/09/2024	1.51	6020A
Mercury (Hg)	57	<0.612	01/09/2024	0.612	7471B2
Molybdenum (Mo)	75	8.22	01/09/2024	4.52	6020A
Nickel (Ni)	420	12.6	01/09/2024	1.51	6020A
Selenium (Se)	100	3.16	01/09/2024	1.51	6020A
Zinc (Zn)	7500	392	01/09/2024	15.1	6020A
PCB (ppm)	50.0 ppm	<0.653	01/09/2024	0.653	8082
Fecal Coliform (MPN)	N/A	N/A	N/A	N/A	N/A

Appendix B
PATHOGEN REDUCTION REQUIREMENTS

For each source, select the pathogen reduction alternative that will be used prior to land application of sewage sludge. Requirements for each alternative can be found in 30 TAC §312.82.

TCEQ Permit Number	Pathogen Reduction Alternative Used	Fecal Coliform Geometric Mean (cfu/gram total solids)*	Fecal Test Date*	Is PSRP Certification Attached?** (Yes/No/NA)
WQ0010334004	Option 2b: Class B Alternative 2 PSRP 1: Aerobic Digestion	N/A	N/A	Biosolids Annual Report Submitted on 09/08/2023

*Applicable to Option 1 only.
**Applicable to Option 2a – f.

If Other or PFRP Equivalent is selected as the Alternative Used, please explain: Vector attraction reduction requirements in 30 TAC §312.83(b)(11) are met, therefore Class A and Class B pathogen reduction requirements are met.

Appendix C
VECTOR ATTRACTION REDUCTION REQUIREMENTS

For each source, provide the vector attraction reduction option that will be used prior to or after land application of sewage sludge/septage. Requirements for each alternative can be found in 30 TAC §312.83.

TCEQ Permit Number	Vector Attraction Reduction Alternative Used*	Monitoring Criteria and results needed for alternative
WQ0010334004	Option 11: Soil or other material placed on active sludge unit	Sewage sludge placed on an active sewage sludge unit shall be covered with soil or other material at the end of each operating day.
	Choose an item.	
	Choose an item.	
	Choose an item.	
	Choose an item.	
	Choose an item.	
	Choose an item.	
	Choose an item.	
	Choose an item.	

*Options 1-8 are sludge treatment alternatives. Options 9-10 are onsite alternatives. Option 12 is for domestic septage only.

Attachment SSRT 1.0-1A

Sludge Treatment Process Information

(AARs: SSTR 1.0-2, SSTR 4.0-2.A-C, SSTR 4.0-3.D, SSTR 4.0-4.A-B)

ATTACHMENT SSTR 1.0-1.A
CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY
TPDES PERMIT MINOR AMENDMENT WITH RENEWAL APPLICATION
SLUDGE TREATMENT PROCESS INFORMATION

(Additional Application References: SSTR 1.0-2, SSTR 4.0-2.A-C, SSTR 4.0-3.D, SSTR 4.0-4.A-B)

The City of Abilene (City) owns and operates the Hamby Water Reclamation Facility (WRF), which is authorized by the Texas Commission on Environmental Quality (TCEQ) to dispose of sewage sludge on-site in a surface disposal site (SDS) under Texas Pollutant Discharge Elimination System (TPDES) permit No. WQ0010334004. The following provides a description of sludge generation and treatment, a description of the SDS, and the volume and frequency of sludge disposal at the SDS.

DESCRIPTION OF SLUDGE GENERATION AND TREATMENT

Mixed liquor from the aeration basins is pumped to the Membrane Bioreactor (MBR) system for solids separation and membrane filtering. Waste activated sludge (WAS) is pumped directly to the SDS, or lime stabilized and disposed in the SDS. The following provides a description of the lime stabilization facilities.

Lime Stabilization

The WRF has lime treatment facilities that are used on an as needed basis. The lime treatment facilities contain a lime storage silo, a 100,000-gallon steel detention tank, mixing chamber, and two sludge recirculation pumps. The lime stabilization system is operated as a batch system. The system works by raising the pH with the addition of hydrated lime [$Ca(OH)_2$] to a level that prevents microbial growth. The existing detention tank at the WRF has a capacity for two days of sludge production at 22 MGD of wastewater flow.

DESCRIPTION OF THE SURFACE DISPOSAL SITE

The Hamby WRF disposes of the sludge generated by the facility in the SDS located on the WRF site in Jones County. A small portion of the Hamby WRF facility boundary extends into eastern Shackelford County (See Attachments SSTR 4.0-1.A for location maps). Sludge is pumped to the SDS in liquid form, which minimizes or eliminates the creation of bioaerosols.

A site plan view and cross-section map are provided in Attachment SSTR 4.0-4.B. As shown on the site plan, the SDS is divided into two zones, zone E3 and zone E4. The currently active SDS unit (SDS-E3) encompasses a total of approximately 64 acres and is completely surrounded by an earthen embankment. The SDS has the capacity to dispose of approximately 1.13 million cubic yards (cu yd^3) of sludge while maintaining a minimum freeboard of 2 feet. SDS-E4 (currently permitted and to be activated next) is approximately 60 acres and is also surrounded by an earthen embankment. SDS-E3 and SDS-E4 share an embankment; the shared embankment is located along SDS-E3's north boundary and SDS-E4's south boundary. The capacity of SDS-E4 will be determined as the plans for activating the unit progress. A minimum freeboard of 2 feet will be maintained. Access to the SDS is controlled by fencing around the Hamby WRF. The hydrology and geology of the SDS are described in Attachment SSTR 4.0-3.A.

The City tests sludge annually in accordance with the TPDES permit. Attachment SSTR 4.0-2.D includes laboratory results of annual sludge analyses for the year 2024.

Five groundwater monitoring wells located in the vicinity of the SDS are sampled quarterly (Attachment SSTR 4.0-5.A-B). A Natural Resources Conservation Service soils map is presented in Attachment SSTR 4.0-1.A.

Prior to the MBR start-up, anaerobically digested sludge was disposed in the SDS and only in zone E3 (SDS-E3). SDS-E3 will continue to be designated for the disposal of both stabilized sludge and WAS. The use of SDS-E4 is planned in the near future.

Pathogen reduction and vector attraction requirements for the disposal of sludge in SDS-E3 and SDS-E4 will be met by placing a cover over the sludge per 30 TAC §312.83(b)(11). A water cap is currently being used as the cover material. The water cap source water consists of Reverse Osmosis (RO) concentrate, precipitation, decant water, or other appropriate water sources.

The SDS is fully protected from runoff and runon by earthen embankments. The embankment is designed to contain a 25-year, 24-hour rainfall event. Based on the Louisiana State University SRCC Technical Report, *Rainfall Frequency/Magnitude Atlas for the South-Central United States*, the 24-hour, 25-year precipitation accumulation rainfall for the Abilene area is approximately 7 inches. The minimum freeboard of the SDS is 2 feet. The earthen embankments also effectively prevent drainage from outside into the SDS.

VOLUME AND FREQUENCY OF SURFACE DISPOSAL SITE

Over the life of the facility, an estimated 155,100 dry tons of sludge have been placed in the SDS. The total quantity of sludge dry tons placed is based on the total tons estimated in 2017 (134,000 dry tons) as listed in the 2018 permit renewal application (APAI permit application, dated 9/2018, Attachment N) plus the quantity placed between 2018-2023 (21,050 dry tons). Sludge is disposed at the SDS at least once per month. The annual volume of sludge placed in the SDS from 1999 through 2023 is presented in Table 1 below.

Table 1: Annual Volume of Sludge Placed in Surface Disposal Site

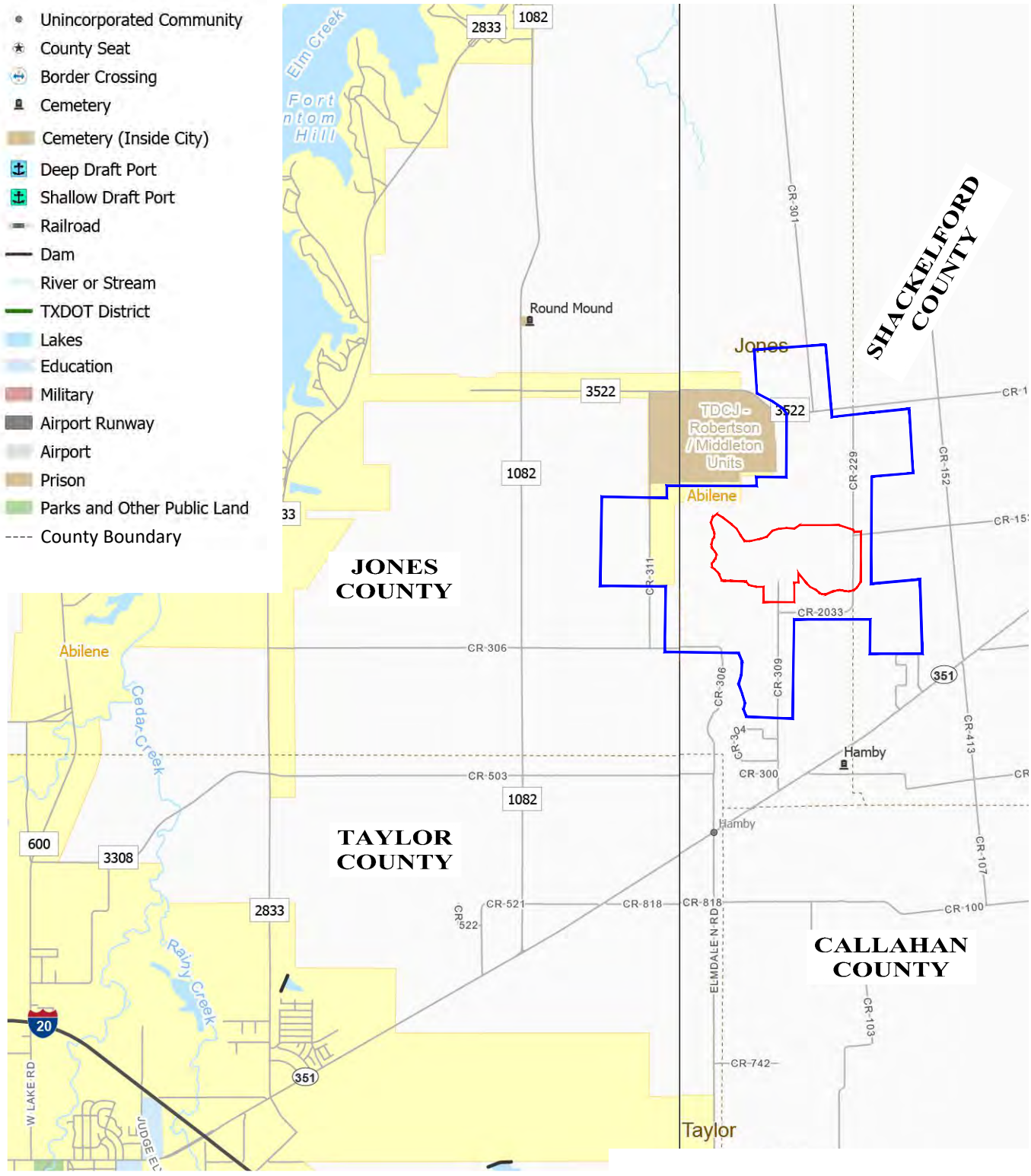
YEAR	DRY TONS
1999	2,160
2000	1,806
2001	1,904
2002	2,183
2003	1,989
2004	2,345
2005	2,487
2006	2,471
2007	2,457
2008	2,503
2009	2,532
2010	2,063
2011	1,998
2012	2,094
2013	2,446
2014	2,171
2015	3,617
2016	3,331
2017	3,483
2018	4,253
2019	5,080
2020	3,194
2021	2,671
2022	2,467
2023	3,385
AVERAGE	**2,684**

Attachment SSTR 4.0-1.A
Sludge Location Information

TxDOT Highway Map

USDA Soil Survey Map

SDS Site Plan



NOTE

1. GENERAL HIGHWAY DOWNLOADED FROM TXDOT WEBSITE AS PART OF THE 2018 COUNTY GRID MAP. MAP COPYRIGHT DATE IS 2018 IS MOST CURRENT AT TIME OF PRODUCTION OF THIS MAP. COUNTY MAP NUMBERS ARE 736 AND 737.

LEGEND

APPLICANT'S PROPERTY BOUNDARY

TREATMENT FACILITY BOUNDARY

2000 0 6000

SCALE IN FEET

CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY
WQ0010334004

TXDOT HIGHWAY MAP

8801 04/09/2024

Enprotec | Hibbs & Todd
402 Cedar Street • Abilene, Texas 79601 • T: (325) 698-5560 • F: (325) 690-3240 • www.e-ht.com
PE Firm Registration No. 1151 • PG Firm Registration No. 50103 • RPLS Firm Registration No. 10011900

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N

200 0 600

SCALE IN FEET

LEGEND

NEXT ACTIVE SLUDGE DISPOSAL SITE SDS-E4

ACTIVE SLUDGE DISPOSAL SITE SDS-E3

CITY OF ABILENE
HAMBY WATER
RECLAMATION FACILITY
WQ0010334004

USDA SOIL
SURVEY MAP

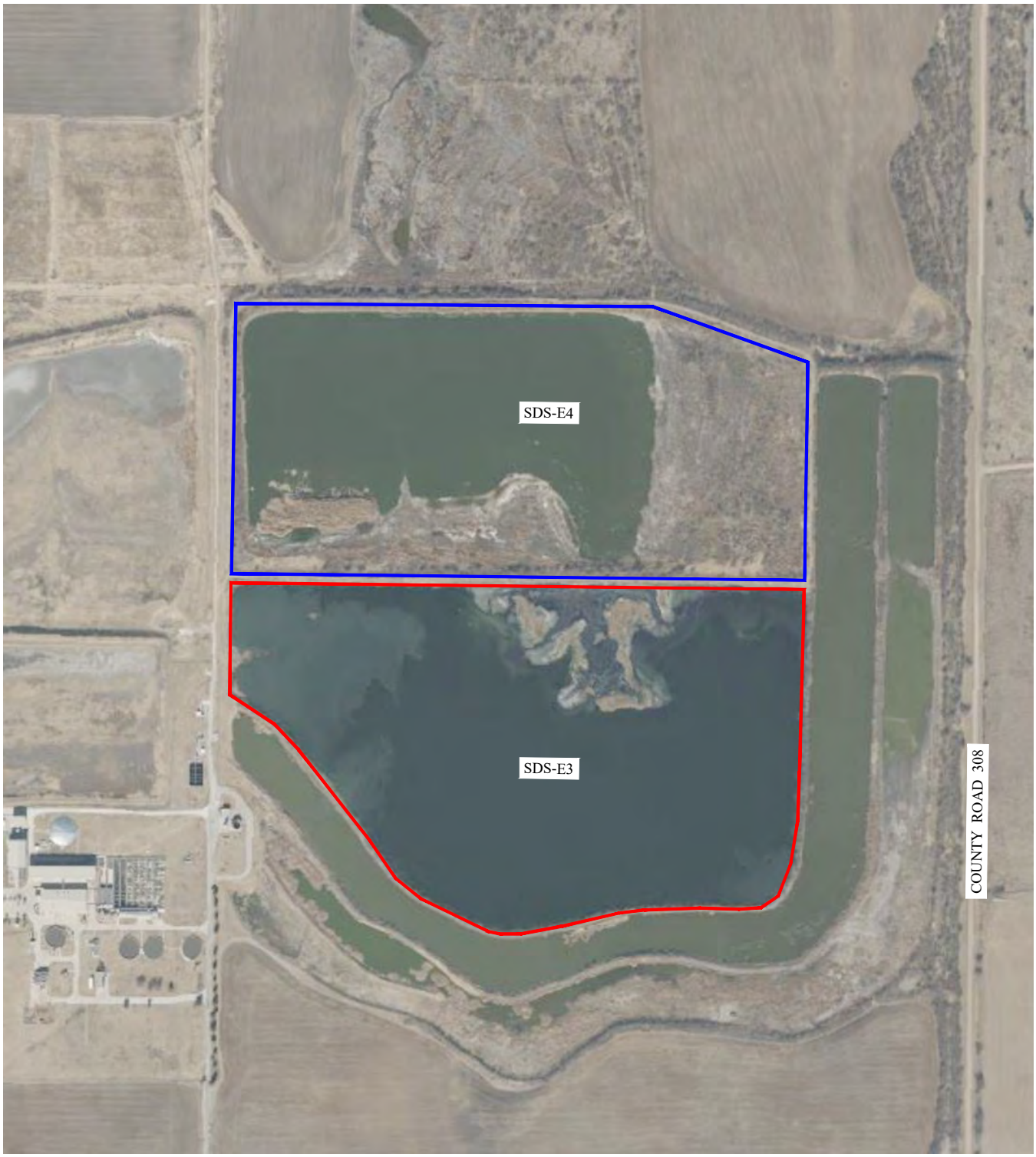
8801

04/12/2024

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N

200 0 600

SCALE IN FEET

LEGEND

NEXT ACTIVE SLUDGE DISPOSAL SITE SDS-E4

CURRENT / ACTIVE SLUDGE DISPOSAL SITE SDS-E3

CITY OF ABILENE
HAMBY WATER
RECLAMATION FACILITY
WQ0010334004

SDS SITE PLAN

8801 04/09/2024

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402 Cedar Street • Abilene, Texas 79601 • T: (325) 698-5560 • F: (325) 690-3240 • www.e-ht.com
PE Firm Registration No. 1151 • PG Firm Registration No. 50103 • RPLS Firm Registration No. 10011900

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Attachment SSTR 4.0-2.D
Sewage Sludge TCLP Test Results &
Pollutant/Metal Analyses

2600 Dudley Rd. Kilgore, Texas 75662
24 Waterway Avenue, Suite 375 The Woodlands, TX 77380
Office: 903-984-0551 * Fax: 903-984-5914

Project
1087303

ABLN-W

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Printed 02/02/2024
12:32

TABLE OF CONTENTS

This report consists of this Table of Contents and the following pages:

Report Name	Description	Pages
1087303_r02_01_ProjectSamples	SPL Kilgore Project P:1087303 C:ABLN Project Sample Cross Reference t:304	2
1087303_r03_03_ProjectResults	SPL Kilgore Project P:1087303 C:ABLN Project Results t:304 PO: 41505	9
1087303_r10_05_ProjectQC	SPL Kilgore Project P:1087303 C:ABLN Project Quality Control Groups	20
1087303_r99_09_CoC__1_of_1	SPL Kilgore CoC ABLN 1087303_1_of_1	2
	Total Pages:	33

Email: Kilgore.projectmanager@spl-inc.com

2600 Dudley Rd. Kilgore, Texas 75662
24 Waterway Avenue, Suite 375 The Woodlands, TX 77380
Office: 903-984-0551 * Fax: 903-984-5914

SAMPLE CROSS REFERENCE

Project
1087303

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Sample	Sample ID	Taken	Time	Received
2262894	*Hamby WRF Sludge*	01/09/2024	08:34:00	01/10/2024

Bottle 01 Glass Qt w/Teflon lined lid
Bottle 02 Glass Qt w/Teflon lined lid
Bottle 03 Glass Qt w/Teflon lined lid
Bottle 04 Glass Qt w/Teflon lined lid
Bottle 05 Prepared Bottle: ICP Preparation for Metals (Batch 1098697) Volume: 50.00000 mL <== Derived from 01 (25.1 grams)
Bottle 06 Prepared Bottle: TCLP Extract (Batch 1098914) Volume: 390.00000 mL <== Derived from 02 (232.6 ml)
Bottle 07 Prepared Bottle: TCLP Extract for Metals (Batch 1098914) Volume: 232.60000 mL <== Derived from 02 (300 ml)
Bottle 08 Prepared Bottle: TCLP Extract for TABN/TCYH (Batch 1098914) Volume: 826.80000 mL <== Derived from 02 (456.3 ml)
Bottle 09 Prepared Bottle: 2 mL Glass vial (Batch 1099004) Volume: 50.00000 mL <== Derived from 03 (5 grams)
Bottle 10 Prepared Bottle: TCLP Extract for TVOA (Batch 1099008)<== Derived from 02 (0 ml)
Bottle 11 Prepared Bottle: TEDLAR BAG (Batch 1099008) Volume: 200.00000 mL <== Derived from 02 (200 ml)
Bottle 12 Prepared Bottle: NH3N TRAACS Autosampler Vial (Batch 1099070) Volume: 6.00000 mL <== Derived from 01 (0.5 grams)
Bottle 13 Prepared Bottle: NH3N TRAACS Autosampler Vial (Batch 1099070) Volume: 6.00000 mL <== Derived from 01 (0.5 grams)
Bottle 14 Prepared Bottle: NH3N TRAACS Autosampler Vial (Batch 1099070) Volume: 6.00000 mL <== Derived from 01 (0.5 grams)
Bottle 15 Prepared Bottle: TCLP Acid Mercury Digestion (Batch 1099168) Volume: 50.00000 mL <== Derived from 07 (2.5 ml)
Bottle 16 Prepared Bottle: TCLP Acid Digestion (Batch 1099169) Volume: 50.00000 mL <== Derived from 07 (10 ml)
Bottle 17 Prepared Bottle: 2 mL Glass vial (Batch 1099217) Volume: 50.00000 mL <== Derived from 03 (5 grams)
Bottle 18 Prepared Bottle: PCBS 2 mL Autosampler Vial (Batch 1099242) Volume: 10.00000 mL <== Derived from 03 (2.0 grams)
Bottle 19 Prepared Bottle: TKN TRAACS Autosampler Vial (Batch 1099272) Volume: 20.00000 mL <== Derived from 01 (1.0 grams)
Bottle 20 Prepared Bottle: TKN TRAACS Autosampler Vial (Batch 1099272) Volume: 20.00000 mL <== Derived from 01 (1.0 grams)
Bottle 21 Prepared Bottle: TKN TRAACS Autosampler Vial (Batch 1099272) Volume: 20.00000 mL <== Derived from 01 (1.0 grams)
Bottle 22 Prepared Bottle: Mercury Preparation for Metals (Batch 1099321) Volume: 50.00000 mL <== Derived from 01 (0.5 grams)
Bottle 23 Prepared Bottle: Mercury Preparation for Metals (Batch 1099321) Volume: 50.00000 mL <== Derived from 01 (0.5 grams)
Bottle 24 Prepared Bottle: Mercury Preparation for Metals (Batch 1099321) Volume: 50.00000 mL <== Derived from 01 (0.5 grams)
Bottle 25 Prepared Bottle: TG80 2 mL Autosampler Vial (Batch 1099498) Volume: 10.00000 mL <== Derived from 08 (200 ml)
Bottle 26 Prepared Bottle: 2 mL Autosampler Vial (Batch 1099607) Volume: 1.00000 mL <== Derived from 08 (30 ml)
Bottle 27 Prepared Bottle: 2 mL Autosampler Vial (Batch 1099716) Volume: 10.00000 mL <== Derived from 08 (1 ml)
Bottle 28 Prepared Bottle: 2 mL Autosampler Vial (Batch 1100661) Volume: 10.00000 mL <== Derived from 01 (20 grams)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
EPA 8082	28	1100661	01/24/2024	1102135	01/29/2024
EPA 9056	02	1099180	01/12/2024	1099180	01/12/2024
EPA 6020A	05	1098697	01/11/2024	1099309	01/12/2024
EPA 6020A	16	1099169	01/12/2024	1099313	01/12/2024
EPA 7470 A	15	1099168	01/12/2024	1099232	01/12/2024
EPA 7471B 2	22	1099321	01/17/2024	1099578	01/18/2024
EPA 6010C	05	1098697	01/11/2024	1099568	01/18/2024
EPA 6010C	05	1098697	01/11/2024	1099520	01/18/2024
EPA 6010C	05	1098697	01/11/2024	1101243	01/26/2024
EPA 6020A	16	1099169	01/12/2024	1099490	01/17/2024

Email: Kilgore.projectmanager@spl-inc.com

2600 Dudley Rd. Kilgore, Texas 75662
24 Waterway Avenue, Suite 375 The Woodlands, TX 77380
*Office: 903-984-0551 * Fax: 903-984-5914*

SAMPLE CROSS REFERENCE

Project
1087303

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Sample	Sample ID	Taken	Time	Received
2262894	*Hamby WRF Sludge*	01/09/2024	08:34:00	01/10/2024

Bottle 01 Glass Qt w/Teflon lined lid
Bottle 02 Glass Qt w/Teflon lined lid
Bottle 03 Glass Qt w/Teflon lined lid
Bottle 04 Glass Qt w/Teflon lined lid
Bottle 05 Prepared Bottle: ICP Preparation for Metals (Batch 1098697) Volume: 50.00000 mL <== Derived from 01 (25.1 grams)
Bottle 06 Prepared Bottle: TCLP Extract (Batch 1098914) Volume: 390.00000 mL <== Derived from 02 (232.6 ml)
Bottle 07 Prepared Bottle: TCLP Extract for Metals (Batch 1098914) Volume: 232.60000 mL <== Derived from 02 (300 ml)
Bottle 08 Prepared Bottle: TCLP Extract for TABN/TCYH (Batch 1098914) Volume: 826.80000 mL <== Derived from 02 (456.3 ml)
Bottle 09 Prepared Bottle: 2 mL Glass vial (Batch 1099004) Volume: 50.00000 mL <== Derived from 03 (5 grams)
Bottle 10 Prepared Bottle: TCLP Extract for TVOA (Batch 1099008)<== Derived from 02 (0 ml)
Bottle 11 Prepared Bottle: TEDLAR BAG (Batch 1099008) Volume: 200.00000 mL <== Derived from 02 (200 ml)
Bottle 12 Prepared Bottle: NH3N TRAACS Autosampler Vial (Batch 1099070) Volume: 6.00000 mL <== Derived from 01 (0.5 grams)
Bottle 13 Prepared Bottle: NH3N TRAACS Autosampler Vial (Batch 1099070) Volume: 6.00000 mL <== Derived from 01 (0.5 grams)
Bottle 14 Prepared Bottle: NH3N TRAACS Autosampler Vial (Batch 1099070) Volume: 6.00000 mL <== Derived from 01 (0.5 grams)
Bottle 15 Prepared Bottle: TCLP Acid Mercury Digestion (Batch 1099168) Volume: 50.00000 mL <== Derived from 07 (2.5 ml)
Bottle 16 Prepared Bottle: TCLP Acid Digestion (Batch 1099169) Volume: 50.00000 mL <== Derived from 07 (10 ml)
Bottle 17 Prepared Bottle: 2 mL Glass vial (Batch 1099217) Volume: 50.00000 mL <== Derived from 03 (5 grams)
Bottle 18 Prepared Bottle: PCBS 2 mL Autosampler Vial (Batch 1099242) Volume: 10.00000 mL <== Derived from 03 (2.0 grams)
Bottle 19 Prepared Bottle: TKN TRAACS Autosampler Vial (Batch 1099272) Volume: 20.00000 mL <== Derived from 01 (1.0 grams)
Bottle 20 Prepared Bottle: TKN TRAACS Autosampler Vial (Batch 1099272) Volume: 20.00000 mL <== Derived from 01 (1.0 grams)
Bottle 21 Prepared Bottle: TKN TRAACS Autosampler Vial (Batch 1099272) Volume: 20.00000 mL <== Derived from 01 (1.0 grams)
Bottle 22 Prepared Bottle: Mercury Preparation for Metals (Batch 1099321) Volume: 50.00000 mL <== Derived from 01 (0.5 grams)
Bottle 23 Prepared Bottle: Mercury Preparation for Metals (Batch 1099321) Volume: 50.00000 mL <== Derived from 01 (0.5 grams)
Bottle 24 Prepared Bottle: Mercury Preparation for Metals (Batch 1099321) Volume: 50.00000 mL <== Derived from 01 (0.5 grams)
Bottle 25 Prepared Bottle: TG80 2 mL Autosampler Vial (Batch 1099498) Volume: 10.00000 mL <== Derived from 08 (200 ml)
Bottle 26 Prepared Bottle: 2 mL Autosampler Vial (Batch 1099607) Volume: 1.00000 mL <== Derived from 08 (30 ml)
Bottle 27 Prepared Bottle: 2 mL Autosampler Vial (Batch 1099716) Volume: 10.00000 mL <== Derived from 08 (1 ml)
Bottle 28 Prepared Bottle: 2 mL Autosampler Vial (Batch 1100661) Volume: 10.00000 mL <== Derived from 01 (20 grams)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
EPA 350.1 2	12	1099070	01/11/2024	1099638	01/18/2024
EPA 8260B	11	1099008	01/11/2024	1099335	01/12/2024
EPA 8081A	25	1099498	01/18/2024	1100064	01/20/2024
EPA 8270C	26	1099607	01/14/2024	1100226	01/19/2024
EPA 8151	27	1099716	01/18/2024	1100126	01/19/2024
EPA 351.2 2	19	1099272	01/13/2024	1099593	01/18/2024
Calculation	19	1099272	01/13/2024	1099593	01/22/2024
SM2540 G-1997 /MOD	01	1099115	01/11/2024	1099115	01/11/2024

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City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

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1087303

Printed: 02/02/2024

RESULTS

Sample Results

2262894 **Hamby WRF Sludge** Received: 01/10/2024

Solid & Chemical Materials | Collected by: Client | City of Abilene | PO: 41505
Taken: 01/09/2024 08:34:00

Calculation Prepared: 1099272 01/13/2024 09:44:08 Calculated 1099593 01/22/2024 15:46:18 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	**Total Nitrogen (as N)**	**54588.0 ***	**mg/kg**	741	E		19

* Dry Weight Basis

EPA 350.1 2 Prepared: 1099070 01/11/2024 18:11:41 Analyzed 1099638 01/18/2024 11:03:00 AMB

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	**Ammonia Nitrogen**	**3520 ***	**mg/kg**	36.3	P		12

* Dry Weight Basis

EPA 351.2 2 Prepared: 1099272 01/13/2024 09:44:08 Analyzed 1099593 01/18/2024 11:45:00 AMB

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	**Total Kjeldahl Nitrogen**	**54500 ***	**mg/kg**	741	P	**7727-37-9**	19

* Dry Weight Basis

EPA 6010C Prepared: 1098697 01/11/2024 14:00:00 Analyzed 1099568 01/18/2024 08:49:00 KB1

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	**Potassium**	**6050 ***	**mg/kg**	754		**7440-09-7**	05

EPA 6010C Prepared: 1098697 01/11/2024 14:00:00 Analyzed 1099520 01/18/2024 09:31:00 KB1

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	**Phosphorus**	**18800 ***	**mg/kg**	151		**7723-14-0**	05

EPA 6010C Prepared: 1098697 01/11/2024 14:00:00 Analyzed 1101243 01/26/2024 12:24:00 KB1

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	**Antimony**	**<8.45 ***	**mg/kg**	8.45		**7440-36-0**	05

* Dry Weight Basis

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2262894 **Hamby WRF Sludge** Received: 01/10/2024

Solid & Chemical Materials | Collected by: Client | City of Abilene | PO: 41505
Taken: 01/09/2024 08:34:00

EPA 6020A Prepared: 1098697 01/11/2024 14:00:00 Analyzed 1099309 01/12/2024 20:02:00 JC2

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Arsenic, Total	2.76 *	mg/kg	7.54	J	7440-38-2	05
NELAC	Beryllium, Total	<0.217 *	mg/kg	0.217		7440-41-7	05
NELAC	Cadmium, Total	0.476 *	mg/kg	1.51	J	7440-43-9	05
NELAC	Chromium, Total	20.5 *	mg/kg	1.51		7440-47-3	05
NELAC	Copper, Total	241 *	mg/kg	1.51		7440-50-8	05
NELAC	Lead, Total	16.4 *	mg/kg	1.51		7439-92-1	05
NELAC	Molybdenum, Total	8.22 *	mg/kg	4.52		7439-98-7	05
NELAC	Nickel, Total	12.6 *	mg/kg	1.51		7440-02-0	05
NELAC	Selenium, Total	3.16 *	mg/kg	1.51		7782-49-2	05
NELAC	Silver, Total	3.25 *	mg/kg	1.51		7440-22-4	05
NELAC	Thallium, Total	0.835 *	mg/kg	1.51	J	7440-28-0	05
NELAC	Zinc, Total	392 *	mg/kg	15.1		7440-66-6	05

EPA 6020A Prepared: 1099169 01/12/2024 11:00:00 Analyzed 1099313 01/12/2024 21:28:00 JC2

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	TCLP Arsenic	<0.050	mg/L	0.050		7440-38-2	16
NELAC	TCLP Barium	0.510	mg/L	0.050		7440-39-3	16
NELAC	TCLP Cadmium	<0.005	mg/L	0.005		7440-43-9	16
NELAC	TCLP Chromium	<0.050	mg/L	0.050		7440-47-3	16
NELAC	TCLP Lead	<0.050	mg/L	0.050		7439-92-1	16
NELAC	TCLP Silver	<0.050	mg/L	0.050		7440-22-4	16

EPA 6020A Prepared: 1099169 01/12/2024 11:00:00 Analyzed 1099490 01/17/2024 19:38:00 JC2

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	TCLP Selenium	<0.050	mg/L	0.050		7782-49-2	16

* Dry Weight Basis

EPA 7470 A Prepared: 1099168 01/12/2024 10:15:00 Analyzed 1099232 01/12/2024 14:51:00 CAS

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	TCLP Mercury	<0.00113	mg/L	0.00113		7439-97-6	15

EPA 7471B 2 Prepared: 1099321 01/17/2024 10:20:00 Analyzed 1099578 01/18/2024 09:22:00 CAS

Parameter	Results	Units	RL	Flags	CAS	Bottle

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Printed: 02/02/2024

2262894 **Hamby WRF Sludge** Received: 01/10/2024

Solid & Chemical Materials | Collected by: Client | City of Abilene | PO: 41505
Taken: 01/09/2024 08:34:00

EPA 7471B 2 Prepared: 1099321 01/17/2024 10:20:00 Analyzed 1099578 01/18/2024 09:22:00 CAS

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Mercury	<0.612 *	mg/kg	0.612		7439-97-6	22

* Dry Weight Basis

EPA 8081A Prepared: 1099498 01/18/2024 06:00:00 Analyzed 1100064 01/20/2024 02:56:00 KAP

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	TCLP Chlordane	<0.001	mg/L	0.001		57-74-9	25
NELAC	TCLP Endrin	<0.00005	mg/L	0.00005		72-20-8	25
NELAC	TCLP gamma-BHC (Lindane)	<0.00005	mg/L	0.00005		58-89-9	25
NELAC	TCLP Heptachlor	<0.00005	mg/L	0.00005		76-44-8	25
NELAC	TCLP Heptachlor Epoxide	<0.00005	mg/L	0.00005		1024-57-3	25
NELAC	TCLP Methoxychlor	<0.00005	mg/L	0.00005		72-43-5	25
NELAC	TCLP Toxaphene	<0.001	mg/L	0.001		8001-35-2	25

EPA 8082 Prepared: 1100661 01/24/2024 14:20:00 Analyzed 1102135 01/29/2024 21:10:00 KAP

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	PCB-1016	<653 *	ug/kg	653		12674-11-2	28
NELAC	PCB-1221	<653 *	ug/kg	653		11104-28-2	28
NELAC	PCB-1232	<653 *	ug/kg	653		11141-16-5	28
NELAC	PCB-1242	<653 *	ug/kg	653		53469-21-9	28
NELAC	PCB-1248	<653 *	ug/kg	653		12672-29-6	28
NELAC	PCB-1254	<653 *	ug/kg	653		11097-69-1	28
NELAC	PCB-1260	<653 *	ug/kg	653		11096-82-5	28
NELAC	PCB-1262	<1190 *	ug/kg	1190		37324-23-5	28
NELAC	PCB-1268	<1190 *	ug/kg	1190		11100-14-4	28

* Dry Weight Basis

EPA 8151 Prepared: 1099716 01/18/2024 15:00:00 Analyzed 1100126 01/19/2024 21:19:00 KAP

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	TCLP 2,4 D	<0.500	mg/L	0.500		94-75-7	27
NELAC	TCLP 2,4,5-TP (Silvex)	<0.300	mg/L	0.300		93-72-1	27

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Printed: 02/02/2024

2262894 Hamby WRF Sludge — Received: 01/10/2024

Solid & Chemical Materials — Collected by: Client — City of Abilene — PO: 41505

Taken: 01/09/2024 08:34:00

EPA 8260B — Prepared: 1099008 01/11/2024 16:15:00 — Analyzed 1099335 01/12/2024 19:19:00 PM1

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	TCLP 1,1-Dichloroethene	<0.010	mg/L	0.010		75-35-4	11
NELAC	TCLP 1,2-Dichloroethane	<0.010	mg/L	0.010		107-06-2	11
NELAC	TCLP 1,4 Dichlorobenzene	<0.010	mg/L	0.010		106-46-7	11
NELAC	TCLP Benzene	<0.010	mg/L	0.010		71-43-2	11
NELAC	TCLP Carbon tetrachloride	<0.010	mg/L	0.010		56-23-5	11
NELAC	TCLP Chlorobenzene	<0.010	mg/L	0.010		108-90-7	11
NELAC	TCLP Chloroform	<0.010	mg/L	0.010		67-66-3	11
NELAC	TCLP MEK	<0.100	mg/L	0.100		78-93-3	11
NELAC	TCLP Tetrachloroethylene	<0.010	mg/L	0.010		127-18-4	11
NELAC	TCLP Trichloroethylene	<0.010	mg/L	0.010		79-01-6	11
NELAC	TCLP Vinyl chloride	<0.0104	mg/L	0.0104		75-01-4	11

EPA 8270C — Prepared: 1099607 01/14/2024 10:30:00 — Analyzed 1100226 01/19/2024 20:37:00 DWL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	TCLP 2,4,5-Trichlorophenol	<0.0333	mg/L	0.0333		95-95-4	26
NELAC	TCLP 2,4,6-Trichlorophenol	<0.0333	mg/L	0.0333		88-06-2	26
NELAC	TCLP 2,4-Dinitrotoluene	<0.117	mg/L	0.117		121-14-2	26
NELAC	TCLP 2-Methylphenol (o-Cresol)	<0.173	mg/L	0.173		95-48-7	26
NELAC	TCLP 3&4-Methylphenol (m&p-Creso	<0.207	mg/L	0.207		108-39-4	26
NELAC	TCLP Hexachlorobenzene	<0.013	mg/L	0.013		118-74-1	26
NELAC	TCLP Hexachlorobutadiene	<0.0333	mg/L	0.0333		87-68-3	26
NELAC	TCLP Hexachloroethane	<0.0333	mg/L	0.0333		67-72-1	26
NELAC	TCLP Nitrobenzene	<0.0333	mg/L	0.0333		98-95-3	26
NELAC	TCLP Pentachlorophenol	<0.0333	mg/L	0.0333		87-86-5	26
NELAC	TCLP Pyridine (Reg. Limit 5)	<0.180	mg/L	0.180	X	110-86-1	26

EPA 8270C — Prepared: 1099607 01/14/2024 10:30:00 — Calculated 1100226 01/25/2024 19:02:02 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
z	TCLP Total Cresols (Reg Lim 200)	<0.207	mg/L	0.207		108-39-4,ect.	26

EPA 9056 — Prepared: 1099180 01/12/2024 03:18:00 — Analyzed 1099180 01/12/2024 03:18:00 NAZ

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Nitrate-Nitrogen	88.0 *	mg/kg	17.1		14797-55-8	02

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City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Printed: 02/02/2024

2262894 Hamby WRF Sludge — Received: 01/10/2024

Solid & Chemical Materials — Collected by: Client — City of Abilene — PO: 41505
Taken: 01/09/2024 08:34:00

EPA 9056 — Prepared: 1099180 01/12/2024 03:18:00 — Analyzed 1099180 01/12/2024 03:18:00 NAZ

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Nitrate-Nitrogen	88.0 *	mg/kg	17.1		14797-55-8	02

* Dry Weight Basis

SM2540 G-1997 /MOD — Prepared: 1099115 01/11/2024 07:19:00 — Analyzed 1099115 01/11/2024 07:19:00 JMB

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Total Solids for Dry Wt Conversi	0.659	%	0.010			01

Sample Preparation

2262894 Hamby WRF Sludge — Received: 01/10/2024

41505

01/09/2024

Prepared: 01/12/2024 09:03:57 — Calculated 01/12/2024 09:03:57 CAL

z	Environmental Fee (per Project)	Verified

Calculation — Prepared: 02/02/2024 08:30:12 — Calculated 02/02/2024 08:30:12 CAL

As Received to Dry Weight Basis	Calculated

EPA 3510C — Prepared: 1098914 01/11/2024 16:15:00 — Analyzed 1099607 01/14/2024 10:30:00 CRS

TCLP Liquid-Liquid Extract	1/30	ml	08

EPA 3510C — Prepared: 1098914 01/11/2024 16:15:00 — Analyzed 1099498 01/18/2024 06:00:00 CRS

TCLP Liq-Liq Extr. W/Hex Exch.	10/200	ml	08

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2262894 **Hamby WRF Sludge** Received: 01/10/2024

41505

01/09/2024

EPA 1311	*Prepared:*	*1098914*	*01/11/2024*	*16:15:00*	*Analyzed*	*1098914*	*01/11/2024*	*16:15:00*		*MAX*
NELAC **TCLP Extraction Non-Volatile**	**SOLID EXT 1**	**ml**								02
EPA 1311ZHE	*Prepared:*	*1099008*	*01/11/2024*	*16:15:00*	*Analyzed*	*1099008*	*01/11/2024*	*16:15:00*		*MAX*
NELAC **TCLP Extraction ZHE Volatiles**	**4.3%SOLID**	**ml**								02
EPA 3005A	*Prepared:*	*1098914*	*01/11/2024*	*16:15:00*	*Analyzed*	*1099169*	*01/12/2024*	*11:00:00*		*TES*
z **Metals Digestion TCLP Extract**	**50/10**	**ml**								07
EPA 3050B	*Prepared:*	*1098697*	*01/11/2024*	*14:00:00*	*Analyzed*	*1098697*	*01/11/2024*	*14:00:00*		*TES*
NELAC **Solid/Sludge/Soil/Sediment Metal**	**50/25.13**	**grams**								01
EPA 350.1 2	*Prepared:*	*1099070*	*01/11/2024*	*18:11:41*	*Analyzed*	*1099070*	*01/11/2024*	*18:11:41*		*SRJ*
NELAC **Ammonia Distillation**	**6/0.5015**	**grams**								01
EPA 351.2 2	*Prepared:*	*1099272*	*01/13/2024*	*09:44:08*	*Analyzed*	*1099272*	*01/13/2024*	*09:44:08*		*SRJ*
NELAC **TKN Block Digestion**	**20/1.0255**	**grams**								01
EPA 3510C	*Prepared:*	*1100661*	*01/24/2024*	*14:20:00*	*Analyzed*	*1100661*	*01/24/2024*	*14:20:00*		*MCC*
PCB Liq-Liq Extr. W/Hex Exch.	**10/20**	**grams**								01

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2262894 **Hamby WRF Sludge** Received: 01/10/2024

41505

01/09/2024

EPA 3550B	*Prepared:*	*1099242*	*01/12/2024*	*15:18:51*	*Analyzed*	*1099242*	*01/12/2024*	*15:18:51*	*PEV*	
NELAC	**PCB Total Sonic Extr. W/Hex Exch**	**10/2.02**	**grams**							03
EPA 7470A	*Prepared:*	*1098914*	*01/11/2024*	*16:15:00*	*Analyzed*	*1099168*	*01/12/2024*	*10:15:00*	*ALB*	
NELAC	**Metals Digestion TCLP 7470**	**50/2.5**	**ml**							07
EPA 7471B	*Prepared:*	*1099321*	*01/17/2024*	*10:20:00*	*Analyzed*	*1099321*	*01/17/2024*	*10:20:00*	*ALB*	
NELAC	**Solid Metals Digestion Hg**	**50/0.5195**	**grams**							01
EPA 8081A	*Prepared:*	*1099498*	*01/18/2024*	*06:00:00*	*Analyzed*	*1100064*	*01/20/2024*	*02:56:00*	*KAP*	
NELAC	**GC TCLP Pesticide**	**Entered**								25
EPA 8082	*Prepared:*	*1100661*	*01/24/2024*	*14:20:00*	*Analyzed*	*1102135*	*01/29/2024*	*21:10:00*	*KAP*	
NELAC	**Polychlorinated Biphenyls**	**Entered**								28
EPA 8151	*Prepared:*	*1099716*	*01/18/2024*	*15:00:00*	*Analyzed*	*1100126*	*01/19/2024*	*21:19:00*	*KAP*	
NELAC	**GC TCLP Herbicide**	**Entered**								27
EPA 8151A (Prep)	*Prepared:*	*1098914*	*01/11/2024*	*16:15:00*	*Analyzed*	*1099716*	*01/18/2024*	*15:00:00*	*CRS*	
NELAC	**Esterification of TCLP Extract**	**10/1**	**ml**							08

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City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Printed: 02/02/2024

2262894 **Hamby WRF Sludge** Received: 01/10/2024

41505

01/09/2024

EPA 8260B		*Prepared:*	*1099008*	*01/11/2024*	*16:15:00*	*Analyzed*	*1099335*	*01/12/2024*	*19:19:00*	*PM1*
NELAC	**MS TCLP Volatile Analysis**	**Entered**								11
EPA 8270C		*Prepared:*	*1099607*	*01/14/2024*	*10:30:00*	*Analyzed*	*1100226*	*01/19/2024*	*20:37:00*	*DWL*
NELAC	**MS TCLP Semivolatile Analysis**	**Entered**								26
EPA 9056		*Prepared:*	*1099004*	*01/11/2024*	*14:50:39*	*Analyzed*	*1099004*	*01/11/2024*	*14:50:39*	*PEV*
	Water Extract-Ion Chromatography	**50/5.0**		**grams**						03
EPA 9056		*Prepared:*	*1099217*	*01/12/2024*	*14:19:59*	*Analyzed*	*1099217*	*01/12/2024*	*14:19:59*	*PEV*
	Water Extract-Ion Chromatography	**50/5.0**		**grams**						03
SM 2540 G-1997		*Prepared:*	*1098848*	*01/11/2024*	*07:19:00*	*Analyzed*	*1098848*	*01/11/2024*	*07:19:00*	*JMB*
NELAC	**Total Solids Start Code**	**Started**								

2600 Dudley Rd. Kilgore, Texas 75662
24 Waterway Avenue, Suite 375 The Woodlands, TX 77380
*Office: 903-984-0551 * Fax: 903-984-5914*

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Qualifiers:

J - Analyte detected below quantitation limit
E - Estimated Value
P - Spike recovery outside control limits due to matrix effects.
X - Standard reads higher than desired.

We report results on an As Received (or Wet) basis unless marked Dry Weight.

Unless otherwise noted, testing was performed at SPL, Inc.- Kilgore laboratory which holds International, Federal, and state accreditations. Please see our Websites for details.

(N)ELAC - Covered in our NELAC scope of accreditation
z -- Not covered by our NELAC scope of accreditation

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of SPL Kilgore. Unless otherwise specified, these test results meet the requirements of NELAC.
RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

Bill Peery, MS, VP Technical Services

QUALITY CONTROL

ABLN-W

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Analytical Set 1099115 — SM2540 G-1997 /MOD

ControlBlk

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Total Solids for Dry Wt Conversi	1099115	0.0001			grams	125855881

Duplicate

Parameter	*Sample*	*Result*	*Unknown*	*Unit*	*RPD*	*Limit%*
Total Solids for Dry Wt Conversi	2255480	91.3	93.0	%	1.84	20.0
Total Solids for Dry Wt Conversi	2262104	12.3	12.6	%	2.41	20.0
Total Solids for Dry Wt Conversi	2262725	13.8	13.8	%	0	20.0

Analytical Set 1099593 — EPA 351.2 2

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Total Kjeldahl Nitrogen	1099272	ND	0.378	1.00	mg/kg	125867077

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Total Kjeldahl Nitrogen	5.38	5.00	mg/kg	108	90.0 - 110	125867075
Total Kjeldahl Nitrogen	5.29	5.00	mg/kg	106	90.0 - 110	125867076
Total Kjeldahl Nitrogen	5.40	5.00	mg/kg	108	90.0 - 110	125867081
Total Kjeldahl Nitrogen	5.32	5.00	mg/kg	106	90.0 - 110	125867092
Total Kjeldahl Nitrogen	5.17	5.00	mg/kg	103	90.0 - 110	125867093

Duplicate

Parameter	*Sample*	*Result*	*Unknown*	*Unit*	*RPD*	*Limit%*
Total Kjeldahl Nitrogen	2262894	336	359	mg/kg	6.62	20.0

ICV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Total Kjeldahl Nitrogen	5.30	5.00	mg/kg	106	90.0 - 110	125867074

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Total Kjeldahl Nitrogen	1099272	105	108	100	90.0 - 110	105	108	mg/kg	2.82	20.0

Mat. Spike

Parameter	*Sample*	*Spike*	*Unknown*	*Known*	*Units*	*Recovery %*	*Limits %*	*File*	
Total Kjeldahl Nitrogen	2262894	485	359	487	mg/kg	25.9	80.0 - 120	125867091	*

Analytical Set 1099638 — EPA 350.1 2

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Ammonia Nitrogen	1099070	ND	0.509	1.00	mg/kg	125868002

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Ammonia Nitrogen	1.96	2.00	mg/kg	98.0	90.0 - 110	125867995

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ABLN-W

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Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Ammonia Nitrogen	2.10	2.00	mg/kg	105	90.0 - 110	125867996
Ammonia Nitrogen	2.01	2.00	mg/kg	100	90.0 - 110	125867997
Ammonia Nitrogen	2.15	2.00	mg/kg	108	90.0 - 110	125867998
Ammonia Nitrogen	2.07	2.00	mg/kg	104	90.0 - 110	125867999
Ammonia Nitrogen	2.17	2.00	mg/kg	108	90.0 - 110	125868000
Ammonia Nitrogen	2.12	2.00	mg/kg	106	90.0 - 110	125868001
Ammonia Nitrogen	2.19	2.00	mg/kg	110	90.0 - 110	125868009
Ammonia Nitrogen	2.17	2.00	mg/kg	108	90.0 - 110	125868010
Ammonia Nitrogen	2.18	2.00	mg/kg	109	90.0 - 110	125868011

Duplicate

Parameter	*Sample*	*Result*	*Unknown*	*Unit*	*RPD*	*Limit%*
Ammonia Nitrogen	2262894	24.8	23.2	mg/kg	6.67	20.0

ICV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Ammonia Nitrogen	2.01	2.00	mg/kg	100	90.0 - 110	125867994

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Ammonia Nitrogen	1099070	108	107	100	90.0 - 110	108	107	mg/kg	0.930	20.0

Mat. Spike

Parameter	*Sample*	*Spike*	*Unknown*	*Known*	*Units*	*Recovery %*	*Limits %*	*File*	
Ammonia Nitrogen	2262894	41.5	23.2	23.6	mg/kg	77.5	80.0 - 120	125868007	*

Analytical Set 1099880 — EPA 351.2 2

Duplicate

Parameter	*Sample*	*Result*	*Unknown*	*Unit*	*RPD*	*Limit%*
Total Kjeldahl Nitrogen	2262894	335	353	mg/kg	5.23	20.0

Mat. Spike

Parameter	*Sample*	*Spike*	*Unknown*	*Known*	*Units*	*Recovery %*	*Limits %*	*File*	
Total Kjeldahl Nitrogen	2262894	470	353	487	mg/kg	24.0	80.0 - 120	125874983	*

Analytical Set 1099232 — EPA 7470 A

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
TCLP Mercury	1099168	ND	0.000113	0.0002	mg/L	125858980

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
TCLP Mercury	0.0052	0.005	mg/L	104	90.0 - 110	125858957
TCLP Mercury	0.00509	0.005	mg/L	102	90.0 - 110	125858958
TCLP Mercury	0.00523	0.005	mg/L	105	90.0 - 110	125858959
TCLP Mercury	0.00521	0.005	mg/L	104	90.0 - 110	125858979
TCLP Mercury	0.00535	0.005	mg/L	107	90.0 - 110	125858981

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Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
TCLP Mercury	0.00531	0.005	mg/L	106	90.0 - 110	125858990

ICL

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
TCLP Mercury	0.0214	0.02	mg/L	107	90.0 - 110	125858956

ICV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
TCLP Mercury	0.00518	0.005	mg/L	104	90.0 - 110	125858955

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
TCLP Mercury	1099168	0.00977	0.00987	0.010	85.1 - 117	97.7	98.7	mg/L	1.02	20.0

MSD

Parameter	*Sample*	*MS*	*MSD*	*UNK*	*Known*	*Limits*	*MS%*	*MSD%*	*Units*	*RPD*	*Limit%*
TCLP Mercury	2262122	0.0943	0.0961	ND	0.100	80.9 - 121	94.3	96.1	mg/L	1.89	20.0

Analytical Set 1099309 — EPA 6020A

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*		*File*
Arsenic, Total	1098697	ND	0.000917	0.005	mg/kg		125860986
Beryllium, Total	1098697	ND	0.000144	0.001	mg/kg		125860986
Cadmium, Total	1098697	ND	0.00011	0.001	mg/kg		125860986
Chromium, Total	1098697	ND	0.000409	0.001	mg/kg		125860986
Copper, Total	1098697	0.00133	0.000242	0.001	mg/kg	*	125860986
Lead, Total	1098697	ND	0.000262	0.001	mg/kg		125860986
Molybdenum, Total	1098697	ND	0.000865	0.003	mg/kg		125860986
Nickel, Total	1098697	ND	0.000287	0.001	mg/kg		125860986
Selenium, Total	1098697	ND	0.000353	0.001	mg/kg		125860986
Silver, Total	1098697	ND	0.000372	0.001	mg/kg		125860986
Thallium, Total	1098697	ND	0.000233	0.001	mg/kg		125860986
Zinc, Total	1098697	ND	0.00479	0.010	mg/kg		125860986

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Arsenic, Total	0.0481	0.05	mg/kg	96.2	90.0 - 110	125860982
Arsenic, Total	0.0474	0.05	mg/kg	94.8	90.0 - 110	125860987
Arsenic, Total	0.0481	0.05	mg/kg	96.2	90.0 - 110	125860996
Arsenic, Total	0.0483	0.05	mg/kg	96.6	90.0 - 110	125861004
Beryllium, Total	0.0493	0.05	mg/kg	98.6	90.0 - 110	125860987
Beryllium, Total	0.050	0.05	mg/kg	100	90.0 - 110	125860996
Beryllium, Total	0.0495	0.05	mg/kg	99.0	90.0 - 110	125861004
Cadmium, Total	0.0491	0.05	mg/kg	98.2	90.0 - 110	125860987
Cadmium, Total	0.0491	0.05	mg/kg	98.2	90.0 - 110	125860996
Cadmium, Total	0.0489	0.05	mg/kg	97.8	90.0 - 110	125861004

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Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Chromium, Total	0.0486	0.05	mg/kg	97.2	90.0 - 110	125860982
Chromium, Total	0.0487	0.05	mg/kg	97.4	90.0 - 110	125860987
Chromium, Total	0.049	0.05	mg/kg	98.0	90.0 - 110	125860996
Chromium, Total	0.0489	0.05	mg/kg	97.8	90.0 - 110	125861004
Copper, Total	0.0499	0.05	mg/kg	99.8	90.0 - 110	125860972
Copper, Total	0.0504	0.05	mg/kg	101	90.0 - 110	125860982
Copper, Total	0.0505	0.05	mg/kg	101	90.0 - 110	125860987
Copper, Total	0.051	0.05	mg/kg	102	90.0 - 110	125860996
Copper, Total	0.0506	0.05	mg/kg	101	90.0 - 110	125861004
Lead, Total	0.0525	0.05	mg/kg	105	90.0 - 110	125860982
Lead, Total	0.0511	0.05	mg/kg	102	90.0 - 110	125860987
Lead, Total	0.0526	0.05	mg/kg	105	90.0 - 110	125860996
Lead, Total	0.0529	0.05	mg/kg	106	90.0 - 110	125861004
Molybdenum, Total	0.0482	0.05	mg/kg	96.4	90.0 - 110	125860987
Molybdenum, Total	0.048	0.05	mg/kg	96.0	90.0 - 110	125860996
Molybdenum, Total	0.0494	0.05	mg/kg	98.8	90.0 - 110	125861004
Nickel, Total	0.0505	0.05	mg/kg	101	90.0 - 110	125860982
Nickel, Total	0.0505	0.05	mg/kg	101	90.0 - 110	125860987
Nickel, Total	0.0509	0.05	mg/kg	102	90.0 - 110	125860996
Nickel, Total	0.0507	0.05	mg/kg	101	90.0 - 110	125861004
Selenium, Total	0.0472	0.05	mg/kg	94.4	90.0 - 110	125860987
Selenium, Total	0.0479	0.05	mg/kg	95.8	90.0 - 110	125860996
Selenium, Total	0.0455	0.05	mg/kg	91.0	90.0 - 110	125861004
Silver, Total	0.0477	0.05	mg/kg	95.4	90.0 - 110	125860987
Silver, Total	0.0469	0.05	mg/kg	93.8	90.0 - 110	125860996
Silver, Total	0.0473	0.05	mg/kg	94.6	90.0 - 110	125861004
Thallium, Total	0.0488	0.05	mg/kg	97.6	90.0 - 110	125860987
Thallium, Total	0.0502	0.05	mg/kg	100	90.0 - 110	125860996
Thallium, Total	0.0503	0.05	mg/kg	101	90.0 - 110	125861004
Zinc, Total	0.051	0.05	mg/kg	102	90.0 - 110	125860982
Zinc, Total	0.0505	0.05	mg/kg	101	90.0 - 110	125860987
Zinc, Total	0.052	0.05	mg/kg	104	90.0 - 110	125860996
Zinc, Total	0.0512	0.05	mg/kg	102	90.0 - 110	125861004

ICV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Arsenic, Total	0.0516	0.05	mg/kg	103	90.0 - 110	125860928
Beryllium, Total	0.0482	0.05	mg/kg	96.4	90.0 - 110	125860928
Cadmium, Total	0.0496	0.05	mg/kg	99.2	90.0 - 110	125860928
Chromium, Total	0.0497	0.05	mg/kg	99.4	90.0 - 110	125860928
Copper, Total	0.0512	0.05	mg/kg	102	90.0 - 110	125860928
Lead, Total	0.0507	0.05	mg/kg	101	90.0 - 110	125860928
Molybdenum, Total	0.0503	0.05	mg/kg	101	90.0 - 110	125860928
Nickel, Total	0.0512	0.05	mg/kg	102	90.0 - 110	125860928
Selenium, Total	0.0485	0.05	mg/kg	97.0	90.0 - 110	125860928

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ICV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Silver, Total	0.0494	0.05	mg/kg	98.8	90.0 - 110	125860928
Thallium, Total	0.0482	0.05	mg/kg	96.4	90.0 - 110	125860928
Zinc, Total	0.049	0.05	mg/kg	98.0	90.0 - 110	125860928

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Arsenic, Total	1098697	2.33	2.12	2.50	80.0 - 120	93.2	84.8	mg/kg	9.44	20.0
Beryllium, Total	1098697	0.971	0.955	1.00	81.9 - 114	97.1	95.5	mg/kg	1.66	20.0
Cadmium, Total	1098697	1.16	1.16	1.25	80.0 - 120	92.8	92.8	mg/kg	0	20.0
Chromium, Total	1098697	2.49	2.43	2.50	80.0 - 120	99.6	97.2	mg/kg	2.44	20.0
Copper, Total	1098697	2.39	2.37	2.50	80.0 - 120	95.6	94.8	mg/kg	0.840	20.0
Lead, Total	1098697	2.41	2.43	2.50	80.0 - 120	96.4	97.2	mg/kg	0.826	20.0
Molybdenum, Total	1098697	2.41	2.33	2.50	80.0 - 120	96.4	93.2	mg/kg	3.38	20.0
Nickel, Total	1098697	2.42	2.42	2.50	80.0 - 120	96.8	96.8	mg/kg	0	20.0
Selenium, Total	1098697	2.07	2.06	2.50	80.0 - 120	82.8	82.4	mg/kg	0.484	20.0
Silver, Total	1098697	0.460	0.451	0.500	80.0 - 120	92.0	90.2	mg/kg	1.98	20.0
Thallium, Total	1098697	2.44	2.49	2.50	79.8 - 111	97.6	99.6	mg/kg	2.03	20.0
Zinc, Total	1098697	2.34	2.34	2.50	80.0 - 120	93.6	93.6	mg/kg	0	20.0

MSD

Parameter	*Sample*	*MS*	*MSD*	*UNK*	*Known*	*Limits*	*MS%*	*MSD%*	*Units*	*RPD*	*Limit%*
Arsenic, Total	2262013	0.734	52.9	4.29	81.2	67.5 - 123	-4.41 *	60.3 *	mg/kg	232 *	20.0
Cadmium, Total	2262013	0.107	29.9	0.0821	40.6	86.3 - 114	0.0618 *	74.0 *	mg/kg	200 *	20.0
Chromium, Total	2262013	7.89	73.3	8.01	81.2	80.1 - 122	-0.149 *	81.0	mg/kg	201 *	20.0
Copper, Total	2262013	40.0	109	79.8	81.2	40.4 - 145	-49.4 *	36.2 *	mg/kg	92.6 *	20.0
Lead, Total	2262013	8.84	69.6	2.55	81.2	78.8 - 123	7.80 *	83.2	mg/kg	166 *	20.0
Molybdenum, Total	2262013	0.932	53.9	3.70	81.2	62.9 - 137	-3.43 *	62.3 *	mg/kg	223 *	20.0
Nickel, Total	2262013	3.80	69.9	3.63	81.2	76.5 - 121	0.211 *	82.2	mg/kg	199 *	20.0
Selenium, Total	2262013	1.02	52.8	1.39	81.2	63.9 - 122	-0.459 *	63.8 *	mg/kg	203 *	20.0
Zinc, Total	2262013	55.5	120	194	81.2	28.6 - 157	-172 *	-91.8 *	mg/kg	73.5 *	20.0
Arsenic, Total	2262130	34.8	44.1	0.609	60.4	67.5 - 123	56.3 *	71.6	mg/kg	23.9 *	20.0
Beryllium, Total	2262130	15.7	20.1	0.0367	24.2	79.5 - 115	64.5 *	82.6	mg/kg	24.6 *	20.0
Cadmium, Total	2262130	18.7	23.7	0.320	30.2	86.3 - 114	60.7 *	77.2 *	mg/kg	23.9 *	20.0
Chromium, Total	2262130	49.1	58.3	9.85	60.4	80.1 - 122	64.7 *	79.8 *	mg/kg	21.0 *	20.0
Copper, Total	2262130	154	136	139	60.4	40.4 - 145	24.7 *	-4.94 *	mg/kg	300 *	20.0
Lead, Total	2262130	40.5	52.3	2.29	60.4	78.8 - 123	62.9 *	82.4	mg/kg	26.8 *	20.0
Molybdenum, Total	2262130	36.6	46.7	1.12	60.4	62.9 - 137	58.5 *	75.1	mg/kg	24.9 *	20.0
Nickel, Total	2262130	42.6	52.9	3.87	60.4	76.5 - 121	63.8 *	80.8	mg/kg	23.5 *	20.0
Selenium, Total	2262130	34.9	43.9	1.09	60.4	63.9 - 122	55.7 *	70.5	mg/kg	23.5 *	20.0
Silver, Total	2262130	7.19	9.16	0.207	12.1	77.6 - 116	57.7 *	74.0 *	mg/kg	24.7 *	20.0
Thallium, Total	2262130	39.4	50.7	0.0534	60.4	70.2 - 112	64.8 *	83.4	mg/kg	25.1 *	20.0
Zinc, Total	2262130	315	314	397	60.4	28.6 - 157	-135 *	-137 *	mg/kg	0.318	20.0

Analytical Set 1099313 EPA 6020A

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Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
TCLP Arsenic	1099169	ND	0.010	0.010	mg/L	125861371
TCLP Barium	1099169	ND	0.010	0.010	mg/L	125861371
TCLP Cadmium	1099169	ND	0.001	0.001	mg/L	125861371
TCLP Chromium	1099169	ND	0.010	0.010	mg/L	125861371
TCLP Lead	1099169	ND	0.010	0.010	mg/L	125861371
TCLP Silver	1099169	ND	0.010	0.010	mg/L	125861371

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
TCLP Arsenic	0.0483	0.05	mg/L	96.6	90.0 - 110	125861368
TCLP Arsenic	0.0493	0.05	mg/L	98.6	90.0 - 110	125861378
TCLP Arsenic	0.047	0.05	mg/L	94.0	90.0 - 110	125861382
TCLP Barium	0.049	0.05	mg/L	98.0	90.0 - 110	125861368
TCLP Barium	0.0501	0.05	mg/L	100	90.0 - 110	125861378
TCLP Barium	0.0488	0.05	mg/L	97.6	90.0 - 110	125861382
TCLP Cadmium	0.0489	0.05	mg/L	97.8	90.0 - 110	125861368
TCLP Cadmium	0.0487	0.05	mg/L	97.4	90.0 - 110	125861378
TCLP Cadmium	0.0487	0.05	mg/L	97.4	90.0 - 110	125861382
TCLP Chromium	0.0489	0.05	mg/L	97.8	90.0 - 110	125861368
TCLP Chromium	0.0486	0.05	mg/L	97.2	90.0 - 110	125861378
TCLP Chromium	0.0479	0.05	mg/L	95.8	90.0 - 110	125861382
TCLP Lead	0.0529	0.05	mg/L	106	90.0 - 110	125861368
TCLP Lead	0.0514	0.05	mg/L	103	90.0 - 110	125861378
TCLP Lead	0.0511	0.05	mg/L	102	90.0 - 110	125861382
TCLP Silver	0.0473	0.05	mg/L	94.6	90.0 - 110	125861368
TCLP Silver	0.0478	0.05	mg/L	95.6	90.0 - 110	125861378
TCLP Silver	0.0473	0.05	mg/L	94.6	90.0 - 110	125861382

ICV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
TCLP Arsenic	0.0516	0.05	mg/L	103	90.0 - 110	125861296
TCLP Barium	0.0523	0.05	mg/L	105	90.0 - 110	125861296
TCLP Cadmium	0.0496	0.05	mg/L	99.2	90.0 - 110	125861296
TCLP Chromium	0.0497	0.05	mg/L	99.4	90.0 - 110	125861296
TCLP Lead	0.0507	0.05	mg/L	101	90.0 - 110	125861296
TCLP Silver	0.0494	0.05	mg/L	98.8	90.0 - 110	125861296

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
TCLP Arsenic	1099169	0.444	0.450	0.500	82.8 - 120	88.8	90.0	mg/L	1.34	14.0
TCLP Barium	1099169	0.456	0.452	0.500	83.1 - 113	91.2	90.4	mg/L	0.881	14.0
TCLP Cadmium	1099169	0.229	0.228	0.250	86.0 - 115	91.6	91.2	mg/L	0.438	14.0
TCLP Chromium	1099169	0.480	0.478	0.500	84.3 - 118	96.0	95.6	mg/L	0.418	14.0
TCLP Lead	1099169	0.481	0.477	0.500	85.1 - 115	96.2	95.4	mg/L	0.835	14.0
TCLP Silver	1099169	0.0891	0.0884	0.100	80.1 - 118	89.1	88.4	mg/L	0.789	14.0

ABLN-W

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Project
1087303

Printed 02/02/2024

MSD

Parameter	*Sample*	*MS*	*MSD*	*UNK*	*Known*	*Limits*	*MS%*	*MSD%*	*Units*	*RPD*	*Limit%*
TCLP Arsenic	2262122	2.22	2.28	ND	2.50	84.9 - 114	88.8	91.2	mg/L	2.67	20.0
TCLP Barium	2262122	2.44	2.51	0.151	2.50	80.3 - 115	91.6	94.4	mg/L	3.01	20.0
TCLP Cadmium	2262122	1.16	1.19	ND	1.25	78.2 - 120	92.8	95.2	mg/L	2.55	20.0
TCLP Chromium	2262122	2.37	2.43	0.0143	2.50	86.0 - 117	94.2	96.6	mg/L	2.51	20.0
TCLP Lead	2262122	2.42	2.48	ND	2.50	85.0 - 116	96.8	99.2	mg/L	2.45	20.0
TCLP Silver	2262122	0.446	0.460	ND	0.500	80.7 - 115	89.2	92.0	mg/L	3.09	20.0

Analytical Set 1099490 — EPA 6020A

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
TCLP Selenium	1099169	ND	0.010	0.010	mg/L	125864741

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
TCLP Selenium	0.0501	0.05	mg/L	100	90.0 - 110	125864740
TCLP Selenium	0.0537	0.05	mg/L	107	90.0 - 110	125864746
TCLP Selenium	0.0486	0.05	mg/L	97.2	90.0 - 110	125864752

ICV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
TCLP Selenium	0.0486	0.05	mg/L	97.2	90.0 - 110	125864713

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
TCLP Selenium	1099169	0.509	0.536	0.500	83.5 - 121	102	107	mg/L	5.17	14.0

MSD

Parameter	*Sample*	*MS*	*MSD*	*UNK*	*Known*	*Limits*	*MS%*	*MSD%*	*Units*	*RPD*	*Limit%*
TCLP Selenium	2262122	2.60	2.64	0.0329	2.50	80.2 - 121	103	104	mg/L	1.55	20.0

Analytical Set 1099520 — EPA 6010C

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Phosphorus	1098697	ND	0.00734	0.100	mg/kg	125865397

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Phosphorus	1.02	1.00	mg/kg	102	90.0 - 110	125865389
Phosphorus	1.00	1.00	mg/kg	100	90.0 - 110	125865396
Phosphorus	1.02	1.00	mg/kg	102	90.0 - 110	125865403
Phosphorus	1.01	1.00	mg/kg	101	90.0 - 110	125865409
Phosphorus	1.01	1.00	mg/kg	101	90.0 - 110	125865410

ICL

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Phosphorus	24.8	25.0	mg/kg	99.2	95.0 - 105	125865387

ABLN-W

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Printed 02/02/2024

ICV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Phosphorus	0.996	1.00	mg/kg	99.6	90.0 - 110	125865388

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Phosphorus	1098697	18.4	18.1	20.0	80.0 - 120	92.0	90.5	mg/kg	1.64	25.0

MSD

Parameter	*Sample*	*MS*	*MSD*	*UNK*	*Known*	*Limits*	*MS%*	*MSD%*	*Units*	*RPD*	*Limit%*
Phosphorus	2262013	3700	3510	3170	649	23.3 - 179	82.2	52.7	mg/kg	43.7 *	25.0

Analytical Set 1099568 — EPA 6010C

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Potassium	1098697	ND	0.111	0.500	mg/kg	125866273

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Potassium	25.6	25.0	mg/kg	102	90.0 - 110	125866272
Potassium	24.1	25.0	mg/kg	96.4	90.0 - 110	125866281

ICL

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Potassium	49.6	50.0	mg/kg	99.2	95.0 - 105	125866266

ICV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Potassium	27.1	25.0	mg/kg	108	90.0 - 110	125866270

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Potassium	1098697	24.5	24.1	25.0	78.0 - 116	98.0	96.4	mg/kg	1.65	25.0

LDR

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Potassium	94.6	100	mg/kg	94.6	90.0 - 110	125866267

MSD

Parameter	*Sample*	*MS*	*MSD*	*UNK*	*Known*	*Limits*	*MS%*	*MSD%*	*Units*	*RPD*	*Limit%*
Potassium	2262013	1280	1160	565	812	33.6 - 179	88.7	73.8	mg/kg	18.3	25.0

Analytical Set 1099578 — EPA 7471B 2

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Mercury	1099321	0.0000684	0.0000419	0.0001	mg/kg	125866787

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Mercury	0.00498	0.005	mg/kg	99.6	90.0 - 110	125866778

ABLN-W

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CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Mercury	0.00512	0.005	mg/kg	102	90.0 - 110	125866779
Mercury	0.00495	0.005	mg/kg	99.0	90.0 - 110	125866786
Mercury	0.00486	0.005	mg/kg	97.2	90.0 - 110	125866794

ICL

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Mercury	0.0211	0.02	mg/kg	106	90.0 - 110	125866777

ICV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Mercury	0.00501	0.005	mg/kg	100	90.0 - 110	125866776

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Mercury	1099321	0.00992	0.00987	0.010	78.6 - 104	99.2	98.7	mg/kg	0.505	20.0

MSD

Parameter	*Sample*	*MS*	*MSD*	*UNK*	*Known*	*Limits*	*MS%*	*MSD%*	*Units*	*RPD*	*Limit%*
Mercury	2262894	0.987	0.982	ND	0.971	74.3 - 109	99.2	98.7	mg/kg	0.508	25.0

Analytical Set 1101243 — EPA 6010C

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
Antimony	1098697	ND	0.0056	0.050	mg/kg	125911132

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Antimony	2.46	2.50	mg/kg	98.4	90.0 - 110	125911096
Antimony	2.46	2.50	mg/kg	98.4	90.0 - 110	125911131
Antimony	2.50	2.50	mg/kg	100	90.0 - 110	125911134
Antimony	2.49	2.50	mg/kg	99.6	90.0 - 110	125911143

ICL

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Antimony	5.16	5.00	mg/kg	103	95.0 - 105	125911090

ICV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Antimony	2.62	2.50	mg/kg	105	90.0 - 110	125911094

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
Antimony	1098697	2.19	2.15	2.50	76.4 - 116	87.6	86.0	mg/kg	1.84	25.0

MSD

Parameter	*Sample*	*MS*	*MSD*	*UNK*	*Known*	*Limits*	*MS%*	*MSD%*	*Units*	*RPD*	*Limit%*
Antimony	2262130	39.1	40.0	ND	60.4	65.8 - 116	64.4 *	65.9	mg/kg	2.28	25.0

ABLN-W

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Analytical Set 1099335 EPA 8260B

BFB

Parameter	*Sample*	*RefMass*	*Reading*	*%*	*Limits%*	*File*
BFB Mass 173	1099335	174	187	1.0	0 - 2.00	125862255
BFB Mass 174	1099335	95.0	19179	76.8	50.0 - 100	125862255
BFB Mass 175	1099335	174	1343	7.0	5.00 - 9.00	125862255
BFB Mass 176	1099335	174	18445	96.2	95.0 - 101	125862255
BFB Mass 177	1099335	176	1175	6.4	5.00 - 9.00	125862255
BFB Mass 50	1099335	95.0	3747	15.0	15.0 - 40.0	125862255
BFB Mass 75	1099335	95.0	11010	44.1	30.0 - 60.0	125862255
BFB Mass 95	1099335	95.0	24979	100.0	100 - 100	125862255
BFB Mass 96	1099335	95.0	1680	6.7	5.00 - 9.00	125862255

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
TCLP 1,1-Dichloroethene	1099335	ND	0.000812	0.001	mg/L	125862259
TCLP 1,1-Dichloroethene	1099335	ND	0.000812	0.001	mg/L	125862260
TCLP 1,2-Dichloroethane	1099335	ND	0.000856	0.001	mg/L	125862259
TCLP 1,2-Dichloroethane	1099335	ND	0.000856	0.001	mg/L	125862260
TCLP 1,4 Dichlorobenzene	1099335	ND	0.000865	0.001	mg/L	125862259
TCLP 1,4 Dichlorobenzene	1099335	ND	0.000865	0.001	mg/L	125862260
TCLP Benzene	1099335	ND	0.000813	0.001	mg/L	125862259
TCLP Benzene	1099335	ND	0.000813	0.001	mg/L	125862260
TCLP Carbon tetrachloride	1099335	ND	0.000825	0.001	mg/L	125862259
TCLP Carbon tetrachloride	1099335	ND	0.000825	0.001	mg/L	125862260
TCLP Chlorobenzene	1099335	ND	0.000945	0.001	mg/L	125862259
TCLP Chlorobenzene	1099335	ND	0.000945	0.001	mg/L	125862260
TCLP Chloroform	1099335	ND	0.000945	0.001	mg/L	125862259
TCLP Chloroform	1099335	ND	0.000945	0.001	mg/L	125862260
TCLP MEK	1099335	ND	0.00654	0.010	mg/L	125862259
TCLP MEK	1099335	ND	0.00654	0.010	mg/L	125862260
TCLP Tetrachloroethylene	1099335	ND	0.000921	0.001	mg/L	125862259
TCLP Tetrachloroethylene	1099335	ND	0.000921	0.001	mg/L	125862260
TCLP Trichloroethylene	1099335	ND	0.000789	0.001	mg/L	125862259
TCLP Trichloroethylene	1099335	ND	0.000789	0.001	mg/L	125862260
TCLP Vinyl chloride	1099335	ND	0.00104	0.00104	mg/L	125862259
TCLP Vinyl chloride	1099335	ND	0.00104	0.00104	mg/L	125862260

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
TCLP 1,1-Dichloroethene	0.0185	0.020	mg/L	92.5	70.0 - 130	125862256
TCLP 1,2-Dichloroethane	0.0178	0.020	mg/L	89.0	70.0 - 130	125862256
TCLP 1,4 Dichlorobenzene	0.0182	0.020	mg/L	91.0	70.0 - 130	125862256
TCLP Benzene	0.0191	0.020	mg/L	95.5	70.0 - 130	125862256
TCLP Carbon tetrachloride	0.0185	0.020	mg/L	92.5	70.0 - 130	125862256
TCLP Chlorobenzene	0.0194	0.020	mg/L	97.0	70.0 - 130	125862256
TCLP Chloroform	0.0189	0.020	mg/L	94.5	70.0 - 130	125862256

QUALITY CONTROL

ABLN-W

City of Abilene
Larry L. Bailey
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Abilene, TX 79601

Project
1087303

Printed 02/02/2024

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
TCLP MEK	0.0159	0.020	mg/L	79.5	70.0 - 130	125862256
TCLP Tetrachloroethylene	0.0202	0.020	mg/L	101	70.0 - 130	125862256
TCLP Trichloroethylene	0.019	0.020	mg/L	95.0	70.0 - 130	125862256
TCLP Vinyl chloride	0.0147	0.020	mg/L	73.5	70.0 - 130	125862256

IS Areas

Parameter	*Sample*	*Type*	*Reading*	*CCVISM*	*Low*	*High*	*File*	*PrepSet*
1,4-DichlorobenzeneD4 (ISTD)	1099335	CCV	137500	137500	96280	178800	125862256	1099335
1,4-DichlorobenzeneD4 (ISTD)	1099335	LCS	140100	137500	96280	178800	125862257	1099335
1,4-DichlorobenzeneD4 (ISTD)	1099335	LCS Dup	136400	137500	96280	178800	125862258	1099335
1,4-DichlorobenzeneD4 (ISTD)	1099335	Blank	119900	137500	96280	178800	125862259	1099335
1,4-DichlorobenzeneD4 (ISTD)	1099335	Blank	96920	137500	96280	178800	125862260	1099335
ChlorobenzeneD5 (ISTD)	1099335	CCV	257600	257600	180300	334900	125862256	1099335
ChlorobenzeneD5 (ISTD)	1099335	LCS	262300	257600	180300	334900	125862257	1099335
ChlorobenzeneD5 (ISTD)	1099335	LCS Dup	258100	257600	180300	334900	125862258	1099335
ChlorobenzeneD5 (ISTD)	1099335	Blank	238400	257600	180300	334900	125862259	1099335
ChlorobenzeneD5 (ISTD)	1099335	Blank	204000	257600	180300	334900	125862260	1099335
1,4-DichlorobenzeneD4 (ISTD)	2261106	MS	105700	137500	96280	178800	125862265	1099008
1,4-DichlorobenzeneD4 (ISTD)	2261106	MSD	105700	137500	96280	178800	125862266	1099008
ChlorobenzeneD5 (ISTD)	2261106	MS	197100	257600	180300	334900	125862265	1099008
ChlorobenzeneD5 (ISTD)	2261106	MSD	195300	257600	180300	334900	125862266	1099008

IS RetTime

Parameter	*Sample*	*Type*	*Reading*	*CCVISM*	*Low*	*High*	*File*	*PrepSet*
1,4-DichlorobenzeneD4 (ISTD)	1099335	LCS	11.09	11.09	11.03	11.15	125862257	1099335
1,4-DichlorobenzeneD4 (ISTD)	1099335	LCS Dup	11.09	11.09	11.03	11.15	125862258	1099335
1,4-DichlorobenzeneD4 (ISTD)	1099335	Blank	11.10	11.09	11.03	11.15	125862259	1099335
1,4-DichlorobenzeneD4 (ISTD)	1099335	Blank	11.10	11.09	11.03	11.15	125862260	1099335
ChlorobenzeneD5 (ISTD)	1099335	LCS	8.735	8.735	8.675	8.795	125862257	1099335
ChlorobenzeneD5 (ISTD)	1099335	LCS Dup	8.735	8.735	8.675	8.795	125862258	1099335
ChlorobenzeneD5 (ISTD)	1099335	Blank	8.735	8.735	8.675	8.795	125862259	1099335
ChlorobenzeneD5 (ISTD)	1099335	Blank	8.735	8.735	8.675	8.795	125862260	1099335
1,4-DichlorobenzeneD4 (ISTD)	2261106	MS	11.09	11.09	11.03	11.15	125862265	1099008
1,4-DichlorobenzeneD4 (ISTD)	2261106	MSD	11.09	11.09	11.03	11.15	125862266	1099008
ChlorobenzeneD5 (ISTD)	2261106	MS	8.735	8.735	8.675	8.795	125862265	1099008
ChlorobenzeneD5 (ISTD)	2261106	MSD	8.735	8.735	8.675	8.795	125862266	1099008

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
TCLP 1,1-Dichloroethene	1099335	0.0212	0.0201	0.020	56.7 - 135	106	100	mg/L	5.83	30.0
TCLP 1,2-Dichloroethane	1099335	0.0193	0.0191	0.020	69.8 - 132	96.5	95.5	mg/L	1.04	30.0
TCLP 1,4 Dichlorobenzene	1099335	0.0199	0.0194	0.020	74.8 - 116	99.5	97.0	mg/L	2.54	30.0
TCLP Benzene	1099335	0.0204	0.0197	0.020	67.1 - 123	102	98.5	mg/L	3.49	30.0
TCLP Carbon tetrachloride	1099335	0.0214	0.0204	0.020	60.1 - 132	107	102	mg/L	4.78	30.0
TCLP Chlorobenzene	1099335	0.0209	0.0205	0.020	74.0 - 115	104	102	mg/L	1.94	30.0
TCLP Chloroform	1099335	0.0208	0.0202	0.020	71.1 - 128	104	101	mg/L	2.93	30.0

QUALITY CONTROL

ABLN-W

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Project
1087303

Printed 02/02/2024

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
TCLP MEK	1099335	0.0189	0.0147	0.020	40.7 - 166	94.5	73.5	mg/L	25.0	30.0
TCLP Tetrachloroethylene	1099335	0.0227	0.0215	0.020	71.2 - 126	114	108	mg/L	5.41	30.0
TCLP Trichloroethylene	1099335	0.0208	0.0201	0.020	71.4 - 126	104	100	mg/L	3.92	30.0
TCLP Vinyl chloride	1099335	0.0162	0.0153	0.020	18.5 - 155	81.0	76.5	mg/L	5.71	30.0

MSD

Parameter	*Sample*	*MS*	*MSD*	*UNK*	*Known*	*Limits*	*MS%*	*MSD%*	*Units*	*RPD*	*Limit%*
TCLP 1,1-Dichloroethene	2261106	0.205	0.199	0.0084	0.200	0.100 - 168	98.3	95.3	mg/L	3.10	30.0
TCLP 1,2-Dichloroethane	2261106	0.208	0.212	0.0084	0.200	48.4 - 134	99.8	102	mg/L	1.98	30.0
TCLP 1,4 Dichlorobenzene	2261106	0.230	0.227	0.0508	0.200	45.4 - 121	89.6	88.1	mg/L	1.69	30.0
TCLP Benzene	2261106	0.198	0.199	0.0084	0.200	5.00 - 119	94.8	95.3	mg/L	0.526	30.0
TCLP Carbon tetrachloride	2261106	0.226	0.225	0.0084	0.200	0.100 - 164	109	108	mg/L	0.461	30.0
TCLP Chlorobenzene	2261106	0.211	0.210	0.0084	0.200	32.5 - 130	101	101	mg/L	0.495	30.0
TCLP Chloroform	2261106	0.214	0.213	0.0084	0.200	22.1 - 141	103	102	mg/L	0.488	30.0
TCLP MEK	2261106	0.200	0.220	ND	0.200	9.88 - 197	100	110	mg/L	9.52	30.0
TCLP Tetrachloroethylene	2261106	0.206	0.212	0.0084	0.200	0.100 - 157	98.8	102	mg/L	2.99	30.0
TCLP Trichloroethylene	2261106	0.207	0.204	0.0084	0.200	0.100 - 161	99.3	97.8	mg/L	1.52	30.0
TCLP Vinyl chloride	2261106	0.201	0.192	0.0084	0.200	0.100 - 197	96.3	91.8	mg/L	4.78	30.0

Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
1,2-DCA-d4 (SURR)	1099335	CCV	0.0178	0.020	mg/L	89.0	74.2 - 132	125862256
1,2-DCA-d4 (SURR)	1099335	LCS	0.0183	0.020	mg/L	91.5	74.2 - 132	125862257
1,2-DCA-d4 (SURR)	1099335	LCS Dup	0.0177	0.020	mg/L	88.5	74.2 - 132	125862258
1,2-DCA-d4 (SURR)	1099335	Blank	0.019	0.020	mg/L	95.0	74.2 - 132	125862259
1,2-DCA-d4 (SURR)	1099335	Blank	0.0201	0.020	mg/L	100	74.2 - 132	125862260
Bromofluorobenzene (SURR)	1099335	CCV	0.0204	0.020	mg/L	102	77.2 - 134	125862256
Bromofluorobenzene (SURR)	1099335	LCS	0.0202	0.020	mg/L	101	77.2 - 134	125862257
Bromofluorobenzene (SURR)	1099335	LCS Dup	0.0205	0.020	mg/L	102	77.2 - 134	125862258
Bromofluorobenzene (SURR)	1099335	Blank	0.0191	0.020	mg/L	95.5	77.2 - 134	125862259
Bromofluorobenzene (SURR)	1099335	Blank	0.0205	0.020	mg/L	102	77.2 - 134	125862260
Dibromofluoromethane (SURR)	1099335	CCV	0.0197	0.020	mg/L	98.5	67.2 - 122	125862256
Dibromofluoromethane (SURR)	1099335	LCS	0.0194	0.020	mg/L	97.0	67.2 - 122	125862257
Dibromofluoromethane (SURR)	1099335	LCS Dup	0.0193	0.020	mg/L	96.5	67.2 - 122	125862258
Dibromofluoromethane (SURR)	1099335	Blank	0.0205	0.020	mg/L	102	67.2 - 122	125862259
Dibromofluoromethane (SURR)	1099335	Blank	0.0204	0.020	mg/L	102	67.2 - 122	125862260
TolueneD8 (SURR)	1099335	CCV	0.0201	0.020	mg/L	100	69.2 - 122	125862256
TolueneD8 (SURR)	1099335	LCS	0.0201	0.020	mg/L	100	69.2 - 122	125862257
TolueneD8 (SURR)	1099335	LCS Dup	0.0198	0.020	mg/L	99.0	69.2 - 122	125862258
TolueneD8 (SURR)	1099335	Blank	0.0191	0.020	mg/L	95.5	69.2 - 122	125862259
TolueneD8 (SURR)	1099335	Blank	0.0193	0.020	mg/L	96.5	69.2 - 122	125862260
1,2-DCA-d4 (SURR)	2261106	MS	0.0206	0.020	mg/L	103	74.2 - 132	125862265
1,2-DCA-d4 (SURR)	2261106	MSD	0.0203	0.020	mg/L	102	74.2 - 132	125862266
Bromofluorobenzene (SURR)	2261106	MS	0.021	0.020	mg/L	105	77.2 - 134	125862265
Bromofluorobenzene (SURR)	2261106	MSD	0.0206	0.020	mg/L	103	77.2 - 134	125862266

ABLN-W

City of Abilene
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Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
Dibromofluoromethane (SURR)	2261106	MS	0.0206	0.020	mg/L	103	67.2 - 122	125862265
Dibromofluoromethane (SURR)	2261106	MSD	0.0204	0.020	mg/L	102	67.2 - 122	125862266
TolueneD8 (SURR)	2261106	MS	0.0196	0.020	mg/L	98.0	69.2 - 122	125862265
TolueneD8 (SURR)	2261106	MSD	0.0198	0.020	mg/L	99.0	69.2 - 122	125862266
1,2-DCA-d4 (SURR)	2262894	Unknown	0.0211	0.020	mg/L	106	74.2 - 132	125862264
Bromofluorobenzene (SURR)	2262894	Unknown	0.020	0.020	mg/L	100	77.2 - 134	125862264
Dibromofluoromethane (SURR)	2262894	Unknown	0.0218	0.020	mg/L	109	67.2 - 122	125862264
TolueneD8 (SURR)	2262894	Unknown	0.0196	0.020	mg/L	98.0	69.2 - 122	125862264

Analytical Set 1100064 EPA 8081A

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
TCLP Chlordane	1098914	ND	0.0183	0.020	mg/L	125878812
TCLP Endrin	1098914	ND	0.000538	0.001	mg/L	125878812
TCLP gamma-BHC (Lindane)	1098914	ND	0.000385	0.001	mg/L	125878812
TCLP Heptachlor	1098914	ND	0.000207	0.001	mg/L	125878812
TCLP Heptachlor Epoxide	1098914	ND	0.00066	0.001	mg/L	125878812
TCLP Methoxychlor	1098914	ND	0.000898	0.001	mg/L	125878812
TCLP Toxaphene	1098914	ND	0.000169	0.0002	mg/L	125878812
TCLP Chlordane	1099498	ND	0.0183	0.020	mg/L	125878806
TCLP Endrin	1099498	ND	0.000538	0.001	mg/L	125878806
TCLP gamma-BHC (Lindane)	1099498	ND	0.000385	0.001	mg/L	125878806
TCLP Heptachlor	1099498	ND	0.000207	0.001	mg/L	125878806
TCLP Heptachlor Epoxide	1099498	ND	0.00066	0.001	mg/L	125878806
TCLP Methoxychlor	1099498	ND	0.000898	0.001	mg/L	125878806
TCLP Toxaphene	1099498	ND	0.000169	0.0002	mg/L	125878806

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
TCLP Endrin	0.0466	0.050	mg/L	93.3	70.0 - 130	125878805
TCLP Endrin	0.0442	0.050	mg/L	88.4	70.0 - 130	125878817
TCLP Endrin	0.0552	0.050	mg/L	110	70.0 - 130	125878822
TCLP gamma-BHC (Lindane)	0.0474	0.050	mg/L	94.7	70.0 - 130	125878805
TCLP gamma-BHC (Lindane)	0.0493	0.050	mg/L	98.7	70.0 - 130	125878817
TCLP gamma-BHC (Lindane)	0.0518	0.050	mg/L	104	70.0 - 130	125878822
TCLP Heptachlor	0.0459	0.050	mg/L	91.8	70.0 - 130	125878805
TCLP Heptachlor	0.0495	0.050	mg/L	99.0	70.0 - 130	125878817
TCLP Heptachlor	0.0547	0.050	mg/L	109	70.0 - 130	125878822
TCLP Heptachlor Epoxide	0.0451	0.050	mg/L	90.2	70.0 - 130	125878805
TCLP Heptachlor Epoxide	0.044	0.050	mg/L	88.0	70.0 - 130	125878817
TCLP Heptachlor Epoxide	0.0454	0.050	mg/L	90.9	70.0 - 130	125878822
TCLP Methoxychlor	0.0497	0.050	mg/L	99.4	70.0 - 130	125878805
TCLP Methoxychlor	0.0444	0.050	mg/L	88.9	70.0 - 130	125878817
TCLP Methoxychlor	0.0608	0.050	mg/L	122	70.0 - 130	125878822

ABLN-W

City of Abilene
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LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
TCLP Endrin	1099498	0.0753	0.0637	0.100	42.6 - 137	75.3	63.7	mg/L	16.7	30.0
TCLP gamma-BHC (Lindane)	1099498	0.0711	0.060	0.100	33.0 - 129	71.1	60.0	mg/L	16.9	30.0
TCLP Heptachlor	1099498	0.0713	0.0595	0.100	24.2 - 129	71.3	59.5	mg/L	18.0	30.0
TCLP Heptachlor Epoxide	1099498	0.0711	0.0606	0.100	40.8 - 128	71.1	60.6	mg/L	15.9	30.0
TCLP Methoxychlor	1099498	0.0817	0.0654	0.100	33.3 - 146	81.7	65.4	mg/L	22.2	30.0

MS

Parameter	*Sample*	*MS*	*MSD*	*UNK*	*Known*	*Limits*	*MS%*	*MSD%*	*Units*	*RPD*	*Limit%*
TCLP Endrin	2261109	0.00316	0	ND	0.005	24.3 - 151	63.2		mg/L		30.0
TCLP gamma-BHC (Lindane)	2261109	0.00371	0	ND	0.005	21.3 - 144	74.2		mg/L		30.0
TCLP Heptachlor	2261109	0.00341	0	ND	0.005	14.9 - 138	68.2		mg/L		30.0
TCLP Heptachlor Epoxide	2261109	0.00324	0	ND	0.005	29.9 - 133	64.8		mg/L		30.0
TCLP Methoxychlor	2261109	0.003	0	ND	0.005	10.3 - 183	60.0		mg/L		30.0

Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Decachlorobiphenyl	621878	CCV	0.0493	0.100	mg/L	49.3	10.0 - 150	125878805
Decachlorobiphenyl	621878	CCV	0.0405	0.100	mg/L	40.5	10.0 - 150	125878817
Decachlorobiphenyl	621878	CCV	0.0628	0.100	mg/L	62.8	10.0 - 150	125878822
Tetrachloro-m-Xylene (Surr)	621878	CCV	0.0453	0.100	mg/L	45.3	10.0 - 150	125878805
Tetrachloro-m-Xylene (Surr)	621878	CCV	0.045	0.100	mg/L	45.0	10.0 - 150	125878817
Tetrachloro-m-Xylene (Surr)	621878	CCV	0.043	0.100	mg/L	43.0	10.0 - 150	125878822
Decachlorobiphenyl	1098914	Blank	0.0872	0.100	mg/L	87.2	10.0 - 150	125878812
Tetrachloro-m-Xylene (Surr)	1098914	Blank	0.0592	0.100	mg/L	59.2	10.0 - 150	125878812
Decachlorobiphenyl	1099498	Blank	0.0706	0.100	mg/L	70.6	10.0 - 150	125878806
Decachlorobiphenyl	1099498	LCS	0.0953	0.100	mg/L	95.3	10.0 - 150	125878807
Decachlorobiphenyl	1099498	LCS Dup	0.0712	0.100	mg/L	71.2	10.0 - 150	125878808
Tetrachloro-m-Xylene (Surr)	1099498	Blank	0.0565	0.100	mg/L	56.5	10.0 - 150	125878806
Tetrachloro-m-Xylene (Surr)	1099498	LCS	0.0614	0.100	mg/L	61.4	10.0 - 150	125878807
Tetrachloro-m-Xylene (Surr)	1099498	LCS Dup	0.0427	0.100	mg/L	42.7	10.0 - 150	125878808
Decachlorobiphenyl	2261109	MS	0.00166	0.005	mg/L	33.2	10.0 - 150	125878814
Tetrachloro-m-Xylene (Surr)	2261109	MS	0.00307	0.005	mg/L	61.4	10.0 - 150	125878814

Analytical Set 1100126 — EPA 8151

Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
TCLP 2,4 D	1098914	ND	0.000159	0.0005	mg/L	125880946
TCLP 2,4,5-TP (Silvex)	1098914	ND	0.0000893	0.0003	mg/L	125880946
TCLP 2,4 D	1099716	ND	0.000159	0.0005	mg/L	125880943
TCLP 2,4,5-TP (Silvex)	1099716	ND	0.0000893	0.0003	mg/L	125880943

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
TCLP 2,4 D	0.129	0.150	mg/L	85.7	70.0 - 130	125880942
TCLP 2,4 D	0.155	0.150	mg/L	103	70.0 - 130	125880952
TCLP 2,4,5-TP (Silvex)	0.135	0.150	mg/L	90.0	70.0 - 130	125880942

ABLN-W

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CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
TCLP 2,4,5-TP (Silvex)	0.160	0.150	mg/L	107	70.0 - 130	125880952

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
TCLP 2,4 D	1099716	0.000817	0.00101	0.001	2.06 - 194	81.7	101	mg/L	21.1	30.0
TCLP 2,4,5-TP (Silvex)	1099716	0.000788	0.000987	0.001	19.3 - 162	78.8	98.7	mg/L	22.4	30.0

MS

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
TCLP 2,4 D	2261109	0.903	0	0.0959	1.00	0.100 - 228	80.7		mg/L		30.0
TCLP 2,4,5-TP (Silvex)	2261109	0.896	0	0.113	1.00	2.02 - 165	78.3		mg/L		30.0

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
2,4-Dichlorophenylacetic Acid		CCV	0.127	0.200	mg/L	63.5	0.100 - 294	125880942
2,4-Dichlorophenylacetic Acid		CCV	0.147	0.200	mg/L	73.5	0.100 - 294	125880952
2,4-Dichlorophenylacetic Acid	1098914	Blank	0.0912	0.200	mg/L	45.6	0.100 - 294	125880946
2,4-Dichlorophenylacetic Acid	1099716	Blank	0.102	0.200	mg/L	51.0	0.100 - 294	125880943
2,4-Dichlorophenylacetic Acid	1099716	LCS	0.0962	0.200	mg/L	48.1	0.100 - 294	125880944
2,4-Dichlorophenylacetic Acid	1099716	LCS Dup	0.120	0.200	mg/L	60.0	0.100 - 294	125880945
2,4-Dichlorophenylacetic Acid	2261109	MS	1.07	2.00	mg/L	53.5	0.100 - 294	125880948
2,4-Dichlorophenylacetic Acid	2262894	Unknown	0.981	2.00	mg/L	49.0	0.100 - 294	125880951

Analytical Set 1100226 — EPA 8270C

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
TCLP 2,4,5-Trichlorophenol	1098914	ND	0.000734	0.001	mg/L	125882727
TCLP 2,4,6-Trichlorophenol	1098914	ND	0.000704	0.001	mg/L	125882727
TCLP 2,4-Dinitrotoluene	1098914	ND	0.00335	0.0035	mg/L	125882727
TCLP 2-Methylphenol (o-Cresol)	1098914	ND	0.00513	0.0052	mg/L	125882727
TCLP 3&4-Methylphenol (m&p-Creso	1098914	ND	0.00615	0.0062	mg/L	125882727
TCLP Hexachlorobenzene	1098914	ND	0.000187	0.001	mg/L	125882727
TCLP Hexachlorobutadiene	1098914	ND	0.000618	0.001	mg/L	125882727
TCLP Hexachloroethane	1098914	ND	0.000789	0.001	mg/L	125882727
TCLP Nitrobenzene	1098914	ND	0.00039	0.001	mg/L	125882727
TCLP Pentachlorophenol	1098914	0.00069	0.000129	0.001	mg/L	125882727
TCLP Pyridine (Reg. Limit 5)	1098914	ND	0.00533	0.0054	mg/L	125882727
TCLP 2,4,5-Trichlorophenol	1099607	ND	0.000734	0.001	mg/L	125882724
TCLP 2,4,6-Trichlorophenol	1099607	ND	0.000704	0.001	mg/L	125882724
TCLP 2,4-Dinitrotoluene	1099607	ND	0.00335	0.0035	mg/L	125882724
TCLP 2-Methylphenol (o-Cresol)	1099607	ND	0.00513	0.0052	mg/L	125882724
TCLP 3&4-Methylphenol (m&p-Creso	1099607	ND	0.00615	0.0062	mg/L	125882724
TCLP Hexachlorobenzene	1099607	ND	0.000187	0.001	mg/L	125882724
TCLP Hexachlorobutadiene	1099607	ND	0.000618	0.001	mg/L	125882724
TCLP Hexachloroethane	1099607	ND	0.000789	0.001	mg/L	125882724
TCLP Nitrobenzene	1099607	ND	0.00039	0.001	mg/L	125882724

QUALITY CONTROL

ABLN-W

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Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
TCLP Pentachlorophenol	1099607	ND	0.000129	0.001	mg/L	125882724
TCLP Pyridine (Reg. Limit 5)	1099607	ND	0.00533	0.0054	mg/L	125882724

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*		*File*
TCLP 2,4,5-Trichlorophenol	54.7	50.0	mg/L	109	70.0 - 130		125882722
TCLP 2,4,6-Trichlorophenol	49.5	50.0	mg/L	99.0	70.0 - 130		125882722
TCLP 2,4-Dinitrotoluene	48.0	50.0	mg/L	95.9	70.0 - 130		125882722
TCLP 2-Methylphenol (o-Cresol)	48.1	50.0	mg/L	96.3	70.0 - 130		125882722
TCLP 3&4-Methylphenol (m&p-Creso	48.0	50.0	mg/L	95.9	70.0 - 130		125882722
TCLP Hexachlorobenzene	54.4	50.0	mg/L	109	70.0 - 130		125882722
TCLP Hexachlorobutadiene	60.4	50.0	mg/L	121	70.0 - 130		125882722
TCLP Hexachloroethane	52.3	50.0	mg/L	105	70.0 - 130		125882722
TCLP Nitrobenzene	51.6	50.0	mg/L	103	70.0 - 130		125882722
TCLP Pentachlorophenol	54.6	50.0	mg/L	109	70.0 - 130		125882722
TCLP Pyridine (Reg. Limit 5)	78.7	50.0	mg/L	157	70.0 - 130	*	125882722

DFTPP

Parameter		*RefMass*	*Reading*	*%*	*Limits%*	*File*
DFTPP Mass 127	622450	198	104178	47.4	40.0 - 60.0	125882721
DFTPP Mass 197	622450	198	0	0.0	0 - 1.00	125882721
DFTPP Mass 198	622450	198	219907	100.0	100 - 100	125882721
DFTPP Mass 199	622450	198	15113	6.9	5.00 - 9.00	125882721
DFTPP Mass 275	622450	198	64437	29.3	10.0 - 30.0	125882721
DFTPP Mass 365	622450	198	16306	7.4	1.00 - 100	125882721
DFTPP Mass 441	622450	443	10432	39.2	0 - 100	125882721
DFTPP Mass 442	622450	198	133242	60.6	40.0 - 100	125882721
DFTPP Mass 443	622450	442	26597	20.0	17.0 - 23.0	125882721
DFTPP Mass 51	622450	198	96085	43.7	30.0 - 60.0	125882721
DFTPP Mass 68	622450	69.0	0	0.0	0 - 2.00	125882721
DFTPP Mass 69	622450	198	104454	47.5	0 - 100	125882721
DFTPP Mass 70	622450	69.0	336	0.3	0 - 2.00	125882721

IS Areas

Parameter	*Sample*	*Type*	*Reading*	*CCVISM*	*Low*	*High*	*File*	*PrepSet*
1,4-Dichlorobenzene-d4-ISTD	621350	CCV	229400	229400	114700	344100	125882722	621350
Acenaphthene-d10-ISTD	621350	CCV	467400	467400	233700	701100	125882722	621350
Naphthalene-d8-ISTD	621350	CCV	820100	820100	410100	1230000	125882722	621350
Phenanthrene-d10-ISTD	621350	CCV	721600	721600	360800	1082000	125882722	621350
1,4-Dichlorobenzene-d4-ISTD	1098914	Blank	179700	229400	114700	344100	125882727	1098914
Acenaphthene-d10-ISTD	1098914	Blank	319700	467400	233700	701100	125882727	1098914
Naphthalene-d8-ISTD	1098914	Blank	628100	820100	410100	1230000	125882727	1098914
Phenanthrene-d10-ISTD	1098914	Blank	395200	721600	360800	1082000	125882727	1098914
1,4-Dichlorobenzene-d4-ISTD	1099607	Blank	187600	229400	114700	344100	125882724	1099607
1,4-Dichlorobenzene-d4-ISTD	1099607	LCS	174900	229400	114700	344100	125882725	1099607
1,4-Dichlorobenzene-d4-ISTD	1099607	LCS Dup	157700	229400	114700	344100	125882726	1099607

QUALITY CONTROL

ABLN-W

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

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IS Areas

Parameter	*Sample*	*Type*	*Reading*	*CCVISM*	*Low*	*High*	*File*	*PrepSet*
Acenaphthene-d10-ISTD	1099607	Blank	349300	467400	233700	701100	125882724	1099607
Acenaphthene-d10-ISTD	1099607	LCS	314700	467400	233700	701100	125882725	1099607
Acenaphthene-d10-ISTD	1099607	LCS Dup	309500	467400	233700	701100	125882726	1099607
Naphthalene-d8-ISTD	1099607	Blank	656100	820100	410100	1230000	125882724	1099607
Naphthalene-d8-ISTD	1099607	LCS	595600	820100	410100	1230000	125882725	1099607
Naphthalene-d8-ISTD	1099607	LCS Dup	562100	820100	410100	1230000	125882726	1099607
Phenanthrene-d10-ISTD	1099607	Blank	501200	721600	360800	1082000	125882724	1099607
Phenanthrene-d10-ISTD	1099607	LCS	454200	721600	360800	1082000	125882725	1099607
Phenanthrene-d10-ISTD	1099607	LCS Dup	486600	721600	360800	1082000	125882726	1099607
1,4-Dichlorobenzene-d4-ISTD	2262122	MS	141300	229400	114700	344100	125882729	1099607
Acenaphthene-d10-ISTD	2262122	MS	279900	467400	233700	701100	125882729	1099607
Naphthalene-d8-ISTD	2262122	MS	499200	820100	410100	1230000	125882729	1099607
Phenanthrene-d10-ISTD	2262122	MS	434600	721600	360800	1082000	125882729	1099607
1,4-Dichlorobenzene-d4-ISTD	2262894	Unknown	167000	229400	114700	344100	125882732	1099607
Acenaphthene-d10-ISTD	2262894	Unknown	298900	467400	233700	701100	125882732	1099607
Naphthalene-d8-ISTD	2262894	Unknown	580400	820100	410100	1230000	125882732	1099607
Phenanthrene-d10-ISTD	2262894	Unknown	424000	721600	360800	1082000	125882732	1099607

IS RetTime

Parameter	*Sample*	*Type*	*Reading*	*CCVISM*	*Low*	*High*	*File*	*PrepSet*
1,4-Dichlorobenzene-d4-ISTD	621350	CCV	8.830	8.830	8.770	8.890	125882722	621350
Acenaphthene-d10-ISTD	621350	CCV	15.36	15.36	15.30	15.42	125882722	621350
Naphthalene-d8-ISTD	621350	CCV	11.39	11.39	11.33	11.45	125882722	621350
Phenanthrene-d10-ISTD	621350	CCV	17.87	17.87	17.81	17.93	125882722	621350
1,4-Dichlorobenzene-d4-ISTD	1098914	Blank	8.820	8.830	8.770	8.890	125882727	1098914
Acenaphthene-d10-ISTD	1098914	Blank	15.36	15.36	15.30	15.42	125882727	1098914
Naphthalene-d8-ISTD	1098914	Blank	11.38	11.39	11.33	11.45	125882727	1098914
Phenanthrene-d10-ISTD	1098914	Blank	17.86	17.87	17.81	17.93	125882727	1098914
1,4-Dichlorobenzene-d4-ISTD	1099607	Blank	8.820	8.830	8.770	8.890	125882724	1099607
1,4-Dichlorobenzene-d4-ISTD	1099607	LCS	8.820	8.830	8.770	8.890	125882725	1099607
1,4-Dichlorobenzene-d4-ISTD	1099607	LCS Dup	8.820	8.830	8.770	8.890	125882726	1099607
Acenaphthene-d10-ISTD	1099607	Blank	15.36	15.36	15.30	15.42	125882724	1099607
Acenaphthene-d10-ISTD	1099607	LCS	15.36	15.36	15.30	15.42	125882725	1099607
Acenaphthene-d10-ISTD	1099607	LCS Dup	15.36	15.36	15.30	15.42	125882726	1099607
Naphthalene-d8-ISTD	1099607	Blank	11.38	11.39	11.33	11.45	125882724	1099607
Naphthalene-d8-ISTD	1099607	LCS	11.38	11.39	11.33	11.45	125882725	1099607
Naphthalene-d8-ISTD	1099607	LCS Dup	11.38	11.39	11.33	11.45	125882726	1099607
Phenanthrene-d10-ISTD	1099607	Blank	17.86	17.87	17.81	17.93	125882724	1099607
Phenanthrene-d10-ISTD	1099607	LCS	17.86	17.87	17.81	17.93	125882725	1099607
Phenanthrene-d10-ISTD	1099607	LCS Dup	17.86	17.87	17.81	17.93	125882726	1099607
1,4-Dichlorobenzene-d4-ISTD	2262122	MS	8.820	8.830	8.770	8.890	125882729	1099607
Acenaphthene-d10-ISTD	2262122	MS	15.36	15.36	15.30	15.42	125882729	1099607
Naphthalene-d8-ISTD	2262122	MS	11.38	11.39	11.33	11.45	125882729	1099607
Phenanthrene-d10-ISTD	2262122	MS	17.86	17.87	17.81	17.93	125882729	1099607
1,4-Dichlorobenzene-d4-ISTD	2262894	Unknown	8.820	8.830	8.770	8.890	125882732	1099607

QUALITY CONTROL

ABLN-W

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
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IS RetTime

Parameter	*Sample*	*Type*	*Reading*	*CCVISM*	*Low*	*High*	*File*	*PrepSet*
Acenaphthene-d10-ISTD	2262894	Unknown	15.36	15.36	15.30	15.42	125882732	1099607
Naphthalene-d8-ISTD	2262894	Unknown	11.38	11.39	11.33	11.45	125882732	1099607
Phenanthrene-d10-ISTD	2262894	Unknown	17.86	17.87	17.81	17.93	125882732	1099607

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
TCLP 2,4,5-Trichlorophenol	1099607	0.0198	0.0204	0.025	39.3 - 111	79.2	81.6	mg/L	2.99	30.0
TCLP 2,4,6-Trichlorophenol	1099607	0.0177	0.0188	0.025	38.2 - 109	70.8	75.2	mg/L	6.03	30.0
TCLP 2,4-Dinitrotoluene	1099607	0.0183	0.0193	0.025	36.3 - 132	73.2	77.2	mg/L	5.32	30.0
TCLP 2-Methylphenol (o-Cresol)	1099607	0.0145	0.0159	0.025	23.0 - 87.8	58.0	63.6	mg/L	9.21	30.0
TCLP 3&4-Methylphenol (m&p-Creso	1099607	0.0136	0.0151	0.025	14.9 - 92.5	54.4	60.4	mg/L	10.5	30.0
TCLP Hexachlorobenzene	1099607	0.024	0.0256	0.025	44.4 - 117	96.0	102	mg/L	6.06	30.0
TCLP Hexachlorobutadiene	1099607	0.0182	0.0189	0.025	17.2 - 88.9	72.8	75.6	mg/L	3.77	30.0
TCLP Hexachloroethane	1099607	0.0152	0.0164	0.025	14.6 - 88.8	60.8	65.6	mg/L	7.59	30.0
TCLP Nitrobenzene	1099607	0.020	0.0202	0.025	34.3 - 113	80.0	80.8	mg/L	0.995	30.0
TCLP Pentachlorophenol	1099607	0.0207	0.0212	0.025	15.7 - 129	82.8	84.8	mg/L	2.39	30.0
TCLP Pyridine (Reg. Limit 5)	1099607	0.0102	0.0118	0.025	0.0753 - 83.4	40.8	47.2	mg/L	14.5	30.0

MS

Parameter	*Sample*	*MS*	*MSD*	*UNK*	*Known*	*Limits*	*MS%*	*MSD%*	*Units*	*RPD*	*Limit%*
TCLP 2,4,5-Trichlorophenol	2262122	0.195	0	0.0061	0.250	33.7 - 116	75.6		mg/L		30.0
TCLP 2,4,6-Trichlorophenol	2262122	0.178	0	0.0066	0.250	20.1 - 131	68.6		mg/L		30.0
TCLP 2,4-Dinitrotoluene	2262122	0.173	0	0.0061	0.250	31.8 - 135	66.8		mg/L		30.0
TCLP 2-Methylphenol (o-Cresol)	2262122	0.154	0	ND	0.250	10.6 - 106	61.6		mg/L		30.0
TCLP 3&4-Methylphenol (m&p-Creso	2262122	0.141	0	ND	0.250	0.100 - 149	56.4		mg/L		30.0
TCLP Hexachlorobenzene	2262122	0.235	0	ND	0.250	35.9 - 125	94.0		mg/L		30.0
TCLP Hexachlorobutadiene	2262122	0.203	0	0.0061	0.250	11.1 - 88.5	78.8		mg/L		30.0
TCLP Hexachloroethane	2262122	0.176	0	0.0061	0.250	8.41 - 88.1	68.0		mg/L		30.0
TCLP Nitrobenzene	2262122	0.204	0	0.0061	0.250	28.7 - 119	79.2		mg/L		30.0
TCLP Pentachlorophenol	2262122	0.201	0	0.0066	0.250	8.33 - 141	77.8		mg/L		30.0
TCLP Pyridine (Reg. Limit 5)	2262122	0.130	0	0.0061	0.250	0.100 - 97.2	49.6		mg/L		30.0

SPCC

Parameter	*Sample*	*RF*	*Minimum*	*File*
TCLP 2,4-Dinitrophenol	621350	48.1	0.050	125882722
TCLP 4-Nitrophenol	621350	51.0	0.050	125882722
TCLP Hexachlorocyclopentadiene	621350	51.7	0.050	125882722
TCLP N-Nitroso-n-propylamine	621350	48.6	0.050	125882722

Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
2,4,6-Tribromophenol	621350	CCV	51.7	100	mg/L	51.7	9.79 - 123	125882722
2-Fluorobiphenyl-SURR	621350	CCV	51.4	50.0	mg/L	103	0.100 - 131	125882722
2-Fluorophenol-SURR	621350	CCV	52.3	100	mg/L	52.3	5.36 - 80.2	125882722
4-Terphenyl-d14-SURR	621350	CCV	46.1	50.0	mg/L	92.2	0.100 - 137	125882722
Nitrobenzene-d5-SURR	621350	CCV	51.1	50.0	mg/L	102	0.100 - 131	125882722

ABLN-W

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Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
Phenol-d6-SURR	621350	CCV	49.0	100	mg/L	49.0	0.100 - 66.5	125882722
2,4,6-Tribromophenol	1098914	Blank	1.99	3.33	mg/L	59.8	9.79 - 123	125882727
2-Fluorobiphenyl-SURR	1098914	Blank	49.4	50.0	mg/L	98.8	0.100 - 131	125882727
2-Fluorophenol-SURR	1098914	Blank	47.0	100	mg/L	47.0	5.36 - 80.2	125882727
4-Terphenyl-d14-SURR	1098914	Blank	38.6	50.0	mg/L	77.2	0.100 - 137	125882727
Nitrobenzene-d5-SURR	1098914	Blank	44.1	50.0	mg/L	88.2	0.100 - 131	125882727
Phenol-d6-SURR	1098914	Blank	28.6	100	mg/L	28.6	0.100 - 66.5	125882727
2,4,6-Tribromophenol	1099607	Blank	1.93	3.33	mg/L	58.0	9.79 - 123	125882724
2,4,6-Tribromophenol	1099607	LCS	2.25	3.33	mg/L	67.6	9.79 - 123	125882725
2,4,6-Tribromophenol	1099607	LCS Dup	2.52	3.33	mg/L	75.7	9.79 - 123	125882726
2-Fluorobiphenyl-SURR	1099607	Blank	41.3	50.0	mg/L	82.6	0.100 - 131	125882724
2-Fluorobiphenyl-SURR	1099607	LCS	41.7	50.0	mg/L	83.4	0.100 - 131	125882725
2-Fluorobiphenyl-SURR	1099607	LCS Dup	43.8	50.0	mg/L	87.6	0.100 - 131	125882726
2-Fluorophenol-SURR	1099607	Blank	40.9	100	mg/L	40.9	5.36 - 80.2	125882724
2-Fluorophenol-SURR	1099607	LCS	42.0	100	mg/L	42.0	5.36 - 80.2	125882725
2-Fluorophenol-SURR	1099607	LCS Dup	45.2	100	mg/L	45.2	5.36 - 80.2	125882726
4-Terphenyl-d14-SURR	1099607	Blank	34.7	50.0	mg/L	69.4	0.100 - 137	125882724
4-Terphenyl-d14-SURR	1099607	LCS	30.2	50.0	mg/L	60.4	0.100 - 137	125882725
4-Terphenyl-d14-SURR	1099607	LCS Dup	34.2	50.0	mg/L	68.4	0.100 - 137	125882726
Nitrobenzene-d5-SURR	1099607	Blank	39.4	50.0	mg/L	78.8	0.100 - 131	125882724
Nitrobenzene-d5-SURR	1099607	LCS	39.6	50.0	mg/L	79.2	0.100 - 131	125882725
Nitrobenzene-d5-SURR	1099607	LCS Dup	42.9	50.0	mg/L	85.8	0.100 - 131	125882726
Phenol-d6-SURR	1099607	Blank	24.8	100	mg/L	24.8	0.100 - 66.5	125882724
Phenol-d6-SURR	1099607	LCS	26.0	100	mg/L	26.0	0.100 - 66.5	125882725
Phenol-d6-SURR	1099607	LCS Dup	28.9	100	mg/L	28.9	0.100 - 66.5	125882726
2,4,6-Tribromophenol	2262122	MS	0.683	1.00	mg/L	68.3	9.79 - 123	125882729
2-Fluorobiphenyl-SURR	2262122	MS	0.411	0.500	mg/L	82.2	0.100 - 131	125882729
2-Fluorophenol-SURR	2262122	MS	0.449	1.00	mg/L	44.9	5.36 - 80.2	125882729
4-Terphenyl-d14-SURR	2262122	MS	0.331	0.500	mg/L	66.2	0.100 - 137	125882729
Nitrobenzene-d5-SURR	2262122	MS	0.414	0.500	mg/L	82.8	0.100 - 131	125882729
Phenol-d6-SURR	2262122	MS	0.277	1.00	mg/L	27.7	0.100 - 66.5	125882729
2,4,6-Tribromophenol	2262894	Unknown	0.629	1.00	mg/L	62.9	9.79 - 123	125882732
2-Fluorobiphenyl-SURR	2262894	Unknown	0.416	0.500	mg/L	83.2	0.100 - 131	125882732
2-Fluorophenol-SURR	2262894	Unknown	0.379	1.00	mg/L	37.9	5.36 - 80.2	125882732
4-Terphenyl-d14-SURR	2262894	Unknown	0.360	0.500	mg/L	72.0	0.100 - 137	125882732
Nitrobenzene-d5-SURR	2262894	Unknown	0.358	0.500	mg/L	71.6	0.100 - 131	125882732
Phenol-d6-SURR	2262894	Unknown	0.236	1.00	mg/L	23.6	0.100 - 66.5	125882732

Analytical Set 1102135 — EPA 8082

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
PCB-1016	1100661	ND	43.0	250	ug/kg	125932338
PCB-1221	1100661	ND	43.0	250	ug/kg	125932338
PCB-1232	1100661	ND	43.0	250	ug/kg	125932338

QUALITY CONTROL

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Blank

Parameter	*PrepSet*	*Reading*	*MDL*	*MQL*	*Units*	*File*
PCB-1242	1100661	ND	43.0	250	ug/kg	125932338
PCB-1248	1100661	ND	43.0	250	ug/kg	125932338
PCB-1254	1100661	ND	43.0	250	ug/kg	125932338
PCB-1260	1100661	ND	43.0	250	ug/kg	125932338
PCB-1262	1100661	ND	78.3	250	ug/kg	125932338
PCB-1268	1100661	ND	78.3	250	ug/kg	125932338

CCV

Parameter	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
PCB-1016	997	1000	ug/kg	99.7	80.0 - 115	125932337
PCB-1016	1110	1000	ug/kg	111	80.0 - 115	125932342
PCB-1260	954	1000	ug/kg	95.4	80.0 - 115	125932337
PCB-1260	1060	1000	ug/kg	106	80.0 - 115	125932342

LCS Dup

Parameter	*PrepSet*	*LCS*	*LCSD*	*Known*	*Limits%*	*LCS%*	*LCSD%*	*Units*	*RPD*	*Limit%*
PCB-1016	1100661	3070	3770	5000	39.8 - 135	61.4	75.4	ug/kg	20.5	30.0
PCB-1260	1100661	3420	4050	5000	36.1 - 134	68.4	81.0	ug/kg	16.9	30.0

Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
Decachlorobiphenyl	1100661	Blank	74.3	100	ug/kg	74.3	10.0 - 200	125932338
Tetrachloro-m-Xylene (Surr)	1100661	Blank	64.4	100	ug/kg	64.4	10.0 - 200	125932338
Decachlorobiphenyl	2262894	Unknown	30.5	50.0	ug/kg	61.0	10.0 - 200	125932341
Tetrachloro-m-Xylene (Surr)	2262894	Unknown	16.9	50.0	ug/kg	33.8	10.0 - 200	125932341

* Out RPD is Relative Percent Difference: abs(r1-r2) / mean(r1,r2) * 100% Recover% is Recovery Percent: result / known * 100%

Blank - Method Blank (reagent water or other blank matrices that contains all reagents except standard(s) and is processed simultaneously with and under the same conditions as samples; carried through preparation and analytical procedures exactly like a sample; monitors); CCV - Continuing Calibration Verification (same standard used to prepare the curve; typically a mid-range concentration; verifies the continued validity of the calibration curve); MSD - Matrix Spike Duplicate (replicate of the matrix spike; same solution and amount of target analyte added to the MS is added to a third aliquot of sample; quantifies matrix bias and precision.); ICV - Initial Calibration Verification; LCS Dup - Laboratory Control Sample Duplicate (replicate LCS; analyzed when there is insufficient sample for duplicate or MSD; quantifies accuracy and precision.); BFB - Bromofluorobenzene, GC/MS Tuning Compound (mass intensity used as tuning acceptance criteria.); Surrogate - Surrogate (mimics the analyte of interest but is unlikely to be found in environmental samples; added to analytical samples for QC purposes. **ANSI/ASQC E4 1994 Ref #4 TRADE QA Resources Guide.); IS Areas - Internal Standard Area (The area of the internal stadard relative to a check standard. Internal Standard is a known concentration of an analyte(s) that is not a sample component or standard that is added to the sample and standard and is used to measure the relative responses of other analytes in the same sample or standard.); IS RetTime - Internal Standard Retention Time (the time the internal standard comes off the column. Internal Stardard is a known concentration of an analyte(s) that is not a sample component or standard that is added to the sample and standard and is used to measure the relative responses of other analytes in the same sample or standard.); LDR - Linear Dynamic Range Standard; MS - Matrix Spike (same solution and amount of target analyte added to the LCS is added to a second aliquot of sample; quantifies matrix bias.); DFTPP - GC/MS Tuning Compound

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ABLN

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Rio Grand Valley 956.831.6437 | Louisiana 318.219.9300 | Gulf Coast 281.333.9414 | Northeast 410.721.6506

Report to: Larry L. Bailey	Project- Name/Location: Hamby WWTF		
Company Name: City of Abilene	Billing Address (if different):		
Address: 4209 East Lake Rd			
City: Abilene State: TX Zip: 79601	City: State: Zip:		
Phone: 325-676-6042 Fax: 325-676-6044	Phone: Fax:		
Sampler Signature: Brandon Purdum	Printed Name: Brandon Purdum	Affiliation: ABLN	PO Number

Analysis Requested

Lab Number Do Not Use	Field Identification	Date	Time	Matrix	# of Containers	Notes	Complete TCLP	Table III Metals*	NH4, NO3, Total N*	Phosphorus*	Potassium*	Molybdenum*	PCBs*
2262894	Hamby WRF Sludge	1-9-24	8:34am	Sludge	4	*Dry Weight Basis	√	√	√	√	√	√	√

Date	Time	Relinquished by: Printed Name	Signature	Affiliation	Received by: Printed Name	Signature	Affiliation
1/9/24	1200	Brandon Purdum	Brandon Purdum	CoA	Larry L. Bailey	L. Z. Bl	ABLN
1/9/24	1514	Larry L. Bailey	L. Z. Bl	ABLN	Brie Wallace	BWallace	SPL
1-9-24	1800	Brie Wallace	BWallace	SPL	XPS		
1-10-24	1020	XPS			Tracey Varvel	Tracey V	SPL

☐ Wastewater ☐ Drinking Water ☒ SW846
Samples contain ☐ HF ☐ CN ☐ S= ☐ other##

Samples Received on Ice? ☑ Yes ☐ No
Cooler/Sample Secure? ☑ Yes ☐ No
Requested TAT ☐ Routine ☐ 3 day ☐ 2 Day ☐ 24 Hr ☐ 2-8 Hour

Method of Shipment ☐ Bus ☐ FedEX ☐ Lone Star ☐ UPS ☐ Hand delivered ☐ Airborne ☒ other ##comments
Tracking or Shipping Number see attached
Samples contain HF CN

1087303 CoC Print Group 001 of 001

4 3 2 1

XPS# 2

From: SPL
Abilene

To: SPL
Kilgore 6

1/10 1130 RT
Date Time Tech
Temp: 5.3 / 5.4 C

Therm#: 8444 Corr Fact: 0.1 C

Attachment SSTR 4.0-3.A
Sludge Facility Information
(Geology and Hydrology Report)

(AAR: WS 3.0-7, SSTR 1.0-1.A, SSTR 4.0-4.B,
SSTR 4.0-5.C-D)

CITY OF ABILENE
TEXAS

PRELIMINARY INVESTIGATION
REPORT
GEOLOGY AND HYDROGEOLOGY
OF
WASTEWATER TREATMENT PLANT
HAMBY, TEXAS

OCTOBER, 1993

Prepared by:

HIBBS & TODD, INC.
Abilene, Texas

HIBBS & TODD, INC.
environmental and civil engineering

PRELIMINARY INVESTIGATION REPORT GEOLOGY AND HYDROGEOLOGY OF THE CITY OF ABILENE WASTEWATER TREATMENT PLANT HAMBY, TEXAS

October, 1993

Prepared for:

Mr. Dwayne Hargesheimer
Abilene Water Utilities Director
P. O. Box 60
Abilene, Texas 79604-0060

Prepared by:

HIBBS & TODD, INC.
Abilene, Texas



10/28/93

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PRELIMINARY INVESTIGATION REPORT:

GEOLOGY AND HYDROGEOLOGY OF THE CITY OF ABILENE
WASTEWATER TREATMENT PLANT
HAMBY, TEXAS

TABLE OF CONTENTS

Page

I. REPORT SUMMARY 1

II. TEXT

A. Geology 3
A.1 Discussion of Geology 3
A.2 Installation of Groundwater Monitor Wells 5

B. Hydrogeology 6
B.1 Water Well Search 6
B.2 Groundwater Discussion 7
B.2.1 Hydraulic Gradient Discussion 10
B.2.2 Groundwater Quality and Quantity 11

III. CONCLUSIONS 14

IV. REFERENCES 16

V. APPENDICES/SUPPORTING DATA

APPENDIX A

Text and Appendices of Jenke (1962)

APPENDIX B

Soil Classification and Description Procedures
Logs of Borings
State of Texas Well Reports

APPENDIX C

Water Well Search Data
Hydraulic Conductivity Laboratory Test Results
Groundwater Sampling Laboratory Results

APPENDIX D

Quality Assurance/Quality Control Procedures

TABLE OF CONTENTS (CONTINUED)

TABLES

1. Table of Groundwater Laboratory Analyses Data
2. Table of Groundwater Elevation Measurements

FIGURES

1. Site (Topographic) Map
2. Location of Cross-Sections
3. West to East Cross Section A-A'
4. West to East Cross Section B-B'
5. West to East Cross Section C-C'
6. South to North Cross Section D-D'
7. Isopach Map of Sand and Gravel Zone
8. Water Well Location Map

PRELIMINARY INVESTIGATION REPORT:

GEOLOGY AND HYDROGEOLOGY OF THE CITY OF ABILENE WASTEWATER TREATMENT PLANT HAMBY, TEXAS

SECTION I

REPORT SUMMARY

This Report is the result of a study of the area geology and hydrogeology near the City of Abilene Wastewater Treatment Plant (WWTP) located in Hamby, Jones County, Texas. The WWTP is situated as shown on the Site Map, Figure 1 in the Figures Section. This Report utilized, as a basis of geological background information, a report provided by the City of Abilene Water Utilities Director, Mr. Dwayne Hargesheimer. The previous report, entitled *Geological Investigation, Abilene Irrigation Farm, Jones and Shackelford Counties, Texas* was prepared in 1962 by Mr. Art Jenke, Registered Professional Engineer and Geologist (presently retired) at the request of the Abilene City Attorney. Refinement of the Jenke (1962) study has been achieved with the supplementation of data obtained through the drilling and installation of five (5) groundwater monitor wells, geotechnical laboratory hydraulic conductivity testing, and additional technical and/or scientific researched data listed in the references. For convenience, Jenke (1962) is included as Appendix A.

The geology of the WWTP involves two basic lithologic types -- a sand and gravel zone and a limestone and shale (or clay) zone. The sand and gravel zone is geologically younger relative to the limestone and shale zone, and has been unconformably deposited by fluvial processes upon the older surface. The accompanying geologic map and cross-sections (Figures 3 through 7) illustrate that the majority of the WWTP overlies the limestone and shale lithology.

Groundwater occurrence in the limestone and shale zone is limited to perched water tables. Monitor wells MW-2, MW-3, and MW-4 are completed in the limestone and shale zone. Groundwater data collected from monitor wells MW-2 and MW-3, which were drilled adjacent but are completed to monitor different subsurface intervals, exhibits this hydraulic separation. Low hydraulic conductivities, as exhibited by the results of geotechnical laboratory tests conducted on a clay sample

collected below the water table in monitor well MW-2, support existing literature data suggesting very little moveable groundwater presence in this zone. Due to inconsistencies in the correlations of the groundwater table lithologies encountered in the present monitor wells, calculation of an accurate hydraulic gradient cannot be completed.

The quality of groundwater present in both lithologic types encountered in the study area is generally above the maximum contaminant levels (MCLs) and secondary maximum contaminant levels (SMCLs) established by the United States Environmental Protection Agency (EPA), as reported in the U.S. Code of Federal Regulations, Title 40, parts 141.11 and 143.3 (40 CFR 141.11 and 143.3). Current groundwater sample analyses results are reflective of levels exhibited in referenced data collected in 1967. With the exception of high chloride levels suggesting possible oil exploration contamination, reasons for the varying analytical concentrations are not apparent at this time and may indicate no more than anomalies associated with normal groundwater inherent to the lithologies encountered.

The residential areas around the WWTP have been served by municipal water systems from Hamby or Abilene since the early 1960's, providing potable water from surface water sources. By current EPA water quality standards, the area groundwater is, and has historically been, unsuitable for development as a potable water source.

SECTION II
TEXT

A. GEOLOGY

A.1 Discussion of Geology:

The Abilene Wastewater Treatment Plant is located in southeastern Jones County, Texas, in an area known locally as the "Hamby Flats". The Hamby Flats area is topographically situated in a valley confined on the east and west sides by higher terrain. The valley floor is relatively flat with a slight northward slope, and trends generally north-south. Land usage is primarily farming and ranching, with a Texas Department of Criminal Justice facility located nearby. Several of the farms adjacent to the WWTP are equipped with irrigation equipment and occasionally utilize effluent water piped from the WWTP as a water source.

The major surface drainage in the valley is through Deadman Creek, an intermittent stream meandering south and west of the treatment plant site. Other drainage from the north and northeast is through Freewater Creek, flowing intermittently northward. Precipitation in the area averaged approximately 26 inches per year over the preceding 10 year period.

The subsurface geology of the area was thoroughly investigated and reported in the Jenke (1962) report. In preparation of that report, 36 "test holes" (borings) were advanced to depths ranging from 41 feet to 100 feet below ground level (bgl). Data on the subsurface lithology encountered is available in Jenke (1962) as "drillers logs", prepared on each boring. The borings were completed as "wells" by the standard oil industry practices utilized at the time.

Maps and cross-sections were prepared by Mr. Jenke to illustrate the subsurface geology. These figures have been revised to reflect new data obtained for this Report and are included as Figures 2 through 7. Figure 2 is a map exhibiting the locations of the cross-sections. Figures 3 through 6 (cross-sections A-A', B-B', C-C', and D-D') exhibit the general subsurface lithology of the area, as well as relative structural dip, position, and thickness of the stratigraphic units. Figure 7 is an Isopach Map of the sand and gravel zone.

Typically, from the surface downward, lies a layer of clayey soil, followed by layer of caliche. This is underlain by interbedded intervals of limestone and either shale, weathered shale, or clay, dependent upon depth and degree of weathering. To the west, southwest, and north of the WWTP, sand and gravel deposition replaces a portion of the interbedded limestone and shale beds. The cross-sections illustrate that the majority of the WWTP overlies the interval of interbedded limestones and shales (or clays).

The limestone and shale beds underlying the main area of the WWTP are of the Permian aged Clearfork Group (Arroyo Formation) and Lueders Formation. Structural dip on these beds, somewhat reflected in the surface topography, is the typical area rate of 35 to 40 feet per mile to the west and northwest (basinward). The limestones are described as light to dark gray, buff to brown, fossiliferous, and finely crystalline; they are typically thin, unevenly bedded, and poorly developed.

These limestone beds represent an offshore shallow sea environment. Their depositional discontinuity is attributed to shoreline migrations, fluvial and deltaic trend alterations, and basinward subsidence. Disconformities and areas of non-depositional occur regularly within these beds.

The shales encountered ranged in color from black and medium gray, to light reddish gray, and olive gray. They were occasionally slightly silty or finely laminated, usually somewhat calcareous, and hard. These shales appeared to weather to varying degrees, becoming lighter in color, slightly bluish on occasion and very plastic. More detailed lithologic descriptions may be located on the Logs of Borings for the recently installed monitor wells included in Appendix B.

The sand and gravel interval present to the west of the treatment plant site is the Pleistocene aged Seymour Formation, and more recent fluvially reworked Seymour materials. It is described as sands, gravels and conglomerates, including pebbles of chert, quartz and metamorphic rocks, all well rounded; with sands of varying grain size and sorting, and some clay lenses.

The Seymour Formation is reported to have been deposited upon an exposed Permian topography, in deference to climate changes associated with the advance or retreat of the glacial ice sheets of the time, resulting in variations in depositional thickness. Further reworking and redeposition of the sands and gravels have occurred in more recent times, as streams such as Deadman Creek and an ancestral Deadman Creek erode across the area. The more recent fluvial deposits may be partially calichefied, and may be locally water bearing or dry, dependent upon their structural position relative to the water table.

A.2 Installation of Groundwater Monitor Wells:

On July 19 and 20, and October 6, 1993, a total of five (5) groundwater monitor wells were installed at the WWTP surrounding ponds E-3 and E-4, at selected locations exhibited on Figures 2 and 7. The monitor wells were drilled with a truck mounted air rotary drilling rig, using a 5.0 inch diameter bit. Soil samples were collected at selected intervals using split spoon or thin walled (Shelby) tube samplers. These samples, in addition to drill cuttings, were examined immediately in the field for lithologic characteristics in accordance with the Soil Classification and Description Procedures included in Appendix B.

The monitor wells were drilled and completed by a licensed driller in accordance with the regulations of the Texas Water Commission, now called the Texas Natural Resources Conservation Commission (TNRCC). The monitor wells were completed with two-inch schedule 40 PVC casing and factory slotted 0.01 screen. Approximately 3 feet of casing is set above the ground surface, protected by a lockable steel cover set in a concrete pad. Top of casing elevations were surveyed relative to mean sea level (msl) by a registered surveyor.

Decontamination procedures, as noted in Section A.4 of the Quality Assurance/Quality Control (QC/QC) Procedures included in Appendix D, were utilized throughout the drilling activities to assure monitor well integrity. Diagrams illustrating the construction design of each monitor well, detailed lithologic descriptions, and other pertinent information may be found on the Logs of Borings presented in Appendix B. Copies of the State of Texas Well Reports, filed with the TNRCC by the contracted drilling company, accompany the Logs of Borings.

B. HYDROGEOLOGY

B.1 Water Well Search:

A water well search of Texas Water Development Board (TWDB) maps and TNRCC records was conducted by Geosource Incorporated (GI), and covers a one mile radius around the WWTP and adjacent city property. Thirty-nine water wells were identified within the search area and are located on a copy of the United States Geological Survey (USGS) Map included as Figure 8.

A review of the water well information reveals all of the wells were recataloged in 1967, and most of these were sampled at that time. Many of the wells were reported to be hand dug, and originally utilized as domestic water wells. However, in the early 1960's, the extension of municipal water lines from the Hamby water system and City of Abilene evidently replaced domestic groundwater dependence with surface water sources used to serve with the municipal water systems.

In the 1967 data, 24 of the 39 wells are listed as not used or abandoned. Of the 15 remaining wells, none were listed in the data as utilized for human consumption -- 2 were reported as water flood supply, with the remainder reportedly used for livestock and/or irrigation purposes. The present status of the wells reported in use in 1967 is unknown. Information pertaining to these wells, and other information received from GI, is included in Appendix C.

B.2 Groundwater Discussion:

Groundwater occurrence and movement, and therefore usefulness, are dependent upon the subsurface geology. As discussed in Section A.1, basically two types of subsurface lithologies are encountered at the project site -- the sand and gravel zone, and the interbedded limestone and clay (or shale) zone. Figure 7 shows the sand and gravel zone was not deposited under most of the WWTP, but primarily to the west, southwest and northwest. Newly installed monitor wells MW-2, MW-3 and MW-4, in addition to test hole No.'s 16, 17, 19 and 21 (Jenke, 1962), encountered only the interbedded limestone and clay (shale) type lithology in the subsurface.

Hydraulic conductivity (k), or the movement over time of groundwater through a permeable medium, is typically very low for limestone and clay (shale). Ranges generally expected are 1.0E-07 to 1.0E-14 cm/sec for limestones, and 1.0E-10 to 1.0E-07 cm/sec for clays (1.0E-11 to 1.0E-07 cm/sec for shales). Therefore, aquifer pump testing or monitor well slug testing to determine aquifer characteristics have not been attempted. However, hydraulic conductivity testing of a soil (clay) sample was completed as discussed below.

An undisturbed soil sample was collected below the water table at 5.0 to 6.5 feet bgl from monitor well MW-2 during drilling operations, in conformance with the thin-walled tube sampling procedures described in ASTM Method D-1587. The sample was laboratory tested for hydraulic conductivity by ASTM Method D-5084-C (falling head, rising tailwater). The resulting values ranged from 7.93E-09 cm/sec to 7.32

E-09 cm/sec, for an average of 7.59E-09 cm/sec (0.24 cm/yr) for the soil sample collected. Similar to lower values would be expected for tests conducted in the shale beds. Conductivity values for the limestone layers are also expected to be within the range mentioned, although weathering and fracturing would increase the value for the limestones. The results of the hydraulic conductivity tests are included in Appendix C.

The lithology and hydraulic conductivities of the interbedded limestone and shale zone indicate that the occurrence and movement of groundwater in this area is limited. Precipitation (or irrigation water) infiltrating from the surface downward is trapped by the relatively impermeable limestone and shale (or clay) layers. Groundwater essentially exists in perched water tables, being trapped within the tight clays and shales above and between the limestone beds. Groundwater movement generally follows the structural dip of these beds, previously mentioned as 35 to 40 feet per mile in the northwestern direction. Calculation of an accurate hydraulic gradient cannot be determined, due to reasons discussed in Section B.2.1. below. As expected, monitor well water level recoveries following well purging activities are poor (slow).

Monitor wells MW-2 and MW-3 were drilled and completed to delineate between separate perched water intervals within the limestones and shales (clays). Both monitor wells encountered "wet" clay (groundwater) at approximately 5.5 feet bgl, with no additional "wet" intervals encountered. Monitor well MW-3, screened from 5.0 to 10.0 feet bgl, was completed to monitor the groundwater zone at 5.5 feet bgl. Monitor well MW-2, screened from 14.0 to 24.0 feet bgl, was completed to monitor groundwater in the interbedded limestones and shales below the initial perched groundwater table. Groundwater sample analyses results and groundwater elevation measurement data from these wells suggest hydraulic separation between the groundwater zones monitored by MW-2 and MW-3. Table 1, the Table of Groundwater Laboratory Analyses Data, and Table 2, the Table of Groundwater Elevation Measurements, provide information as supporting evidence of the

hydraulic separation of these wells completed to monitor separate groundwater intervals.

Monitor well MW-4, installed east of pond E-3, encountered only "slightly moist" intervals in the interbedded limestones and shales. This well was screened from 9 to 24 feet bgl to allow infiltration of any groundwater from the limestone and shale beds at those depths. As expected, the groundwater recovery levels after purging have also been poor.

The sand and gravel zone was encountered in MW-1, the westernmost of the newly installed monitor wells. Approximately 6.5 feet of gravel was penetrated in three (3) intervals, separated by a clay bed and a sand bed. The total thickness of the sand and gravel zone is approximately 10 feet. Groundwater was encountered at the base of the lowest gravel bed within this zone, at approximately 15.5 feet bgl. Static groundwater elevation measurements are fairly consistent, with good recoveries reflecting good hydraulic conductivity of the zone. Attempts to collect undisturbed samples in the sand and gravel zone were unsuccessful due to the unconsolidated nature of these beds.

General hydraulic conductivity values for sands and gravels range from 1.0E-05 cm/sec to 1.0 cm/sec for sands, and 1.0E-01 cm/sec to 1.0E02 cm/sec for gravels. The variance exhibited by these ranges is dependent upon the presence of silts and clays. Based upon the relatively good groundwater elevation recoveries and general lithologic nature of the zone, hydraulic conductivity values for the sand and gravel zone are considered to be within the normal ranges stated.

The sand and gravel zone encountered in MW-1 represents the northeastern edge of the redeposition of the Seymour Formation by an ancestral Deadman Creek. While drilling monitor well MW-5, located east of MW-1, the sand and gravel zone was not encountered. However, channel deposits of siltstone and sandy clays were logged in the well, suggesting proximity of the channel gravel deposits. Due to the

meandering nature of this type of channel, the exact location of these deposits in the subsurface is interpretative.

Figure 7 represents a map of the sand and gravel zone, revised from the Jenke (1962) report. The revision of this map from the original has moved the estimated eastern limits of the sand and gravel zone further eastward, based upon the new data obtained from monitor wells MW-1 and MW-5, and reinterpretation of sample description data from test holes Nos. 1, 2, and 3 completed by Jenke.

B.2.1 Hydraulic Gradient Discussion: Inconsistencies in the correlations between the groundwater table lithologies present in the monitor wells installed thus far prohibit the accurate calculation of a hydraulic gradient, and construction of a hydraulic gradient map. Idiosyncracies in the deposition of the interbedded limestone and shale zone have resulted in several perched water tables of limited aerial extent, each having similar—but separate—hydraulic characteristics. Monitor wells MW-2, MW-3 and MW-4 are completed in the limestone and shale lithology. Monitor wells MW-2 and MW-3, installed six feet apart, are completed in two such perched water tables, as suggested by differences in their groundwater sample analytical results (see Table 1) and their groundwater elevation measurements exhibiting different hydraulic heads (see Table 2).

For the same lithologic reasons, monitor wells MW-1 and MW-5 represent additional, and different, groundwater tables, also not correlative with the other wells. Monitor well MW-1 penetrated the sand and gravel zone more prevalent further westward and is representative of the groundwater conditions of that zone. Monitor well MW-5, penetrated channel deposits that partially replaced the limestone and shale zone, but did not encounter the sand and gravel zone. Therefore, the groundwater levels recorded from monitor wells MW-1 through MW-5 are not representative of the same groundwater intervals, preventing a hydraulic gradient calculation from the present configuration of wells.

B.2.2 Groundwater Quality and Quantity: Groundwater usage is directly related to groundwater quality. The Jenke (1962) report stated that, except for chlorides, the quality of the groundwater was "beyond the scope of this study". Groundwater samples were collected from 33 of the 36 test wells installed for the 1962 report and were analyzed for chloride content. The results are tabulated in Appendix B of that report. Twenty-five (25) of the 33 samples tested above the secondary maximum contaminant level (SMCL) for chloride of 250 mg/L established by the EPA in 40 CFR 143.3. The average chloride content for the test hole samples was 1,745 ppm, ranging from 18,420 ppm in test hole No. 17, to 31 ppm in test hole No. 14 (Jenke, 1962).

Mr. Jenke attributed the high chloride concentrations to "extensive prospecting for petroleum in the subject area", and identified 47 exploratory test holes drilled within the study area. Additional petroleum exploratory wells were drilled in the early 1980's. A recent *Hendricks* oilfield map for southeast Jones County reveals 21 wells drilled within the present boundaries of the City of Abilene property surrounding the WWTP.

Groundwater samples were collected from newly installed monitor wells MW-1 through MW-5, in general conformance with the QA/QC Procedures in Appendix D. The groundwater samples were analyzed by the City of Abilene Environmental Laboratory for nine parameters. Table 1 exhibits each specific parameter, the laboratory method utilized for detection, the MCL or SMCL as established by the EPA in 40 CFR 141.11 or 40 CFR 143.3, and the results of the groundwater sample analyses. Copies of the laboratory analytical reports, with their associated chain-of-custody forms, are included in Appendix C.

The groundwater samples collected from all monitor wells exhibit results above the SMCL of 500 mg/L recommended for drinking water for total dissolved solids (TDS), with an average of 3,140 mg/L. The groundwater samples from monitor wells MW-1, MW-2, MW-3 and MW-5 each exhibited concentrations above the established SMCL for chlorides of 250 mg/L, with an average of 1,429 mg/L. The samples from monitor wells MW-2, MW-4 and MW-5 analyzed above the sulfate SMCL of 250 mg/L with an average of 747 mg/L. Two samples from monitor well MW-1, and one sample from monitor well MW-5, exhibited nitrate analyses results of 47 mg/L, 43 mg/L, and 15 mg/L, respectively, each above the nitrate maximum contaminate level (MCL) of 10 mg/L. Additional parameters analyzed were arsenic, chromium, nickel, and fecal coliform. Results of the analyses for these parameters were reported as below detectable limits or zero (0).

Referencing the waterwell search discussed in Section B.1, 25 of the 39 wells located within the search area had groundwater samples analyzed in 1967 by the Texas Department of Health Laboratory for various parameters, including sulfates, chlorides, nitrates and dissolved solids. Of the 23 wells reporting dissolved solids analyses, 22 are above SMCL of 500 mg/L. Sulfate analyses results exhibited 13 of 25 groundwater samples above the sulfate SMCL of 250 mg/l. Chloride analyses results exhibited 13 of 25 groundwater samples above the chloride SMCL of 250 mg/l, and nitrate analyses results exhibited 17 of 23 groundwater samples analyzed above the MCL of 10 mg/L for nitrate. One well in the entire search area (No. XA-30-28-405) exhibited groundwater sample analyses results below the 1962 USPHS recommended standards. This well, reported on the 1967 report form as being old, hand dug, and rock walled, was also said to be "partially filled in with rubble" and abandoned.

The Jenke (1962) report concluded that the sand and gravel zone, due to good porosity and permeability (hydraulic conductivity) values inherent to these lithologies, represented "a sizable quantity of groundwater that could be available for future use". The report estimated (by volumetrics) that 9,240 acre-feet of water storage capacity existed in the area of that study, and also stated this "source would be independent of a cycle of dry years by virtue of continuous artificial and uniform recharge from the irrigation farm spreading ponds and basins".

The Jenke (1962) report assumed a homogeneous zone and a given average porosity of 31 percent "determined under laboratory conditions". However, in an unconfined aquifer, porosity is affected by grain size and sorting. The effective porosity, or specific yield, is the percentage of total porosity actually utilized by fluid movement. Total porosity is reduced in unconfined aquifers by specific retention, or water trapped (immobilized) by poor sorting and generally smaller grain sizes. This is the case with the sand and gravel zone. Well yields reported in the water well search data were occasionally "good", but primarily not reported, or "poor" to "fair", suggesting a lower specific yield for the zone. Additionally, for the past several years, the old spreading ponds and basins at the WWTP have been primarily dry, and all effluent (minus irrigation) is discharged by permit to Freewater Creek.

SECTION III
CONCLUSIONS

This Report was prepared as the result of a study of the geology and hydrogeology near the Abilene WWTP in Jones County, Texas. This Report utilized previous work, referenced as Jenke (1962), for general background geological information. Further refinement and understanding of the study area was accomplished through the drilling and installation of five groundwater monitoring wells, groundwater elevation data and sample analyses, laboratory hydraulic conductivity testing, and reference materials. Previous portions of this Report have established the following:

- Geology of the WWTP area is basically two lithological types, a sand and gravel zone and an interbedded limestone and shale (clay) zone.

- The sand and gravel zone, geologically younger relative to the limestone and shale zone, has been fluvially and unconformably deposited upon the older surface.

- The majority of the WWTP overlies the limestone and shale zone.

- In the limestone and shale zone, groundwater occurs in perched water tables which have very low hydraulic conductivities.

- Hydraulic separation of the perched water tables is apparent on at least a localized basis, as exhibited by groundwater data collected from monitor wells MW-2 and MW-3. Elevated nitrate levels were not identified in these zones within wells adjacent to pond E-3.

- Due to the inconsistencies in the correlations between the groundwater table lithologies encountered in the present monitor wells, accurate calculation of a hydraulic gradient cannot be completed.

- Based upon the referenced sources of groundwater analytical information from testing conducted in 1967 and analyses of groundwater samples collected from the five newly installed monitor wells, the quality of groundwater present in both lithologic types encountered in the study area is generally above the MCLs and SMCLs established by the EPA in 40 CFR 141.11 and 143.3. By these standards, the groundwater is, and has historically been, unsuitable for development as a potable water source.

- Current groundwater samples analytical results are reflective of 1967 levels. With the exception of high chloride levels suggesting possible oil exploration contaminants, reasons for the varying concentrations in the laboratory analytical results are not apparent at this time, and may indicate no more than normal analytical anomalies associated with the connate water inherent to the lithologies encountered.

- In recent years, changes in the operations of the WWTP would have acted to limit potential infiltration from the former ponds and basins, thereby reducing any potential "recharge" of groundwater referred to by Jenke (1962).

- The residential areas around the Abilene WWTP are served by municipal or rural water systems which provide potable water developed from surface water sources.

SECTION IV

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COPY NO. 4

February 10, 1962

Mr. John W. Davidson, City Attorney
P. O. Box 60
Abilene, Texas

Dear Mr. Davidson:

Pursuant to your request I have conducted a subsurface geological investigation in the area of the City of Abilene Irrigation Farm located in Jones and Shackelford Counties, Texas.

The results of this study, based upon information acquired by drilling 36 exploration test holes between the dates of December 21, 1961 and January 17, 1962, indicate that the subject area is underlain by bedrock of the Lueders Limestone Formation which dips to the west and northwest at a relatively constant rate of approximately 40 feet per mile. In the western and northern part of the Irrigation Farm, the Lueders Limestone is overlain by shale, sand and gravel, caliche and soil, in that order. The balance of the Farm contains no sand and gravel beds, but is underlain by a series of limestone and shale beds covered by caliche and/or soil.

The sand and gravel zone is very significant. The gravels, which also dip to the west and northwest are porous, permeable, and capable of transmitting fluid. Fluid, in the form of rainfall and sewage effluent, is readily available to the gravel beds by infiltration and percolation through the overlying porous caliche and soil. Continuous recharge from the ponds and basins, which are an integral part of the Irrigation Farm's mechanism, can deliver a continuous supply of water to the underlying beds. A part of the effluent is delivered as runoff directly into Deadman Creek through its local tributary, Freewater Creek, which flows through the northeastern part of the Farm. Deadman Creek receives fluid through bank seepage. Freewater Creek receives fluid through both seepage and surface runoff. The sand and gravel zone found in the test holes passes beneath the bed of Deadman Creek and continues to the west where the edge is defined by pinch-out against a topographically high area.

The sand and gravel zone contains an estimated 29,800 acre-feet and a fluid storage capacity of 3 billion gallons. This readily available source of water could be diverted to municipal, industrial or irrigation use. Such source would be completely independent of rainfall and would constitute a highly reliable supply of water in future years.

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Samples of water, taken during the drilling operation immediately after encountering fluid in each hole were analyzed for chloride content. Excessive chlorides were present in several holes, suggesting possible pollution as a result of oil exploration activity. The Irrigation Farm contains 14 such holes within the present boundary.

All test holes drilled during this investigation have been completed in a manner which will allow continued observation for several years in the future.

Nine illustrations, consisting of four cross sections and five maps are submitted as a part of this report.

It has been a pleasure to be of service. If I can be of further assistance, please do not hesitate to call upon me.

Very truly yours,

A. L. Jenke

Arthur L. Jenke

COPY NO. 4

CITY OF ABILENE IRRIGATION FARM INVESTIGATION

PURPOSE:

The purpose of the work performed for the City of Abilene was as follows:

a) To determine the structure, lithologic character, and areal extent of the rock formations underlying the Irrigation Farm and adjacent area.

b) To determine the depth and configuration of the water table underlying the subject area.

c) To determine the mineral quality of water encountered in the test holes.

d) To drill and complete the test holes in such manner so as to allow for continued chemical and biological testing and observation of water table fluctuations.

LOCATION OF TEST HOLES:

The test holes were located so as to yield a maximum amount of subsurface information at a minimum of expenditure of time and money. These holes, shown on Figures 1 through 5, are located within and along the perimeter of the Farm and beyond, a distance considered adequate to reveal subsurface conditions under adjacent properties.

METHOD OF DRILLING AND COMPLETING TEST HOLES:

The test hole drilling program was initiated December 21, 1961 and completed January 17, 1962. During this period, a total of 36 test holes were drilled to varying depths using both rotary and spudder-type drilling rigs.

Wherever possible, the holes were drilled using the rotary equipment and compressed air as drilling fluid. The use of compressed air minimized the possibility of contamination of subsurface fluids and allowed immediate detection of moisture in the test hole. Thirty holes were drilled using rotary equipment. In the areas where excessive quantities of unconsolidated, water-bearing formations were present, a spudder type rig was employed and casing temporarily set through the incompetent beds. This casing was withdrawn after total depth was reached and production casing set. Six holes were drilled using the spudder and were designated S-1 through S-6 inclusive.

All holes, with the exception of Test Hole No. 29 were cased using 4 inch, 30 gauge, galvanized pipe, cemented at the surface above a burlap packer. Casing was perforated opposite the water bearing formation to allow entry of fluid into the pipe.

Each hole was completed so as to allow for continuous observation regarding water level, water quality (chemical, physical and bacteriological) and for the measurement of fluid drawdown if desired.

INFORMATION OBTAINED DURING THE DRILLING OF TEST HOLES:

Numerous rock samples were examined during drilling and later reexamined microscopically in the laboratory.

Two samples of water were taken from each test hole which encountered fluid. These samples were bailed from the hole at a depth not greater than five feet below the first show of fluid. One sample was submitted to the City of Abilene water plant chemist, and the second to the laboratory of Arthur L.

Jenke where each was tested for chloride content.

Upon reaching total depth an electrical survey was made in each hole in order to verify the vertical position and character of the rock beds.

A detailed lithologic log of each hole showing subsurface rock depths adjusted to the electrical survey depths appears in Appendix A of this report. Special attention was given to the position of 1), a relatively thick stratigraphically continuous bed of gray granular limestone herein termed the "Lueders Limestone Marker Bed" and 2), to the depth and thickness of the sand and gravel strata.

STRUCTURE OF ROCKS UNDERLYING IRRIGATION FARM AREA:

A subsurface structure map with contours drawn on the top of a continuous limestone formation herein termed the Lueders Limestone Marker Bed is shown on Figure 1. This illustration clearly indicates that this structural marker bed dips to the west and northwest at a relatively constant rate of 35 to 40 feet to the mile. No reversal is indicated. This rate of dip is considered normal for the area.

Three west-to-east cross sections and one south-to-north cross section are presented. Figure 2 shows the location of these cross-sections. Each cross section contains a detailed columnar log of all holes located on that cross section. The lithology of each hole has been plotted in detail and the subsurface strata correlated.

The value of any cross section lies in the fact that the relative position, dip (inclination), and thickness of the stratigraphic units are readily perceived. The position of the upper surface of the ground water table as of

January 25 and 26, 1962, is indicated on all cross sections.

Examination of the west-to-east cross sections (A-A', B-B' and C-C') indicate that the western and northern part of the Irrigation Farm together with the adjacent area lying to the west, north and south of the Farm is underlain by a zone of sand and gravel ranging from 0 to 25 feet in thickness. The balance of the Farm and the area to the east is devoid of gravel deposits and is underlain by a series of limestones and shales together with soil and caliche.

QUALITY OF WATER IN TEST HOLES:

Water taken from each hole in which fluid was encountered was analyzed for chloride content. The results of these analyses are presented in Appendix B of this report and are also shown on the Isochlor Map, Figure 3. Except for four holes, the chloride content of the water was greater than the average chloride content of the Irrigation Farm effluent. The exceptions were Test Holes No. 9, 13, 14 and 24. The average chloride content of the effluent is approximately 205 parts per million. In comparison, the chloride content of Abilene tapwater was 62 ppm on January 31, 1962.

The highest chloride content was in water taken from Test Hole No. 17, located in the extreme southeast corner of the Farm. This hole yielded 18,420 ppm chlorides and contained 0.2 foot of petroleum floating on the surface of the brine. Test Hole No. 17 is located on the west edge of an oil field which formerly contained nine producing wells. The field, discovered in 1938 now contains one producer. Figure 3 also shows the location of all oil exploratory test holes drilled on and adjacent to the Irrigation Farm. A total of 14 holes have been drilled within the present boundary. Of these, two are producers, and twelve, dry holes. Pertinent

data regarding all wells shown on Figure 3 is tabulated in Appendix C. The wells are keyed to the map numerically. The high chloride values shown on this map may be originating from one or more of these holes.

SAND AND GRAVEL ZONE:

An isopach (thickness) map of the sand and gravel beds underlying the western and northern part of the Farm and the adjacent area to the south, north and west is shown on Figure 4. The gravel zone varies in thickness from zero to a maximum of 25 feet in Test Hole No. 7. The depth from the surface to the top of the gravel zone ranges from a minimum of 9 feet in Test Hole No. 29-A (A. B. Youngblood) to a maximum of 25 feet in the Test Hole No. S-6 (Grantham). The areal extent of the gravel zone has not been delimited to the north and south, and only at one point (Test Hole No. 29-A) to the west. The estimated eastern limit of the gravels underlying the Farm is shown on the referenced Figure 4.

The sand and gravel beds dip to the west and northwest. They are overlain by caliche and soil and directly underlain by shale and/or limestone. The amount and direction of dip of the gravel beds is controlled by the old eroded land surface upon which the gravels were deposited. This surface in turn conforms to the direction of dip of the Lueders Limestone Marker Bed. Cross section D-D' shows the north component of the dip of the gravels. Variations in thickness of the sand and gravel beds are a result of 1), variation in the topography of the old land surface or valley floor upon which the sediments were deposited and 2), upon changes in stream velocity and load carrying capacity at the time of deposition.

The cross sections, together with surface investigations, reveal that the sand and gravel beds pass beneath the present bed of both Deadman Creek and Freewater

Creek. In no place along either stream in the Irrigation Farm Area were gravels, other than stream-borne, exposed either in the banks or in the bed of the drainages.

Results of this study indicate that the entire valley in the area of the Farm (known locally as "Hamby Flat") is underlain by sand and gravel strata. The valley is relatively flat and slopes gently to the north. It is confined on the east and west by high terrain. Deadman Creek, the major drainage, is not presently confined to any particular part of the valley but traverses diagonally across the valley floor immediately south of the Farm, then turns to the north a short distance west of the Farm. This seemingly patternless and meandering character is mentioned, as it is probable that Deadman Creek or an ancestral Deadman, together with its tributaries, was the transporting and distributing agent for the extensive deposits of sand and gravel underlying the valley.

A planimetric survey of the gravel beds contained within the polygonal area indicated on Figure 4 yielded a total volume of 29,800 acre-feet. Using an average porosity of 31 percent determined in the laboratory, the fluid storage capacity of the sand and gravel zone is 9,240 acre-feet or approximately 3 billion gallons.

There is no question but that the gravels are porous and permeable. Water infiltrating into the ground and percolating to the water table will penetrate into the sand and gravel zone, and then move laterally down dip to the west and north. Beds overlying the gravel and sand zone are composed of soil and caliche. Both are permeable and porous and will readily conduct fluid.

GROUND WATER TABLE IN IRRIGATION FARM AREA:

The elevation of the ground water table in all test holes was measured on

January 25 and 26, 1962. Data pertinent to the elevation of the water table is shown in Appendix D, attached. Figure 5, a contour map showing the top of the water table indicates that the upper surface of the zone of saturation follows the configuration of the ground surface. The vertical distance to the water table from the ground surface varies from 0.3 feet in Test Hole No. 20 to 23.1 feet in Test Hole No. 19. The extremely close approach to the ground surface at Test Hole No. 20 gives rise to continuously wet swampy conditions in the immediate area. The proximity of the water table to the surface is due to the existence of a topographically low drainage area (Freewater Creek) along the north-central edge of the Farm.

The subsurface water table encountered in the row of holes drilled south of the Farm (Nos. 23, 24, 25 and 26) and those drilled west of the Farm (Nos. S-4, S-5 and S-6) encountered the water table at average depths greater than those holes drilled along and within the boundary of the Farm. The higher water table encountered directly beneath the Farm is a result of the continuous supply of water from the ponds and basins.

Effluent from the Farm seeps into Deadman and Freewater Creeks. This is shown by the contrast in the elevation of the water table in Test Holes Nos. 4, 5, 6, S-3 and S-4, all located close to Deadman Creek. Tabulated below are data indicating the relative elevation of the water table and the bed of adjacent Deadman Creek. These relationships are also shown on Figure 5.

Test Hole No.	Elevation of Water Table	Elevation of Bed of Deadman Creek	Distance from Test Hole to Deadman Creek
4	1701.3	1694.48	484'
5	1696.0	1689.53	236'
6	1691.8	1686.82	154'
S-3	1675.7	1671.82	376'
S-4	1679.8	1675.67	472'

There is no question that the ground water table intersects the banks of Deadman Creek.

Deadman Creek is an "effluent" stream - one which receives ground water discharge. Deadman may become "influent" temporarily during periods of flood when the stream stage is high and the direction of ground water flow would be reversed. Under these conditions, the stream would recharge the ground water zone.

The drainage rate of ground water discharge into Deadman Creek is expected to be fairly constant in as much as the quantity of effluent distributed over the surface of the Irrigation Farm varies within relatively narrow limits.

What has been said regarding seepage from the saturated ground water zone into Deadman Creek holds equally true for Freewater Creek which flows across the northeast part of the Farm and through the Beasley property. The major difference is that the ground water table intersects Freewater Creek at a relatively shallow depth.

CONCLUSIONS:

1. Results of this study indicate that both the surface and subsurface rock formations dip to the west and northwest at a relatively constant rate of approximately 40 feet per mile. This rate of dip is considered normal for the area. No reversal of this dip is indicated.

2. The quality of the ground water, except for the determination of chlorides (salt) is beyond the scope of this study. High concentrations of chlorides were found in some areas of the Farm and no doubt represent sources of past and/or present pollution presumably as a result of extensive prospecting for petroleum in the subject area.

3. The western and northern part of the Irrigation Farm together with the adjacent area to the north, south and west is underlain by porous sand and gravels

through which water, including effluent, can move both vertically and laterally. Water can readily reach the sand and gravel zone by percolation and seepage through overlying porous caliche and soil. The direction of this subsurface movement is to the west and north and follows the direction of the dip of the underlying rock structure.

The volume of the sand and gravel mass underlying the Farm and enclosed within a polygonal area bounded by the test holes is estimated at 29,800 acre-feet. Using an average porosity of 31 percent determined under laboratory conditions, it is estimated that the storage capacity of the sand and gravel alone is 9,240 acre-feet or approximately 3 billion gallons.

This represents a sizeable quantity of ground water that could be available for future municipal, agricultural, irrigation and industrial use. Such source would be, for all practical purposes, independent of a cycle of dry years by virtue of continuous artificial and uniform recharge from the Irrigation Farm spreading ponds and basins.

4. The elevation of the ground water table is higher than that of the bed of Deadman Creek, and ground water is seeping into the creek in the area of the Farm. The same condition exists in the north-central part of the Farm where "Freewater Creek", tributary to Deadman, flows continuously.

Respectfully submitted,

A. L. Jenke

Arthur L. Jenke
Geological Engineer

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TEST HOLE NO. 2

Drilled with rotary 12-21-61

Interval Feet	Sample Description
0 - 10	Soil, dark brown, slightly damp, calcareous.
10 - 22	Caliche, wet, 40% gravel at 13' (1" size). Approximately 4' gravelly.
22 - 26	Shale, ochre to buff, sandy toward base.
26 - 32	Shale, ochre to buff, but more sandy.
32 - 37	Limestone, light gray, dense to finely granular.
37 - 40	Shale, light gray to buff, part dark gray, hard, siliceous.
40 - 50	Limestone, gray to light gray, hard, with few scattered shale beds.

Total Depth 50'
Total Depth Log 40'

Elevation: 1732.71 Collar, 1731.0 Ground

Pipe in Hole: 42'

Perforated Interval: 15 to 20'.

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TEST HOLE NO. 3

Drilled with rotary 12-22-61

Interval Feet	Sample Description
0 - 3.5	Soil, dark brown, sticky, damp.
3.5 - 12.0	Caliche, light pink, damp
12.0 - 18.0	Shale, buff to light gray, damp. Gravel at 14 to 16'. Water Sample at 17'.
18.0 - 20.0	Limestone, gray, dense to very finely crystalline.
20.0 - 21.0	Shale, gray.
21.0 - 25.0	Limestone, gray to light gray, dense to very finely crystalline.
25.0 - 27.0	Shale, gray.
27.0 - 28.0	Limestone, gray to light gray, dense to very fine crystalline.
28.0 - 30.5	Shale, gray to buff.
30.5 - 33.5	Limestone, light gray to white, dense to fine crystalline.
33.5 - 44.0	Shale, gray to medium gray, hard, siliceous.
44.0 - 50.0	Limestone, medium gray to gray, granular to finely granular.
50.0 - 54.0	Limestone, medium gray to gray, granular to finely granular, but with scattered shale beds.

Total Depth 54.0'

Elevation: 1716.91 Collar, 1715.0 Ground.

Pipe in Hole: 47'

Perforated Interval: 15 to 20'.

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TEST HOLE NO. 4

Drilled with rotary 12-22-61

Interval Feet	Sample Description
0 - 7.0	Soil, dark brown, calcareous, damp
7.0 - 13.0	Caliche, light pink, dry to damp at 12'.
13.0 - 20.0	Gravel and sand, water, gravels to 1" in diameter.
20.0 - 24.0	Limestone, light gray, dense to very finely crystalline.
24.0 - 26.0	Shale, buff to gray.
26.0 - 29.5	Limestone, gray to light gray, dense to finely crystalline.
29.5 - 32.0	Limestone and shale beds.
32.0 - 40.0	Shale, medium to dark gray, hard, siliceous.
40.0 - 50.0	Limestone, gray to medium gray, hard, granular to finely granular.

Total Depth 50.0'

Elevation: 1709.48 Collar, 1708.0 Ground.

Pipe in hole: 23.5'

Perforated Interval: 13.5 to 18.5'.

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TEST HOLE NO. 5

Drilled with rotary 12-26-61

Interval Feet	Sample Description
0 - 14	Soil, dark brown to very dark brown (alluvium), damp.
14 - 16.5	Caliche, light pink, wet, very gravelly.
16.5 - 18.0	Limestone, light gray, dense.
18.0 - 20.0	Shale, buff.
20.0 - 26.0	Limestone, light gray, granular to finely granular, calcitic.
26.0 - 28.0	Shale, gray? very poor samples.
28.0 - 29.0	Limestone, light gray, granular.
29.0 - 33.0	Shale, gray.
33.0 - 38.5	Limestone, light gray, dense to fine granular, very poor samples.
38.5 - 41.0	Limestone and shale beds.
41.0 - 50.0	Limestone, medium gray, granular, fragmental.

Total Depth 50.0'

Elevation: 1705.75 Collar, 1703.4 Ground.

Pipe in hole: 36'

Perforated Interval: 15 to 20'.

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TEST HOLE NO. 6

Drilled with rotary 12-26-61

Interval Feet	Sample Description
0 - 14.0	Soil, dark brown, (alluvium) damp.
14.0 - 22.0	Gravel and sand, water show at 19'.
22.0 - 29.0	Shale, gray to buff, very slightly sandy, very plastic, wet.
29.0 - 31.5	Limestone, gray to light gray, hard, dense.
31.5 - 33.0	Shale, gray.
33.0 - 34.0	Limestone, gray, hard, dense to finely granular.
34.0 - 36.0	Shale, gray with limestone stringers.
36.0 - 40.0	Limestone, gray, hard, finely granular.
40.0 - 42.0	Shale, gray.
42.0 - 44.0	Limestone, gray to light gray, granular to finely granular.
44.0 - 46.0	Shale, gray, very poor samples.
46.0 - 50.0	Limestone, gray to light gray, hard, dense.

Total Depth 50'

Elevation: 1700.80 Collar, 1699.0 Ground.

Pipe in hole: 43'

Perforated Interval: 18 to 22'.

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TEST HOLE NO. 7

Drilled with rotary 12-27-61

Interval Feet	Sample Description
0 - 7.0	Soil, dark brown, wet, calcareous
7.0 - 16.0	Caliche, pink, wet.
16.0 - 41.0	Sand and gravel, unconsolidated, wet.
41.0 - 48.0	Limestone, gray, hard, dense to granular, very poor samples.
48.0 - 52.5	Limestone, gray, hard, dense to granular but drilled harder. Very poor samples.

Total Depth 52.5'
Hole caved badly.

Elevation: 1703.93 Collar, 1702.3 Ground.

Pipe in hole: 32'

Perforated Interval: 15 to 20'.

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TEST HOLE NO. 8

Drilled with rotary 12-27-61

Interval Feet	Sample Description
0 - 5	Soil, dark brown, "grainy", damp.
5 - 14	Caliche, becoming sandy at 10', gravelly at 12', wet.
14 - 28	Coarse gravel and well rounded pebbles (2") of gray Lueders(?) limestone. Some sand and clay.
28 - 28.5	Limestone, gray, hard, fossiliferous, very poor samples.
28.5 - 34	Shale, probably gray. Hole to this point made estimated 40 barrels of water.
34 - 38.5	Limestone, hard, drilled like limestone, no cuttings.
38.5 - 41	Shale? drilled like shale, no cuttings. Hole caving badly.

Total Depth 41'

Elevation: 1703.09 Collar, 1701.1 Ground.

Pipe in hole: 13.5'. Hole badly caved.

Perforated Interval: 10 to 13'.

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TEST HOLE NO. 9

Drilled with rotary 12-28-61

Interval Feet	Sample Description
0 - 1.7	Soil, dark red to brown, calcareous.
1.7 - 1.9	Limestone, tan to buff, dense calcitic, finely siliceous (fusilids) iron stained (boulder?).
1.9 - 4.5	Caliche, buff, damp.
4.5 - 8.5	Limestone, tan to pink, fossiliferous, dense to lithographic, iron stained.
8.5 - 10.0	Shale, buff.
10.0 - 12.0	Limestone, gray, dense to very finely crystalline, part lighographic.
12.0 - 14.5	Shale, buff to ochre, very plastic, damp.
14.5 - 18.5	Limestone, tan to brown, dense to very finely crystalline, lithographic in part, calcitic, fossiliferous.
18.5 - 27.0	Shale, buff, with lime stringers at 19 to 23'.
27.0 - 33.0	Limestone, medium to gray, granular, fragmental, fossiliferous.
33.0 - 34.0	Shale, gray, hard.
34.0 - 36.5	Limestone, medium gray, granular, fragmental.
36.5 - 38.0	Shale, gray.
38.0 - 46.0	Limestone, medium gray, granular, part light gray.

Total Depth 46'

Elevation: 1721.06 Collar, 1719.8 Ground.

Pipe in hole: 38'

Perforated Interval: 10 to 15', 33 to 38'.

Hole dry.

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TEST HOLE NO. 10

Drilled with rotary 12-28-61

Interval Feet	Sample Description
0 - 9.5	Soil (Alluvium), dark brown, calcareous (damp).
9.5 - 16.0	Caliche, buff to tan to pink, damp, limestone, (boulder?), at 13.0 to 13.4', red to variegated, hard, dense.
16.0 - 34.0	Limestone, medium to gray, granular, fragmental.
34.0 - 36.5	Shale, gray to buff, hard.
36.5 - 40.0	Limestone, medium gray, granular to fine granular.
40.0 - 42.0	Shale, gray.
42.0 - 46.0	Limestone, gray, granular.

Total Depth 46'

Elevation: 1687.71 Collar, 1686.1 Ground

Pipe in hole: 38'

Perforated Interval: 10 to 15'.

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TEST HOLE NO. 11

Drilled with rotary 12-29-61

Interval Feet	Sample Description
0 - 1.0	Soil and weathered limestone fragments.
1.0 - 4.5	Shale, buff to gray, very slightly damp.
4.5 - 6.0	Limestone, light gray, dense to finely crystalline.
6.0 - 8.5	Shale, gray to buff, dry.
8.5 - 11.0	Limestone, light to medium gray, finely crystalline.
11.0 - 23.0	Shale, buff, with thin gray limestone beds.
23.0 - 39.0	Limestone, medium to gray, granular to finely granular, slightly fossiliferous, calcitic (brown calcite) becoming light gray, granular at 33'.
39.0 - 40.0	Shale, gray.
40.0 - 45.0	Limestone, light gray, dense to fine granular.

Total Depth 45'

Elevation: 1734.99 Collar, 1733.3 Ground

Pipe in hole: 40'

Perforated Interval: 10 to 15', 33 to 38'.

Hole dry.

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TEST HOLE NO. 12

Drilled with rotary 12-29-61

Interval Feet	Sample Description
0 - 2.5	Caliche, light pink, damp.
2.5 - 3.0	Limestone, light gray to buff, dense to finely crystalline.
3.0 - 4.0	Shale, buff, damp.
4.0 - 5.5	Limestone, buff, fine granular to finely crystalline.
5.5 - 7.0	Shale, buff, damp.
7.0 - 8.5	Limestone, buff to gray, finely crystalline.
8.5 - 10.5	Shale, buff.
10.5 - 13.0	Limestone, light tan to buff, finely crystalline.
13.0 - 18.0	Shale, gray to buff, with thin limestone stringers, damp.
18.0 - 24.0	Shale, gray.
24.0 - 30.0	Limestone, tan, very finely crystalline to dense, part lithographic, fossiliferous, fragmental.
30.0 - 30.5	Shale, gray.
30.5 - 33.5	Limestone, gray, very fine crystalline to dense.
33.5 - 34.0	Shale, gray.
34.0 - 37.0	Limestone, gray, finely granular.
37.0 - 38.0	Shale, gray, hard, siliceous.
38.0 - 44.0	Limestone, gray to blue, finely granular.

Total Depth 44'

Elevation: 1737.90 Collar, 1735.9 Ground.

Pipe in hole: 38'

Perforated Interval: 10 to 15', 33 to 38'.

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TEST HOLE NO. 13

Drilled with rotary 12-30-61

Interval Feet	Sample Description
0 - 0.5	Soil, dark gray to red to brown.
0.5 - 1.5	Limestone, light gray, argillaceous, finely crystalline to finely granular, calcitic, fossiliferous.
1.5 - 2.5	Shale, light gray to buff, plastic.
2.5 - 4.0	Shale, light gray to buff, plastic.
4.0 - 6.0	Limestone, buff to tan, dense to very finely crystalline, very finely siliceous, fossiliferous, iron stained.
6.0 - 7.0	Shale, buff, plastic, damp.
7.0 - 8.0	Limestone, light gray, hard, dense.
8.0 - 9.0	Shale, buff, plastic, dry.
9.0 - 10.0	Shale, buff, plastic, dry.
10.0 - 12.0	Limestone, light gray to buff, dense to very finely crystalline, very fossiliferous (fusilids), iron stained.
12.0 - 13.0	Shale, buff to ochre, plastic, very slightly damp.
13.0 - 16.5	Limestone, light gray to buff, dense to argillaceous, mottled iron stain.
16.5 - 22.0	Limestone, medium gray, argillaceous.
22.0 - 27.0	Shale, buff to ochre to gray, dry.
27.0 - 29.0	Limestone, medium gray, granular to finely granular, slightly fossiliferous.
29.0 - 30.0	Shale, gray to part buff, dry.
30.0 - 33.0	Limestone, medium gray, granular to finely granular.
33.0 - 34.0	Shale, gray, dry.
34.0 - 36.0	Limestone, medium gray, finely granular to finely crystalline.
36.0 - 36.5	Shale, gray.
36.5 - 40.0	Limestone, medium gray, finely granular to finely crystalline.
40.0 - 41.0	Shale, gray.
41.0 - 45.0	Limestone, medium gray, finely granular to finely crystalline.

Total Depth 45'

Elevation: 1755.52 Collar, 1754.1 Ground

Pipe in hole: 38'

Perforated Interval: 10 to 15', 33 to 38'.

Hole dry.

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TEST HOLE NO. 14

Drilled with rotary 12-30-61

Interval Feet	Sample Description
0 - 1.0	Soil, medium gray, with caliche and limestone fragments.
1.0 - 2.0	Shale, light gray to white, with caliche admixed, damp.
2.0 - 4.0	Limestone, light gray, hard, finely crystalline to fossiliferous.
4.0 - 6.0	Shale, buff to ochre, damp.
6.0 - 14.0	Shale, buff to ochre, dry.
14.0 - 16.0	Shale, medium to dark gray, damp.
16.0 - 22.0	Limestone, medium to gray, granular to finely granular, slightly fossiliferous, calcitic.
22.0 - 22.5	Shale, gray to dark gray, dry.
22.5 - 26.0	Limestone, medium gray, granular to finely granular.
26.0 - 27.0	Shale, gray.
27.0 - 33.0	Limestone, medium to dark gray, finely granular to granular.
33.0 - 35.0	Shale, gray, hard.
35.0 - 39.5	Limestone, medium gray, granular to finely granular.
39.5 - 46.0	Limestone, medium gray, with few scattered shale beds.

Total Depth 46.0'

Elevation: 1743.93 Collar, 1742.4 Ground.

Pipe in hole: 38'

Perforated Interval: 15 to 20'.

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TEST HOLE NO. 15

Drilled with rotary 1-1-62

Interval Feet	Sample Description
0 - 1.7	Soil, dark brown, damp.
1.7 - 2.2	Caliche, damp.
2.2 - 4.0	Limestone, gray to buff, mottled, dense to very fine crystalline.
4.0 - 5.5	Shale, light buff, very calcareous, dry.
5.5 - 8.0	Limestone, buff, finely granular to dense, mottled fossiliferous (fusilids), iron stained.
8.0 - 10.0	Shale, buff, dry.
10.0 - 15.0	Limestone, gray, very hard, finely granular, dry.
15.0 - 16.5	Shale, gray, hard siliceous.
16.5 - 18.0	Limestone, gray, hard, finely crystalline to dense.
18.0 - 21.0	Shale, gray.
21.0 - 26.5	Limestone, medium gray, finely granular to granular, part dense, mottled.
26.5 - 28.0	Shale, gray.
28.0 - 30.0	Limestone, gray, finely granular.
30.0 - 31.0	Shale, gray.
31.0 - 37.0	Limestone, medium gray, finely granular to granular, part dense, fossiliferous, calcitic.
37.0 - 40.0	Shale, gray, hard, siliceous.
40.0 - 45.0	Limestone, medium gray, finely granular, calcitic.

Total Depth 45'

Elevation: 1750.85 Collar, 1749.9 Ground

Pipe in hole: 38'

Perforated Interval: 33 to 38'.

Hole dry.

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TEST HOLE NO. 16

Drilled with rotary 1-1-62

Interval Feet	Sample Description
0 - 2.5	Soil, dark red to brown, wet.
2.5 - 5.0	Caliche, pink to tan, wet.
5.0 - 6.2	Limestone, medium gray, hard, very finely crystalline to dense.
6.2 - 8.0	Shale, buff to very light tan, plastic.
8.0 - 10.0	Limestone, gray, hard, dense to very finely crystalline.
10.0 - 11.5	Shale, buff to ochre, damp.
11.5 - 12.0	Lime, gray, dense to finely crystalline, part lithographic.
12.0 - 14.0	Shale, tan to light brown, damp.
14.0 - 15.5	Limestone, gray, dense to very finely crystalline.
15.5 - 18.0	Shale, gray, damp.
18.0 - 20.0	Limestone, gray, dense to very finely crystalline.
20.0 - 24.0	Shale, buff to gray, with thin lime beds.
24.0 - 24.5	Lime, gray, dense.
24.5 - 31.0	Shale, dark gray, dry.
31.0 - 37.0	Limestone, gray to medium gray, finely granular to granular.
37.0 - 38.0	Shale, dark gray.
38.0 - 41.5	Limestone, gray, granular to finely granular.
41.5 - 42.5	Shale, gray, hard, siliceous.
42.5 - 45.0	Limestone, gray, granular to finely granular.
45.0 - 46.5	Shale, gray, hard, siliceous.
46.5 - 48.5	Limestone, gray, granular.
48.5 - 50.0	Shale, gray, hard, siliceous.
50.0 - 56.0	Limestone, gray, granular to finely granular.

Total Depth 56.0'

Elevation: 1741.02 Collar, 1739.5 Ground.

Pipe in hole: 48'

Perforated Interval: 10 to 15', 43 to 48'.

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TEST HOLE NO. 17

Drilled with rotary 1-1-62

Interval Feet	Sample Description
0 - 2.5	Soil, red to brown, with caliche.
2.5 - 6.5	Caliche, pale pink.
6.5 - 7.5	Shale, buff, with caliche, damp.
7.5 - 8.0	Limestone, buff to tan, dense to very finely crystalline, fossiliferous (fusilids).
8.0 - 13.5	Shale, gray to buff, with thin limestone stringers, dry.
13.5 - 14.0	Limestone, gray, dense to very finely crystalline.
14.0 - 16.0	Shale, gray to buff, dark gray, dry.
16.0 - 17.0	Limestone, gray, dense to very finely crystalline.
17.0 - 19.0	Shale, dark gray, hard, siliceous.
19.0 - 20.5	Limestone, gray, finely granular to very finely crystalline, fossiliferous.
20.5 - 24.5	Shale, gray, hard, siliceous.
24.5 - 26.0	Limestone, gray, dense to very finely crystalline, part lithographic.
26.0 - 28.5	Shale, gray, hard, siliceous.
28.5 - 29.5	Limestone, gray, dense to very finely crystalline, part lithographic to part granular.
29.5 - 32.0	Shale, gray, part light gray, hard, siliceous (gas odor here).
32.0 - 39.0	Limestone, medium gray to gray, finely granular, fragmental at 38'.
39.0 - 40.0	Shale, gray, hard, siliceous.
40.0 - 44.0	Limestone, gray to medium gray, granular to finely granular.
44.0 - 51.5	Shale, gray to dark gray, hard, siliceous, carbonaceous.
51.5 - 55.0	Limestone, gray to medium gray, finely granular (few thin shale beds).

Total Depth 55'

Elevation: 1753.61 Collar, 1752.0 Ground.

Pipe in hole: 48'

Perforated Interval: 6 to 10', 30 to 34', 46 to 48'.

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TEST HOLE NO. 18

Drilled with rotary 1-2-62

Interval Feet	Sample Description
0 - 3.0	Soil, red to brown, very calcareous.
3.0 - 5.0	Limestone, light gray to buff, very finely granular to argillaceous.
5.0 - 9.0	Shale, gray to buff, hard, damp.
9.0 - 9.5	Limestone, gray to buff, finely granular.
9.5 - 10.0	Limestone, light gray to buff, dense to very finely crystalline.
10.0 - 12.0	Shale, tan to buff.
12.0 - 13.0	Limestone, gray, dense to very finely crystalline.
13.0 - 17.0	Shale, buff to tan, plastic, damp.
17.0 - 18.5	Limestone, gray, dense to very finely crystalline.
18.5 - 21.0	Shale, gray, very hard, siliceous.
21.0 - 22.0	Limestone, gray, hard, dense.
22.0 - 26.0	Shale, gray, hard.
26.0 - 32.0	Limestone, gray to dark gray, granular, part light gray, granular.
32.0 - 33.0	Shale, gray, hard, siliceous.
33.0 - 35.0	Limestone, gray to dark gray, granular.
35.0 - 44.5	Shale, gray to dark gray, hard, siliceous, with scattered limestone beds.
44.5 - 45.0	Limestone, gray to dark gray, granular.
45.0 - 46.5	Shale, gray, hard.
46.5 - 50.0	Limestone, gray to medium gray, granular to finely crystalline.

Total Depth 50'

Elevation: 1739.76 Collar, 1737.9 Ground.

Pipe in hole: 46'.

Perforated Interval: 5 to 10', 15 to 20'.

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TEST HOLE NO. 19

Drilled with rotary 1-2-62

Interval Feet	Sample Description
0 - 2.0	Soil, dark red to brown, very calcareous.
2.0 - 8.0	Caliche, pink, dry.
8.0 - 9.5	Shale, light gray, plastic, dry. Thin limestone bed at 8.5 to 9.0'
9.5 - 15.0	Shale, red, variegated, dry.
15.0 - 21.5	Shale, light gray to pale buff, plastic, damp.
21.5 - 23.0	Limestone, gray, hard, dense to very finely crystalline.
23.0 - 25.0	Shale, light gray.
25.0 - 26.5	Limestone, medium gray, dense to very finely crystalline to finely granular.
26.5 - 28.5	Shale, light gray.
28.5 - 29.0	Limestone, gray, dense.
29.0 - 31.0	Shale, gray.
31.0 - 32.0	Limestone, gray, dense to finely crystalline, calcitic.
32.0 - 35.0	Shale, medium to dark gray, hard.
35.0 - 37.0	Limestone, gray to medium gray, hard, dense to very finely crystalline.
37.0 - 39.0	Shale, gray.
39.0 - 43.0	Limestone, gray, dense to finely granular, hard.
43.0 - 45.0	Shale, light gray, soft, sandy.

Total Depth 45.0'

Elevation: 1751.58 Collar, 1749.6 Ground.

Pipe in hole: 46'.

Perforated Interval: 15 to 20'.

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TEST HOLE NO. 20

Drilled with rotary 1-3-62

Interval Feet	Sample Description
0 - 2.0	Soil, dark red to brown, calcareous.
2.0 - 8.0	Caliche, water at 8'.
8.0 - 11.0	Caliche, pink, buff, with shale fragments.
11.0 - 16.0	Gravel and sand, wet, with some clay.
16.0 - 17.5	Shale, buff to ochre.
17.5 - 32.0	Limestone, medium gray, granular to finely granular, fragmental, slightly fossiliferous, carbonaceous shale bed at 34.0 to 35.0'.
32.0 - 35.0	Shale, gray, hard.
35.0 - 46.0	Lime, gray, fine granular to finely crystalline.
46.0 - 48.0	Shale, gray, hard.

Total Depth 48'

Elevation: 1703.73 Collar, 1701.7 Ground.

Pipe in hole: 40'.

Perforated Interval: 10 to 15', 35 to 40'.

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TEST HOLE NO. 21

Drilled with rotary 1-3-62

Interval Feet	Sample Description
0 - 6.0	Soil, dark red to brown, very calcareous.
6.0 - 8.0	Caliche, pale red.
8.0 - 10.0	Limestone, light tan, finely granular to finely crystalline, fossiliferous, mottled.
10.0 - 12.0	Limestone, gray, dense.
12.0 - 13.0	Shale, buff.
13.0 - 18.0	Limestone, light gray, dense to very finely crystalline.
18.0 - 20.0	Shale, gray.
20.0 - 21.0	Limestone, gray, hard, dense.
21.0 - 23.0	Shale, gray.
23.0 - 26.5	Limestone, medium gray, granular.
26.5 - 36.0	Shale, gray, hard.
36.0 - 43.0	Limestone, medium gray, finely granular to granular.
43.0 - 44.0	Shale, gray.
44.0 - 48.0	Limestone, gray, granular.
48.0 - 53.0	Limestone, gray, granular with few thin shale beds.

Total Depth 53.0'

Elevation: 1724.17 Collar, 1722.2 Ground.

Pipe in hole: 48'.

Perforated Interval: 15 to 20', 43 to 48'.

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TEST HOLE NO. 22

Drilled with rotary 1-4-62

Interval Feet	Sample Description
0 - 2.0	Soil, dark red to brown, calcareous.
2.0 - 8.0	Caliche, dry.
8.0 - 20.0	Caliche, damp, water at 20'.
20.0 - 22.0	Caliche, wet.
22.0 - 30.0	Gravel and sand.
30.0 - 31.0	Limestone, gray, hard, dense, (very poor samples).
31.0 - 32.5	Shale, sandy, (very poor samples).
32.5 - 43.0	Limestone, gray, hard, with numerous shale beds. (Very poor samples).
43.0 - 47.0	Shale, gray? (Very poor sample).
47.0 - 51.0	Limestone, gray, very hard, (very poor samples).

Total Depth 51'.

Elevation: 1680.84 Collar, 1678.8 Ground.

Pipe in hole: 33'.

Perforated Interval: 20 to 24'.

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TEST HOLE NO. 23

Drilled with rotary 1-4-62

Interval Feet	Sample Description
0 - 1.5	Soil, dark red to brown.
1.5 - 8.5	Caliche, dry.
8.5 - 11.5	Caliche, damp.
11.5 - 12.5	Gravel and coarse grained sand.
12.5 - 16.0	Sand, coarse grained with some gravel.
16.0 - 20.0	Gravel (one inch), wet.
20.0 - 24.5	Limestone, gray, very finely crystalline to crystalline.
24.5 - 26.0	Shale, gray to buff, wet.
26.0 - 29.5	Limestone, gray, dense to finely crystalline.
29.5 - 31.0	Shale, gray.
31.0 - 34.0	Limestone, gray, dense to finely crystalline.
34.0 - 36.0	Shale, gray.
36.0 - 37.0	Limestone, light gray, finely crystalline.
37.0 - 39.0	Shale, gray.
39.0 - 41.0	Limestone, gray, finely crystalline.
41.0 - 49.0	Shale, gray, plastic.
49.0 - 50.5	Limestone, gray, finely crystalline to crystalline.
50.5 - 53.0	Limestone, gray, dense to crystalline.

Total Depth 53'

Elevation: 1715.82 Collar, 1713.8 Ground.

Pipe in hole: 48'.

Perforated Interval: 20 to 25', 43 to 48'.

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TEST HOLE NO. 24

Drilled with rotary 1-5-62

Interval Feet	Sample Description
0 - 3.0	Soil, dark brown, damp.
3.0 - 9.0	Caliche, dry.
9.0 - 12.0	Caliche, damp.
12.0 - 20.0	Sand and gravel. Water at 17'
20.0 - 33.0	Shale, gray, wet, plastic.
33.0 - 34.5	Limestone, light gray to buff, finely crystalline.
34.5 - 36.0	Shale, gray.
36.0 - 42.0	Limestone, gray, crystalline.
42.0 - 43.0	Shale, gray.
43.0 - 46.0	Limestone, gray, finely crystalline to crystalline.
46.0 - 46.5	Shale, gray.
46.5 - 51.5	Limestone, gray, finely crystalline to crystalline.

Total Depth 51.5'

Elevation: 1714.18 Collar, 1712.2 Ground.

Pipe in hole: 48'.

Perforated Interval: 15 to 20'.

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TEST HOLE NO. 25

Drilled with rotary 1-6-62

Interval Feet	Sample Description
0 - 6.5	Soil, dark brown, calcareous.
6.5 - 8.4	Caliche.
8.4 - 10.5	Clay, sandy, plastic, wet.
10.5 - 18.5	Sand, gravel, clean, wet.
18.5 - 19.0	Limestone, buff to tan, dense to very finely crystalline (boulder?).
19.0 - 22.0	Clay, gray to buff.
22.0 - 24.5	Sand and gravel.
24.5 - 32.0	Limestone, gray to tan, dense to finely crystalline, with scattered shale beds.
32.0 - 34.0	Shale, gray.
34.0 - 36.0	Limestone, gray, hard, dense.
36.0 - 38.0	Shale, gray.
38.0 - 41.0	Limestone, gray, finely crystalline with thin shale beds.
41.0 - 51.0	Limestone, medium to gray, crystalline.

Total Depth 51'

Elevation: 1711.80 Collar, 1710.1 Ground.

Pipe in hole: 18'.

Perforated Interval: 10 to 15'.

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TEST HOLE NO. 26

Drilled with rotary 1-8-62

Interval Feet	Sample Description
0 - 4.0	Soil, dark brown.
4 - 16.0	Caliche, pink, very slightly damp.
16 - 19	Caliche, wet.
19 - 40	Gravel and sand.
40 - 44	Shale, gray, with scattered lime stringers.
44 - 45	Shale, gray.
45 - 52	Limestone, light gray, dense to crystalline.
52 - 53.5	Shale, gray.
53.5 - 55.0	Limestone, light gray, dense to crystalline.
55.0 - 56.0	Shale, gray.
56.0 - 64.0	Limestone, medium gray, granular, fragmental, carbonaceous.

Total Depth 64'

Elevation: 1711.56 Collar, 1710.2 Ground.

Pipe in hole: 59'.

Perforated Interval: 15 to 20'.

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TEST HOLE NO. 27

Drilled with rotary 1-11-62

Interval Feet	Sample Description
0 - 3.5	Soil, dark brown, damp.
3.5 - 5.0	Shale, gray, plastic.
5.0 - 9.0	Limestone, medium to dark gray, finely granular to granular.
9.0 - 11.0	Shale, gray, damp.
11.0 - 12.0	Limestone, gray, dense to part finely granular.
12.0 - 13.0	Shale, gray.
13.0 - 17.5	Limestone, medium gray, finely granular to granular.
17.5 - 18.5	Shale, gray.
18.5 - 23.0	Limestone, medium gray to gray, finely granular.
23.0 - 24.5	Shale, gray to dark gray, hard.
24.5 - 28.0	Limestone, medium gray, granular.
28.0 - 30.0	Shale, gray, hard, siliceous.
30.0 - 34.0	Limestone, gray to medium gray, dense to finely granular.
34.0 - 35.0	Shale, gray.
35.0 - 36.0	Limestone, gray, dense.
36.0 - 36.5	Shale, gray.
36.5 - 39.0	Limestone, gray, dense.

Total Depth 39'

Elevation: 1728.07 Collar, 1726.2 Ground.

Pipe in hole: 38'.

Perforated Interval: 10 to 15', 35 to 38'.

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TEST HOLE NO. 28

Drilled with rotary 1-11-62

Interval Feet	Sample Description
0 - 4.0	Soil, dark brown, damp to wet.
4.0 - 14.0	Soil to weathered caliche, damp.
14.0 - 16.0	Limestone, light gray, dense to very finely crystalline.
16.0 - 18.5	Shale, gray.
18.5 - 20.5	Limestone, light gray, dense.
20.5 - 24.0	Shale, gray, with thin limestone at 22'.
24.0 - 26.0	Limestone, light gray, dense.
26.0 - 28.0	Shale, gray, hard.
28.0 - 30.0	Limestone, light gray, dense to finely granular.
30.0 - 41.0	Shale, gray to medium gray, hard, siliceous.
41.0 - 47.0	Limestone, gray to medium gray, granular.
47.0 - 48.0	Shale, gray, hard, siliceous.
48.0 - 51.0	Limestone, medium gray, fine granular to granular.
51.0 - 52.0	Shale, gray, hard.
52.0 - 55.0	Limestone, medium gray, granular.
55.0 - 61.0	Shale, gray, with thin limestone stringers.

Total Depth 61'

Elevation: 1707.22 Collar, 1705.5 Ground.

Pipe in hole: 58'.

Perforated Interval: 53 to 58'.

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TEST HOLE NO. 29

Drilled with rotary 1-12-62

Interval Feet	Sample Description
0 - 6	Soil, dark brown, damp.
6 - 7	Soil, light brown, damp. (caliche?)
7 - 12	Clay, pink to red, sandy, wet.
12 - 18	Clay, light gray, sandy, wet.
18 - 40	Sand and gravel, wet.

Total Depth 40'

Skidded rig 400 feet west to Hole No. 29-A. Couldn't penetrate gravel due to badly caving hole.

Elevation: 1694.20 Ground.

Pipe in hole: None.

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TEST HOLE NO. 29-A

Drilled with rotary 1-13-62

Interval Feet	Sample Description
0 - 2.0	Soil, dark brown, damp.
2.0 - 9.0	Soil, light gray.
9.0 - 11.0	Gravel, dry.
11.0 - 14.0	Shale, light gray, sandy, dry.
14.0 - 20.0	Shale, gray, hard, dry.
20.0 - 42.0	Shale, pink to gray, variegated, sandy, dry.
42.0 - 55.0	Shale, gray, dry.
55.0 - 58.0	Lime, light gray, hard, dense.
58.0 - 68.0	Shale, medium gray, hard, siliceous.
68.0 - 70.5	Limestone, light gray, dense to very finely crystalline.
70.5 - 72.0	Shale, gray.
72.0 - 73.5	Limestone, light gray, dense.
73.5 - 75.0	Shale, gray.
75.0 - 78.0	Limestone, light gray, hard, dense to finely granular.
78.0 - 79.0	Shale, gray.
79.0 - 86.0	Limestone, light gray, dense, with scattered shale beds.
86.0 - 94.0	Shale, medium gray, hard, siliceous.
94.0 -100.0	Limestone, medium to dark gray, fine granular to granular, fragmental.

Total Depth 100'

Elevation: 1704.14 Collar, 1702.1 Ground.

Pipe in hole: 98'.

Perforated Interval: 10 to 15'.

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TEST HOLE NO. S-1

Drilled with spudder 1-5-62

Interval Feet	Sample Description
0 - 2	Soil, dark red to brown.
2 - 8	Caliche, damp.
8 - 15	Caliche, wet.
15 - 18	Gravel and sand.
18 - 28	Gravel, water.
28 - 29	Shale, buff. Casing at 29'.
29.0 - 30.0	Limestone, light gray to tan, dense to very finely crystalline.
30.0 - 31.0	Shale, gray to buff.
31.0 - 35.0	Shale, gray.
35.0 - 38.0	Limestone, light gray, dense to finely crystalline, fossiliferous.
38.0 - 47.0	Shale, gray, hard, siliceous at 42 to 45'.
47.0 - 55.0	Limestone, medium gray, granular.

Total Depth 55'

Elevation: 1693.59 Collar, 1691.8 Ground.

Pipe in hole: 55'.

Perforated Interval: 15 to 20'.

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TEST HOLE NO. S-2

Drilled with spudder 1-8-62

Interval Feet	Sample Description
0 - 4	Soil, dark red to brown, wet.
4 - 18	Caliche, wet at 18'
18 - 28	Gravel, with some sand, wet.
28 - 30	Shale, buff. Casing at 30'
30 - 38	Shale, buff.
38 - 42.5	Limestone, gray, dense to very finely crystalline, part finely granular.
42.5 - 46.0	Shale, gray.
46.0 - 46.5	Limestone, gray, dense.
46.5 - 48.5	Shale, gray.
48.5 - 52.0	Limestone, light gray, finely crystalline to crystalline.
52.0 - 58.0	Shale, gray.
58.0 - 64.0	Limestone, medium gray, granular, fragmental.

Total Depth 64'.

Elevation: 1687.84 Collar, 1686.3 Ground

Pipe in hole: 64'

Perforated Interval: 20 to 25'.

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TEST HOLE NO. S-3

Drilled with spudder 1-12-62

Interval Feet	Sample Description
0 - 6	Soil, dark brown, damp.
6 - 18	Caliche, pink, damp.
18 - 28	Gravel, wet, with sand.
28 - 40	Shale, gray to buff. Casing at 40'.
40 - 51.0	Shale, gray, hard, with scattered limestone beds.
51.0 - 55.0	Limestone, light gray, dense to finely granular.
55.0 - 60.0	Shale, gray, hard, limey.
60.0 - 64.0	Limestone, light gray, hard, dense to very finely crystalline.
64.0 - 74.0	Shale, medium gray, hard, siliceous.
74.0 - 80.0	Limestone, medium gray, hard, granular, fragmental.

Total Depth 80'.

Elevation: 1684.01 Collar, 1682.4 Ground.

Pipe in hole: 78'.

Perforated Interval: 15 to 20'.

CONFIDENTIAL COPY NO. 4

TEST HOLE NO. S-4

Drilled with spudder 1-14-62

Interval Feet	Sample Description
0 - 7	Soil, dark brown.
7 - 17	Caliche.
17 - 28	Gravel, with some sand, water.
28 - 36	Shale, gray to buff.
36 - 38	Limestone, gray to light gray, dense.
38 - 43	Shale, light gray. Casing at 43'.
43 - 56.0	Shale, gray, hard, with thin limestone stringer at 52 to 53'.
56.0 - 62.0	Limestone, light gray, dense to finely granular.
62.0 - 64.0	Shale, gray.
64.0 - 66.0	Limestone, light gray, dense.
66.0 - 67.5	Shale, gray.
67.5 - 72.0	Limestone, light gray, finely granular.
72.0 - 81.0	Shale, medium gray, very hard, siliceous.
81.0 - 85.0	Limestone, medium gray, finely granular to granular.

Total Depth 85'.

Elevation: 1690.35 Collar, 1689.4 Ground.

Pipe in hole: 29' of 5½" 24 gauge, supplied by Mr. McBeath.

Perforated Interval: 19 to 29'.

CONFIDENTIAL COPY NO. 4

TEST HOLE NO. S-5

Drilled with spudder 1-15-62

Interval Feet	Sample Description
0 - 10	Soil, dark brown, damp.
10 - 15	Caliche.
15 - 28	Gravel, with some sand.
28 - 36	Shale, buff. Casing at 36'.
36 - 39.0	Shale, buff, gray.
39.0 - 40.0	Limestone, light gray, dense.
40.0 - 42.0	Shale, gray, hard.
42.0 - 50.0	Shale, gray, hard, siliceous, with scattered limestone stringers.
50.0 - 55.0	Limestone, light gray, dense to finely granular.
55.0 - 64.0	Shale, medium gray, hard, siliceous.
64.0 - 71.0	Limestone, medium gray, granular.
71.0 - 80.0	Shale, light to medium gray, hard.
80.0 - 85.0	Limestone, medium gray, granular.

Total Depth 85'

Elevation: 1694.36 Collar, 1692.5 Ground.

Pipe in hole: 85'.

Perforated Interval: 15 to 25'

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TEST HOLE NO. S-6

Drilled with spudder 1-16-62

Interval Feet	Sample Description
0 - 7	Soil, dark brown, damp.
7 - 25	Caliche with some sand at base.
25 - 28	Gravel, water.
28 - 43	Shale, gray, with thin limestone bed at 39'. Casing at 43'.
43 - 52.0	Limestone, light gray, dense to very finely crystalline to finely granular.
52.0 - 55.0	Shale, gray, with thin limestone bed at 54'.
55.0 - 64.5	Limestone, light gray, finely granular.
64.5 - 69.0	Shale, medium gray, hard, siliceous.
69.0 - 76.0	Limestone, medium gray, granular to clastic.
76.0 - 78.0	Shale, gray, hard.
78.0 - 85.0	Limestone, medium gray, granular.

Total Depth 85'

Elevation: 1704.73 Collar, 1704.4 Ground.

Pipe in hole: 30' of 5½" 24 gauge supplied by Mr. Grantham.

Perforated Interval: 20 to 30'.

COPY NO. 4

APPENDIX B

CHLORIDE VALUES OF WATER FROM TEST HOLES

Test Hole No.	*Chloride parts per million
1	789
2	2840
3	473
4	315
5	237
6	210
7	237
8	475
9	160 (1-26-62)
10	580
11	Dry
12	Dry
13	138 (1-26-62)
14	31
15	350 (1-26-62)
16	400
17	18420
18	3160
19	1600
20	390
21	1900
22	470
23	300
24	80
25	530
26	1175
27	225
28	2250
29	2450
29-A	Dry
S-1	280
S-2	350
S-3	800
S-4	1100 (1-26-62)
S-5	700 (1-26-62)
S-6	1250 (1-26-62)

* All chloride determinations, except where dated, were made on water taken from the Test Hole during the drilling operation.

APPENDIX C

OIL EXPLORATION

COPY NO. 4

WELLS DRILLED ON IRRIGATION FARM

Map Reference No.	Operator and Well	Total Depth	Status	Completion Date	Location
1	Ambassador No. 1 City of Abilene	3525	Producer	10-16-58	NE¼ Sec. 7
2	Ambassador No. 2 City of Abilene	1630	Producer	3-2-59	SW¼ NW¼ Sec. 8
3	Ambassador No. 1-A City of Abilene	2009	Dry	4-2-60	NW¼ NE¼ Sec. 8
4	H. B. Dennis No. 1 Wooten	2000	Dry	7-30-39	SE¼ NW¼ Sec. 8
5	Eltex No. 1 Wooten	3546	Dry	9-4-45	NE¼ SW¼ Sec. 3
6	Humble No. 1 Cowden	2400	Dry	5-25-52	SW¼ NE¼ Sec. 8
7	Johnston & Sabens No. 1 Wooten	2109	Dry	4-15-38	SW¼ SE¼ Sec. 4
8	E. N. Lillard No. 1 J. M. Smith Hrs.	2366	Dry	12-21-54	NE¼ Sec. 53
9	Sojourner & Duffield No. 1 City of Abilene	2000	Dry	11-1-60	NE¼ NE¼ Sec. 8
10	Spiva & Doss No. 1 City of Abilene	1995	Dry	12-15-58	SW¼ SW¼ Sec. 3
11	Spiva & Doss No. 1-A City of Abilene	1760	Dry	12-30-60	SW¼ NW¼ Sec. 3
12	Terry No. 1 Deatheridge	2078	Dry	3-22-60	SE¼ Sec. 52
13	West Central No. 1 E. S. Brady	4067	Dry	8-17-56	S½ Sec. 9
14	West Central No. 1 Walker Williams	1708	Dry	1-23-56	N½ Sec. 9

WELLS DRILLED ADJACENT TO IRRIGATION FARM

15	Ambassador No. 1 Alma Stuart	1639	Producer	5-27-59	NE¼ SE¼ Sec. 7
16	Ambassador No. 2 Alma Stuart	1771	Dry	5-20-61	NE¼ SE¼ Sec. 7
17	Ambassador No. 1 Bynum	1635	Producer	6-10-59	NW¼ SW¼ Sec. 8
18	Ambassador No. 1 S. J. Winter	2115	Dry	10-3-58	NW¼ SW¼ Sec. 6
19	Belchic & King No. 1 Bynum	2050	Dry	8-27-59	NW¼ SE¼ Sec. 8
20	Bridwell No. 1 Vaughn	1990	Dry	3-5-60	NW¼ SE¼ Sec. 6
-	N. M. Dillard No. 1 Ida M. Smith	1931	Dry	5-8-59	NE¼ SW¼ Sec. 7
22	Eltex No. 1 C. C. Smith	4975	Dry	1-15-45	SW¼ NW¼ Sec. 4

APPENDIX C Continued

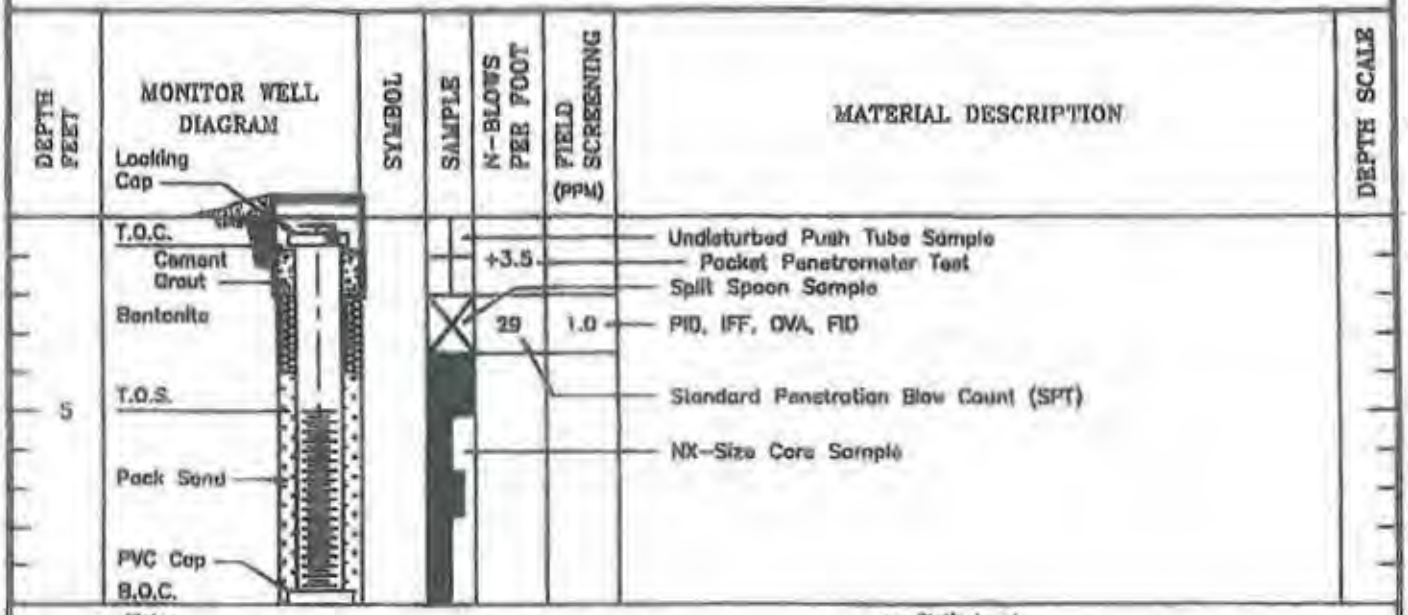
OIL EXPLORATION

COPY NO. 4

WELLS DRILLED ADJACENT TO IRRIGATION FARM

Map Reference No.	Operator and Well	Total Depth	Status	Completion Date	Location
23	E. L. Evans No. 1 W. T. Crier	1715	Dry	3-16-39	NE¼ SW¼ Sec. 8
24	Faustgen No. 1 Bailey	2095	Dry	9-6-51	SW¼ SE¼ Sec. 54
25	Fletcher Oil & Gas No. 1 Alma Stuart	2456	Dry	7-19-54	SE¼ SE¼ Sec. 7
26	Fletcher Oil & Gas No. 1 Shornick	1731	Dry	9-18-55	SE¼ SW¼ Sec. 7
27	Fox & Rudd No. 1 F. W. Shotwell	1632	Producer	11-7-38	SW¼ Sec. 59
28	Fox & Rudd No. 2 F. W. Shotwell	?	Abd. Prod.	?	SW¼ Sec. 59
29	Fox & Rudd No. 3 F. W. Shotwell	1631	Abd. Prod.	8-31-40	SW¼ Sec. 59
30	Humble No. 1 Schornicke	3732	Dry	4-8-44	NW¼ SW¼ Sec. 7
31	Lauderdale & Straughan No. 1 Radford	2206	Dry	4-12-61	SE¼ Sec. 76
32	J. R. McLean No. 1 Harp	1999	Dry	11-3-58	SW¼ NE¼ Sec. 6
33	J. R. McLean No. 2 Harp	1771	Dry	6-19-60	SE¼ NE¼ Sec. 6
34	J. R. McLean No. 1 Radford	1999	Dry	12-8-58	S½ Sec. 5
35	Patex No. 1 F. W. Shotwell	1658	Abd. Prod.	12-38	SW¼ Sec. 59
36	Patton Oil Prod. No. 1-A Harp	1993	Dry	6-12-61	NE¼ NE¼ Sec. 6
37	Proctor Prod. Co. No. 1 Youngblood	1895	Dry	5-27-61	SE¼ SW¼ Sec. 6
38	Rauch No. 1 Whiteaker	4051	Dry	4-60	NE¼ SW¼ Sec. 51
39	Saben & Pinkston No. 1 F. W.Shotwell	1660	Abd. Prod.	2-24-45	SW¼ Sec. 59
40	Saben & Pinkston No. 2 F. W.Shotwell	?	Abd. Prod.	?	SW¼ Sec. 59
41	Saben & Pinkston No. 3 F. W.Shotwell	?	Abd. Prod.	?	SW¼ Sec. 59
42	Saben & Pinkston No. 4 F. W.Shotwell	1703	Abd. Prod.	5-21-45	SW¼ Sec. 59
43	Saben & Pinkston No. 5 F. W.Shotwell	?	Abd. Prod.	?	SW¼ Sec. 59
44	Sojourner No. 1 Crawford	1955	Dry	10-10-60	NW¼ SE¼ Sec. 2
45	L. A. Warren No. 1 Beasley	1964	Dry	5-23-59	NW¼ Sec. 52
46	E. L. Wilson No. 1 W. T. Crier	2023	Dry	2-13-52	SE¼ SW¼ Sec. 8
47	Wrightsman No. 1 Powers	1933	Dry	8-2-38	SW Cor. Powers Fee Sec. 59

EXPLANATION OF SYMBOLS AND TERMS USED ON BORING LOGS



Water Encountered — Water Level Encountered During Drilling

Static Level (date) — Stabilized Water Level

UNIFIED SOIL CLASSIFICATION
DESCRIPTION OF SYMBOLS AND DIVISIONS

- Well-Graded Gravels, Gravel Sand Mixtures (GW)
- Poorly-Graded Gravels, Gravel Sand Mixtures (GP)
- Silty Gravel, Gravel Sand-Silt Mixtures (GM)
- Clayey Gravels, Gravel-Sand-Clay Mixtures (GC)
- Well-Graded Sands, Gravelly Sands (SW)
- Poorly-Graded Sands, Gravelly Sands (SP)
- Silty Sands, Poorly-Graded, Sand-Silt Mixtures (SM)
- Clayey Sands, Poorly-Graded, Sand-Clay Mixtures (SC)
- Inorganic Silts and Very Fine Sands, Silty or Clayey Fine Sands (ML)
- Inorganic Clays of Low to Medium Plasticity Gravelly, Sandy or Silty Clays, Lean Clays (CL)
- Organic Silts and Organic Silty Clays of Low Plasticity (OL)
- Inorganic Silts, Micaceous or Diatomaceous Fine Sandy or Silty Soils (MH)
- Inorganic Clays of High Plasticity, Fat Clays (CH)
- Organic Clays of Medium to High Plasticity, Organic Silts (OH)
- Caliche and Other Impervious Layer (HP)

BEDROCK SYMBOLS

- Conglomerate (CGL)
- Sandstone (SS)
- Limestone (LS)
- Shale (Sh)
- Weathered Shale (WS)
- Sandy Shale (SSh)
- Shaley Limestone (Sh LS)
- Dolomite (DOL)

MISCELLANEOUS SYMBOLS

- Asphaltic Concrete (HMAC)
- Cement Grout (CMT)
- Bentonite (BENT)

The LOG of BORING is a representation of the subsurface material at specific boring location and within the depth explored. The transition between strata may be gradual and variations in material types and depths between borings can be expected. Water level observations represent these conditions at the time of exploration and may vary with time and location of site.

SOIL COLOR CLASSIFICATION
Determined by
MUNSELL SOIL COLOR CHARTS
1990 EDITION REVISED

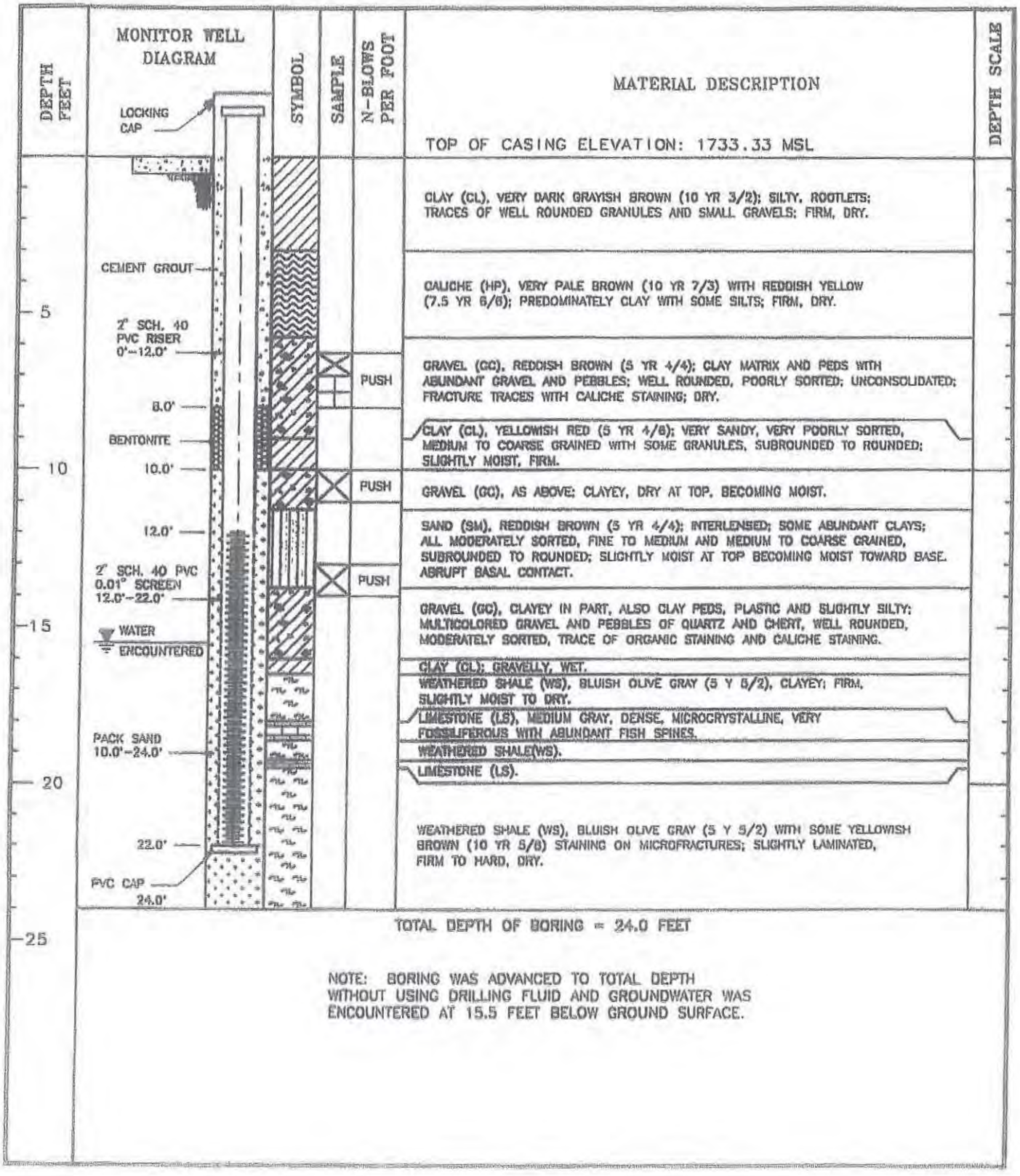
ENPROTEC, INC.

Environmental Protection Technologies

LOG OF BORING

Project: ABILENE WASTEWATER TREATMENT PLANT Type: AIR ROTARY Boring No.: MW-1

Location: HAMBY, TEXAS DRILLER: DIVERSIFIED WATER WELLS Date: 7/19/93 Boring Dia.: 6"



TOTAL DEPTH OF BORING = 24.0 FEET

NOTE: BORING WAS ADVANCED TO TOTAL DEPTH WITHOUT USING DRILLING FLUID AND GROUNDWATER WAS ENCOUNTERED AT 15.5 FEET BELOW GROUND SURFACE.

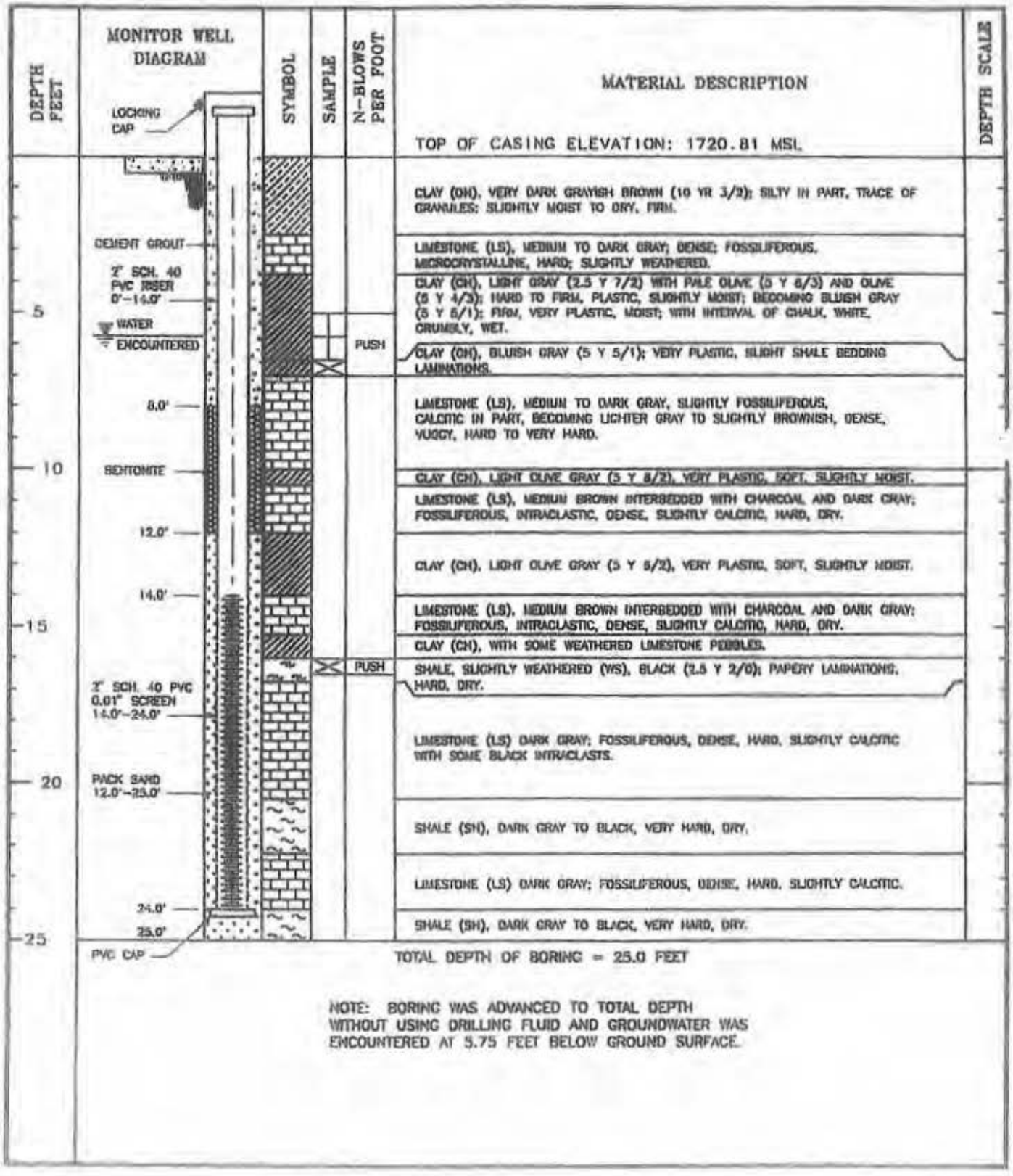
ENPROTEC, INC.

Environmental Protection Technologies

LOG OF BORING

Project: ABILENE WASTEWATER TREATMENT PLANT Type: AIR ROTARY Boring No.: MW-2

Location: HAMBY, TEXAS DRILLER: DIVERSIFIED WATER WELLS Date: 7/19/93 Boring Dia.: 8"



TOTAL DEPTH OF BORING = 25.0 FEET

NOTE: BORING WAS ADVANCED TO TOTAL DEPTH WITHOUT USING DRILLING FLUID AND GROUNDWATER WAS ENCOUNTERED AT 5.75 FEET BELOW GROUND SURFACE.

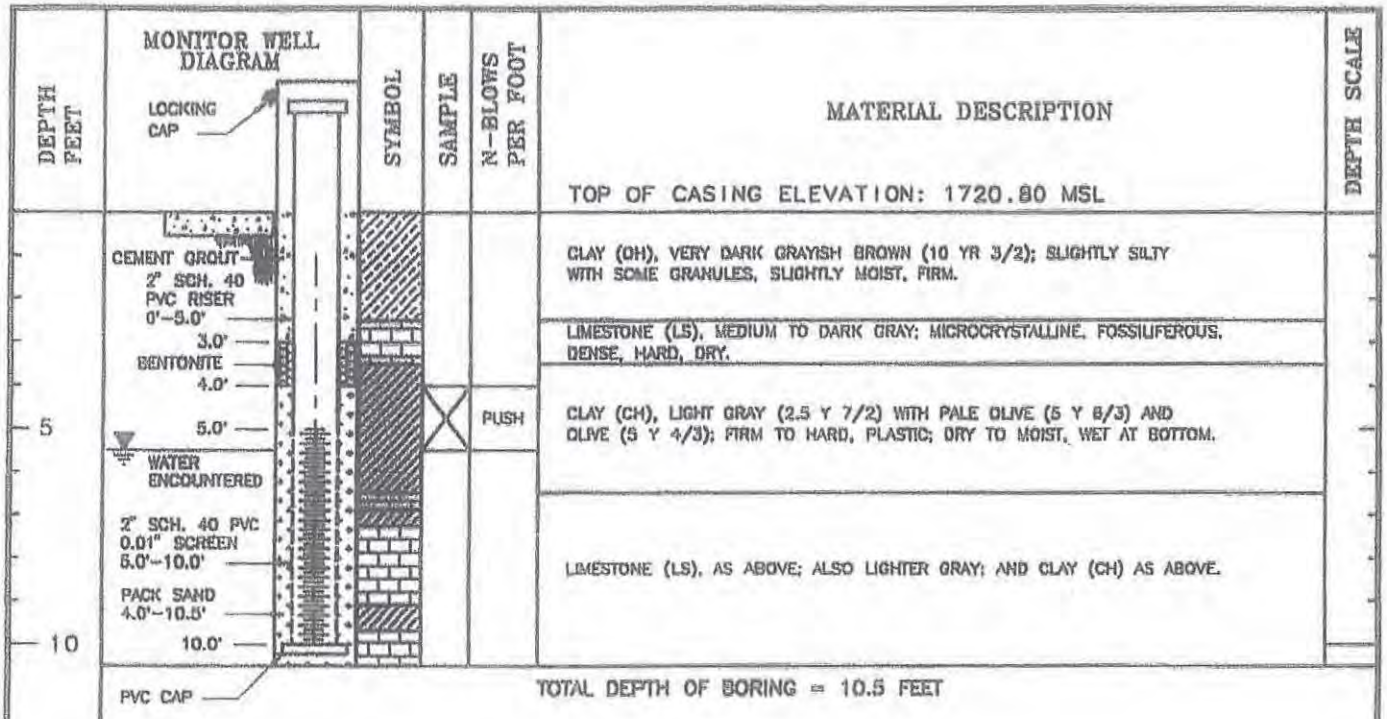
ENPROTEC, INC.

Environmental Protection Technologies

LOG OF BORING

Project: ABILENE WASTEWATER TREATMENT PLANT Type: AIR ROTARY Boring No.: MW-3

Location: HAMBY, TEXAS DRILLER: DIVERSIFIED WATER WELLS Date: 7/19/93 Boring Dia.: 5"



TOTAL DEPTH OF BORING = 10.5 FEET

NOTE: BORING WAS ADVANCED TO TOTAL DEPTH WITHOUT USING DRILLING FLUID AND GROUNDWATER WAS ENCOUNTERED AT 5.5 FEET BELOW GROUND SURFACE.

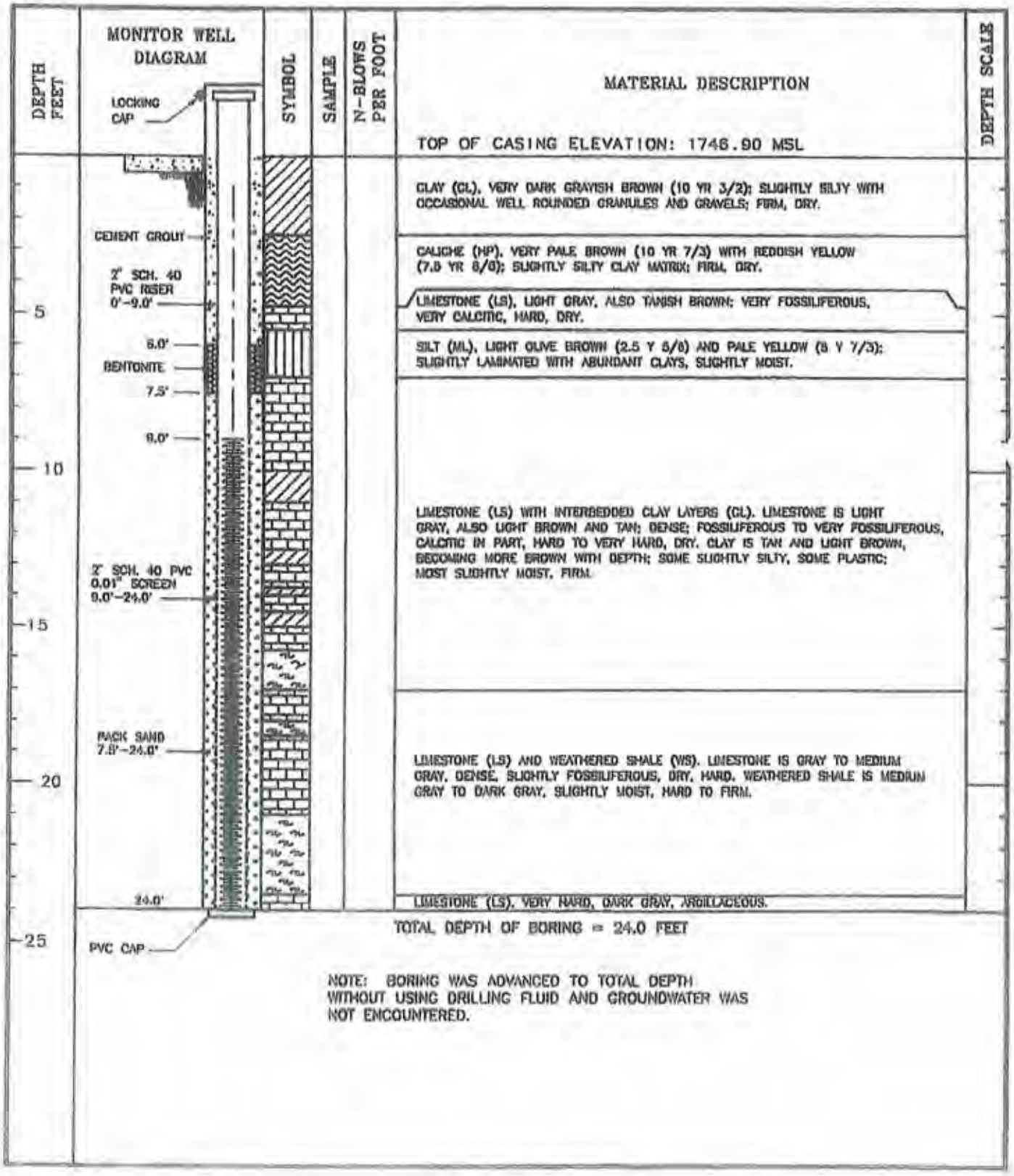
ENPROTEC, INC.

Environmental Protection Technologies

LOG OF BORING

Project: ABILENE WASTEWATER TREATMENT PLANT Type: AIR ROTARY Boring No.: MW-4

Location: HAMBY, TEXAS DRILLER: DIVERSIFIED WATER WELLS Date: 7/19/93 Boring Dia.: 5"



NOTE: BORING WAS ADVANCED TO TOTAL DEPTH WITHOUT USING DRILLING FLUID AND GROUNDWATER WAS NOT ENCOUNTERED.

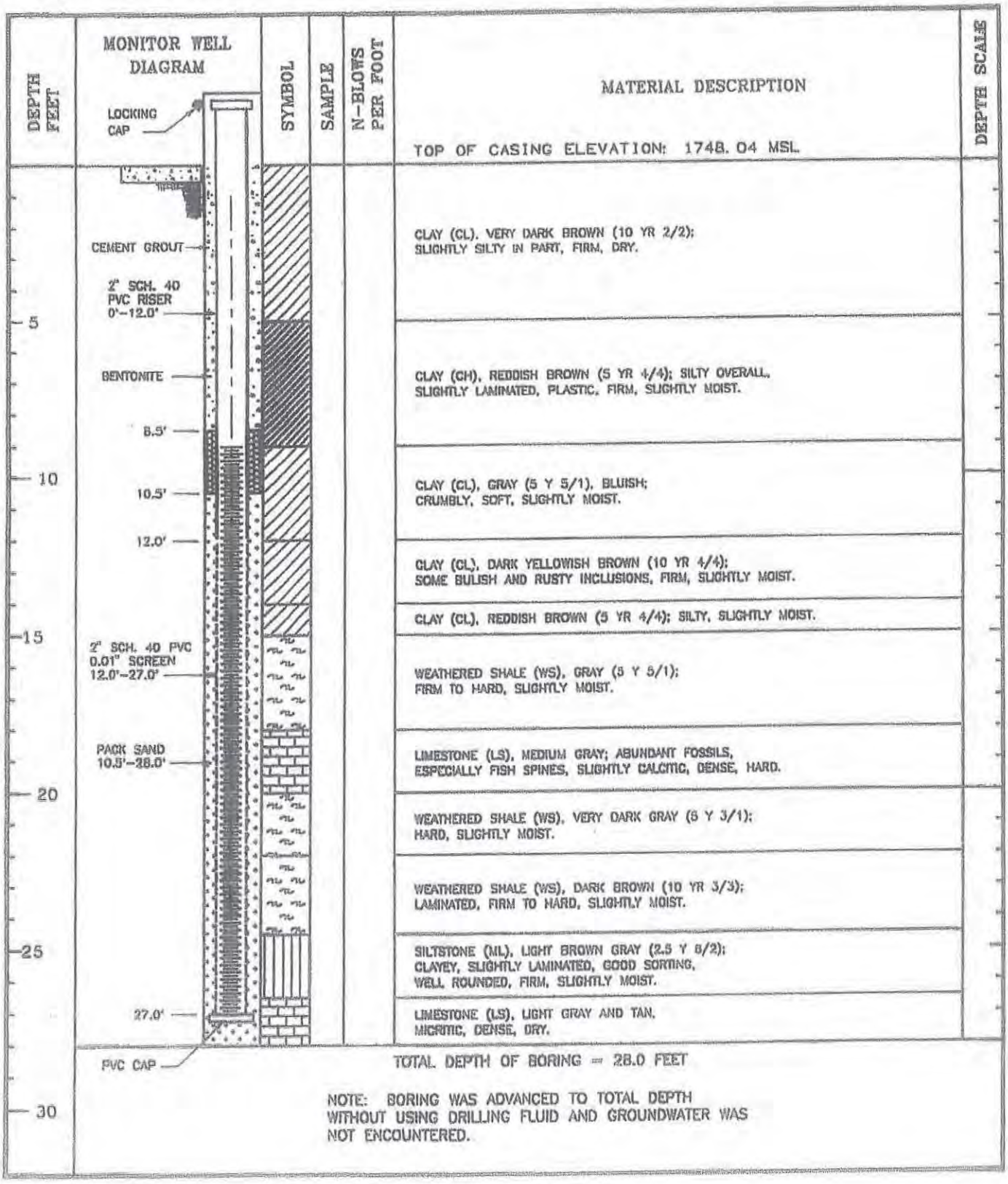
ENPROTEC, INC.

Environmental Protection Technologies

LOG OF BORING

Project: ABILENE WASTEWATER TREATMENT PLANT Type: AIR ROTARY Boring No.: MW-5

Location: HAMBY, TEXAS DRILLER: DIVERSIFIED WATER WELLS Date: 10/5/93 Boring Dia.: 5"



TOTAL DEPTH OF BORING = 28.0 FEET

NOTE: BORING WAS ADVANCED TO TOTAL DEPTH WITHOUT USING DRILLING FLUID AND GROUNDWATER WAS NOT ENCOUNTERED.

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711 — Please use black ink.

ATTENTION OWNER: Confidentiality Privilege Notice on Reverse Side

State of Texas
WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER Enprotec/Abilene Waste Water (Name) ADDRESS P.O. Box 5198 Abilene Tx. 79607 (Street & RFD) (City) (State) (Zip)

2) LOCATION OF WELL:
County Jones · 10 miles in N.E. (NE, SW, etc.) direction from downtown Abilene (Town)

Driller must complete the legal description below 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 MW-1

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☒ Air Rotary ☐ Cable Tool ☐ Other _____

8) WELL LOG:
Date Drilling: Started 7-20 1993 Completed 7-20 1993

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
5	Surface	24

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Undermanned
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 10 ft. to 24 ft.
8716 Frac Sand

From (ft.)	To (ft.)	Description and color of formation material
0	3	Top Soil Clay
3	6	Caliche
6	9	Clay w/ gravel
9	10	Clay
10	16	Sand & Gravel
16	18	Clay
18	24	Weathered Shale & limestone

(Use reverse side if necessary)

9) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
2	N	Plastic	0	22	sch 40
		Slotted	12	22	.01
		Mono Flex			

11) CEMENTING DATA (Rule 287.44(1))
Cemented from 0 ft. to 8 ft. No. of Sacks Used 2
Bentonite 8 ft. to 10 ft. No. of Sacks Used 1/2 sack
Method used Ready Mix Port. Cont. Grout
Cemented by Spencer Powell

12) SURFACE COMPLETION
☐ Specified Surface Slab Installed (Rule 287.44(2)(A))
☐ Specified Steel Sleeve Installed (Rule 287.44(3)(A))
☐ Pitless Adapter Used (Rule 287.44(3)(B))
☒ Approved Alternative Procedure Used (Rule 287.71)

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☒ Estimated
Yield: 1 gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? Fresh Depth of strata 15
Was a chemical analysis made? ☒ Yes ☐ No

17) WATER LEVEL:
Static level 15 ft. below land surface Date 7-22-93
Artesian flow _____ gpm. Date _____

18) PACKERS: Type Depth

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 18 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME Diversified Water Wells (Type or print) WELL DRILLER'S LICENSE NO. 2611 WP

ADDRESS P.O. Box 5373 (Street or RFD) Abilene (City) Tx. (State) 79608 (Zip)

(Signed) _____ (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWC-0199 (Rev. 05-16-90)

WELL OWNER'S COPY

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711 — Please use black ink.

ATTENTION OWNER: Confidentiality Privilege Notice on Reverse Side

State of Texas WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

OWNER Enprotec/Abilene Waste Water (Name) ADDRESS P.O. Box 5193 (Street or RFD) Abilene (City) Tx. (State) 79603 (Zip)

2) LOCATION OF WELL:
County Jones . 10 miles in N.E. (NE, SW, etc.) direction from downtown Abilene (Town)

Driller must complete the legal description below 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 MW-2

3) TYPE OF WORK (Check):
☐ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check): ☐ Driven
☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☒ Air Rotary ☐ Cable Tool ☐ Other _____

6) WELL LOG:
Date Drilling: Started 7-20 19 93 Completed 7-20 19 93

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
5	Surface	25

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval ... from 12 ft. to 25 ft.
8-16 Frac Sand

From (ft.)	To (ft.)	Description and color of formation material
0	2.5	Top Soil Clay
2.5	4	Limestone
4	7	Clay
7	16	Clay w/limestone stringers
16	25	Weathered Shale and Limestone

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
2	N	Plastic	0	24	sch 40
		Slotted	14	24	.01
		Mono Flex			

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 8 ft. No. of Sacks Used 5
Bentonite 3 ft. to 12 ft. No. of Sacks Used 1 c.
Method used Ready Mix Portt Bent. Grout
Cemented by Spencer Powell

10) SURFACE COMPLETION
☐ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☒ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL:
Static level 15 ft. below land surface Date 7-20-93
Artesian flow _____ gpm. Date _____

12) PACKERS: Type Depth

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☒ Estimated
Yield: 1 gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? Fresh Depth of strata 15
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 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME Diversified Water Wells (Type or print) WELL DRILLER'S LICENSE NO. 2611 WP

P.O. Box 5373 (Street or RFD) Abilene (City) Tx. (State) 79603 (Zip)

Signed _____ (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWC-0199 (Rev. 05-18-90)

WELL OWNER'S COPY

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas
WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

OWNER Enprotec/Abilene Waste Water (Name) ADDRESS P.O. Box 5133 (Street or RFD) Abilene (City) Tx. (State) 79601 (Zip)

2) LOCATION OF WELL:
County Jones · 10 miles in N E (NE, SW, etc.) direction from downtown Abilene (Town)

Driller must complete the legal description below 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 MW-3

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☒ Air Rotary ☐ Cable Tool ☐ Other _____

6) WELL LOG:
Date Drilling: Started 7-20 1993 Completed 7-20 1993

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
5	Surface	10

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 4 ft. to 10 ft.
8-16 Frac Sand

From (ft.)	To (ft.)	Description and color of formation material
0	3	Top Soil clay
3	4	Limestone
4	7	Clay
7	10	Limestone

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
2	N	Plastic	0	10	sch 40
		Slotted	5	10	.01
		Mono Flex			

(Use reverse side if necessary)

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 3 ft. No. of Sacks Used 1
Bentonite 3 ft. to 4 ft. No. of Sacks Used 1/3 c
Method used Ready Mix Pour, Tamp. Grout
Cemented by Spencer Powell

10) SURFACE COMPLETION
☐ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☒ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL:
Static level 6 ft. below land surface Date 7-20-93
Artesian flow _____ gpm. Date _____

12) PACKERS: Type Depth

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc. _____ ft.

14) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☒ Estimated
Yield: 2 gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? Fresh Depth of strata 6
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 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME Diversified Water Wells (Type or print) WELL DRILLER'S LICENSE NO. 2611WD

P.O. Box 5373 (Street or RFD) Abilene (City) Tx. (State) 79608 (Zip)

(Signed) _____ (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWC-0199 (Rev. 05-10-90)

USER'S OWNER'S COPY

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711 — Please use black ink.

ATTENTION OWNER: Confidentiality Privilege Notice on Reverse Side

State of Texas
WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

OWNER Inprotec/Abilene Waste Water (Name) ADDRESS P.O. Box 5193 (Street or RFD) Abilene (City) Tx. (State) (Zip)

2) LOCATION OF WELL:
County Jones . 10 miles in N.E. (NE, SW, etc.) direction from downtown Abilene (Town)

Driller must complete the legal description below 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 MJ-4

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☒ Air Rotary ☐ Cable Tool ☐ Other _____

6) WELL LOG:
Date Drilling: Started 7-21 19 93 Completed 7-21 19 93

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
5	Surface	24

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Undereamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval ... from 7.5 ft. to 24 ft.
8-16 Frac Sand

From (ft.) To (ft.) Description and color of formation material

0-3 Top Soil clay
3-5 Caliche
5-11 Sand and silty clay
11-16 Limestone w/clay stringers
16-24 Limestone w/ weathered Shales

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
2	N	Plastic	0	24	sch 40
		Slotted	9	24	.01
		Mono Flex			

(Use reverse side if necessary)

9) CEMENTING DATA (Rule 287.44(1))
Cemented from 0 ft. to 6 ft. No. of Sacks Used 1
Bentonite 6 ft. to 7.5 ft. No. of Sacks Used 1/3 c
Method used Ready Mix Port. Cent. Grout
Cemented by Spencer Powell

10) SURFACE COMPLETION
☐ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☒ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL:
Static level _____ ft. below land surface Date _____
Artesian flow _____ gpm. Date _____

12) PACKERS: Type Depth

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☒ Estimated
Yield: 01 gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? Fresh Depth of strata dry hole
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 15 will result in the log(s) being returned for completion and resubmitted.

COMPANY NAME Diversified Water Wells (Type or print) WELL DRILLER'S LICENSE NO. 2611 WP

P.O. Box 5373 (Street or RFD) Abilene (City) Tx. (State) 79608 (Zip)

Signed _____ (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

WC-0199 (Rev. 05-18-90)

WELL OWNER'S COPY

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

Please see back list.

ATTENTION OWNER: Confidentiality Privilege Notice on Reverse Side

State of Texas WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER Enpretec/Abilene Waste Water (Name) ADDRESS P.O. Box 5198 (Street or RFD) Abilene (City) Tx. 79608 (State)

2) LOCATION OF WELL:
County Jones 10 miles to N. (NE, SW, etc.) direction from downtown Abilene (Town)

Driller must complete the legal description below 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 197-5

3) TYPE OF WORK (Check):
☐ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☒ Air Rotary ☐ Cable Tool ☐ Other _____

6) WELL LOG:
Date Drilling:
Started 10-5 1993
Completed 10-5 1993

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
5	Surface	28

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval ... from 10.5 ft. to 28 ft.
8-16 Pea Gravel

From (ft.)	To (ft.)	Description and color of formation material
0	5	Top Soil Clay
5	7	Clay Reddish Brown
7	12	Clay blue gray
12	15	Clay tan
15	18	Shale gray
18	20	Limestone
20	25	Shale brown
25	27	Siltstone
27	28	limestone

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
2	N	Plastic	0	27	Sch. 40
		Slotted	16	27	.0
		mono flex			

9) CEMENTING DATA (Rule 287.44(1))
Cemented from 0 ft. to 8.5 ft. No. of Sacks Used 2
Bentonite 8.5 to 10.5 No. of Sacks Used 1/2
Method used Ready Mix Port. Rent. Grout
Cemented by Spencer Powell

10) SURFACE COMPLETION
☐ Specified Surface Slab Installed [Rule 287.44(3)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☒ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL:
Static level 15 ft. below land surface Date 10-5-93
Artesian flow _____ gpm. Date _____

12) PACKERS: Type _____ Depth _____

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc. _____ ft.

14) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☒ Estimated
Yield: 1 gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit REPORT OF UNDESIRABLE WATER
Type of water? Fresh Depth of strata 15
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 15 will result in the log(s) being rejected for completion and reinstatement.

COMPANY NAME Diversified Water Wells (Type or Print) WELL DRILLER'S LICENSE NO. 2611 WP

ADDRESS P.O. Box 5373 (Street or RFD) Abilene (City) Tx. (State) 79608 (Zip)

(Signed) Spencer Powell (Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWC-0199 (Rev. 08-19-93)

WELL OWNER'S COPY

Soil Classification and Description Procedures

During field operations, soil samples and borehole cuttings are classified and described by the items and methods discussed below.

1.0 Lithologic Descriptions:

The American Society for Testing and Materials (ASTM) and the Unified Soil Classification (USC) Systems are utilized as the general standards for the classification of soils by manual and visual examination. These systems were adopted in order to adequately describe soils using standardized nomenclature and terminology.

The ASTM soils classification system is based on the USC. Classification by the ASTM System usually results in a single classification group symbol, based upon the manual and visual examinations made in the field. Subsequent geotechnical laboratory analyses may result in a different soil classification than originally logged during field operations.

The ASTM Method identifies three (3) primary soil divisions: 1) organic fine-grained soils (50% or more fines), 2) inorganic fine-grained soils (50% or more fines), and coarse-grained soils (less than 50% fines). These primary divisions are further subdivided into a total of fifteen (15) basic soil groups, each with an identifying symbol. The classification symbols, and a brief description of the associated soil group, are as follows:

- OH: Organic silts and clays of medium to high plasticity
- OL: Organic silts and clays of low plasticity
- CH: Inorganic clays of high plasticity, fat clays
- CL: Inorganic clays of low to medium plasticity, sandy, silty or lean clays, or gravelly clays
- MH: Inorganic silts, micaceous or diatomaceous fine sandy or silty soils
- ML: Inorganic silts and very fine sands, silty or clayey fine sands
- SW: Well-graded sands, gravelly sands
- SP: Poorly-graded sands, gravelly sands
- SM: Silty sands, poorly-graded sand-silt mixtures
- SC: Clayey sands, poorly-graded sand-silt mixtures
- GW: Well-graded gravels, gravel-sand mixtures
- GP: Poorly-graded gravels, gravel-sand mixtures.

- GM: Silty gravel, gravel-sand-silt mixtures
- GC: Clayey gravel, gravel-sand-silt mixtures
- HP: Hard pan soil, caliche and other impervious layers

Dual symbols, separated by a hyphen (i.e. SW-SC), indicate a soil having distinctive properties of both groups. Borderline symbols, separated by a slash (i.e. GM/SM), indicate a soil having properties that do not distinctly classify the soil into a single group. Further explanation of terminology and definitions maybe located in ASTM Documents D-2488 and D-653. A reference for the USC System is the "United States Department of the Interior, Bureau of Reclamation, Earth Manual".

1.1 Color:

Color is correctly described by comparing the soil sample with a Munsell Color Chart and applying correct designations and descriptions. The soil is described in its natural state at the time of sample recovery; saturated, wet, moist, dry, etc.

The Munsell notation for color consists of separate notations for hue, value, and chroma, which are combined in that order to form color designation. The symbol for hue is the letter abbreviation of the color of the rainbow (R for red, YR for yellow-red, Y for yellow) preceded by numbers from 0. to 10. Within each letter range, the hue becomes more yellow and less red as the numbers increase.

The middle of the letter range is a 5; the zero point coincides with the 10 point of the next redder hue. Thus, 5 YR is in the middle of the yellow-red hue, which extends from 10 R (Zero YR) to 10 YR (Zero Y).

"The notation for value consists of numbers from 0, for absolute black, to 10, for absolute white. Thus a color of value 51 is visually midway between absolute white and absolute black. One of value 61 is slightly less dark, 60 percent of the way from black to white, and mid-way between values of 51 and 71."

"The notation for chroma consists of numbers beginning at 0 for neutral grays and increasing at equal intervals to a maximum of about 20, which is never really approached in soil. For absolute

achromatic colors (pure grays, white and black), which have zero chroma and no hue, the letter N (neutral) takes the place of a hue designation."

In writing the Munsell notation, the order is hue value, chroma with a space between the hue letter and the succeeding value number, and a diagonal between the two (2) numbers for value and chroma.

NOTE: The ability to sense color differences varies among people, even among those not regarded as color blind. Descriptions are subjective by nature and will vary from logger to logger.

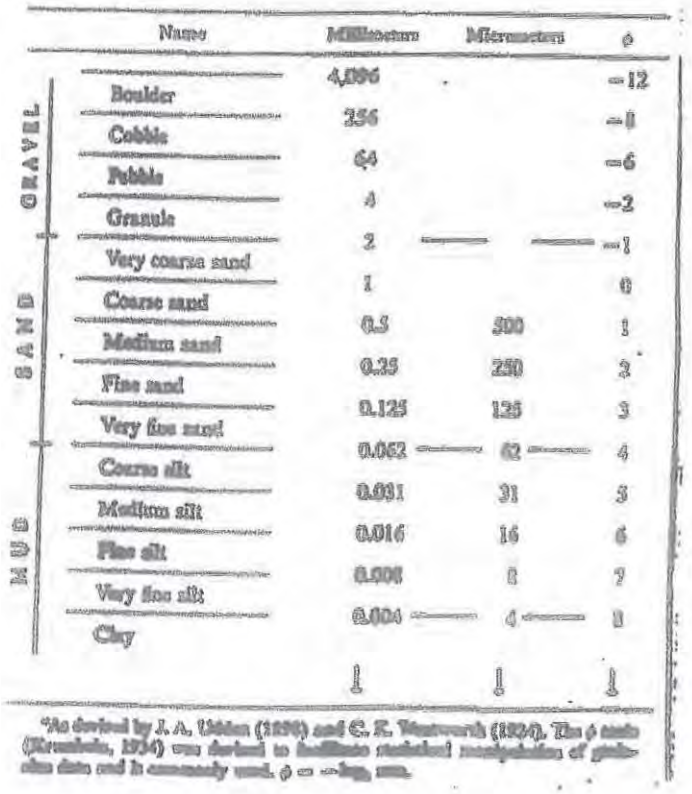
The following is an example of a typical color description: -

Yellowish Red (5 YR 5/6) lean clay (CL)

1.2 Petrology:

The color description is generally followed by the petrologic description of the sample, i.e., limestone, sand, shale, etc., followed by the:

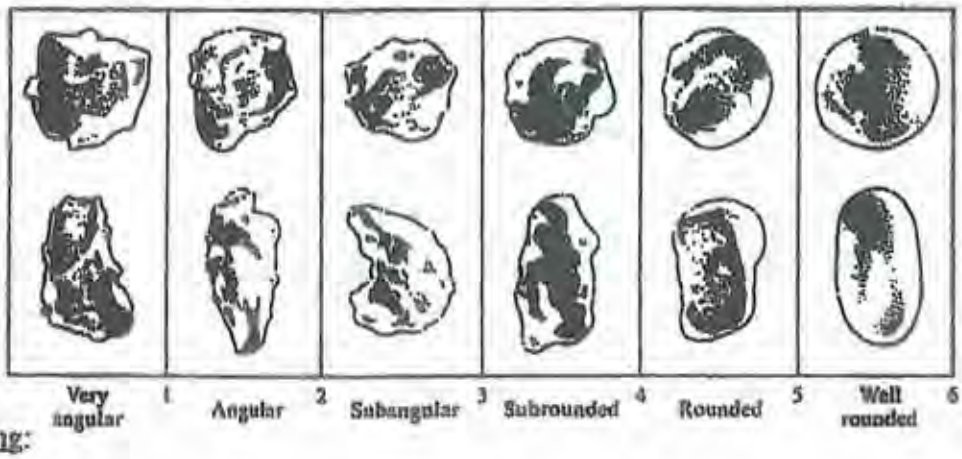
1.3 Grain Size:



"As devised by J. A. Udden (1898) and C. K. Wentworth (1924). The φ scale (Krumbein, 1934) was devised to facilitate statistical manipulation of grain-size data and is commonly used. φ = −log₂ mm.

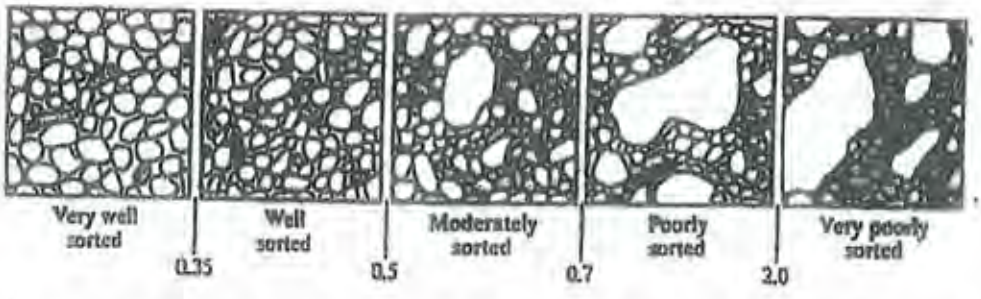
1.4 Angularity:

DESCRIPTION	CRITERIA
Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces.
Subangular	Particles are similar to angular description but have rounded edges.
Subrounded	Particles have nearly plane sides but have well-rounded corners and edges.
Rounded	Particles have smoothly curved sides and edges.



1.5 Sorting:

Sorting refers to the degree of similarity in particle size in a sedimentary rock. Description of sorting is generally referred to as: very well sorted, well sorted, moderately sorted, poorly sorted, and very well sorted. The diagram below is an example of the different degrees of sorting:



Classification of degrees of sorting as seen through a square hand lens. Silt- and clay-size sediment are indicated by the fine stipple. The values of standard deviation that divide each class of sorting are also shown. [From R. R. Compton, 1962, *Manual of Field Geology* (New York: John Wiley and Sons), Fig. 12–1.]

1.6 Consistency:

An estimate of the consistency (if available, use standard penetration resistance as a guide) should accompany descriptions of all fine-grained soils (silts and clays where more than 50 percent of the material would pass the No. 200 sieve). The following consistency terminology is used:

Blows/foot*	Consistency	Identification Procedure
0 - 2	Very soft	Very easily penetrated if soil is known to be "clean" several inches with thumb
2 - 4	Soft	Easily penetrated several inches by thumb
4 - 8	Medium stiff	Penetrated several inches by thumb with moderate effort
8 - 15	Stiff	Readily indented by thumb but penetrated only with great effort
15 - 30	Very stiff	Readily indented by thumb nail
greater than 30	Hard	Indented with difficulty by thumb nail

1.6.1 Natural Density:

Descriptions of all coarse-grained soils (sands and gravels where less than 50 percent of the material would pass the No. 200 sieve and 100 percent would pass the 3-inch size) is accompanied by an estimate of the relative density. The following guidelines should be used:

Blows Per Foot	Relative Density
less than 4	Very loose
4 - 10	Loose
10 - 30	Medium dense
30 - 50	Dense
over 50	Very dense

There is no simple method to convert field blow counts to standard penetration

resistance. Consequently, evaluation of relative density in the field is a judgement decision. Generally, an estimate of loose or dense is recorded.

"Blows/foot" is defined as the total number of blows required to drive the second and third six inches of penetration (the first six inches' blow count is also recorded) while driving an 18-inch sampler with a 140-pound hammer falling a free height of 30-inches.

1.7 Structure:

The structural characteristics of undisturbed samples often provide important information. Some of the more common terms are defined below and are used when applicable.

1.7.1 Stratified - Alternating layers of different types or colors of soil. If the layers are less than about 1/4 inch thick, describe as laminated.

1.7.2 Fissured - Tendency to shear along definite fracture planes with little resistance.

1.7.3 Slickensided - Soils containing polished, glossy surfaces on soil particles or fractures.

1.7.4 Blocky - Easily broken into small angular lumps that resist further breakdown.

1.7.5 Lensed - Inclusion of small pockets of different texture, such as small pockets of sand scattered through a clay mass.

1.8 Other Data:

Other descriptive information is also included, if applicable, such as; general composition or mineralogic description of grains (e.g. granitic, micaceous, etc.) coatings on coarse grains; plasticity; organic content; cementation; local weathering, solution cavities or geologic name, as well as any pertinent information about any discoloration, or hydrocarbon odors (slight, moderate or strong).

1.9 Moisture Content:

Moisture content is estimated and described using the terminology described below: dry, moist, wet, saturated, below the water table, etc.

2.0 Bedrock Logging Procedures:

Depending on the drilling method, bedrock logging is usually performed either on cuttings samples, on undisturbed samples collected by one of numerous methods (NX core, split-spoon sampler, for example), or on a combination of the two. At the present time, there is no common unified system for classifying rock. Rock is classified as rock and not as soil, as it sometimes appears in the cuttings. Conversely, rock fragments or coarse gravel are not referred to as "rock", unless larger than one cubic yard (see also definition of cobbles and gravel).

2.1 Bedding and Splitting:

Rock in place varies in character from massive to thinly laminated or foliated. These planar features (layers) were either formed at the time of deposition (as in the case of sedimentary and some volcanic rocks), or may have resulted from forces acting on the rock at depth (as in the case of foliated metamorphic rocks, such as schist).

The following quantitative classification has been developed to describe layered rock.

Splitting Property	Stratification	Thickness
A. Massive	(Very thick-bedded)	Greater than 4.0 feet
B. Blocky	(Thick-bedded)	2.0 to 4.0 feet
C. Slabby	(Thin-bedded)	0.2 to 2.0 feet
D. Flaggy	(Very thin-bedded)	0.05 to 0.2 foot
E. Shaley or Platey	(Laminated)	0.01 to 0.05 foot
F. Papery	(Thinly laminated)	Less than 0.01 foot

2.2 Fracturing:

Fractures include joints, faults, shears and other more or less continuous ruptures in the rock. Joints are fractures (no relative movement of the rock on either side) and can be regular or irregular and discontinuous. Faults or shears are fractures on which movement has taken place. These features tend to reduce the overall mass hardness and strength of the rock. You should describe whether or not fractures contain open voids, or, if they are filled, describe the type of filling (e.g. clay, quartz, etc.).

2.2.1 Categories of fracturing are based on measurements of the lengths of recovered diamond drill core lengths and inspections of trench exposures.

Intensity	Size of Pieces (ft.)
Crushed	Less than 0.05
Intensely fractured	0.05 - 0.1
Closely fractured	0.1 - 0.5
Moderately fractured	0.5 - 1.0
Little fractured	1.0 - 4.0
Massive	Greater than 4.0

2.3 Hardness:

Hardness and strength are interrelated in many ways and the meaning of the term depends on how it is being used. Hardness is evaluated with a pocket knife on an unfractured specimen. When equating mass hardness, the degree of fracturing should always be considered, as follows:

2.3.1 Soft - Reserved for plastic material alone

2.3.2 Low Hardness - Can be gouged deeply or carved with a pocket knife

2.3.3 Moderately Hard - Can be readily scratched by a knife blade; scratch leaves heavy trace of dust and is readily visible after the powder has been blown away

2.3.4 Hard - Can be scratched with difficulty; scratch produces little powder and is often faintly visible

2.3.5 Very Hard - Cannot be scratched with pocket knife, leaves a metallic streak

2.4 Strength:

Evaluating the strength of rock in the field is usually a somewhat subjective activity in that it depends on both the observer's interpretation and on the way unfractured specimens respond to hammer blows. Consistency between observers can be evaluated through laboratory test results. Some categories of rock strength include:

2.4.1 Plastic

2.4.2 Friable - Crumbles by rubbing with fingers

2.4.3 Weak - An unfractured specimen of such material will crumble under light hammer blows

2.4.4 Moderately Strong - Specimen will withstand a few heavy ringing hammer blows before breaking

2.4.5 Strong - Specimen will withstand a few heavy ringing hammer blows and usually yields large fragments

2.4.6 Very Strong - Rock will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments

[redacted]

Geosource Incorporated

July 19, 1993 Project #: H.O.T. #110.93

Olin McNamara
Enprotec, Inc.
17 Windmill Circle
Abilene, Texas 79606

In re: Water well search for a site in Jones and Shackelford Counties at a site in SE Jones Co. north of Abilene, Texas.

Dear Mr. McNamara,

Geosource Inc. (GI) has performed a water well search for a site in Jones and Shackelford Counties. GI utilized the following steps for this project:

1. Locate all located and plotted water wells on TWDB (Texas Water Development Board) County highway maps onto a map provided by GI within the area of review (AOR).

   Locate all located water wells on TWDB USGS (United States Geological Survey) 7.5 minute topo maps onto the map provided by GI.

2. Research well schedules of located and plotted wells found on the TWDB water well maps at the TWC (Texas Water Commission) central records.

3. Research well schedules of partially numbered water wells within the plotted water well files at the TWC central records within the AOR.

   Note: A set of files named "unplotted wells" exist for every county. Within these files are well logs which have no location information. The TWDB does not assign a state id. no. to these wells considering that location information is not available. These files date back to 1966. GI did not search through these files due to the fact that many of the logs have little or no location information. If you feel that these files should be examined, GI will search the files per your request.

GI has enclosed the map and well records for your review. The following is a brief explanation of terms:

1201 N. LAMAR, SUITE 200 · AUSTIN, TEXAS 78703
512-474-6721 · FAX: 512-474-5428

Plotted water wells - wells whose location has been taken from water well drillers logs. Since June of 1986 the TWDB has stopped locating these wells on their county highway maps. The accuracy of the location for these wells was dependent on the driller. Drillers logs that are currently being processed are given a partial well number where by the well is identified within a 2.5 minute quadrangle (within a 7.5 minute topo). There are also wells which have duplicate well numbers. These wells are supposedly in or around the original well location. (Examples; of a plotted well number is 10-10-5A, of a partial well number 10-10-4)

Located water wells - wells whose location has been verified on site by a TWDB or USGS staff member. Often times when a well is located on the ground it ends up being a plotted well. In such cases the plotted water well becomes a located well. (Example of a located well number is 12-34-654)

GI identified thirty-nine water wells within 1 mile of the site. There was one plotted well and thirty-eight located wells. The following is a listing of the wells:

STATE ID NO

Jones County
30-27-602
30-27-603
30-27-604
30-27-605
30-27-606
30-27-607
30-27-608
30-27-609
30-27-610
30-27-611
30-27-612
30-27-613
30-27-614
30-27-615
30-27-616
30-27-617
30-27-618
30-27-619
30-27-620
30-27-621
30-27-622
30-27-9A
30-27-902
30-27-903
30-28-407

Shackelford County
30-27-904
30-27-905
30-27-906
30-27-907
30-27-908
30-27-909
30-27-910
30-27-911
30-28-401
30-28-402
30-28-403
30-28-404
30-28-405
30-28-702

Note: The location map will have thirty-nine locations.

GI's research of water wells within the AOR was a search of the maps at the TWDB and the records within the TWC central records files at the time of the search. GI may not be able to account for logs not within the files of the TWC central records files. Also, due to the fact that some water well logs are not submitted by drillers and the unaccountability of privately drilled water wells, GI is unable to provide 100% of the data in the AOR.

If you have any questions concerning this project or need additional information, please call me at 512 474 6721.

Sincerely,

Eloy Del Bosque

Enclosures

30-27-9A

Original copy with Water Commission Box 2311, Capital Station 11, Texas

State of Texas

DRILLERS LOG AND WELL DATA REPORT

For use by TWC only
Well No. [illegible]
Located on map [illegible]
By [illegible] Date [illegible]
Map no. [illegible]

Owner: Mrs. H. L. McBeath (Name) 302 Palm St. (Street or RFD) Abilene (City) Texas (State)

Driller: Mrs. W. M. McBeath (Name) same (Street or RFD) (City) (State)

Intended use: Industrial ☐ Municipal ☐ Irrigation ☐ Other Household

Location of well: County Jones Labor ____ League ____ Abstract No. 2361

¼ NW¼ SW¼ of Section 12 Block No. ____ Survey ____
(Give as many as are known)

miles in NE direction (Nearest city)
Abilene (Town)

N.W. ¼ Section 12

well

FM 1082

(Sketch)

Sketch map of well location with distances from two section or survey lines, and to landmarks, roads, and creeks.

DRILLERS LOG OF WELL

Method of drilling: Rotary "bucket" Diameter of hole 42" in. Date drilled April 1966

All measurements made from ____ ft. above ground level.

No.	To (ft)	Description and color of formation material	From (ft)	To (ft)	Description and color of formation material
	3	topsoil			
	4	caliche			
	12	sand			
	25	sand and gravel (water bearing)			
	25	red clay			
					(Use continuation sheets if necessary)

COMPLETION DATA

COMPLETION

Straight wall ☐
Underreamed ☐
Gravel packed ☒
Multiple hole ☐

CASING

Type: Old ☐ New ☒
Cemented from ____ ft.
to ____ ft.

Diameter (inches)	Setting from (ft)	Setting to (ft)
24"	0	27

SCREEN

Type Punch perforated
Perforated ☒ Slotted ☐

Diameter (inches)	Setting from (ft)	Setting to (ft)
24"	27	25

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.

Ed L. Chapman (Signature) Ed L. Chapman Drlg. Co. (Company Name) Reg. No. 308

Attach electric log, chemical analysis, and other pertinent information if available.

If well was tested by your company or if you installed the permanent pump please complete the following:

WATER LEVEL AND PUMP DATA

Static water level ____
Pumping below ____

Test No.	Pumping level hours	gpm

Pump type ____
Designed pumping rate ____ gpm ☐ gph ☐
Type power unit ____
Horsepower ____
Depth to bowls, cylinder, jet, etc., ____ ft. below pump base.

If contractor testing well or installing permanent pump if other than your company: ____

(52-6)

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer _____ Field No. _____ State Well No. XA-30-28-401

Owner's Well No. _____ County SHACKELFORD

1. Location: NW 1/4, SE 1/4 Sec. 51, Block 14, Survey T & P RR. Co.
3.5 mi. North and 0.25 mi. East of SW corner of County

2. Owner: ALTON WHITAKER Address: Rte. 6, Abilene, Texas

Tenant: _____ Address: _____

Driller: _____ Address: _____

3. Elevation of ground at 1738 ft. above msl, determined by topo

4. Drilled: 1961; Dug, (Cable Tool), Rotary, _____

5. Depth: Rept. 20 ft. Meas. 21' 6 4" ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfgr. NONE Type _____

No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel _____ Make & Model _____ HP. _____

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. _____

10. Performance Test: Date _____ Length of Test _____ Made by _____

Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.

Production _____ gpm Specific Capacity _____ gpm/ft.

CASING & BLANK PIPE

Cemented From _____ ft. to _____ ft.

Diam. (in.)	Type	Setting, ft. From	to
5 5/8	galvanized	+20	

11. Water Level: 10.34 ft. rept. meas. 5-4 1967 above (below) top of galvanized casing which is 3.0 ft. above (below) surface

_____ ft. rept. meas. 19 above below which is _____ ft. above below surface

_____ ft. rept. meas. 19 above below which is _____ ft. above below surface.

_____ ft. rept. meas. 19 above below which is _____ ft. above below surface.

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, (Not Used) _____

13. Quality: (Remarks on taste, odor, color, etc.) _____

Temp. 67 °F, Date sampled for analysis 5-4-67 Laboratory S.W.D.

Temp. _____ °F, Date sampled for analysis _____ Laboratory _____

Temp. _____ °F, Date sampled for analysis _____ Laboratory _____

WELL SCREEN

Screen Openings _____

Diam. (in.)	Type	Setting, ft. From	to

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test, _____

15. Record by: R. Preston Date 5-4 1967

Source of Data _____

16. Remarks: _____

Central Records
Texas Water Development Board

(Sketch)

CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County SHACKELFORD XH

State Well No. XA -30 -28 401

Well No. ____

Date Collected 5-4-67

By R. PRESTON

Location NW¼, SE¼, Sec. 51, blk. 14, T-3, PRRCo. SURVEY

Source (type of well) ——— Owner ALTON WHITAKER, Rte. 6, ABILENE, TEXAS

Date Drilled 1961 Depth 18 ± ft. WHF ____

Producing intervals ____ Water level ____ ft.

Sampled after pumping — hrs. Yield — GPM meas. est. Temperature 67° °F

Point of collection bailed Appearance clear - (turbid) - colored RUSTY

Use None Remarks Copy to owner.

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS

Laboratory No. 88137W Date Received ____ Date Reported 5-26-67

	PPM	EPM		PPM	EPM
Silica	11		Carbonate		0
Calcium	79	3.95	Bicarbonate	190 / 327	3.73
Magnesium	35	2.85	Sulfate	63	1.31
Sodium	81	3.53	Chloride	93	2.61
	Total	10.33	Fluoride	1.7	
☐ Potassium			Nitrate	7.0	
☐ Manganese		%Na 34.2	pH	7.5	Total 10.77
☐ Boron		SAR 1.27	1/ Dissolved Solids (sum)		572
☐ Total Iron		RSC —	Phenolphthalein Alkalinity as C aCO_3		0
☐ ____ (other)			Total Alkalinity as C aCO_3	(6.34)	311
Specific Conductance (micromhos/cm3)		721	Total Hardness as C aCO_3	(6.80)	340
Diluted Conductance (micromhos/cm3)		6 121 / 1221			

☐ items will be analyzed if checked.

Analyst ____

Total Iron requires separate sample.

Checked by ____

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer _____ Field No. _____ State Well No. XA-30-28-402

Owner's Well No. _____ County SHACKELFORD

1. Location: NE 1/4, SW 1/4 Sec. 54, Block 14, Survey T & P RR Co.
2.6 Mi. North and 0.1 Mile East of SW corner of county

2. Owner: CITY OF ABILENE Address: _____

Tenant: _____ Address: _____

Driller: _____ Address: _____

3. Elevation of ground is ~~1715~~ 1715 ft. above msl, determined by topo

4. Drilled: old 19 ___ (Dug,) Cable Tool, Rotary, _____

5. Depth: Rept. _____ ft. Meas. 1705 ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfgr. _____ Type W M C (Broken)

No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel _____ Make & Model _____ HP. _____

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. _____

10. Performance Test: Date _____ Length of Test _____ Made by _____

Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.

Production _____ gpm Specific Capacity _____ gpm/ft.

CASING & BLANK PIPE

Cemented From _____ ft. to _____ ft.

Diam. (in.)	Type	Setting, ft. from	to
4 ft.	rock walled		

11. Water Level: 12.44 ft. rept. meas. 5-10 1967 above (below) top of concrete curbing which is 2.92 ft. above (below) surface.

_____ ft. rept. meas. _____ 19 ___ above below which is _____ ft. above below surface.

_____ ft. rept. meas. _____ 19 ___ above below which is _____ ft. above below surface.

_____ ft. rept. meas. _____ 19 ___ above below which is _____ ft. above below surface.

12. Use: Dom., (Stock,) Public Supply, Ind., Irr., Waterflooding, Observation, (Not Used) _____

13. Quality: (Remarks on taste, odor, color, etc.) _____

Temp. 69 °F, Date sampled for analysis 5-10-67 Laboratory _____

Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

WELL SCREEN

Screen Openings _____

Diam. (in.)	Type	Setting, ft. from	to

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test, _____

15. Record by: R. PRESTON Date 5-10 1967

Source of Data _____

16. Remarks: _____



(Stenciled) Prior

CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County SHACKELFORD

State Well No. XA -30 -28 402

Well No.

Date Collected 5-10-67

By R. PRESTON

Location NE ¼, SW ¼, sec. 54, blk. 14, T. & P. RR. Co. Survey

Source (type of well) abandoned Owner CITY OF ABILENE

Date Drilled old Depth 17.05 ft. WBF

Producing intervals Water level 9.52 (5-10-67) ft.

Sampled after pumping — hrs. Yield — GPM meas. est. Temperature 69 °F

Point of collection bailed Appearance (clear) turbid - colored

Use NONE Remarks

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS

Laboratory No. 87654 Date Received Date Reported 6-5-67

	PPM	EPM		PPM	EPM
Silica	18		Carbonate		0
Calcium	57	2.87	Bicarbonate	426	6.98
Magnesium	114	9.35	Sulfate	138	2.87
Sodium	172	7.48	Chloride	315	8.86
Total		19.70	Fluoride	1.5	
☐ Potassium			Nitrate	411	0.66
☐ Manganese		%Na 38.0	pH 7.5	Total	19.37
☐ Boron		SAR 3.04	1/ Dissolved Solids (sum)		1070
☐ Total Iron		RSC	Phenolphthalein Alkalinity as C aCO_3		0
☐ (other)			Total Alkalinity as C aCO_3		(6.98) 349
Specific Conductance (micromhos/cm3)			Total Hardness as C aCO_3		(12.22) 610
Diluted Conductance (micromhos/cm3)					

☐ items will be analyzed if checked.

Analyst

Total Iron requires separate sample.

Checked by

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

GW

TEXAS WATER DEVELOPMENT BOARD

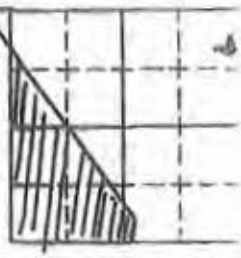
WELL SCHEDULE

403

Aquifer _____ Field No. _____ State Well No. XA-30-28-105

Owner's Well No. _____ County SHACKELFORD

1. Location: NE 1/4 NE 1/4 Sec. 59, Block 14 Survey T. & P. R.R. Co.
2.0 mi. North and 0.7 mi. East of SW Corner of County



2. Owner: CITY OF ABILENE Address: _____
Tenant: ROBERT MARTINEZ Address: Rt. 1, ABILENE, TEXAS
Driller: _____ Address: _____
3. Elevation of Ground is 1740 ft. above msl, determined by topo
4. Drilled: old 19___ (Dug) Cable Tool, Rotary, _____
5. Depth: Rept. _____ ft. Meas. 13.7 ft.
6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____
7. Pump: Mfgr. None Type _____
No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.
8. Motor: Fuel _____ Make & Model _____ HP. _____
9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. _____
10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.

CASING & BLANK PIPE

Cemented From _____ ft. to _____ ft.

Diam. (in.)	Type	Setting, ft. from	to
3 ft.	rock walled		

11. Water Level: 9.36 ft. rept. meas. 5-10 1967 above (below) Top of rock curbing which is 1.2 ft. above (below) surface.
_____ ft. rept. meas. _____ 19___ above below which is _____ ft. above below surface.
_____ ft. rept. meas. _____ 19___ above below which is _____ ft. above below surface.
_____ ft. rept. meas. _____ 19___ above below which is _____ ft. above below surface.
12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation (Not Used) _____
13. Quality: (Remarks on taste, odor, color, etc.) _____
Temp. 69 °F, Date sampled for analysis 5-10-67 Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log,
Formation Samples, Pumping Test, _____
15. Record by: R. PRESTON Date 5-10 1967
Source of Data _____
16. Remarks: Copy to Robert Martinez _____

WELL SCREEN

Screen Openings _____

Diam. (in.)	Type	Setting, ft. from	to



Central Records
Texas Water
(Sketch)

CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County SHACKELFORD

State Well No. XA -30 -28 403

Well No.

Date Collected 5-10-67

By R. PRESTON

Location NE ¼, NE ¼, Sec. 59, Blk. 14, T. & P. RR. Co. SURVEY

Source (type of well) abandoned Owner CITY of ABILENE

Date Drilled old Depth 13.7 ft. WHF

Producing intervals Water level 8.2 (5-10-67) ft.

Sampled after pumping — hrs. Yield — GPM meas. est. Temperature 69 °F

Point of collection bailed Appearance (clear) turbid - colored

Use None Remarks Copy to Robert MARTINEZ, Rte. 1, ABILENE, TEXAS

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS

Laboratory No. 87672 Date Received Date Reported 6-9-67

	PPM	EPM		PPM	EPM
Silica	12		Carbonate	0	0
Calcium	81	4.04	Bicarbonate	368 (181)	6.04
Magnesium	52	4.29	Sulfate	75	1.58
Sodium	81	3.54	Chloride	155	4.38
	Total	11.87	Fluoride	1.5	
☐ Potassium			Nitrate	4.0	
☐ Manganese		%Na 29.8	pH 7.5	Total	12.00
☐ Boron		SAR 1.72	1/ Dissolved Solids (sum)		640
☐ Total Iron		RSC —	Phenolphthalein Alkalinity as C aCO_3		0
☐ (other)			Total Alkalinity as C aCO_3	(0.041)	302
Specific Conductance (micromhos/cm3)		1135	Total Hardness as C aCO_3	8.33	417
Diluted Conductance (micromhos/cm3)		2 x 1/4 = 1130			

" items will be analyzed if checked.

Analyst

Total Iron requires separate sample.

Checked by

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

GW

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer [illegible] Field No. _____ State Well No. XA-30-28-404

Owner's Well No. _____ County SHACKELFORD

1. Location: NE 1/4, NW 1/4 Sec. 50, Block 14, Survey T & P RR Co
4.1 mi. North and 0.9 mi. East of SW corner of county

2. Owner: MRS. NONNIE BOX Address: Rte. 1, ABILENE, TEXAS
Tenant: A. C. HERSHEY Address: Rte. 1, ABILENE, TEXAS
Driller: _____ Address: _____

3. Elevation of ground is 1762 ft. above msl, determined by topo

4. Drilled: old 19 (Dug) Cable Tool, Rotary, _____

5. Depth: Rept. _____ ft. Meas. 14.67 ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfgr. _____ Type WM/C

No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel _____ Make & Model _____ HP

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est.

10. Performance Test: Date _____ Length of Test _____ Made by _____

Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.

Production _____ gpm Specific Capacity _____ gpm/ft.

11. Water Level: 10.32 ft. rept. (meas.) 5-8 1967 above (below) top of rock curb which is 2.62 ft. above (below) surface.
_____ ft. rept. meas. 19__ above below which is _____ ft. above below surface.
_____ ft. rept. meas. 19__ above below which is _____ ft. above below surface.
_____ ft. rept. meas. 19__ above below which is _____ ft. above below surface.

12. Use: Dom. (Stock) Public Supply, Ind., Irr., Waterflooding, Observation, (Not Used) _____

13. Quality: (Remarks on taste, odor, color, etc.) _____

Temp. 68 °F, Date sampled for analysis 5-8-67 Laboratory _____

Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log,
Formation Samples, Pumping Test, _____

15. Record by: R. PRESTON Date 5-8 1967
Source of Data obs & Mrs. Hershey

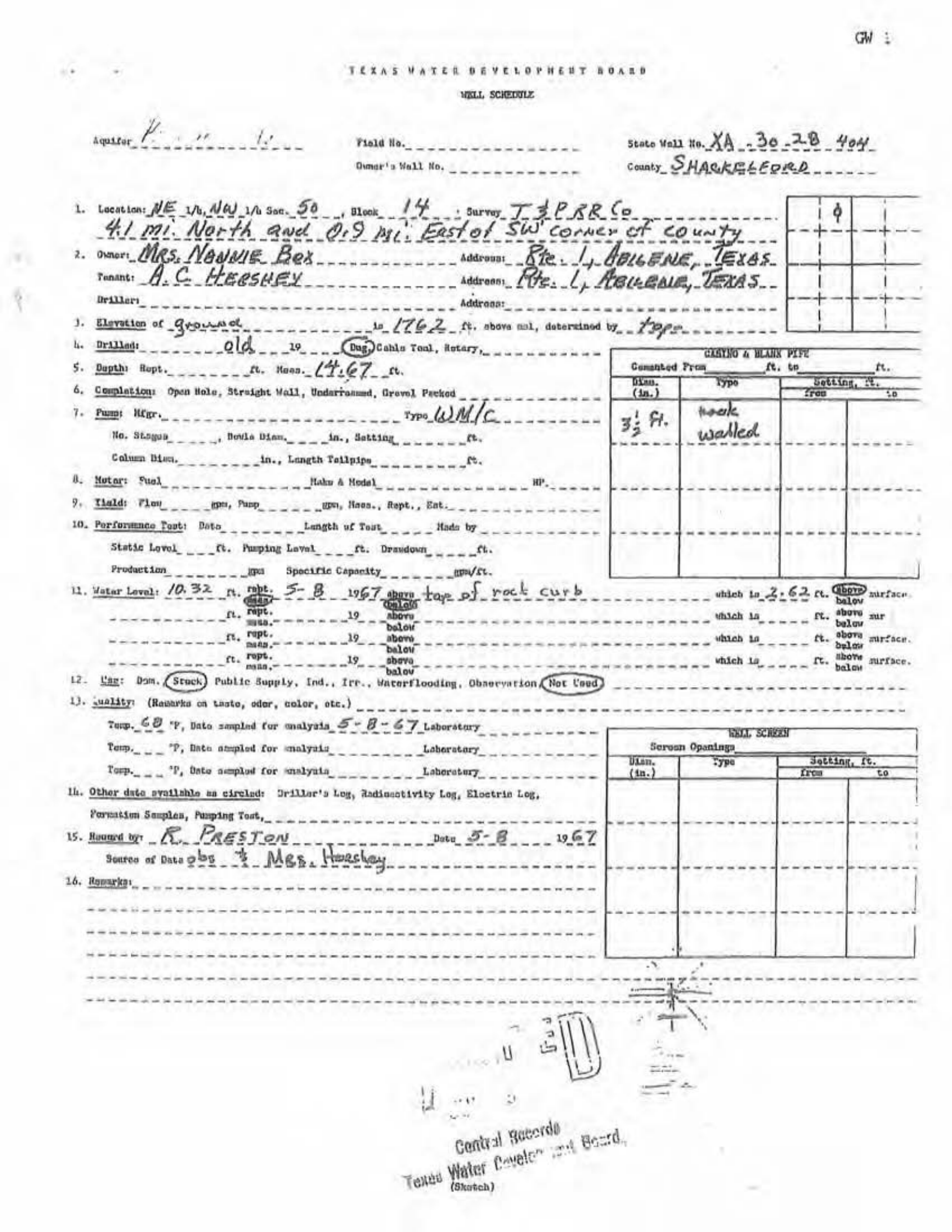
16. Remarks: _____

CASING & BLANK PIPE
Cemented From _____ ft. to _____ ft.

Diam. (in.)	Type	Setting, ft. from	to
3½ ft.	rock walled		

WELL SCREEN
Screen Openings _____

Diam. (in.)	Type	Setting, ft. from	to



(Sketch)

CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County SHACKELFORD

State Well No. XA -30 28 404

Well No.

Date Collected 5-8-67

By R. PRESTON

Location NE¼ NW¼, sec. 50, blk. 14, T.&P. R.R. Co. SURVEY

Source (type of well) WM/c Owner MRS. NANNIE BOX, Rte.1, ABILENE, TEXAS

Date Drilled old Depth ~~1207~~ 1205 ft. WHF

Producing intervals Water level 7.70 (5-8-67) ft.

Sampled after pumping — hrs. Yield — GPM meas. est. Temperature 68 °F

Point of collection bailed Appearance (clear) turbid - colored

Use NONE Remarks Copy to MRS. A.C. HEARNEY, Rte. 1, ABILENE, TEXAS

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS

387

Laboratory No. 85765 W Date Received Date Reported 6-5-67

	PPM	EPM		PPM	EPM
Silica	18		Carbonate		0
Calcium	146	7.32	Bicarbonate	157 320	5.24
Magnesium	106	8.68	Sulfate	294	6.22
Sodium	343	14.80	Chloride	610	17.25
Total		30.90	Fluoride	2.1	0.11
☐ Potassium			Nitrate	80	1.29
☐ Manganese		%Na 48.1	pH 7.6	Total	30.11
☐ Boron		SAR 5.24	1/Dissolved Solids (sum)		1760
☐ Total Iron		RSC —	Phenolphthalein Alkalinity as C aCO_3		0
☐ (other)			Total Alkalinity as C aCO_3		5.24 262
Specific Conductance (micromhos/cm3)		2345	Total Hardness as C aCO_3		16.00 800
Diluted Conductance (micromhos/cm3)		782 x 3			

"☐" items will be analyzed if checked.

Total Iron requires separate sample.

Analyst

Checked by

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer [illegible] Field No. _____ State Well No. XA-30-28-405

Owner's Well No. _____ County SHACKELFORD

1. Location: NW 1/4 NW 1/4 Sec. 55, Block 14, Survey T. & P. R. R. Co.
3.0 mi. North and 0.5 mi. East of SW Corner of County

2. Owner: Mrs. C. G. (Isabelle) Stinchcomb Address: 302 Poplar, Abilene, Texas
Tenant: Mrs. Sarah Atha Address: Rte. 1, Abilene, Texas
Driller: _____ Address: _____

3. Elevation of Ground is 1738 ft. above msl, determined by _____

4. Drilled: Old 19___ Dug, Cable Tool, Rotary, _____

5. Depth: Rept. _____ ft. Meas. 8.50 ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfgr. None Type _____
No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel _____ Make & Model _____ HP. _____

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. _____

10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.

CASING & BLANK PIPE
Cemented From _____ ft. to _____ ft.

Diam. (in.)	Type	Setting, ft. from	to
3½ ft.	rock walled		

11. Water Level: 7.23 ft. rept. meas. 5-8 1967 above (below) top of rock wall which is 2.28 ft. above (below) surface
_____ ft. rept. meas. 19___ above below which is _____ ft. above below surface
_____ ft. rept. meas. 19___ above below which is _____ ft. above below surface
_____ ft. rept. meas. 19___ above below which is _____ ft. above below surface

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation (Not Used) _____

13. Quality: (Remarks on taste, odor, color, etc.) _____
Temp. 68 °F, Date sampled for analysis 5-8-67 Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

WELL SCREEN
Screen Openings _____

Diam. (in.)	Type	Setting, ft. from	to

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test, _____

15. Record by: R. Preston Date 5-8 1967
Source of Data _____

16. Remarks:
Dug partially filled in with rubble

(Sketch)

Central Records
Texas Water Development Board

CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County SHACKELFORD
State Well No. XA -30 -28 40S
Well No.
Date Collected 5-8-67
By R. PRESTON

Location NW 1/4, NW 1/4, sec. 55, blk. 14, T. & P. RR. Co. SURVEY
Source (type of well) abandoned Owner MRS. C.C. STINGHCOMB, 302 POPLAR, ABILENE, TEXAS
Date Drilled old Depth 8.50 ft. WBF
Producing intervals Water level 4.95 (5-8-67) ft.
Sampled after pumping — hrs. Yield — GPM meas. est. Temperature 68 °F
Point of collection bailed Appearance (clear) turbid colored
Use None Remarks COPY TO OWNER

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS

RECEIVED
1967

Laboratory No. 87703 Date Received Date Reported 6-9-67

	PPM	EPM		PPM	EPM
Silica	8		Carbonate		0
Calcium	77	3.95	Bicarbonate	336	5.50
Magnesium	15	1.23	Sulfate	13	0.28
Sodium	25	1.07	Chloride	28	0.80
Total		6.25	Fluoride	0.5	
☐ Potassium	13	0.32	Nitrate	4.0	
☐ Manganese		%Na 6.57 (17.1%)	pH 7.4	Total	6.58
☐ Boron		SAR 0.66	1/ Dissolved Solids (sum)		351
☐ Total Iron		RSC 0.32	Phenolphthalein Alkalinity as C aCO_3		0
☐ (other)			Total Alkalinity as C aCO_3	(5.50)	275
Specific Conductance (micromhos/cm3)		619	Total Hardness as C aCO_3	(5.12)	259
Diluted Conductance (micromhos/cm3)		1x 1.1			

JUN 12 67

☐ items will be analyzed if checked.

Analyst

Total Iron requires separate sample.

Checked by

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Permian lu. Field No. _____ State Well No. KR-30-28

Owner's Well No. _____ County SHACKELFORD

1. Location: SE 1/4 NE 1/4 Sec. 60, Block 14, Survey T. & P. RR. Co.
0.8 mi. S and E of the SW corner of the county

2. Owner: K. K. MORRISETT Address: _____
Tenant: John STASH Address: Rte. box ABILENE, TEXAS
Driller: _____ Address: _____

3. Elevation of ground is 1772 ft. above msl, determined by topo

4. Drilled: old 19__ Dug, Cable Tool, Rotary, _____

5. Depth: Rept. _____ ft. Meas. 10.53 ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfgr. _____ Type _____
No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel _____ Make & Model _____ HP. _____

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est.

10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.

CASING & BLANK PIPE
Cemented From _____ ft. to _____ ft.

Diam. (in.)	Type	Setting, ft. from	to
3 1/2	Rock walled		

11. Water Level: 12.50 ft. rept. meas. 5-9 1967 above below Concrete Curb which is 2.50 ft. above below surface.
_____ ft. rept. meas. 19__ above below which is _____ ft. above below surface.
_____ ft. rept. meas. 19__ above below which is _____ ft. above below surface.
_____ ft. rept. meas. 19__ above below which is _____ ft. above below surface.

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used

13. Quality: (Remarks on taste, odor, color, etc.) _____
Temp. 69 °F, Date sampled for analysis 5-9-67 Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test,

15. Reported by: R. PRESTON Date 5-9 1967
Source of Data obs.

16. Remarks _____

WELL SCREEN
Screen Openings _____

Diam. (in.)	Type	Setting, ft. from	to



RECEIVED
JUL 5
Central Records
Texas Water Development Board

CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County SHACKELFORD

State Well No. XA .30 28 702

Well No.

Date Collected 5-9-67

By R. PRESTON

Location SE 1/4, NE 1/4, sec. 60, blk. 14, T & P. RR. Co. SURVEY

Source (type of well) WM/C Owner JOHN STASH, Rte. 1, Box 142 A, ABILENE, TEXAS

Date Drilled old Depth 10.53 ft. WBF

Producing intervals Water level 10.00 (5-9-67) ft.

Sampled after pumping — hrs. Yield — GPM Meas. est. Temperature 69 °F

Point of collection bailed Appearance (clear) - turbid - colored

Use NONE Remarks Copy to owner

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS

KEY PUNCHED

Laboratory No. 88766 wr Date Received JUN 9 1967 Date Reported 6-9-67

	PPM	MPM		PPM	MPM
Silica	16		Carbonate	0	
Calcium	263	13.16	Bicarbonate	336 (765)	5.50
Magnesium	164	13.46	Sulfate	53	1.10
Sodium	298	12.96	Chloride	1190	33.60
	Total	39.58	Fluoride	1.4	
☐ Potassium			Nitrate	<0.4	
☐ Manganese		%Na 32.7	pH 7.2	Total	40.20
☐ Boron		SAR 3.56	1/ Dissolved Solids (sum)	2150	
☐ Total Iron		RSC —	Phenolphthalein Alkalinity as C aCO_3	0	
☐ (other)			Total Alkalinity as C aCO_3	(5.50) 275	
Specific Conductance (micromhos/cm3)	4110		Total Hardness as C aCO_3	(26.62) 1330	
Diluted Conductance (micromhos/cm3)	36x135 4860				

☐ items will be analyzed if checked.

Total Iron requires separate sample.

Analyst JUN 12 '67

Checked by

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratori
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. PY-30-28-407

Test Hole Well #

Date Collected 10/5/61

By R. Price

Location SE Sec. 52, Blk. 14, T&P RR, 1.55mi. W. Hamby 3mi. N. on F.M. 1082, 2.3mi. E. & 1mi. N. of & thru gate 0.05mi. W.

Source (type of well) Unequiped Owner City of Abilene, Box 60, Abilene, Texas

Date Drilled 1961 Depth 39.0 ft. WL

Producing intervals Unknown Water level 34.91 L.S.D. ft.

Sampled after pumping bld. hrs. Yield Unknown GPM Stead. est. Temperature 72 °F

Point of collection Well Appearance clear - turbid - colored

Use Not Used Remarks Send copy to owner & copy to: Russell Do. 2442 Swenson Abilene, Texas

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS

KEY PUNCHED

Laboratory No. G3384 wl Date Received NOV 1 1967 Date Reported 11-1-67

	PPM	EPM		PPM	EPM
Silica	15		Carbonate		0
Calcium	99	4.96	Bicarbonate	320 650	10.66
Magnesium	89	7.28	Sulfate	101	2.10
Sodium	97	4.22	Chloride	113	3.19
Total		16.46	Fluoride	1.2	
☐ Potassium			Nitrate	24	0.39
☐ Manganese		%Na 25.6	pH 7.6	Total	14.28
☐ Boron		SAR 1.71	1/ Dissolved Solids (sum)		860
☐ Total Iron		RSC —	Phenolphthalein Alkalinity as C CO_3		0
☐ (other)			Total Alkalinity as C CO_3		262
Specific Conductance (micromhos/cm³)		1410	Total Hardness as C CO_3		1241
Diluted Conductance (micromhos/cm³)		1154 1694			

"☐" items will be analyzed if checked.

Total Iron requires separate sample.

Analyst

Checked by

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Deadman Cr.

Aquifer Alluvium - Qal Field No. 30 Acre State Well No. PY-30-27-602

Owner's Well No. Wradmill County Jones

1. Location: — 1/4, SE 1/4 Sec. 44, Block 14, Survey T.E.P.RR.Co.
1.55 mi. W. Hamby, 7.8 mi. N. on F.M. 1082, 0.55 mi. NE. to mill, SE to mill
2. Owner: Dr. D. G. Strale Address: Rt. 1, Box 216, Abilene, Texas
Tenant: Same Address:
Driller: Unknown Address:
3. Elevation of Ground is 1677 ft. above sea, determined by Topo
4. Drilled: Unknown 19 45 (Dug) Cable Tool, Rotary,
5. Depth: Rept. ft. Meas. 24.3 ft.
6. Completion: (Open Hole) Straight Wall, Underreamed, Gravel Packed WMfc
7. Pump: Mfgr. Type
No. Stages, Bowls Diam. in., Setting ft.
Column Diam. in., Length Tailpipe ft.
8. Motor: Fuel Make & Model HP.
9. Yield: Flow gpm, Pump gpm, Meas., Rept., Est. Unknown
10. Performance Test: Date Length of Test Made by
Static Level ft. Pumping Level ft. Drawdown ft.
Production gpm Specific Capacity gpm/ft.
11. Water Level: 14.3 ft. (meas.) 9-19 1967 above below Top Conc. rings which is 3.0 ft. above below surface.
ft. rept. meas. 19 above below which is ft. above below surface.
ft. rept. meas. 19 above below which is ft. above below surface.
ft. rept. meas. 19 above below which is ft. above below surface.
12. Use: Dom., (Stock) Public Supply, Ind., Irr., Waterflooding, Observation, Not Used,
13. Quality: (Remarks on taste, odor, color, etc.)
Temp. 70 °F, Date sampled for analysis 9-19-67 Laboratory SHD
Temp. °F, Date sampled for analysis Laboratory
Temp. °F, Date sampled for analysis Laboratory
14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log,
Formation Samples, Pumping Test,
15. Record by: R. Price Date 9-19 1967
Source of Data Mr. Talley
16. Remarks:
Wtr. believed from Alluvium
@ unknown depth

odd shaped section see ownership map

CASING & BLANK PIPE

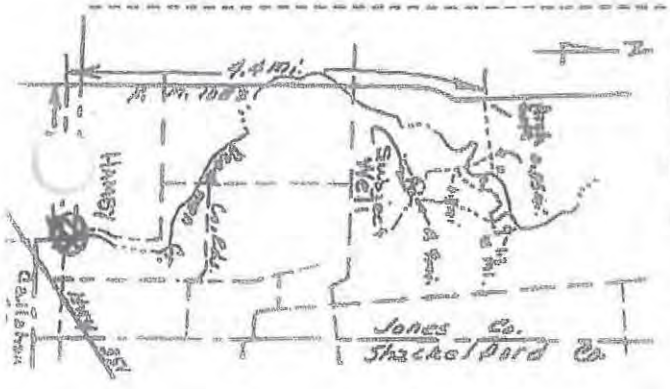
Cemented From ft. to ft.

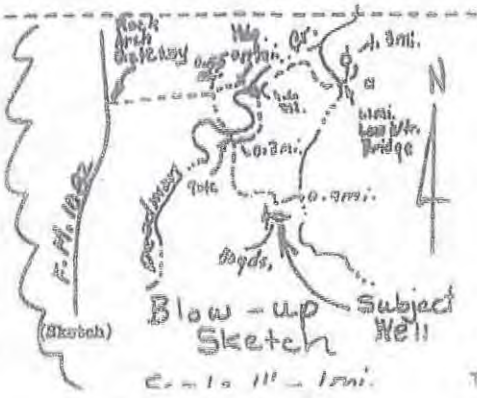
Diam. (in.)	Type	Setting, ft. From	to
36	Conc. rings	3.5	T.D.

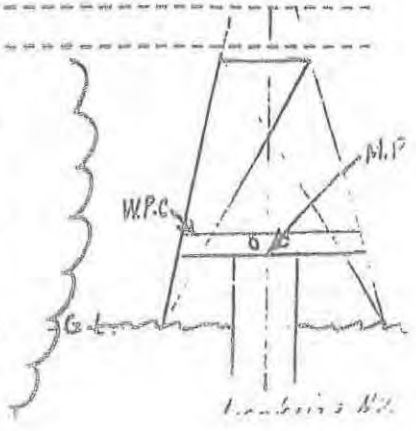
WELL SCREEN

Screen Openings

Diam. (in.)	Type	Setting, ft. From	to
36	Conc. rings open	@ bottom	







CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratori
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. PY- 30-27-602

30 Ac. Windmill Well

Date Collected 9/19/67

By R. Price

Location 6E Co. Rd, Blk. 14, T&P, 0.55mi. W. Nunley, 1.6mi. N. FM 1082, 0.55mi. NE & 0.9mi. SE to

Source (type of well) WM/C Owner Dr. D. G. Stroke, RFD, Box 2Ka, Abilene, Tex.

Date Drilled before 1945 Depth 248.3 ft. WSE —

Producing intervals Unknown Water level 11.0 L.S.D. ft.

Sampled after pumping bld. hrs. Yield Unknown GPM Meas. est. Temperature 70 °F

Point of collection well Appearance

(clear) - turbid - colored

Use S Remarks Send copy to owner as listed above.

FOR LABORATORY USE ONLY

KEY PUNCH

CHEMICAL ANALYSIS

Laboratory No. 92326W Date Received OCT 11 1967 Date Reported 10-19-67

	PPM	EPM		PPM	EPM
Silica	22		Carbonate		0
Calcium	98	4.90	Bicarbonate	384	6.30
Magnesium	47	3.88	Sulfate	279	5.82
Sodium	308	13.39	Chloride	320	9.00
Total		22.17	Fluoride	1.7	0.09
☐ Potassium			Nitrate	23.5	0.38
☐ Manganese		%Na 60.4	pH 7.5	Total	21.59
☐ Boron		SAR 6.39	1/Dissolved Solids (sum)		1290
☐ Total Iron		RSC —	Phenolphthalein Alkalinity as C CO_3		0
☐ (other)			Total Alkalinity as C CO_3 (6.30)		315
Specific Conductance (micromhos/cm3)		2080	Total Hardness as C CO_3 (8.78)		439
Diluted Conductance (micromhos/cm3)		16 x 156 = 2496			

1.39 + 7.5

OCT 20 67

☐* Items will be analyzed if checked.

Analyst

Total Iron requires separate sample.

Checked by

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Deadman Cr. Alluvium - Qal Stated Use 30 ac. State Well No. BY-30-27-603

Owner's Well No. Dug - Abd. County Jones

1. Location: 1/4, SE 1/4 Sec. 44, Block 14 Survey T.E.P.R.R. Co.
1.55 mi. W. Hwy 6, 2 mi. N on F.M. 1082, 0.55 mi. NE & 0.9 mi. SE to well
2. Owner: Dr. D.G. Strole Address: Rt. 1, Box 216, Abilene, Tex.
Tenant: Same Address:
Driller: Unknown Address:
3. Elevation of Ground is 1680 ft. above msl, determined by Topo
4. Drilled: Unknown 19 Dug, Cable Tool, Rotary,
5. Depth: Rept. ft. Meas. 26.1 ft.
6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed
7. Pump: Mfgr. Type Unequiped
No. Stages, Bowls Diam. in., Setting ft.
Column Diam. in., Length Tailpipe ft.
8. Motor: Fuel Make & Model HP.
9. Yield: Flow gpm, Pump gpm, Meas., Rept., Est. Unknown
10. Performance Test: Date Length of Test Made by
Static Level ft. Pumping Level ft. Drawdown ft.
Production gpm Specific Capacity (gpm/ft.

odd shaped section see ownership Map

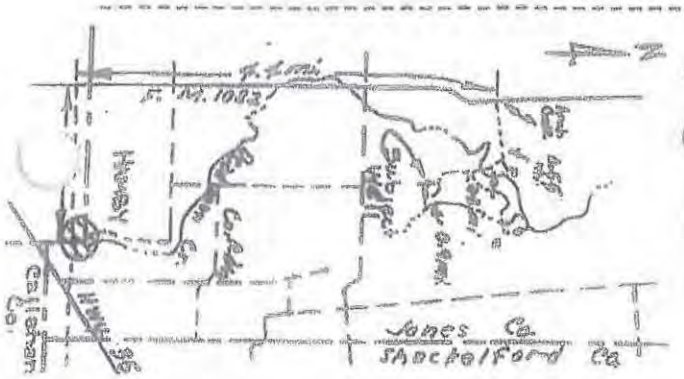
CASING & BLANK PIPE
Cemented From ft. to ft.

Diam. (in.)	Type	Setting, ft. from	to
36	Conc. rings	+ 2.0	T.D.

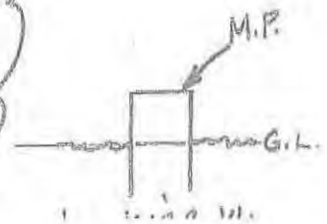
11. Water Level: 15.3 ft. rept. meas. 9-19 19 67 above below Top Conc. rings which is 2.0 ft. above below surface.
ft. rept. meas. 19 above below which is ft. above below surface.
ft. rept. meas. 19 above below which is ft. above below surface.
ft. rept. meas. 19 above below which is ft. above below surface.
12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used.
13. Quality: (Remarks on taste, odor, color, etc.)
Temp. 68° F, Date sampled for analysis Laboratory
Temp. °F, Date sampled for analysis Laboratory
Temp. °F, Date sampled for analysis Laboratory
14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log,
Formation Samples, Pumping Test,
15. Record by: R. Price Date 9-19 1967
Source of Data Mr. Talley
16. Remarks:
Geology Unknown - probably produces from Alluvium
This well is located 5 yds. NW of 30 ac. Windmill BY-30-27-6

WELL SCREEN
Screen Openings

Diam. (in.)	Type	Setting, ft. from	to
36	Conc. Rings open	@	bottom







GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL REPORT

Aquifer Deadman Cr. Alluvium = Qal Field No. _____ State Well No. PY-30-27-604

Owner's Well No. House Dug County Jones

1. Location: 1/4 C N/E Sec. 4, Block _____ Survey Blind Asylum
1.55 mi. W. Nanby, 20 mi. N. on F.M. 1082, 0.25 mi. E. on Co. Rd. S. in house

2. Owner: Mrs. Chas. G. Smith, Jr. Address: Rt. 1, Box 145, Abilene, Texas
Tenant: Same Address: _____
Driller: Mc. Joe Foster Address: _____

3. Elevation of Ground is 1683 ft. above msl, determined by Topo

4. Drilled: Yes 19__ (Dug) Cable Tool, Rotary, _____

5. Depth: Rept. _____ ft. Meas. 18.4 ft.

6. Completion: (Open Hole) Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfgr. Power Machine Co. Type Turbine - Jet
No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel Elect. Make & Model _____ HP. 1/3

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. Weak

10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.

11. Water Level: 7.8 ft. rept. 9-19 1967 above below Top conc. cover which is 3.6 ft. above below surf.
_____ ft. rept. meas. 19__ above below which is _____ ft. above below surf.
_____ ft. rept. meas. 19__ above below which is _____ ft. above below surface.
_____ ft. rept. meas. 19__ above below which is _____ ft. above below surface.

12. Use: (Dom.) Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used, _____

13. Quality: (Remarks on taste, odor, color, etc.) Owner claims contaminated by sewer

Temp. 71 °F, Date sampled for analysis 9-19-67 Laboratory STD.
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test, _____

15. Record by: R. Price Date 9-19 1967
Source of Data Mrs. Smith & Mr. J. M. Foster

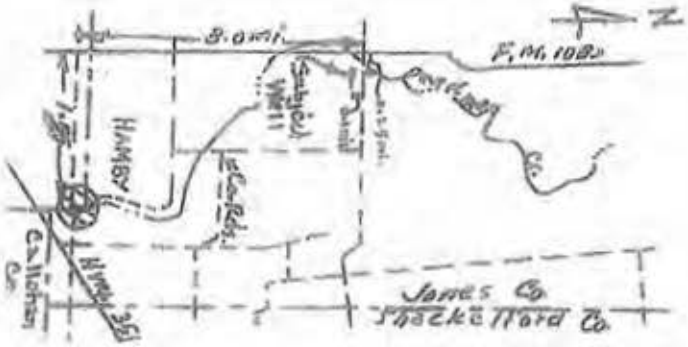
16. Remarks: House Abilene City water
Geology Waterman
Well located on back porch of house.

CASING & BLANK PIPE
Cemented From _____ ft. to _____ ft.

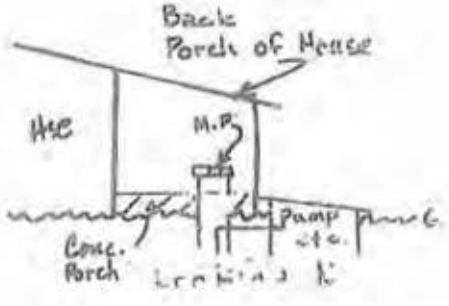
Diam. (in.)	Type	Setting, ft. From	To
24-36	brick wall	+3.6	T.D.

WELL SCREEN
Screen Openings _____

Diam. (in.)	Type	Setting, ft. From	To
24-36	brick wall open @ bottom		



(Sketch)



CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. FY-30-27-604

House Well #

Date Collected 9/19/67

By R. Price

Location C/L Sec. 4, Blind Asylum, 0.55mi. W. Hwy by 3.0 mi. N. on F.M. 1082, 0.25mi. E. & 0.1mi. S. in house

Source (type of well) Let Owner Mrs. Chas. G. Smith, Jr., Rt. 1, Box 115, Abilene,

Date Drilled V. old Depth 18.4 ft. WBF —

Producing intervals Unknown Water level 4.2 L.S.D. ft.

Sampled after pumping bld. hrs. Yield Weak GPM meas. est. Temperature 71 °F

Point of collection Well Appearance (clear) - turbid - colored

Use D* Remarks Send copy to owner as listed above

* owner does not drink

FOR LABORATORY USE ONLY

KEY PUNCHED

CHEMICAL ANALYSIS

Laboratory No. 92331W Date Received OCT 1 1967 Date Reported 10-19-67

	PPM	EPM		PPM	EPM
Silica	26		Carbonate	146	0
Calcium	159	7.96	Bicarbonate	296	4.86
Magnesium	77	6.32	Sulfate	402	8.38
Sodium	334	14.53	Chloride	492	13.86
Total		28.81	Fluoride	2.0	0.11
☐ Potassium			Nitrate	10	1.29
☐ Manganese		%Na 50.4	pH 7.7		Total 28.50
☐ Boron		SAR 5.44	1/Dissolved Solids (sum)		1720
☐ Total Iron		RSC —	Phenolphthalein Alkalinity as C $CaCO_3$		0
☐ (other)			Total Alkalinity as C $CaCO_3$ (4.86)		243
Specific Conductance (micromhos/cm³)		2640	Total Hardness as C $CaCO_3$ (14.78)		710
Diluted Conductance (micromhos/cm³)		21 x 159 = 3339			

7.1 / 14.28

☐* items will be analyzed if checked.

Total Iron requires separate sample.

Analyst OCT 20 67

Checked by

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Deadman Cr.

Aquifer Alluvium - Qa / Field No. House State Well No. FY-30-27-605

Owner's Well No. Windmill County Jones

1. Location: NE ¼, NW ¼ Sec. 4, Block ——— Survey Blind Asylum
1.550mi. W. Hwy 6, 3.0mi. N. on FM 1082, 0.250mi. E. Enters in back door
2. Owner: Mrs. Chas. G. Smith, Jr. Address: Rt. 1, Box 415, Abilene, Tex.
Tenant: Same (Works) Address: " " 4166, " "
Driller: Mr. Joe Foster Address:
3. Elevation of Ground is 1684 ft. above msl, determined by TopD
4. Drilled: Yes 19— (Dug) Cable Tool, Rotary,
5. Depth: Rept. ft. Meas. 10.5 ft.
6. Completion: (Open Hole) Straight Wall, Underreamed, Gravel Packed
7. Pump: Mfgr. Peerless Type WM 5" & centrifugal
No. Stages —, Bowls Dism. — in., Setting — ft.
Column Dism. — in., Length Tailpipe — ft.
8. Motor: Fuel Elect. Make & Model HP. 10? 1½
9. Yield: Flow — gpm, Pump 350 gpm, Meas. (Rept.) Est. Strong
10. Performance Test: Date — Length of Test — Made by —
Static Level — ft. Pumping Level — ft. Drawdown — ft.
Production — gpm Specific Capacity — gpm/ft.
11. Water Level: 9.34 ft. (Meas.) 9-19 1967 above (below) top rockwall which is 0.15 ft. (above) below surface
— ft. rept. meas. 19— above below which is — ft. above below surface
— ft. rept. meas. 19— above below which is — ft. above below surface
— ft. rept. meas. 19— above below which is — ft. above below surface
12. Use: Dom., (Stock), Public Supply, Ind. (Irr.) Waterflooding, Observation, Not Used,
13. Quality: (Remarks on taste, odor, color, etc.) Owner claims contaminated by sewer
Temp. NST °F, Date sampled for analysis — Laboratory —
Temp. — °F, Date sampled for analysis — Laboratory —
Temp. — °F, Date sampled for analysis — Laboratory —
14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log,
Formation Samples, Pumping Test,
15. Record by: R. Price Date 9-19 1967
Source of Data Mrs. Smith
16. Remarks:
Geology Unknown
R.W.H. consumption data is available on this well.

CASING & BLANK PIPE

Cemented From — ft. to — ft.

Diam. (in.)	Type	Setting, ft. from	to
36	rockwall	+0.5	T.D.

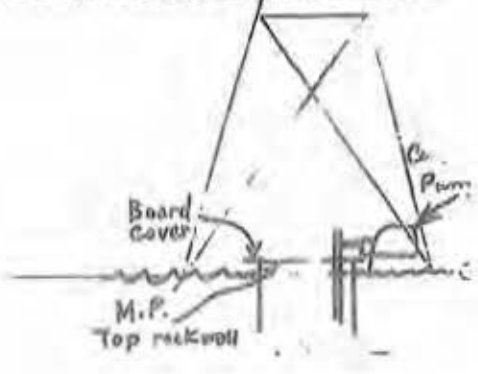
WELL SCREEN

Screen Openings —

Diam. (in.)	Type	Setting, ft. from	to
36	rockwall open	@ bottom	



(Sketch)



TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Deadman Cr.

Aquifer Alluvium - Qal Field No. _____ State Well No. 11-30-27-606

Owner's Well No. House County Jones

1. Location: NW 1/4, NW 1/4 Sec. 7, Block — Survey Blind Asylum
1.55mi. W. Hamby E. 1.8mi. N. on F.M. 1082 on E. Side road

2. Owner: C.E. Hill Address: Rt. 1, Box 419, Abilene, Texas
Tenant: Shae Address: _____
Driller: Underwater Address: _____

3. Elevation of Ground is 1701 ft. above msl, determined by Topo

4. Drilled: About 19 17 Dug, Cable Tool, Rotary,

5. Depth: Rept. _____ ft. Meas. 20.8 ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfgr. Underwater Type Jet
No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel Elect. Make & Model _____ HP. 1/3

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. Strong

10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.

11. Water Level: 10.6 ft. rept. meas. 7-20 19 67 above below Top Conc. Well which is 0.5 ft. above below surface.
_____ ft. rept. meas. 19 above below which is _____ ft. above below surface.
_____ ft. rept. meas. 19 above below which is _____ ft. above below surface.
_____ ft. rept. meas. 19 above below which is _____ ft. above below surface.

12. Use: Dom, Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used,

13. Quality: (Remarks on taste, odor, color, etc.) Well became contaminated by sewage about 19.
Temp. 71 °F, Date sampled for analysis 9-20-67 Laboratory SHD
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log,
Formation Samples, Pumping Test,

15. Record by: R. Price Date 9-20 1967
Source of Data Mr. Hill

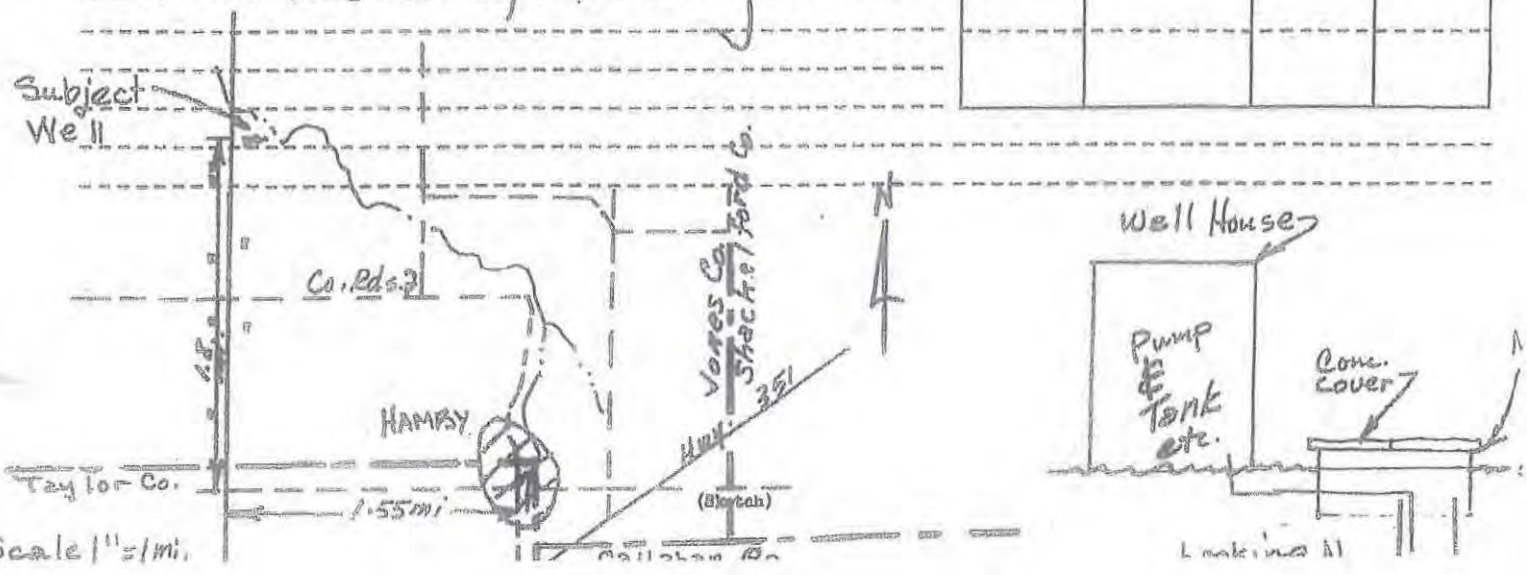
16. Remarks: * Use for yard only

CASING & BLANK PIPE
Cemented From _____ ft. to _____ ft.

Diam. (in.)	Type	Setting, ft. from	to
36	rockwall	+0.5?	T.D.

WELL SCREEN
Screen Openings _____

Diam. (in.)	Type	Setting, ft. from	to
36	rockwall open end bottom		



CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. PY-30-27-606

House Well [redacted]

Date Collected 9/20/67

By R. Price

Location NW NW Sec. 7, Blind Asylum, 0.55 mi. N. Hwy 84 & E. E. Sidetrack

Source (type of well) Dug Owner C. F. Hill, Rt. 1, Box 419, Abilene, Texas

Date Drilled about 1917 Depth 20.8 ft. WBF –

Producing intervals Unknown Water level 10.1 ft.

Sampled after pumping bld. hrs. Yield Strong GPM meas. est. Temperature 71 °F

Point of collection Well Appearance clear - turbid - colored

Use D* Remarks Send copy to owner as listed above.

*For yard only

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS

KEY PUNCHED

Laboratory No. T23174 Date Received OCT 1 2 1967 Date Reported 10-19-67

	PPM	EPM		PPM	EPM
Silica	25		Carbonate		0
Calcium	260	13.00	Bicarbonate	282	4.62
Magnesium	86	7.08	Sulfate	432	9.00
Sodium	444	19.30	Chloride	840	23.58
Total		39.38	Fluoride	1.3	
☐ Potassium			Nitrate	83	1.34
☐ Manganese		ppm 49.0	pH	7.3	Total 38.54
☐ Boron		SAR 6.09	1/ Dissolved Solids (sum)		2310
☐ Total Iron		RSC —	Phenolphthalein Alkalinity as C CO_3		0
☐ (other)			Total Alkalinity as C CO_3	(4.62)	231
Specific Conductance (micromhos/cm3)		3600	Total Hardness as C CO_3	(20.08)	1000
Dilution Conductance (micromhos/cm3)		26 x 181 4706			

"☐" items will be analyzed if checked.

Total Iron requires separate sample.

Analyst [illegible] OCT 20 67

Checked by [illegible]

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Dead man Cr. Alluvium - Qa / Field No. _____ State Well No. PY-30-27-607

Owner's Well No. House County Lamas

Co. Rd. 7

1. Location: SE 1/4, NE 1/4 Sec. 5, Block _____ Survey Blind Asylum
1.65 mi. W. Hawley & 2.55 mi. N. on F.M. 1082 on West side

2. Owner: D. McBeath Address: Rt. 1, Abilene, Texas
Tenant: Same Address: _____
Driller: Johnson & Henderson Address: Hawley, Texas

3. Elevation of Ground is 1681 ft. above msl, determined by Topo

4. Drilled: 19 65 ; Dug, Cable Tool, Rotary

5. Depth: Rept. 26 ft. Meas. _____ ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfgr. Aad Type (Piston) Recip.
No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel Elect. Make & Model _____ HP. 1½

9. Yields: Flow _____ gpm, Pump 100 gpm, Meas. (Rept.), Est. Strong

10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.

11. Water Level: 10.03 ft. rept. meas. 9-19 19 67 above (below) top csg. which is 1.0 ft. above (below) surface.
_____ ft. rept. meas. 19 above below which is _____ ft. above below surface.
_____ ft. rept. meas. 19 above below which is _____ ft. above below surface.
_____ ft. rept. meas. 19 above below which is _____ ft. above below surface.

12. Use: (Dom.) (Stock) Public Supply, Ind., Irr., Waterflooding, Observation, Not Used, _____

13. Quality: (Remarks on taste, odor, color, etc.) _____

Temp. 71 °F, Date sampled for analysis 9-19-67 Laboratory SHD

Temp. _____ °F, Date sampled for analysis _____ Laboratory _____

Temp. _____ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: (Driller's Log) Radioactivity Log, Electric Log, Formation Samples, Pumping Test, unable to locate drlr's log

15. Record by: R. Price Date 9-19 19 67

Source of Data Mr. McBeath & drlr.

16. Remarks: * have Abilene City water

drl. rept. 12'-25.5' sd. & gravels - wtr.
25.5'-26' red beds

SUBJECT WELL

1 mi.

CASING & BLANK PIPE

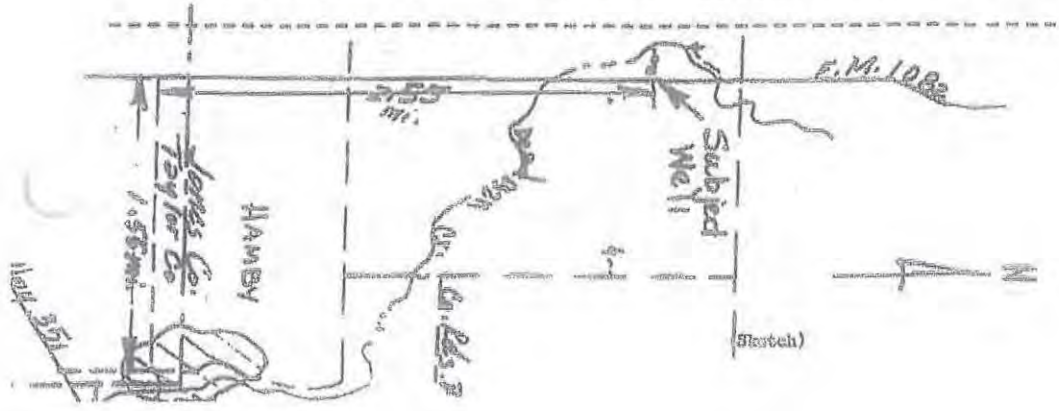
Cemented From _____ ft. to _____ ft.

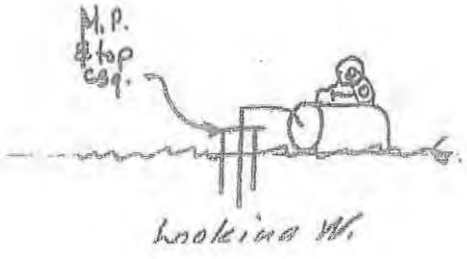
Diam. (in.)	Type	Setting, ft. From	Setting, ft. To
12	O.E.	+1.0	T.D.

WELL SCREEN

Screen Openings

Diam. (in.)	Type	Setting, ft. From	Setting, ft. To
12	Slotted O.E.	16	26





CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratori
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. BY-30-27-607

House Well

Date Collected 9/19/67

By R. Price

Location SE NE Sec. 5, Blind Asylum, 0.55mi. W. Hamby & 2.55 mi. N. on F.M. 1082 on E. side road

Source (type of well) Recirculating Owner D. Mc Beath, Rt. 1, Abilene, Texas

Date Drilled 1965 Depth 26 ft. Wtr Alluvium

Producing intervals 12-25.5 Water level 9.03 LSD ft.

Sampled after pumping No mp. Yield Strong GPM meas. est. Temperature 71 °F

Point of collection faucet near well Appearance (clear) - turbid - colored

Use D.E.S. Remarks Send copy to owner as listed above

*Owner Uses Abilene Wtr. for drinking

FOR LABORATORY USE ONLY

KEY PUNCHED

CHEMICAL ANALYSIS

Laboratory No. 923184W Date Received OCT 11 1967 Date Reported 10-19-67

	PPM	EPM		PPM	EPM
Silica	17		Carbonate		0
Calcium	520	25.80	Bicarbonate	327	5.36
Magnesium	145	11.96	Sulfate	1090	22.90
Sodium	770	33.48	Chloride	1490	42.06
Total	71		Fluoride	0.8	
☐ Potassium			Nitrate	22	0.35
☐ Manganese		%Na 47.2	pH 7.3	Total	71
☐ Boron		SAR 7.71	1/ Dissolved Solids (sum)	4220	
☐ Total Iron		RSC —	Phenolphthalein Alkalinity as C CO_3	0	
☐ (other)			Total Alkalinity as C CO_3 (5.36)	268	
Specific Conductance (micromhos/cm3)	5960		Total Hardness as C CO_3 (37.76)	1890	
Filtered Conductance (micromhos/cm3)	46 = 186 8552				

"☐" items will be analyzed if checked.

Total Iron requires separate sample.

Analyst OCT 20

Checked by

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Deadman Cr. Alluvium - Qa | Field No. _____ | State Well No. PY-30-27-608

Owner's Well No. N. Abd. | County Jones

1. Location: NE 1/4, NE 1/4 Sec. 5, Block _____ Survey Blind Asylum
1.55 mi. N. Hamby, 2.85 mi. N. on F.M. 1082 & 0.25 mi. SW to well

2. Owner: D. McBeath Address: Rt. 1, Abilene, Texas
Tenant: Same Address: _____
Driller: Unknown Address: _____

3. Elevation of Ground is 1685 ft. above msl, determined by Topo

4. Drilled: Yes 19 ____ Dug, Cable Tool, Rotary, _____

5. Depth: Rept. 28 ft. Meas. _____ ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfgr. _____ Type Unequipped
No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel _____ Make & Model _____ HP. _____

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. Est

10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.

11. Water Level: 9.83 ft. rept. meas. 9-19 1967 above below Top brickwall which is 3.0 ft. above below surface.
_____ ft. rept. meas. _____ 19 _____ above below which is _____ ft. above below surface.
_____ ft. rept. meas. _____ 19 _____ above below which is _____ ft. above below surface.
_____ ft. rept. meas. _____ 19 _____ above below which is _____ ft. above below surface.

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used: Occasionally

13. Quality: (Remarks on taste, odor, color, etc.) _____
Temp. 105 °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test, _____

15. Record by: R. Price Date 9-19 1967
Source of Data Mr. McBeath

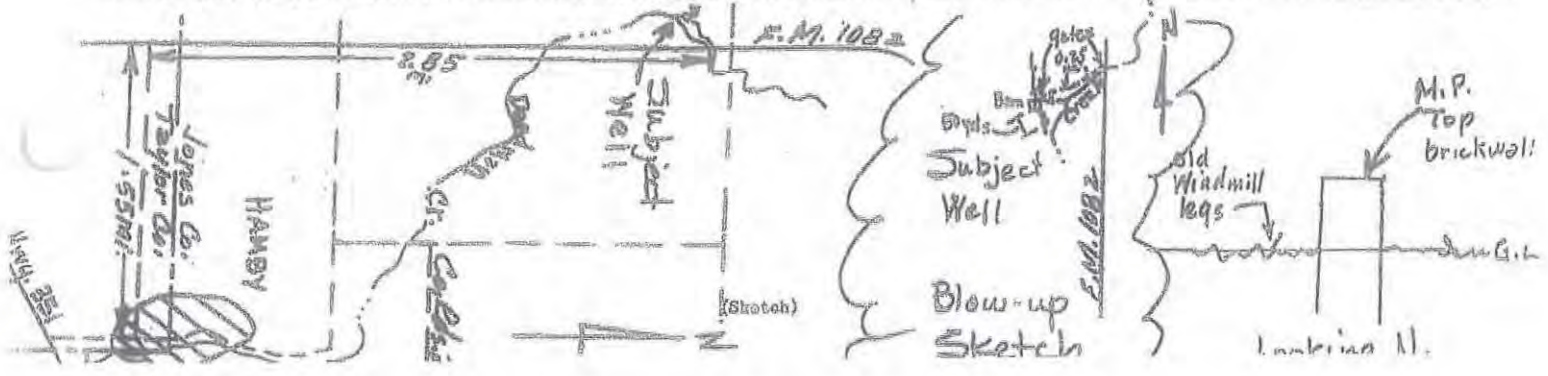
16. Remarks: believed seep wtr from creek
located 25' W of creek
& 50 yds. SE of barn

CASING & BLANK PIPE
Cemented From _____ ft. to _____ ft.

Diam. (in.)	Type	Setting, ft. From	Setting, ft. to
24	brickwall	3.0	T.D.

WELL SCREEN
Screen Openings _____

Diam. (in.)	Type	Setting, ft. From	Setting, ft. to
24	open brickwall	@ bottom	



GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Deadman Cr. Alluvium - Qal Field No. _____ State Well No. PY-30-27-609

Owner's Well No. E. Farm County Jones

1. Location: NE ¼ of SE ¼ Sec. 4, Block _____ Survey Blind Asylum
1655 mi. N. Hawley, 3 mi. N on F.M. 1082, 100' E. & 0.7 mi. S. on ill side
2. Owner: D. McBeath Address: Rt. 1, Abilene, Texas
Tenant: Same Address: _____
Driller: Unknown Address: _____
3. Elevation of Ground is 1702 ft. above msl, determined by Topo
4. Drilled: 19 38 Dug Cable Tool, Rotary, _____
5. Depth: Rept. _____ ft. Meas. 25.9 ft.
6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____
7. Pump: Mfgr. _____ Type Unequipped
No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.
8. Motor: Fuel _____ Make & Model _____ HP _____
9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. Est
10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.
11. Water Level: 11.17 ft. rept. meas. 9-19 1967 above below Top brickwall which is 1.6 ft. above below surface
_____ ft. rept. meas. 19 above below which is _____ ft. above below surface
_____ ft. rept. meas. 19 above below which is _____ ft. above below surface
_____ ft. rept. meas. 19 above below which is _____ ft. above below surface
12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used
13. Quality: (Remarks on taste, odor, color, etc.) Owner claims contaminated by sewer about 1960
Temp. 71 °F, Date sampled for analysis 9-19-67 Laboratory SHD
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test,
15. Record by: R. Price Date 9-19 1967
Source of Data Mr. McBeath
16. Remarks:
Wt. SL 9-20-67 23-25
" 5/5 22-26

CASING & BLANK PIPE

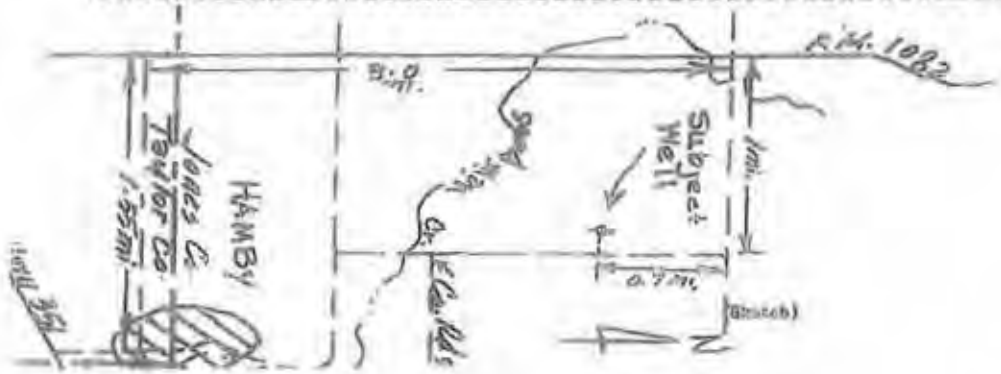
Cemented From _____ ft. to _____ ft.

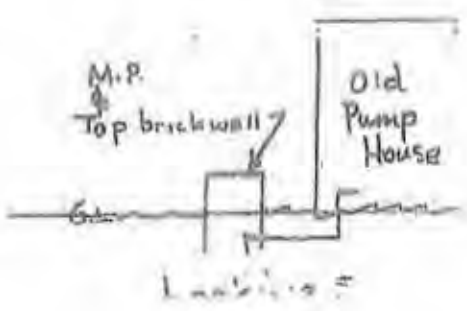
Diam. (in.)	Type	Setting, ft. from	to
24	brickwall	1.6	T.D.

WELL SCREEN

Screen Openings

Diam. (in.)	Type	Setting, ft. from	to
24	brickwall open	@ bottom	





CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. PY-30-27-609

E. Farm Well #

Date Collected 9/19/67

By R. Price

Location NESE Sec. 4, Blind Asylum, 9.55 mi. W. Hamby, 3 mi. N. on F.M. & 0.7 mi. S. on W. side road

Source (type of well) Dug - Unequipped Owner D. M. Beath, Rt. 1, Abilene, Texas

Date Drilled 1938 Depth 25.9 ft. WBF - Alluvium

Producing intervals 23-25 Water level 9.67 L.S.D. ft.

Sampled after pumping bld. hrs. Yield Fair GPM Meas. est. Temperature 71 °F

Point of collection Well Appearance clear - turbid - colored

Use Not Used Remarks Send copy to owner as listed above

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS KEY PUNCHED

Laboratory No. 923074W Date Received OCT 11 1967 Date Reported 10-20-67

	PPM	EPM		PPM	EPM
Silica	22		Carbonate		0
Calcium	122	6.08	Bicarbonate	450 (221)	7.38
Magnesium	36	2.94	Sulfate	144	2.99
Sodium	233	10.12	Chloride	309	8.70
Total		19.14	Fluoride	0.8	
☐ Potassium			Nitrate	<0.4	
☐ Manganese		%Na 52.9	pH 7.3	Total	19.07
☐ Boron		SAR 4.77	1/ Dissolved Solids (sum)		1090
☐ Total Iron		RSC —	Phenolphthalein Alkalinity as C aCO_3		0
☐ (other)			Total Alkalinity as C aCO_3	(7.38)	369
Specific Conductance (micromhos/cm³)		1830	Total Hardness as C aCO_3	(9.02)	451
Diluted Conductance (micromhos/cm³)		11 x 195 = 2145			

4.51 / 9.02

☐ " items will be analyzed if checked.

Total Iron requires separate sample.

Analyst OCT 20 67

Checked by JA

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Dead Man Cr.

Aquifer Alluvium - Qal Purpose: Homeplace State Well No. FY-30-27-610

Owner's Well No. House County Jones

1. Location: NW¼, SW ¼ Sec. 4, Block —, Survey Blind Asylum
1.55mi. W. Hamby & 2.4mi. N. on F.M. 1082 on E. side road

2. Owner J. M. Foster Address: Rt. 1, Box 446-A, Abilene, Tex.
Tenant: Same Address:
Driller: Unknown Address:

3. Elevation of Ground is 1684 ft. above msl, determined by Topo

4. Drilled: before 19 00 (Dug.) Cable Tool, Rotary,

5. Depth: Repd. ft. Meas. 24.4 ft.

6. Completion: (Open Hole) Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfgr. Goulds Type Jet
No. Stages , Bowls Diam. in., Setting ft.
Column Diam. in., Length Tailpipe ft.

8. Motor: Fuel Elect. Make & Model HP. 1½

9. Yield: Flow gpm, Pump gpm, Meas., Repd., Est. Strong

10. Performance Test: Date Length of Test Made by
Static Level ft. Pumping Level ft. Drawdown ft.
Production gpm Specific Capacity gpm/ft.

11. Water Level: 11.0 ft. (rept.) 9-20 19 67 (above) below Top rockwall which is 2.2 ft. above below surf
ft. rept. meas. 19 above below which is ft. above below surfce.
ft. rept. meas. 19 above below which is ft. above below surfce.
ft. rept. meas. 19 above below which is ft. above below surfce.

12. Use: Dom. (Stock) Public Supply, Ind., Irr., Waterflooding, Observation, Not Used,

13. Quality: (Remarks on taste, odor, color, etc.) Wtr. reported "unfit for human consumption"
Temp. 71 °F, Date sampled for analysis 9-20-67 Laboratory SHD
Temp. 69 °F, Date sampled for analysis 3-19-68 Laboratory SHD - Bacteriological
Temp. 69 °F, Date sampled for analysis 3-14-68 Laboratory 41565 - Toxicological

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log,
Formation Samples, Pumping Test,

15. Record by: R. Price Date 9-20 1967
Source of Data Mr. Foster

16. Remarks:
Geology Unknown

CASING & BLANK PIPE

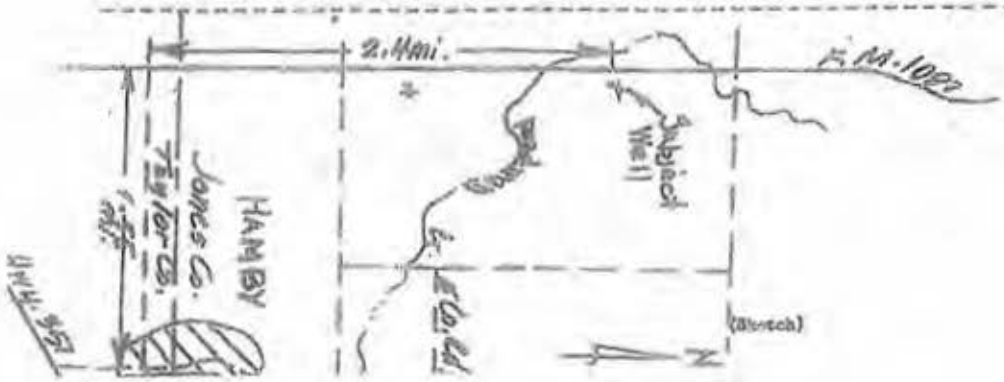
Cemented From ft. to ft.

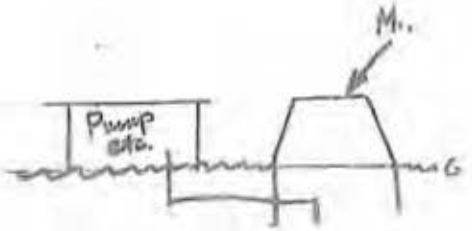
Diam. (in.)	Type	Setting, ft. from	to
36	Rockwall	+2.2 Ref.	T.D.

WELL SCREEN

Screen Openings

Diam. (in.)	Type	Setting, ft. from	to
36	Formation open @ bottom		





Austin, Texas

State: Texas 4 County: Jones PY Well No. Latitude Longitude Seq. No. Date M 01 D 13 Y 68 Sampling Depth Type

Local Well No. PY-30-27-610 Location 1.55 mi. W Hamby + 2.4 mi. N on F.M. 1082 on E

Owner J. M. Foster Date drilled: bef. 1900 Depth 24.4 ft. Geol. Alluvium Prod. Intervals Unknown Water level ft.

Sample after pumping 10 min. Yield Strong GPM Pr. of coll. Faucet ab well Appearance Clear Use Stock Collector K. D. Price Date

Sample volume:
Insecticide 777 ml.
Herbicide 808 ml.

Date extracted:
Insecticide APR 1 1968
Herbicide APR 1 9 1968

Date chromatographed:
Insecticide APR 1 1968
Herbicide APR 1 5 1968

Concentrated volume:
Insecticide 1.0 ml.
Herbicide 2.0 ml.

Volume injected:
Insecticide
DC-200 5.7 µl.
QF-1 —— µl.
Herbicide
DC-200 5.5 µl.
QF-1 —— µl.

Rt. 1, Box 416-A
Abilene, Texas

Chemist DOUGLAS MARIGOLD
Checked by [illegible]

Pesticide	Column	Detected	Meas. area (in^2)	Atten.	Calc. area (in^2)	Oper. cond. corr.	Re-sponse factor	Corr. area (in^2)	Quant. (pico-grams)	Cc (1
Aldrin	DC-200	No								
	QF-1									0.0
DDD	DC-200	No								
	QF-1									0.0
DDE	DC-200	No								
	QF-1									1.0
DDT	DC-200	No								
	QF-1									0
Dieldrin	DC-200	No								
	QF-1									0
Endrin	DC-200	No								
	QF-1									0.0
Heptachlor	DC-200	No								
	QF-1									0.0
Heptachlor epoxide	DC-200	No								
	QF-1									0.0
Lindane	DC-200	No								
	QF-1									0.0
2, 4-D	DC-200	No								
	QF-1									0.
Silvex	DC-200	No								
	QF-1									0.0
2, 4, 5-T	DC-200	No								

CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratori
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. PY-30-27-610

House Well @ Homeplace

Date Collected 9/20/67

By R. Price

Location NW SW Sec. 4, Blind Asylum, 0.55 mi. W. Hamby & 2.4 mi. N. on E.M. 1082 on E. side Road

Source (type of well) Dug Owner L.M. Foster, Rt. 1, Box 416-A, Abilene, Texas

Date Drilled before 1900 Depth 24.4 ft. WBF —

Producing intervals Unknown Water level 8.84.50 ft.

Sampled after pumping bld. hrs. Yield Strong GPM meas. est. Temperature 71 °F

Point of collection Well Appearance (clear) turbid - colored

Use S. Remarks Send copy to owner as listed above

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS KEY PUNCHED

Laboratory No. 923164 Date Received OCT 1 1967 Date Reported 10-19-67

	PPM	EPM		PPM	EPM
Silica	27		Carbonate		0
Calcium	255	12.76	Bicarbonate	327	5.36
Magnesium	82	6.76	Sulfate	560	11.62
Sodium	478	20.77	Chloride	730	20.64
	Total	40.29	Fluoride	0.9	
☐ Potassium			Nitrate	145	2.34
☐ Manganese		%Na 51.6	pH 7.4	Total	39.96
☐ Boron		SAR 6.64	1/ Dissolved Solids (sum) 2440		
☐ Total Iron		RSC —	Phenolphthalein Alkalinity as C $CaCO_3$ 0		
☐ (other)			Total Alkalinity as C $CaCO_3$ (5.36) 268		
Specific Conductance (micromhos/cm3) 3660			Total Hardness as C $CaCO_3$ (19.52) 980		
Diluted Conductance (micromhos/cm3) 24 185 4810					

"☐" items will be analyzed if checked.

Total Iron requires separate sample.

Analyst OCT 20 67

Checked by

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. PY-30-27-610

House Well @ Home

Date Collected 3/14/68

By R. Price

Location NW SW Sec. 4, Blind Asylum, 0.55 mi. W. Hwy 6 on E. Rd. 1682 & E 2.4 mi. N. Side Wood

Source (type of well) Jet Owner J. M. Foster, Rt. 1, Box 416-A, Abilene, Texas

Date Drilled before 1900 Depth 24.4 ft. WBU Dead Man Creek Alluvium

Producing intervals Unknown Water level 8.8 b.s.d. ft.

Sampled after pumping hld. hrs. Yield Strong GPM meas. est. Temperature 61 °F

Point of collection Well Appearance clear - turbid - colored

Use S. Remarks Send copy only to Tex. Wtr. Dev. Board
Abilene Field Office

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS

APR 2 3 1968

APR 3 0 1968

Laboratory No. 101234W Date Received _____ Date Reported _____

	PPM	EPM		PPM	EPM
Silica			Carbonate		
Calcium			Bicarbonate		
Magnesium			Sulfate		
Sodium			Chloride		
Total			Fluoride		
☐ Potassium			Nitrate		
☑ NH_3-N	< 0.2		pH	Total	
☑ NO_2-N	< 0.1	SAR			
☑ ABS	< 0.02	EBC	1/ Dissolved Solids (sum)		
☑ LAS (other)			Phenolphthalein Alkalinity as C aCO_3		
Specific Conductance (micromhos/cm3)			Total Alkalinity as C aCO_3		
Diluted Conductance (micromhos/cm3)			Total Hardness as C aCO_3		

"☐" items will be analyzed if checked.

Total Iron requires separate sample.

Analyst _____ MAY - 6 1968

Checked by _____

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Deadman Cr. Alluvium - Qal Field No. _____ State Well No. PY-20-27-611

Owner's Well No. House County James

1. Location: SE¼ NE¼ Sec. 6 Block — Survey Blind Asylum
1.55 mi. W. Hanley & 1.2 mi. N. on F.M. 1082 on W. side road
2. Owner: J. R. Harp Address: Rt. 1, Box 421, Abilene, Tex.
Tenant: Same Address: _____
Driller: Unknown Address: _____
3. Elevation of Ground is 1702 ft. above msl, determined by Topo
4. Drilled: before 19 21 (Dug) Cable Tool, Rotary
5. Depth: Rept. _____ ft. Meas. 24.1 ft.
6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed
7. Pump: Mfgr. Warner Type 2 Jets
No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.
8. Motor: Fuel Electric Make & Model _____ HP. ½ ⅓
9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. Strong
10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.
11. Water Level: 15.3 ft. rept. meas. 9-19 1967 above below Top brick wall which is 3.0 ft. above below surface.
_____ ft. rept. meas. 19 above below which is _____ ft. above below surface.
_____ ft. rept. meas. 19 above below which is _____ ft. above below surface.
_____ ft. rept. meas. 19 above below which is _____ ft. above below surface.
12. Use: Dom. Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used. _____
13. Quality: (Remarks on taste, odor, color, etc.) Owner claims contaminated by sewer
Temp. 71 °F, Date sampled for analysis 9-19-67 Laboratory SAD
Temp. _____ °F, Date sampled for analysis _____ Laboratory _____
Temp. _____ °F, Date sampled for analysis _____ Laboratory _____
14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test.
15. Record by: K. Price Date 9-19 1967
Source of Data Mr. Harp
16. Remarks:
* Drink Abilene City water
Geology Unknown

CASING & BLANK PIPE

Cemented From _____ ft. to _____ ft.

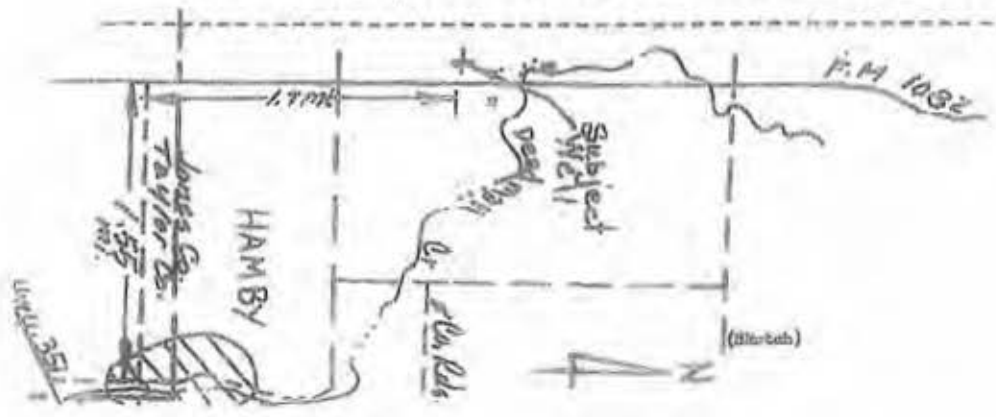
Diam. (in.)	Type	Setting, ft. From	Setting, ft. To
48	brick & rockwall	+ 3.0	T.D.

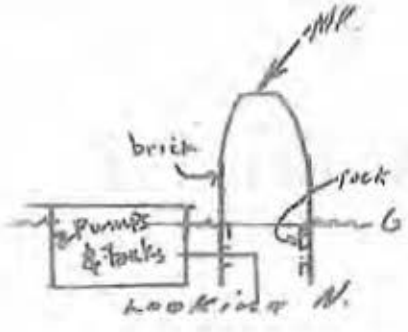
WELL SCREEN

Screen Openings

Diam. (in.)	Type	Setting, ft. From	Setting, ft. To
48	bricked rockwall open @ bottom		

Subject well 6 mi. 2





CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. PY-30-27-6K

House Well [redacted]

Date Collected 9/19/67

By R. Price

Location SE NE Sec. 6, Blind Asylum, 0.55 mi. E. & 1.7 mi. N. of W. Hamby on E. side road

Source (type of well) Jet Owner J. R. Harp, Rt. 1, Box 42, Abilene, Tex.

Date Drilled before 1921 Depth 241 ft. WBF —

Producing intervals Unknown Water level 123 LSD ft.

Sampled after pumping bld. hrs. Yield Strong GPM meas. est. Temperature 71 °F

Point of collection Well Appearance clear - turbid - colored

Use D*&S. Remarks Send copy to owner as listed above

*drink Abilene City Wtr.

FOR LABORATORY USE ONLY

KEY PUNCHED NOV

CHEMICAL ANALYSIS

Laboratory No. 9231-SW Date Received OCT 11 1967 Date Reported 10-20-67

	PPM	EPM		PPM	EPM
Silica	25		Carbonate	0	0
Calcium	290	14.48	Bicarbonate	205	3.36
Magnesium	108	8.88	Sulfate	429	8.94
Sodium	481	20.92	Chloride	1060	30.00
	Total	44.28	Fluoride	1.8	
☐ Potassium			Nitrate	90	1.45
☐ Manganese		%Na 47.2	pH 7.2	Total	43.75
☐ Boron		SAR 6.12	1/ Dissolved Solids (sum) 2600		
☐ Total Iron		RSC —	Phenolphthalein Alkalinity as C aCO_3 0		
☐ (other)			Total Alkalinity as C aCO_3 (3.36) 168		
Specific Conductance (micromhos/cm3) 4140			Total Hardness as C aCO_3 (23.36) 1170		
Diluted Conductance (micromhos/cm3) 36x150 5400					

"☐" items will be analyzed if checked.

Analyst [redacted] OCT 20 67

al Iron requires separate sample.

Checked by [redacted]

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

exas Water Development Board
Well Schedule

State Well No. 36 27 6 1 1 Previous Well No. 3027611 County Jones 253

River Basin Brazos 12 Zone 2 Region 05 Lat. 32 32 38 Long. 99 39 34 Source of Coord. 1

Owner's Well No. _____ Location ___ 1/4, ___ 1/4, Section ___, Block ___, Survey ___

Owner M W Ware

Driller

Address Rt. 1 Bx 421 Abilene, Tx 79601 Tenant/Oper. _____

Date Drilled 1921 Depth 24 Source of Depth Datum O Altitude 1702 Source of Alt. Datum M

Aquifer Alluvium - Qal 100ALVM Well Type W User

Well Construction Const. Method Handdug D Casing Material Brick B

Completion _____ Screen Material Open a

Lift Data Pump Mfr. _____ Type Subm 5 No. Stages ___

Bowls Diam. ___ in. Setting ___ ft. Column Diam. ___ in.

Motor Mfr. _____ Fuel or Power Elec. E 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 Stock 5 Secondary ___ Tertiary ___

Other Data Available: Water Level ___ Water Quality V Logs ___ Other Data ___

	Date	Meas.
	9 19 1967	15.3
Water Levels	___	___
	___	___

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S)
Open Hole (O)
Cemented from ___ to ___

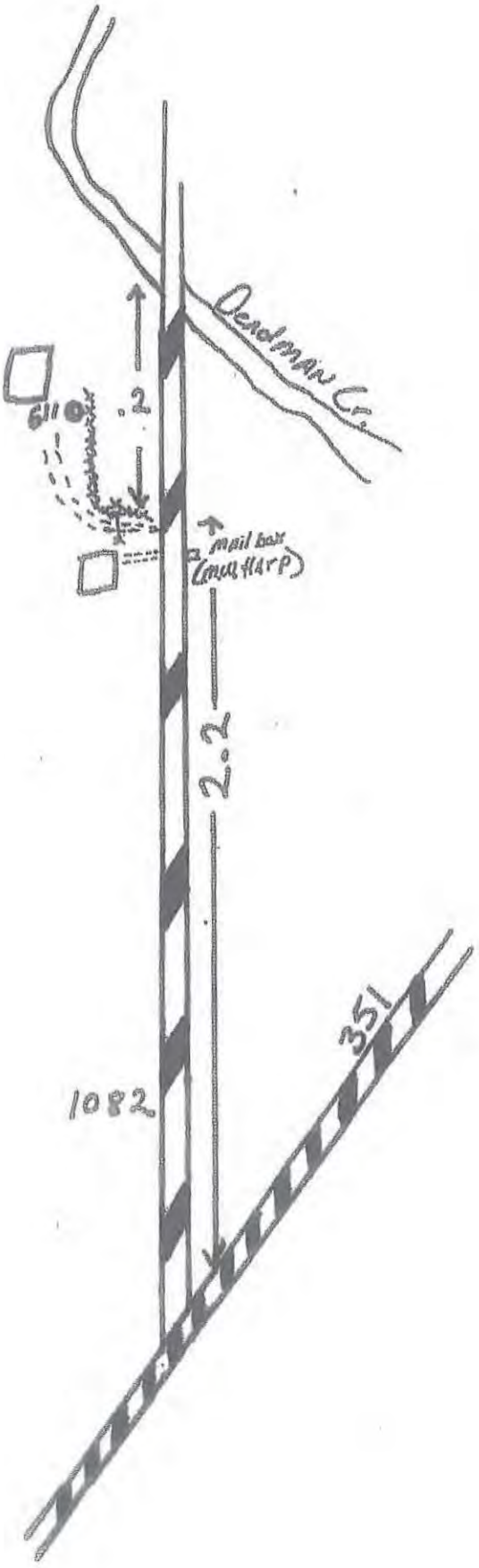
	Diam. (in.)	Setting (feet) From	To
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

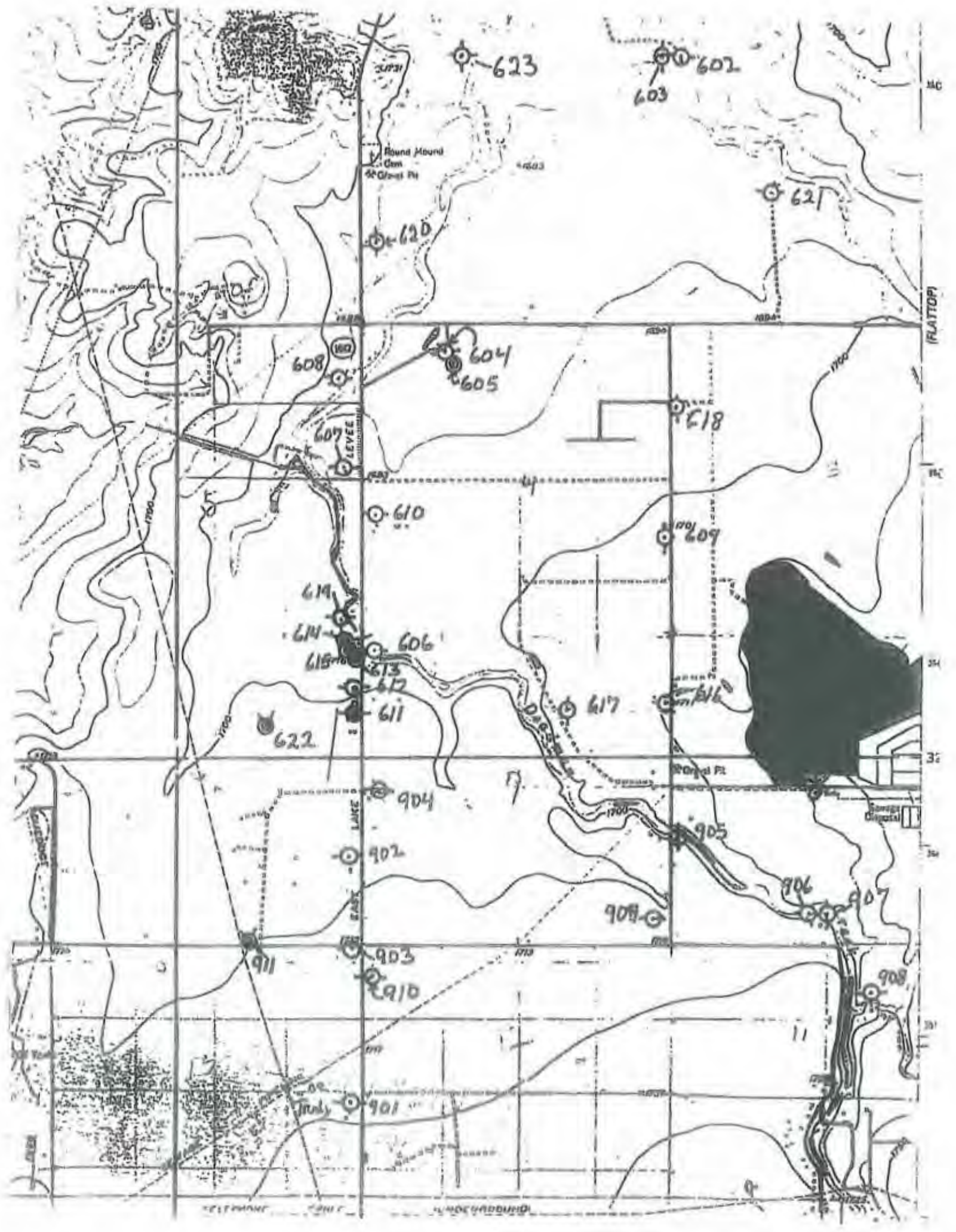
Recorded By Robert Orment Date Record Collected or Updated 4 24 1991 (20 max) Reporting Agency ___

Remarks

Aquifer Allov

Well No. 36-27-61


Deadman Cr.
.2
mail box
(Mill Harp)
2.2
1082
351


623
602
603
Round Mound
Cem
Gravel Pit
621
620
608
604
605
618
607
LEVEE
610
609
619
614
606
613
612
611
622
617
616
Gravel Pit
904
905
902
LAKE
EAST
906
907
909
911
903
910
908
901
Study
(FLATTOP)

Water Quality Sampling Run

SWN: 30-27-611
County: Jones Co.
Aquifer(s): 100 ALV

Sample No. RO-1991-1346
Date: 4-25-91 9:15
By: Robert Ormsbee

	Bottle 1	Bottle 2	Bottle 3	Bottle 4	Bottle 5	Bottle 6	Bottle 7	Total
	1 liter Anions	1 liter Cations/HM	1 liter 1-gallon Radioactivity	500 ml Nitrate/ Phosphate	1 Qt.(glass) (TOC) Organics	500 ml Cyanide		Sub-Samples
					unfiltered			All filtered unless otherwise stipulated. All on ice.
Preserve with:	–	2ml HNO_3 (Nitric)	2ml HNO_3 (Nitric)	1ml H_2SO_4 (Sulfuric)	–	NaOH (Sodium Hydroxide)		

Water Level _____ LSD
Temperature (00010) 18.3 °C
Specific Conductance (00094) 4.42(29,000) µmhos/cm
pH (00400) 7.10 @ _____ °C
Eh (00090) 54.9 mv @ _____ °C
Phenol ALK (82244) 0 mg/l
Total ALK (00431) 196 mg/l
Carbonate (00452) _____ meq/l 0 mg/l
Bicarbonate (00453) _____ meq/l _____ mg/l

Total Cations (+) _____
Total Anions (-) _____
Total Hardness (46570) 1194
Dissolved Solids (70301) ~~2.84(29,000)~~ 2762

Notes & Calculations

KEY PUNCHED

Started titrations with 7.10@ At 17.5°C.
Titrations took 9.8ml H_2SO_4 (.02N) to take A 50ml sample to a Ph of 4.5@ At 17.6°C.

Texas Water Development Board

Chemical Water Analysis Report

GWR- Ro .1991.1346
(Anions)

TWDB Use Only
Work No. 370-31030
IAC No. _____

Send Reply To:
Ground Water Unit
Texas Water Development Board
P.O. Box 13231
Austin, Texas 78711

Attention: Phil Nordstrom
State Well Number: 30-27-611
County: Jones Co.
Date & Time: 4-25-91 9:20
Owner: M.W. Harp
☒ Send Copy To Owner
Address: Rt-1 Bx 42J Abilene, Tx 79601
Sampled After Pumping: 1/2 Hours
Date Drilled: 1921 Depth: 24'
Yield: _____ GPM ☐ Measured ☐ Estimated
Collection Point: F.M.P.T. pH 7.10
Use: Stock Temperature: 18.3 °C
By: Robert Ormert
Specific Conductance: 4.42 (20,000)

Requested Chu[redacted]

Laboratory No.: [redacted] Date Received: APR 26 1991 Date Reported: MAY 28 1991

THD-Sample No. EB1 1752 Date Received 04/26/91 Date Reported 05/22/91

		MEQ/L	MG/L
Sulfate	(00946)	10.94	525
Chloride	(00941)	30.85	1094
Fluoride	(00950)	0.06	1.08
P.Akalinity	(00415)	0.00	0
T.Akalinity	(00410)	3.94	197
Bromide	(71870)		3.75

Texas Water Development Board

Chemical Water Analysis Report

HM- RO .1991. 1346
HM = Heavy Trace and Alkaline-Earth Metals

TWDB Use Only
Work No. 320-31030
IAC No. _____

Send Reply To:
Ground Water Unit
Texas Water Development Board
P.O. Box 13231
Austin, Texas 78711

Attention: Phil Nordstrom
State Well Number: 30-27-611
County: Jones Co.
Date & Time: 4-25-91 9:25
Owner: M.W. Hard
☒ Send Copy To Owner
Address: Rt 1 Bx 421 Abilene, Tx 79601
Sampled After Pumping: 1/2 Hours
Date Drilled: 1921 Depth: 241
Yield: _____ GPM ☐ Measured ☐ Estimated
Collection Point: F.A.P.T. pH 7.10
Use: Stock Temperature: 18.3 °C
By: Robert Ormert
Specific Conductance: 4.42 (20,000)

Requested Chem: [redacted]
Laboratory No.: [redacted]
Date Received: APR 26 1991
Date Reported: MAY 28 1991

		me/l	mg/l			me/l	mg/l
✓ Calcium	(00915)		317	✓ Sodium	(00930)		491
✓ Magnesium	(00925)		98	✓ Potassium	(00935)		5.8

		µg/l			µg/l
~~Aluminum~~	(01106)		~~Manganese~~	(01056)	
~~Arsenic~~	(01000)		~~Mercury~~	(71890)	
✓ Barium	(01005)	35	~~Molybdenum~~*	(01062)	
✓ Cadmium	(01025)	<10	~~Selenium~~	(01145)	
~~Chromium~~	(01030)		~~Silver~~	(01075)	
~~Copper~~	(01040)		✓ Strontium*	(01080)	3980
✓ Iron	(01046)	81	~~Vanadium~~*	(01085)	
~~Lead~~	(01049)		~~Zinc~~	(01090)	

* Do not analyze unless it is checked.
Note: Crossout those elements not to be analyzed.

Texas Water Development Board

Chemical Water Analysis Report

MISC. 120.1991.1346

TWDB Use Only

Work No. 320-31030

IAC No. _____

Send Reply To:
Ground Water Unit
Texas Water Development Board
P.O. Box 13231
Austin, Texas 78711

Attention: Phil Nordstrom

State Well Number: 30-27-611

County: Jones Co.

Date & Time: 4-25-91 9:40

Owner: M.W. Harp

☒ Send Copy To Owner

Address: Rt 1 Box 421 Abilene, Tx 79601

Sampled After Pumping: 1/2 Hours

Date Drilled: 1921 Depth: 24'

Yield: _____ GPM ☐ Measured ☐ Estimated

Collection Point: F.A.P.T. pH 7.10

Use: Stock Temperature: 18.3 °C

By: Robert Ozment

Specific Conductance: 4.42 (20,000)

Requested Chem [redacted]

Laboratory No.: [redacted]

Date Received: APR 26 1991

Date Reported: MAY 22 1991

THD-Sample No. 881 1780 Date Received 04/26/91 Date Reported 05/21/91
00680- 2 TOC mg/L

Texas Water Development Board

Chemical Water Analysis Report

GWN- RO .1991 . 1346
(Nitrogen Cycle)

TWDB Use Only
Work No. 320-31030
IAC No.

Send Reply To:
Ground Water Unit
Texas Water Development Board
P.O. Box 13231
Austin, Texas 78711

Attention: Phil Nordstrom
State Well Number: 30-27-611
County: Jones Co.
Date & Time: 4-25-91 9:35
Owner: M.W. Hart
Send Copy To Owner
Address: Rt 1 Bx 421 Abilene, Tx 79601
Sampled After Pumping: 1/2 Hours
Date Drilled: 1921 Depth: 24'
Yield: GPM ☐ Measured ☐ Estimated
Collection Point: F.A.P.T. pH 7.10
Use: Stock Temperature: 18.3 °C
By: Robert Ozment
Specific Conductance: 4.42 (20,000)

Requested Chem: [redacted]

Laboratory No.: [redacted]
Date Received: APR 26 1991
Date Reported: MAY 07 199[illegible]

THD-Sample No. EB1 1773 Date Received 04/26/91 Date Reported 05/06/91
00618- 25.48 Nitrate as N mg/L

*Note: To convert NO_3-N to NO_3, multiply by 4.427.

Texas Water Development Board

Chemical Water Analysis Report

RAD - Ro .1991.1346

RAD = Radioactivity Sample

TWDB Use Only

Work No. 320-31030

IAC No. _____

Send Reply To:
Ground Water Unit
Texas Water Development Board
P.O. Box 13231
Austin, Texas 78711

Attention: Phil Nordstrom — State Well Number: 30-27-611

County: Jones Co. — Date & Time: 4-25-91 9:30

Owner: M.W. Hard — Send Copy To Owner

Address: Rt 1 Bx 42J Abilene, Tx 79601 — Sampled After Pumping: ½ Hours

Date Drilled: 1921 — Depth: 241' — Yield: _____ GPM ☐ Measured ☐ Estimated

Collection Point: F.A.P.T. — pH 7.10 — Use: Stock — Temperature: 18.3 °C

By: Robert Ozment — Specific Conductance: 4.42 (2,900)

Requested Chemical Analysis

Laboratory No.: [redacted] — Date Received: APR 26 1991 — Date Reported: JUN 26 1991

✓ Alpha	(01503)	3.1 ± 1.3	pCi/l
✓ Beta	(03503)	<30	pCi/l
~~Radium-226~~	(09503)		pCi/l
~~Radium-228~~	(81366)		pCi/l
~~Total Radium~~*	(11500)		pCi/l
Thorium*	(26403)		pCi/l
~~Uranium~~*	(22703)		pCi/l

* Do not analyze unless it is checked yes.

GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Dead man Cr.

Aquifer Alluvium - Qa / Field No. _____ State Well No. PY-30-27-612

Owner's Well No. Abd. Field County Lamb

1. Location: NE 1/4 NE 1/4 Sec. 6, Block _____ Survey Blind Asylum
1.55mi. W. Hamby & 1.65 mi. N. on FM. 1082 in W. side of road

2. Owner: J. R. Harp Address: Rt. 1, Box 72, Abilene, Tex.
Tenant: Same Address: _____
Driller: Jack Leonard Address: Abilene, Texas

3. Elevation of Ground in 1700 ft. above msl, determined by Topo

4. Drilled: July 23 19 61, Dug, Cable Tool, Rotary

5. Depth: Rept. 26 ft. Meas. _____ ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfgr. _____ Type Unequipped
No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel _____ Make & Model _____ HP. _____

9. Yield: Flow _____ gpm, Pump 20 gpm, Meas. Rept. Est. Strong

10. Performance Test: Date 7/61 Length of Test 1 Made by Contr.-Dr.
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.

11. Water Level: 10.28 ft. rept. meas. 9-20 1961 above below Top tile wall which is 0.7 ft. above below surface.
_____ ft. rept. meas. _____ 19 _____ above below which is _____ ft. above below surface.
_____ ft. rept. meas. _____ 19 _____ above below which is _____ ft. above below surface.
_____ ft. rept. meas. _____ 19 _____ above below which is _____ ft. above below surface.

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation Not Used

13. Quality: (Remarks on taste, odor, color, etc.) _____

Temp. NSt °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: Driller's Log Radioactivity Log, Electric Log, Formation Samples, Pumping Test,

15. Record by: R. Price Date 9-20 1961
Source of Data Mr. Harp & Mr. Leonard

16. Remarks: located about 20 yds W. of road in field

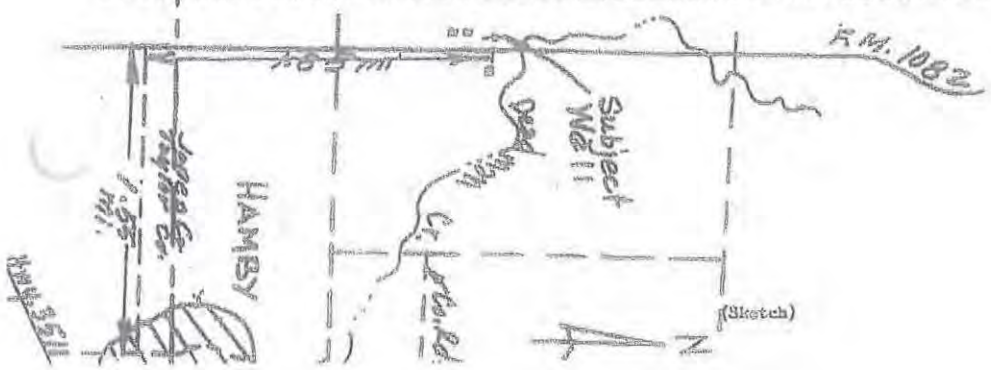
CASING & BLANK PIPE
Cemented From _____ ft. to _____ ft.

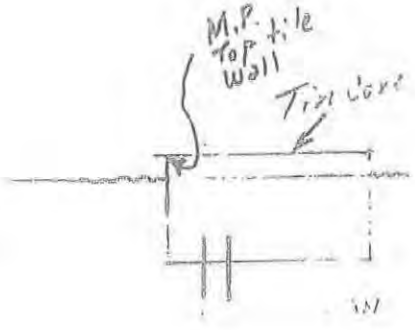
Diam. (in.)	Type	Setting, ft. from	to
8 5/8	O.F.	-1.5	T.D.

WELL SCREEN
Screen Openings

Diam. (in.)	Type	Setting, ft. from	to
8 5/8	Slotted O.F.	15	20

Drl's. Log: 0-3' topsoil
3'-16' say. clay
16-24' [illegible] gravel-wtr.
24-26' red bed







Jack Leonard Water Well Drilling

709 Glenhaven — OR 3-7469 — Shop 3001 S. Treadaway

ABILENE, TEXAS



30-27-612 DATE July 23 19 61

M. J R Hays

Rt 1 Abilene

Farm

0-3 top soil

3-16 Sandy Clay

16-24 Red Hydrant

24-26 red bed

Drilled 30" hole at P.S.R. casing built at 209 ft.

GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Deadman Cr. Alluvium = Qal Basin No. (Est.) State Well No. BY-30-27-613

Owner's Well No. 1 Irr. County Jones

1. Location: NE¼, NE¼ Sec. 6, Block —, Survey Blind Asylum
1.55mi W Hamby, 1.2mi N on F.M. 1082 & thru gate 0.05mi NW to well
2. Owner: J. R. Harp Address: Rt. 1, Box 62, Abilene, Tex
Tenant: Same Address:
Driller: Jack Leguard Address: Abilene, Texas
3. Elevation of Ground is 1687 ft. above msl, determined by Topo
4. Drilled: Mar 21 1967; Dug, Cable Tool, (Rotary)
5. Depth: Rept. 24 ft. Meas. ft.
6. Completion: Open Hole, Straight Wall, Underreamed (Gravel Packed)
7. Pump: Mfgr. Berkley Type Submersible
No. Stages, Bowls Diam. in., Setting 20 ft.
Column Diam. 3 in., Length Tailpipe ft.
8. Motor: Fuel Elect. Make & Model HP. 5
9. Yield: Flow gpm, Pump 85 (gpm), Meas. (Rept.), Est.
10. Performance Test: Date 3/67 Length of Test ? Made by Contr.
Static Level ft. Pumping Level ft. Drawdown ft.
Production gpm Specific Capacity gpm/ft.
11. Water Level: 12.52 ft. rept. meas. 9-20 19 67 above (below) Top csg. which is 1.2 ft. (above) below surface.
ft. rept. meas. 19 above below which is ft. above below surface.
ft. rept. meas. 19 above below which is ft. above below surface.
ft. rept. meas. 19 above below which is ft. above below surface.
12. Use: Dom., Stock, Public Supply, Ind. (Irr.) Waterflooding, Observation, Not Used,
13. Quality: (Remarks on taste, odor, color, etc.)
Temp. NS °F, Date sampled for analysis Laboratory
Temp. °F, Date sampled for analysis Laboratory
Temp. °F, Date sampled for analysis Laboratory
14. Other data available as circled: (Driller's Log) Radioactivity Log, Electric Log, Formation Samples, Pumping Test,
15. Record by: R. Price Date 9-20 1967
Source of Data Mr. Harp & Mr. Leguard
16. Remarks: Drlr's Log: 0-3' topsoil
3-18' gray clay
18-22' sd. & gravel - wtr.
22-24' red bed

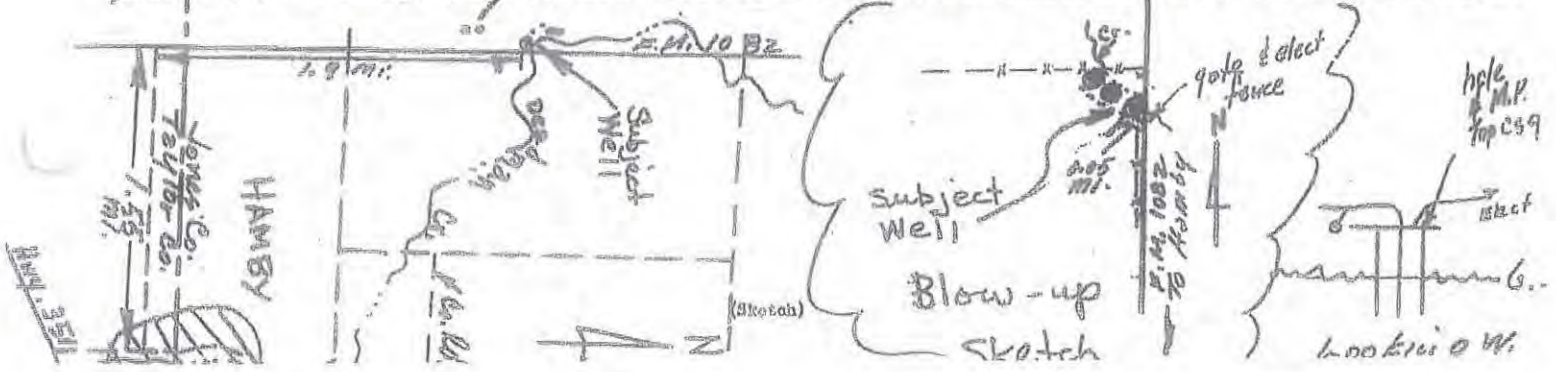
CASING & BLANK PIPE
Cemented From ft. to ft.

Diam. (in.)	Type	Setting, ft. From	to
12¾	O.E.	+1.2	T.D.

WELL SCREEN
Screen Openings

Diam. (in.)	Type	Setting, ft. From	to
12¾	Screen	19	24

K.W.H. consumption data is available on this well.





Jack Leonard Water Well Drilling

709 Glenhaven — OR 3-7469 — Shop 2601 S. Treadaway

ABILENE, TEXAS



30-27-613

DATE Mar 31 19 57

M. J. R. Hays

Rt 1 Box 321 Abilene

Farm

0-3 top Soil

3-11 Gray Clay

11-22 Sand & Gravel

22-24 Red Bed

Drilled 30" hole Set 12 3/4" Casing to 24 ft.

45 gpm.

Installed 5 H.P. Berkley Submersible

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Deadman Cr. Alluvium = Qal Map No. (Northwest) State Well No. FY-30-27-614

Owner's Well No. 3 Irr. County Jones

1. Location: NE 1/4, NE 1/4 Sec. 6, Block ——, Survey Blind Asylum
1.55 mi. W. Hwy 1, 1.9 mi. N. on FM 1082 thru gate E. Carson Ind.

2. Owner: J. R. Harp Address: Rt. 1, Box 421, Abilene, Tex.
Tenant: Same Address:
Driller: Jack Leonard Address: Abilene, Texas

3. Elevation of Ground is 1687 ft. above msl, determined by Topo

4. Drilled: Mar. 15 19 67; Dug, Cable Tool, Rotary

5. Depth: Rept. 24 ft. Meas. ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfgr. Berkley Type Submersible
No. Stages ——, Bowls Diam. —— in., Setting 20 ft.
Column Diam. 3 in., Length Tailpipe —— ft.

8. Motor: Fuel Elect. Make & Model HP. 5

9. Yield: Flow —— gpm, Pump 85 gpm, Meas. Rept. Est.

10. Performance Test: Date 3/67 Length of Test 2 Made by Contr.
Static Level —— ft. Pumping Level —— ft. Drawdown —— ft.
Production —— gpm Specific Capacity —— gpm/ft.

11. Water Level: 11.88 ft. rept. meas. 9-20 19 67 above below Top Csg. which is 1.8 ft. above below surface.
—— ft. rept. meas. 19 above below which is —— ft. above below surface.
—— ft. rept. meas. 19 above below which is —— ft. above below surface.
—— ft. rept. meas. 19 above below which is —— ft. above below surface.

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used.

13. Quality: (Remarks on taste, odor, color, etc.)

Temp. 72 °F, Date sampled for analysis 9-20-67 Laboratory SWD.
Temp. —— °F, Date sampled for analysis —— Laboratory
Temp. —— °F, Date sampled for analysis —— Laboratory

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test,

15. Record by: R. Price Date 9-20 19 67
Source of Data Mr. Harp & Mr. Leonard

16. Remarks: Drl. Log: 0-3' top soil
3'-16' Sdy Clay
16'-21' Sdy gravel-wtr
21'-24' red bed

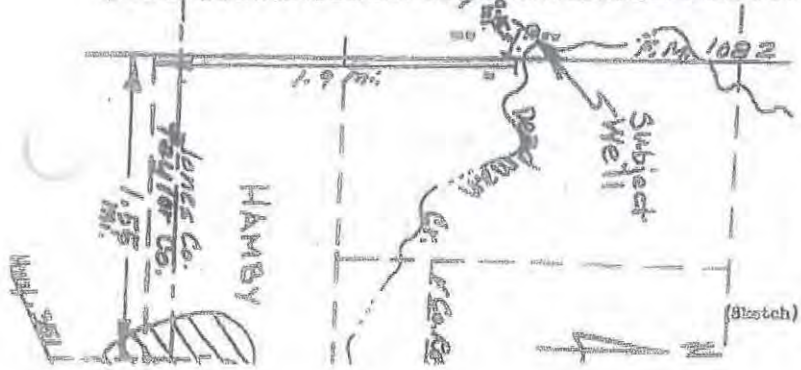
CASING & BLANK PIPE
Cemented From —— ft. to —— ft.

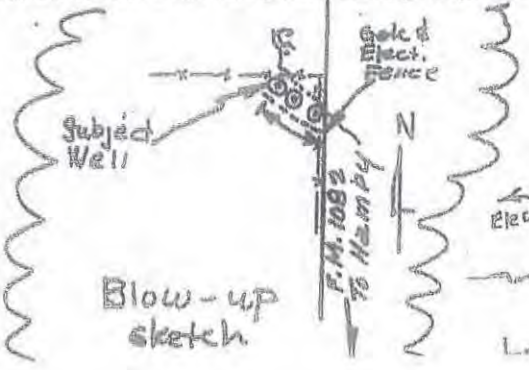
Diam. (in.)	Type	Setting, ft. from	to
16	O.E.	+1.8	T.D.

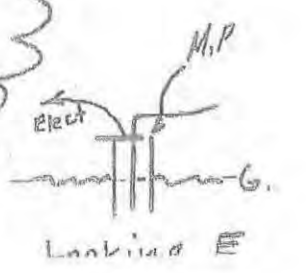
WELL SCREEN
Screen Openings

Diam. (in.)	Type	Setting, ft. from	to
16"	Screen	19	24

Kwh consumption data is available on this well.









Jack Leonard Water Well Drilling

709 Glenhaven — OR 3-7469 — Shop 2901 S. Treadaway
ABILENE, TEXAS



30-27-614

DATE Mar. 15 19 62

M. J R Hays
#1 Blk 9 21 Abilene Tex

Farm

0-3 Top Soil
3-16 Sandy clay
16-21 Sand + gravel
21-24 Red shale
Drilled 20" hole at 16" casing, test pumped at 85 gpm.
Set 5 HP Berkley Automatic

CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. FY-30-27-614

Irr. Well No. 3 (Northwes

Date Collected 9/20/67

By R. Price

Location NENE Sec. 6, Blind Asylum, 0.55 mi. E. & 1.68 mi. W. of Hamby & 1.9 mi. N. of Nail.

Source (type of well) Submersible Owner J.E. Harp, Rt. 1, Box 42, Abilene, Tex.

Date Drilled Mar. 1967 Depth 24 ft. WBF —

Producing intervals 19-24 Water level 10.08 L.S.D. ft.

Sampled after pumping ½ hr. Yield 75 GPM Est. Temperature 72 °F

Point of collection opening near pump Appearance (clear) turbid colored

Use Irr. Remarks Send copy to owner as listed above

FOR LABORATORY USE ONLY

KEY PUNCHED

CHEMICAL ANALYSIS

Laboratory No. 42303 Date Received OCT 11 1967 Date Reported 10-20-67

	PPM	MPM			PPM	MPM
Silica	19			Carbonate		0
Calcium	272	13.60	10.90	Bicarbonate	215	3.52
Magnesium	100	8.20	21.80	Sulfate	477	9.93
Sodium	478	20.77		Chloride	980	27.60
	Total	42.57		Fluoride	0.8	
☒ Potassium	3 ppm			Nitrate	76	1.06
☒ Manganese	<0.05 ppm			pH 7.6	Total	42.11
☒ Boron	0.58 ppm	SAR 6.29		1/Dissolved Solids (sum)		2470
☒ Total Iron	2.5 ppm	RSC —		Phenolphthalein Alkalinity as C CO_3		0
☐ (other)				Total Alkalinity as C CO_3	(3.52)	176
Specific Conductance (micromhos/cm3)		3960		Total Hardness as C CO_3	(21.80)	1090
Diluted Conductance (micromhos/cm3)		36x 146 5256				

OCT 20 '67

☒ items will be analyzed if checked.

Analyst

Total Iron requires separate sample.

Checked by

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Deadman Cr.

Aquifer: Alluvium - Qal Sub-No. (Middle) State Well No. PV-30-27-615

Owner's Well No. 2 Farm County Jones

1. Location: NE ¼ NE ¼ Sec. 6, Block —, Survey Blind Asylum
1.55 mi. W Hamby, 1.9 mi. N on F.M. 182 & three gate S. into NW to well

2. Owner: J. R. Harp Address: Rt. 1, Box 421, Abilene, Tex.
Tenant: Same Address:
Driller: Jack Leonard Address: Abilene, Texas

3. Elevation of Ground is 1687 ft. above msl, determined by Topo

4. Drilled: Mar. 14 19 67, Dug, Cable Tool, Rotary

5. Depth: Repl. 24 ft. Reco. ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfr. Berkley Type Submersible
No. Stages —, Bowl Diam. — in., Setting 20 ft.
Column Diam. 3 in., Length Tailpipe — ft.

8. Motor: Fuel Elec Gas Make & Model HP 5

9. Yield: Flow — gpm, Pump 100 gpm, Reco. Repl. Est.

10. Performance Test: Date 3/67 Length of Test 2 Made by Constr.
Static Level — ft. Pumping Level — ft. Drawdown — ft.
Production — gpm Specific Capacity — gpm/ft.

11. Water Level: 1653 ft. Repl. Reco. 9-20 19 67 above below Top Cog. which is 2.0 ft. above below surface
— ft. Repl. Reco. 19 above below which is — ft. above below surface
— ft. Repl. Reco. 19 above below which is — ft. above below surface
— ft. Repl. Reco. 19 above below which is — ft. above below surface

12. Use: Dom., Stock, Public Supply, Ind. Irr., Waterflooding, Observation, Not Used.

13. Quality: (Remarks on taste, odor, color, etc.)

Temp. 83 °F, Date sampled for analysis — Laboratory
Temp. — °F, Date sampled for analysis — Laboratory
Temp. — °F, Date sampled for analysis — Laboratory

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test,

15. Record by: L. Price Date 9-20 19 67
Source of Data Mr. Harp & Mr. Leonard

16. Remarks: Drlr's. Log: 0-3' top soil
3-17' gray clay
17-22' gravel & sd. - wtr.
22-24' red bed

R.R.M.H. Assumption Data is available on this well.

CASING & BLANK PIPE
Cemented From — ft. to — ft.

Diam. (in.)	Type	Setting, ft. From	To
16	O.E.	+2.0	T.D.

WELL SCREEN
Screen Openings —

Diam. (in.)	Type	Setting, ft. From	To
16	Slotted O.E.	19	24





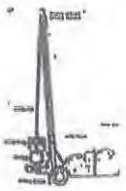
TEST I G № 977



Jack Leonard Water Well Drilling

709 Glenhaven — OR 3-7469 — Shop 2001 S. Treadaway

ABILENE, TEXAS



20-37-615

DATE March 14 1957

M. J. R. Hays

Rt 1 Box 92 Abilene, Tex

Farm

0-2 top soil
2-17 grey clay
17-22 grey sand + sand
22-24 red bed
drilled 30" hole set 16" casing gravel packed
Pumped well at 150 gpm
Set 5 HP Berkley Submersible

GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL SCREENING

Deadman Cr.

Aquifer Alluvium - Dog Grid No. _____ State Well No. PY-30-27-616

Owner's Well No. House County Jones

1. Location: NE 1/4 NE 1/4 Sec. 7, Block _____ Survey Blind Asylum
1 Mi. W. Hamby, 3 mi. N. on F.M. 1082, 1 mi. E. & 1/2 mi. S. on N. side road

2. Owner: City of Abilene (Attn. Mr. W.C. Weems) Address: Box 60, Abilene, Texas
Tenant: G. W. Green Address: Rt. 1, Abilene, Texas
Driller: Unknown Address: _____

3. Elevation of Ground is 1709 ft. above msl, determined by Topo

4. Drilled: Old* 19___ (Dug), Cable Tool, Rotary, _____

5. Depth: Repd. 28 ft. Meas. _____ ft.

6. Completion: (Open Hole), Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfgr. ? Type Jet
No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel Elect Make & Model _____ HP. 1/2

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Repd., Est. Unknown

10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.

11. Water Level: UTM ft. (Dpt.) 9-26 1967 above below ground level which is @ ft. above below surface
_____ ft. rept. meas. 19 above below _____ which is _____ ft. above below surface.
_____ ft. rept. meas. 19 above below _____ which is _____ ft. above below surface.
_____ ft. rept. meas. 19 above below _____ which is _____ ft. above below surface.

12. Use: (Dom.), Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used. _____

13. Quality: (Remarks on taste, odor, color, etc.) _____
Temp. 71 °F, Date sampled for analysis 9-26-67 Laboratory SAD
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log,
Formation Samples, Pumping Test, _____

15. Record by: R. Price Date 9-26 1967
Source of Data Mr. Green

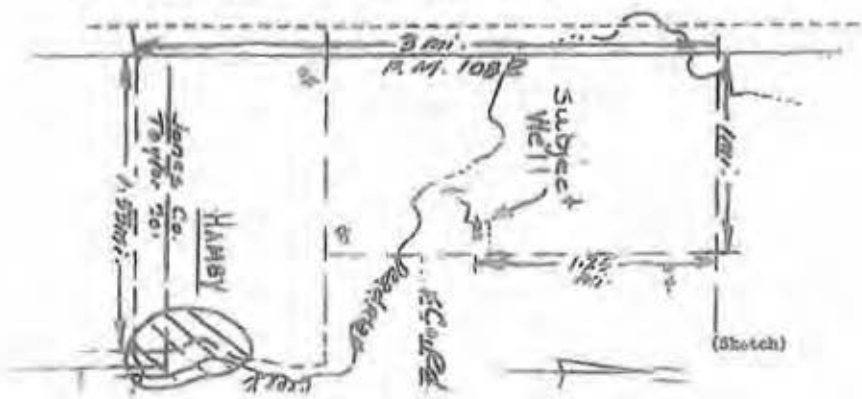
16. Remarks: * est. 100 yrs. old - located on back porch of what used to be old Round Mound Elem. School & Post Office
** - Do not drink

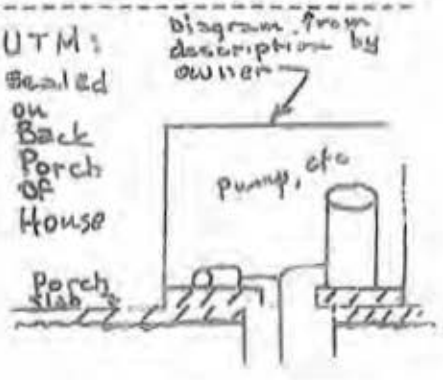
CASING & BLANK PIPE
Cemented From _____ ft. to _____ ft.

Diam. (in.)	Type	Setting, ft. From	to
36	rockwall	0	T.D.

WELL SCREEN
Screen Openings _____

Diam. (in.)	Type	Setting, ft. From	to
36	rockwall open @ bottom		





CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. FY-30-27-616

G.W. Green Well @ house

Date Collected 9/26/67

By R. Price

Location NENE Sec. 7, Blind Asylum, 1.65 mi. W. Hwy 64, 3 mi. N. on F.M. 1082, 0.2 mi. S. on W. side road
Attn: Mr. W.E. Weems

Source (type of well) Well Owner City of Abilene, Box 60, Abilene, Texas

Date Drilled Old Depth 28 ft. WBF —

Producing intervals Unknown Water level 15 (rept.) L.S.D. ft.

Sampled after pumping 1/6 hr. Yield Unknown GPM meas. est. Temperature 71 °F

Point of collection faucet near well Appearance clear - turbid - colored

Use D* Remarks *Send copy to owners as listed above &
*tenant does not drink
copy to: G.W. Green, Rt. 1, Abilene, Texas

FOR LABORATORY USE ONLY

KEY PUNCHED VCH

CHEMICAL ANALYSIS

Laboratory No. 72298 Date Received OCT 11 1967 Date Reported 10-20-67

	PPM	MPM		PPM	MPM
Silica	24		Carbonate		0
Calcium	106	5.30	Bicarbonate	223 453	7.42
Magnesium	31	2.56	Sulfate	177	3.69
Sodium	256	11.11	Chloride	278	7.82
Total		18.97	Fluoride	0.9	
☐ Potassium			Nitrate	6.0	0.10
☐ Manganese		%Na 59.1	pH 7.4	Total	19.03
☐ Boron		SAR 5.61	1/Dissolved Solids (sum)		1100
☐ Total Iron		RSC —	Phenolphthalein Alkalinity as C aCO_3		0
☐ (other)			Total Alkalinity as C aCO_3	(7.42)	371
Specific Conductance (micromhos/cm³)		1830	Total Hardness as C aCO_3	(0.86)	393
Diluted Conductance (micromhos/cm³)		11 x 195 = 2145			

3.73
7.86

"☐" items will be analysed if checked.

Total Iron requires separate sample.

Analyst

Checked by

OCT 20 67

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Deadman Co.

Aquifer Alluvium - Q2 | Field No. _____ | State Well No. PX-30-27-617

Owner's Well No. Abd. Field | County Jones

1. Location: SW¼ NE¼ Sec. 7, Block _____ Survey Blind Asylum
1.55mi. W. Hoxby, 3mi. N. on FM 1082, 1mi. E, 1.2mi. S. 0.15mi. W, 0.2mi. S, 0.2mi. W & 0.1mi. SW.

2. Owner: City of Abilene (W. A. Weeks) Address: Box 60, Abilene, Texas
Tenant: G. W. Green Address: R.F.D. 7, Abilene, Texas
Driller: Unknown Address: _____

3. Elevation of Ground is 1701 ft. above msl, determined by Topo

4. Drilled: Abd. 19 ___ (Dug) Cable Tool, Rotary, _____

5. Depth: Rept. 28 ft. Meas. 21 ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfr. _____ Type Unequipped
No. Stages ____, Bowls Diam. ____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel _____ Make & Model _____ HP. _____

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. Unknown

10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level ____ ft. Pumping Level ____ ft. Drawdown ____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.

11. Water Level: 17.5 ft. rept. meas. 9-26 1961 above (below) Top brickwall which is 2.7 ft. above (below) surface
____ ft. rept. meas. 19__ above (below) which is ____ ft. above (below) surface
____ ft. rept. meas. 19__ above (below) which is ____ ft. above (below) surface
____ ft. rept. meas. 19__ above (below) which is ____ ft. above (below) surface

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation (Not Used)

13. Quality: (Remarks on taste, odor, color, etc.) _____
Temp. Nat. °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Sampling, Pumping Test,

15. Record by: R. Price Date 9-26 1961
Source of Data Mr. Green

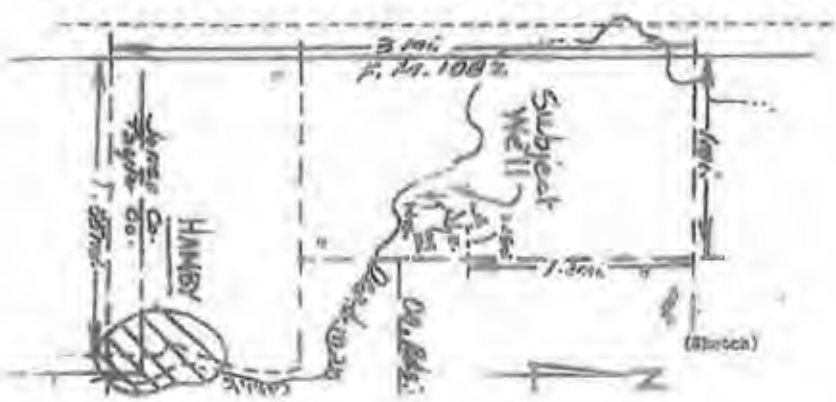
16. Remarks: Geology Unknown

CASING & BLANK PIPE
Cemented From ____ ft. to ____ ft.

Diam. (in.)	Type	Setting, ft. From	to
36	brickwall	+2.7	T.D.

WELL SCREEN
Screen Openings

Diam. (in.)	Type	Setting, ft. From	to
36	brickwall open @ bottom		



(Sketch)

GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Stream Alluvium Qal Field No. _____ State Well No. PY-30-27-618

Owner's Well No. Hse. Windmill County Jones

1. Location: W½ NW¼ Sec. 3, Block ____ Survey Blind Asylum
1.56 mi. W. Hamby, 2 mi. N. on F.M. 1082, 1 mi. E. & 0.25 mi. S. on E. side road
2. Owner: City of Abilene (Mr. Weeg) Address: Box 60, Abilene, Texas
Tenant: Alton Hughes Address: Rt. 1, Box 146, Abilene, Tex.
Driller: Unknown Address: _____
3. Elevation of Ground is 1696 ft. above msl, determined by Topo
4. Drilled: Mo. Old 19 ___ Dug, Cable Tool, Rotary, _____
5. Depth: Rept. 22 ft. Meas. _____ ft.
6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____
7. Pump: Mfgr. _____ Type W.D.S.C.
No. Stages ____, Bowls Diam. ____ in., Setting ____ ft.
Column Diam. ____ in., Length Tailpipe ____ ft.
8. Motor: Fuel _____ Make & Model _____ HP. _____
9. Yield: Flow ____ gpm, Pump ____ gpm, Meas., Rept., Est. Unknown
10. Performance Test: Date ____ Length of Test ____ Made by _____
Static Level ____ ft. Pumping Level ____ ft. Drawdown ____ ft.
Production ____ gpm Specific Capacity ____ gpm/ft.
11. Water Level: 11.18 ft. rept. meas. 9-26 1967 above below Top brickwall which is 2.13 ft. above below surface.
____ ft. rept. meas. 19__ above below _____ which is ____ ft. above below surface.
____ ft. rept. meas. 19__ above below _____ which is ____ ft. above below surface.
____ ft. rept. meas. 19__ above below _____ which is ____ ft. above below surface.
12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used
13. Quality: (Remarks on taste, odor, color, etc.) Our Sewer Farm unfit for human consumption
Temp. NSF, Date sampled for analysis ____ Laboratory ____
Temp. ___ °F, Date sampled for analysis ____ Laboratory ____
Temp. ___ °F, Date sampled for analysis ____ Laboratory ____
14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test,
15. Record by: E. Price Date 9-26 1967
Source of Data Mr. Hughes, et. al.
16. Remarks:
Geology Unknown

CASING & BLANK PIPE

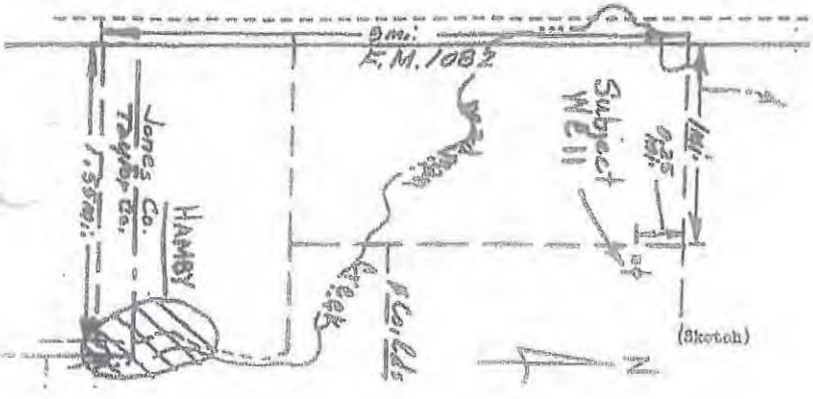
Cemented From ____ ft. to ____ ft.

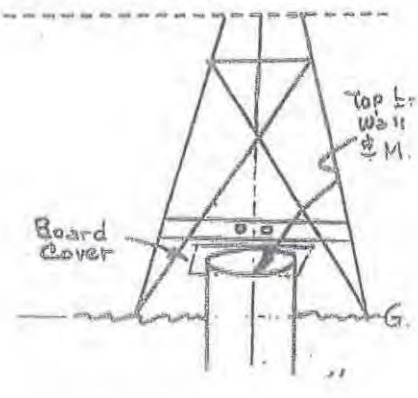
Diam. (in.)	Type	Setting, ft. from	to
36	brickwall	+2.13	T.D.

WELL SCREEN

Screen Openings

Diam. (in.)	Type	Setting, ft. from	to
36	brickwall open @ bottom		





CW 1

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Deadman Cr.

Aquifer Alluvium-Qal Field No. old Radford State Well No. PY-30-27-613

Owner's Well No. Place County Jones

1. Location: SE 1/4 SE 1/4 Sec. 5, Block —, Survey Blind Asylum
1155mi W Hamby, N. 2.1 mi on F.M. 1082 & thru locked gate 0.1mi W.
2. Owner: N.K. Myatt, et al Address: Rt. 1, Abilene, Texas
Tenant: Sand (work) Address:
Driller: Unknown Address:
3. Elevation of Ground is 1685 ft. above msl, determined by Topo
4. Drilled: Old 19 10 Dug, Cable Tool, Rotary,
5. Depth: Repd. 24 ft. Meas. ft.
6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed
7. Pump: Mfgr. Meyers Type Jet
No. Stages, Bowls Diam. in., Setting ft.
Column Diam. in., Length Tailpipe ft.
8. Motor: Fuel Elect. Make & Model G.E. HP. 3/4
9. Yields: Flow gpm, Pump gpm, Meas., Repd., Est. Unknown
10. Performance Test: Date Length of Test Made by
Static Level ft. Pumping Level ft. Drawdown ft.
Production gpm Specific Capacity gpm/ft.

odd shaped Section see ownership map

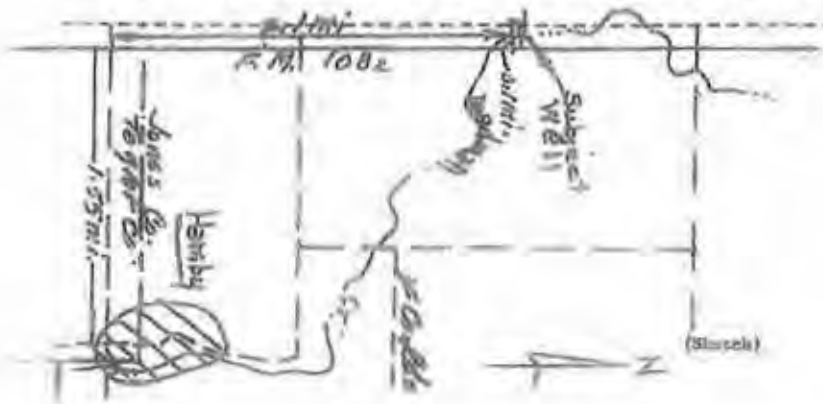
CASING & BLANK PIPE
Cemented From ft. to ft.

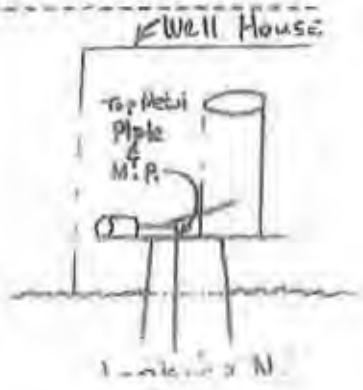
Diam. (in.)	Type	Setting, ft. from	to
36	brick wall	+2.5	T.D.

11. Water Level: 23.50 ft. rept. meas. 7-29 19 53 above below top brick curb which is 3.0 ft. above below surface
15.06 ft. rept. meas. 9-28 19 67 above below Top Metal cover which is 2.5 ft. above below surface
ft. rept. meas. 19 above below which is ft. above below surface.
ft. rept. meas. 19 above below which is ft. above below surface.
12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used,
13. Quality: (Remarks on taste, odor, color, etc.) Salty, hard
Temp. 69°F, Date sampled for analysis 7-29-53 Laboratory SHD
Temp. 74°F, Date sampled for analysis 9-28-67 Laboratory SHD
Temp. °F, Date sampled for analysis Laboratory
14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test,
15. Record by: R. Price Date 9-28 1967
Source of Data old Ticket & Mr. Myatt
16. Remarks:
Geology Unknown
This is well M-2 at Bulletin 5418

WELL SCREEN
Screen Openings

Diam. (in.)	Type	Setting, ft. from	to
36	brick wall	open @ bottom	





Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
* Do not use ball point pen

Texas Department of Health Laboratories
1100 West 49th Street
Austin, Texas 78756

TDWR ONLY

Organization No. _____ Lab No. _____

Work No. _____

CHEMICAL WATER ANALYSIS REPORT

County 127 Jones

Send report to:

Data Collection and Evaluation Section
Texas Department of Water Resources
P.O. Box 13087
Austin, Texas 78711

State Well No. 30-27-61[illegible]

Well No. _____

Date Collected 07-29-53

Owner _____ Send copy to owner Sample No. _____ By _____

Address _____ Well Location _____

Date Drilled _____ Depth _____ ft. WBF _____ Source (type of well) _____

Producing intervals _____ Water level _____ ft. Sample depth _____ ft.

Sampled after pumping _____ hrs. Yield _____ GPM meas. est. Temperature _____ °F _____ °C

Point of collection _____ Appearance ☐ clear ☐ turbid ☐ colored ☐ other

Use _____ Remarks _____

(FOR LABORATORY USE ONLY)

CHEMICAL ANALYSIS

KEY PUNCHED

Laboratory No. _____ Date Received _____ Date Reported _____

		MG/L	ME/L
[illegible]	00955	20	
Calcium	00910	238	
Magnesium	00920	68	
Sodium	00929	371	
	Total		
☐ Potassium	00937		
[3] ☐ Manganese	01055		%Na
☐ Boron	01022		SAR
[3] ☐ Total Iron	01045		RSC
☐ (other) _____		MG/L	

		MG/L	ME/L
Carbonate	00445		
Bicarbonate	00440	227	
Sulfate	00945	328	
Chloride	00940	792	
Fluoride	00951	.4	
Nitrate	71850	89.00	
pH	00403	7.9	
	Total		
[1] Dissolved Solids (residue at 180° C)	70300	2010	
Phenolphthalein Alkalinity as C aCO_3	00415		
Total Alkalinity as C aCO_3	00410		
Total Hardness as C aCO_3	00900	861	
[2] Nitrogen Cycle			
Ammonia - N	00610		
Nitrite - N	00615		
Nitrate - N	00620		
Organic Nitrogen	00605		

Specific Conductance (micromhos/cm[3]) 00095 _____

Diluted Conductance (micromhos/cm[3]): _____ X _____ = 3460

"☐" items will be analyzed if checked.

[1] Bicarbonate reported in this analysis can be converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure used in the computation of dissolved solids.
[2] Nitrogen cycle requires separate sample.
[3] Total Iron and Manganese require separate sample.

Analyst _____ Checked By _____

TDWR-0148 (Rev. 9-26-83)

CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. FY-30-27-619

Bedford Well #

Date Collected 9/28/67

By R. Price

Location SESE Sec. 5, Blind Asylum, 1.55 mi. W. Hamby & 3.1mi. N. on F.M. 1082, 2 Shown located 4 mi. W. @ house.

Source (type of well) Jet Owner N.H. Myatt, Rt. 1, Abilene, Texas

Date Drilled about 1910 Depth 24 ft. WW -

Producing intervals Unknown Water Level 12.56 L.S.D. ft.

Sampled after pumping tank hrs. Yield GPM meas. est. Temperature tank °F

Point of collection tank Appearance clear turbid green colored

Use S. Remarks Send copy to owner listed above

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS

KEY PUNCHED

Laboratory No. 923124 Date Received OCT 11 1967 Date Reported 10-19-67

	PPM	EPM		PPM	EPM
Silica	21		Carbonate		0
Calcium	195	9.76	Bicarbonate	72 (35)	1.18
Magnesium	59	4.84	Sulfate	354	7.37
Sodium	431	18.72	Chloride	850	24.00
Total		33.32	Fluoride	0.7	
☐ Potassium			Nitrate	6.0	0.10
☐ Manganese		ppm 56.2	pH 6.8	Total	32.65
☐ Boron		SAR 6.93	1/ Dissolved Solids (cmp)		1930
☐ Total Iron		RSC —	Phenolphthalein Alkalinity as C CO_3		0
☐ (other)			Total Alkalinity as C CO_3	(1.18)	59
Specific Conductance (micromhos/cm³)		3250	Total Hardness as C CO_3	(14.60)	730
Dilution Conductance (micromhos/cm³)		26 x 157 4082			

"☐" items will be analyzed if checked.

Total Iron requires separate sample.

Analyst OCT 20 67

Checked by

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Deadmen Cr.

Aquifer Alluvium - Qal Field No. _____ State Well No. PY-30-27-620

Owner's Well No. Abd. West County Jones

1. Location: 1/4, SW 1/4 Sec. 2, Block _____ Survey Rlwd Asylum

1.55 mi. W. Hamby Et. 3.3 mi. N. on F.M. 1082 on E. side road

2. Owner: J. M. Crawford Est. Address: Haskell, Texas

Tenant: Melvin Hill (Lease) Address: 206 S. Ave. Q, Haskell, Texas

Driller: Unknown Address: _____

3. Elevation of Ground is 1699 ft. above msl, determined by Topo

4. Drilled: Yr. old 19 ___ Dug, Cable Tool, Rotary, _____

5. Depth: Rept. _____ ft. Meas. 23.0 ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfgr. _____ Type Unequipped

No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel _____ Make & Model _____ HP. _____

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. Unknown

10. Performance Test: Date _____ Length of Test _____ Made by _____

Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.

Production _____ gpm Specific Capacity _____ gpm/ft.

CASING & BLANK PIPE

Cemented From _____ ft. to _____ ft.

Diam. (in.)	Type	Setting, ft. From	to
24 sq.	brickwall	+2.6	0
48	brickwall	0	T.D.

11. Water Level: 13.5 ft. rept. meas. 9-28 1967 above below Top brickwall which is 2.6 ft. above below surface.

_____ ft. rept. meas. 19 above below which is _____ ft. above below surface.

_____ ft. rept. meas. 19 above below which is _____ ft. above below surface.

_____ ft. rept. meas. 19 above below which is _____ ft. above below surface.

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation Not Used.

13. Quality: (Remarks on taste, odor, color, etc.) _____

Temp. 18? °F, Date sampled for analysis _____ Laboratory _____

Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test, _____

15. Record by: R. Price Date 9-28 1967

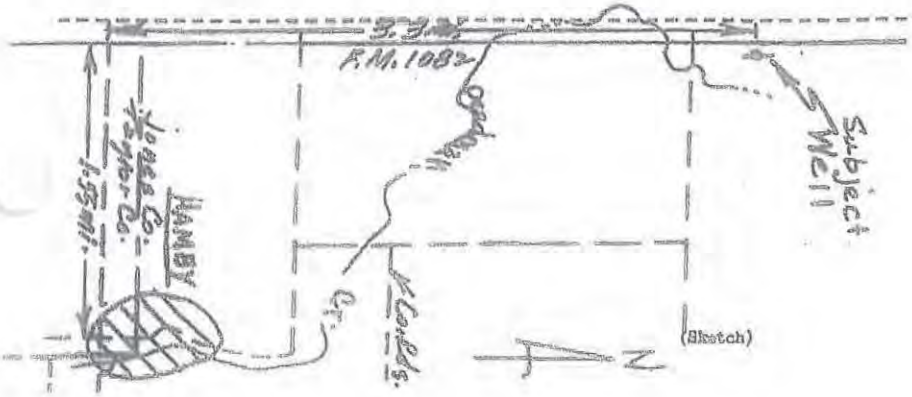
Source of Data Observation

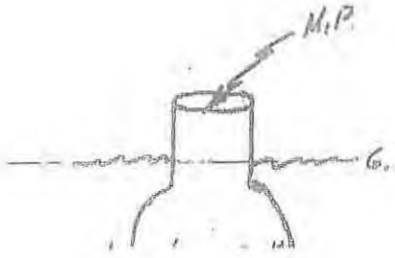
16. Remarks: Geology Unknown

WELL SCREEN

Screen Openings

Diam. (in.)	Type	Setting, ft. From	to
as above	open hole	bottom	





TEXAS WATER DEVELOPMENT BOARD

WELL REGISTER

Aquifer Stream Alluvium - Qal Field No. _____ State Well No. PY-30-22-621

Owner's Well No. House County Jones

1. Location: 1/4 NW 1/4 Sec. 52 Block 14 Survey T.E.P. R.R. 1.55mi. W. Hawley, 3mi. N. on F.M. 1082, 1.4mi. E. & 0.45mi. N.

2. Owner: Clyde Beasley Address: 925 Leggett, Abilene, Tex.

Tenant: Derrell D. Deaver Address: Rt. 1, Abilene, Texas

Driller: Unknown Address: _____

3. Elevation of Ground is 1682 ft. above msl, determined by Topo

4. Drilled: Yes 19 ___ (Dug) Cable Tool, Rotary, _____

5. Depth: Rept. 25 ft. Meas. 26.7 ft.

6. Completion: (Open Hole), Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfgr. Rapidation Type Jet SWSC

No. Stages ____, Bowls Diam. ____ in., Setting ____ ft.

Column Diam. ____ in., Length Tailpipe ____ ft.

8. Motor: Fuel Elect. Make & Model Marathon HP. 1½

9. Yield: Flow ____ gpm, Pump ____ gpm, Meas., Rept., Est. Weak-fair

10. Performance Test: Date ____ Length of Test ____ Made by _____

Static Level ____ ft. Pumping Level ____ ft. Drawdown ____ ft.

Production ____ gpm Specific Capacity ____ gpm/ft.

11. Water Level: 12.5 ft. rept. meas. 9-28 1967 above below Top brickwall which is 3.3 ft. above below surface.

____ ft. rept. meas. ____ 19 ___ above below _____ which is ____ ft. above below surface.

____ ft. rept. meas. ____ 19 ___ above below _____ which is ____ ft. above below surface.

____ ft. rept. meas. ____ 19 ___ above below _____ which is ____ ft. above below surface.

12. Use: Dom., (Stock) Public Supply, Ind., Irr., Waterflooding, Observation, Not Used. _____

13. Quality: (Remarks on taste, odor, color, etc.) Smells of chemicals

Temp. 68 °F, Date sampled for analysis 9-28-67 Laboratory SWD

Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test, _____

15. Record by: R. Price Date 9-28 1967

Source of Data Mr. Beasley

16. Remarks: Geology Unknown

CASING & BLANK PIPE

Cemented From ____ ft. to ____ ft.

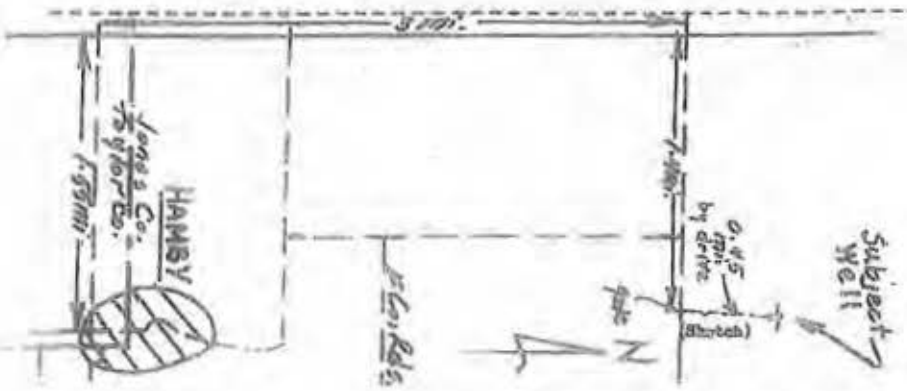
Diam. (in.)	Type	Setting, ft. from	to
30"&36	brickwall	+3.3	0
36"	brickwall	0	T.D.

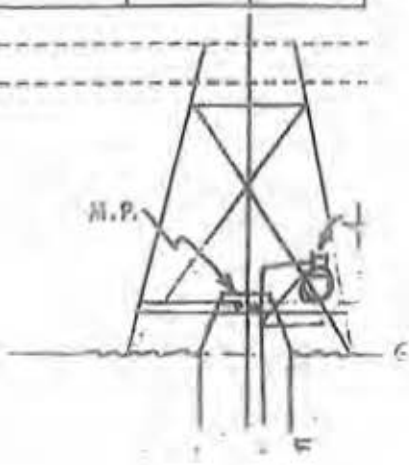
WELL SCREEN

Screen Openings

Diam. (in.)	Type	Setting, ft. from	to
Same as above		open	bottom

Add shaped section for ownership map





CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. FY-30-27-621

House Well #

Date Collected 9/28/67

By R. Price

Location NW Sec. 52, Blk. 14, T&P RR, 1.55 mi. W. Hamby, 3 mi. N. on F.M. 1082, 1.1 mi. E. thru gate 0.45 mi. N. @ house

Source (type of well) Windmill Owner Clyde Beasley, 925 Leggett, Abilene,

Date Drilled Y. old. Depth 26.7 ft. WBF -

Producing intervals Unknown Water level 9.2 L.S.D. ft.

Sampled after pumping bld. hrs. Yield Weak-fair GPM meas. est. Temperature 68 °F

Point of collection Well Appearance clear - turbid - colored

Use S. Remarks Send copy to owner as above & copy to: Darrell O. Dean, WTL, Abilene, Texas

FOR LABORATORY USE ONLY

KEY PUNCHED

CHEMICAL ANALYSIS

Laboratory No. 92310W Date Received OCT 11 1967 Date Reported 10-17-67

	PPM	MPM			PPM	MPM
Silica	21			Carbonate	0	0
Calcium	132	6.60	6.30	Bicarbonate	215 438	7.18
Magnesium	73	6.00	12.60	Sulfate	188	3.91
Sodium	235	10.21		Chloride	394	11.10
	Total	22.81		Fluoride	2.0	0.11
☐ Potassium				Nitrate	18.0	0.29
☐ Manganese		%Na 44.8		pH 7.5	Total	22.59
☐ Boron		SAR 4.12		1/Dissolved Solids (sum)		1280
☐ Total Iron		MEC —		Phenolphthalein Alkalinity as C CO_3		0
☐ (other)				Total Alkalinity as C CO_3 (7.18)		359
Specific Conductance (micromhos/cm3)		2150		Total Hardness as C CO_3 (12.60)		630
Diluted Conductance (micromhos/cm3)		16 x 163 = 2608				

OCT 20 '67

"☐" items will be analyzed if checked.

Analyst

Total Iron requires separate sample.

Checked by

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Deadman Ct. Alluvium Qal State Well No. PY-30-27-622

Owner's Well No. Water Supply County Jones

1650' FEL & 1320' FNL of Sec.

1. Location: 1/4 NE 1/4 Sec. 6, Block —, Survey Blind Asylum
1.55 mi. W. Hamby, 1.45 mi. N. on 1082, 0.3 mi. W by furrow & 0.2 mi. N



2. Owner: Schkade Bros. Drlg. Co. Address: Box 2617, Abilene, Texas
Tenant: J. R. Harp (Surface) Address: Rt. 1, Box 421, Abilene, Tex
Driller: M & M Water Works Address: Clyde, Tex.
3. Elevation of Ground is 1702 ft. above msl, determined by Topo
4. Drilled: March 19 58 Dug, Cable Tool, (Rotary)
5. Depth: Rept. 35 ft. Meas. ft.
6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed
7. Pump: Mfgr. Sears Roebuck Type Jet
No. Stages, Bowls Diam. in., Setting ft.
Column Diam. in., Length Tailpipe ft.
8. Motor: Fuel Electricity Make & Model Sears HP. 1½
9. Yield: Flow gpm, Pump 7 gpm, Meas., Rept., Est. Taking 125 BPD
10. Performance Test: Date Length of Test Made by
Static Level ft. Pumping Level ft. Drawdown ft.
Production gpm Specific Capacity gpm/ft.

CASING & BLANK PIPE
Cemented From ft. to ft.

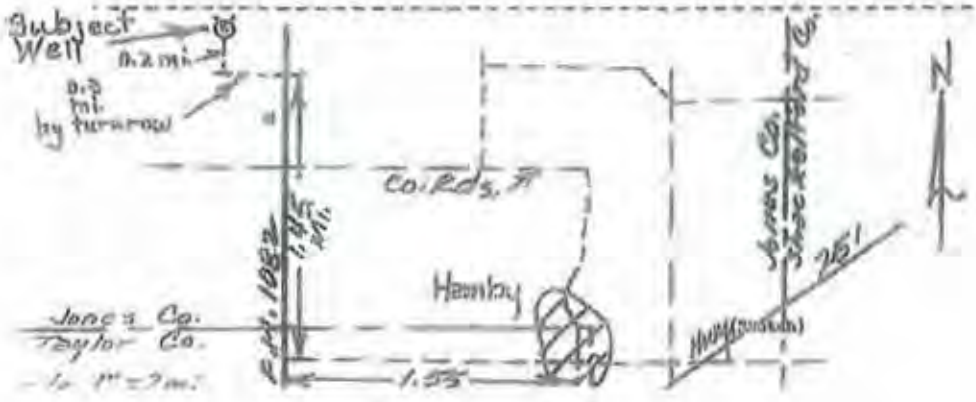
Diam. (in.)	Type	Setting, ft. from	to
7	D.F.	D.	35

11. Water Level: 15 ft. (Cable meas.) 8-15 1968 above (below) ground level which is @ ft. above (below) surface.
ft. rept. meas. 19 above below which is ft. above below surface
ft. rept. meas. 19 above below which is ft. above below surface.
ft. rept. meas. 19 above below which is ft. above below surface.
12. Use: Dom., Stock, Public Supply, (Ind.) Irr. (Waterflooding) Observation, Not Used. W/ Fresh Water
13. Quality: (Remarks on taste, odor, color, etc.)
Temp. ? °F, Date sampled for analysis 7-31-68 Laboratory Halliburton Co.
Temp. °F, Date sampled for analysis Laboratory
Temp. °F, Date sampled for analysis Laboratory

WELL SCREEN
Screen Openings

Diam. (in.)	Type	Setting, ft. from	to
7	Perf.	20	32

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test,
15. Record by R. Price Date 9-20 1968
Source of Data Schkade Bros. Drlg. Co.
16. Remarks: Geology Mentioned
Water-flooding Jennekill
Sand @ 1700'±



Well Not Visited

No Well Sketch Made

Type (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pan

Texas Department of Health Laboratories
1100 West 49th Street
Austin, Texas 78756

TDWR ONLY

Organization No. _____ Lab No. _____

Work No. _____

CHEMICAL WATER ANALYSIS REPORT

Send report to:

Data Collection and Evaluation Section
Texas Department of Water Resources
P.O. Box 13087
Austin, Texas 78711

County 127 Jones

State Well No. 58-27-622

Well No. _____

Date Collected 07-31-68

Owner _____ Send copy to owner Sample No. _____ By _____

Address _____ Well Location _____

Date Drilled _____ Depth 35 ft. WBF 001 Source (type of well) _____

Producing intervals _____ Water level _____ ft. Sample depth _____ ft.

Sampled after pumping _____ hrs. Yield _____ GPM meas. est. Temperature _____ °F _____ °C

Point of collection _____ Appearance ☐ clear ☐ turbid ☑ colored ☐ other

Use Ind Remarks _____

(FOR LABORATORY USE ONLY)

CHEMICAL ANALYSIS

KEY PUNCHED

Laboratory No. _____ Date Received _____ Date Reported _____

		MG/L	ME/L
	00955		
Calcium	00910	210	
Magnesium	00920		
Sodium	00929		
	Total		
☐ Potassium	00937		
[3] ☐ Manganese	01055		%Na _____
☐ Boron	01022		SAR _____
[3] ☐ Total Iron	01045		RSC _____

☐ (other) _____ MG/L

Specific Conductance (micromhos/cm³) 00095 _____

Diluted Conductance (micromhos/cm³): _____ x _____ = _____

		MG/L	ME/L
Carbonate	00445		
Bicarbonate	00440		
Sulfate	00945	310	
Chloride	00940	996	
Fluoride	00951		
Nitrate	71850		
pH	00403	6.6	Total
[1] Dissolved Solids (residue at 180°C)	70300		
Phenolphthalein Alkalinity as C aCO_3	00415		
Total Alkalinity as C aCO_3	00410		
Total Hardness as C aCO_3	00900		
[2] Nitrogen Cycle			
Ammonia - N	00610		
Nitrite - N	00615		
Nitrate - N	00620		
Organic Nitrogen	00605		

☐ * items will be analyzed if checked.

[1] Bicarbonate reported in this analysis can be converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure used in the computation of dissolved solids.
[2] Nitrogen cycle requires separate sample.
[3] Total Iron and Manganese require separate sample.

Analyst _____ Checked By _____

TDWR-0148 (Rev. 9-26-83)

Depth -35

Meadmon Cr. Alluvium - C

HALLIBURTON COMPANY
DALLAS DIVISION

LABORATORY WATER ANALYSIS

No. AT1-367-68

To Schlade Bros. Drilling Co.

Petroleum Bldg.

Abilene, Texas

Date 7-31-68

This report is the property of Halliburton Company and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management; it may however, be used in the course of regular business operations by any person or concern and employees thereof receiving such report from Halliburton Company.

Submitted by _____ Date Rec. 7-31-68

Well No. _____ Depth _____ Formation Fresh Water

County _____ Field _____ Source Supply Wells

Sample Markings		Harp	~~Keeler~~	Joe H. Scott
Resistivity @	°F			
Specific Gravity @	°F	1.001	1.001	
pH		6.6	6.4	6.5
Total Dissolved Solids				
Calcium (Ca)		210	211	178 *MPL
Magnesium (Mg)				
Chlorides (Cl)		996	1,038	297
Sulfates (SO_4)		310	270	420
Bicarbonates (HCO_3)		KEY PUNCHED		

Unable to calc.
% Na. & SAR —

*Milligrams per liter

Respectfully submitted,

Analyst: Eagle

cc:

HALLIBURTON COMPANY

By John Cagle
DIVISION CHEMIST

Notice

This report is limited to the described sample tested. Any user of this report agrees that Halliburton shall not be liable for any loss or damage, whether it be in act or omission, resulting from such report or its use.

GW -

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Redman Cr. Alluvium — Qal Field No. _____ State Well No. PY-30-27-902

Owner's Well No. House County Jones

1. Location: NE 1/4 SE 1/4 Sec. 6, Block _____ Survey Blind Asylum
.65mi N. Hamby & 1.25mi N. on F.M. 1082 on W. side road
2. Owner: Tony P. Vaughan Address: 315 Austin, Borger, Texas
Tenant: Clyde Hampton Address: Rt. 4 Abilene, Texas
Driller: Unknown Address: _____
3. Elevation of Ground is 1708 ft. above msl, determined by Topo
4. Drilled: Yes 19 ___ Dug, Cable Tool, Rotary, _____
5. Depth: Rept. _____ ft. Meas. 26.2 ft.
6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____
7. Pump: Mfgr. ? Type Jet
No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.
8. Motor: Fuel Elect. Make & Model _____ HP. 1/2
9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. Drag
10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.
11. Water Level: 15.2 ft. rept. meas. 9-20 19 67 above below Top brickwall which is 1.3 ft. above below surface.
_____ ft. rept. meas. 19 ___ above below which is _____ ft. above below surface.
_____ ft. rept. meas. 19 ___ above below which is _____ ft. above below surface.
_____ ft. rept. meas. 19 ___ above below which is _____ ft. above below surface.
12. Use: Dom. Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used, _____
13. Quality: (Remarks on taste, odor, color, etc.) Owner believes cowturn TW kills vegetation
Temp. 71 °F, Date sampled for analysis 9-20-67 Laboratory SHD
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test, _____
15. Record by: R. Price Date 9-20 1967
Source of Data Mr. Hampton
16. Remarks: Dont drink & kills vegetation when used in yard

CASING & BLANK PIPE

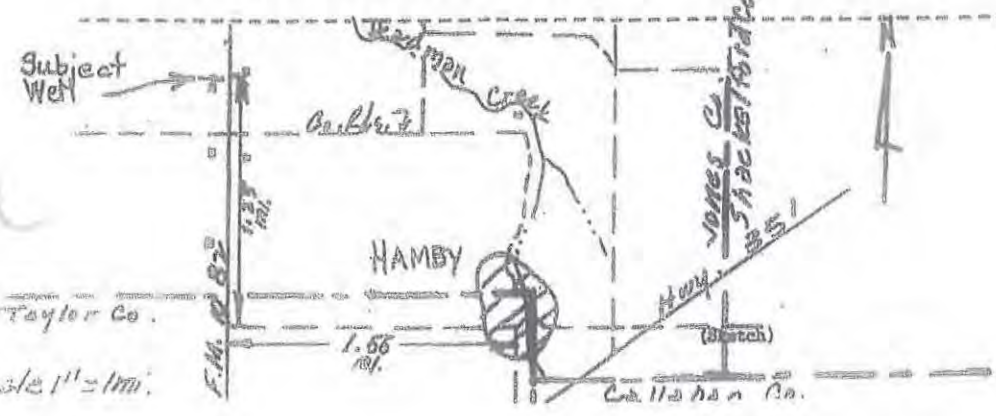
Cemented From _____ ft. to _____ ft.

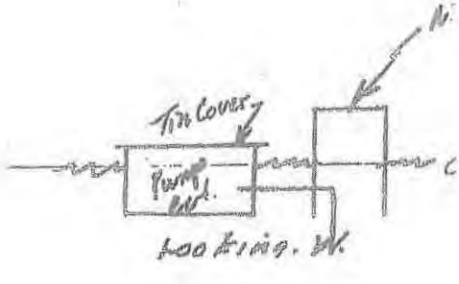
Diam. (in.)	Type	Setting, ft. from	to
36	brick wall	+1.3	T.D.

WELL SCREEN

Screen Openings _____

Diam. (in.)	Type	Setting, ft. from	to
36	brickwall open @ bottom		





CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. FY-30-27-902

House Well

Date Collected 9/20/67

By R. Price

Location NE SE SE Sec. 6, Blind Asylum, 0.55 mi. W. E.M. 1082 Hamby on W side road 1.25 mi. N. on

Source (type of well) Jet Owner Tracy P. Vaughn, 315 Austin, Borger, Texas

Date Drilled V. Old Depth 76.7 ft. Dia —

Producing intervals Unknown Water level 13.9 L.S.D. ft.

Sampled after pumping bld. hrs. Yield Strong GPM meas. est. Temperature 71 °F

Point of collection Well Appearance (clear) - turbid - colored

Use D* Remarks Send copy to owner as above & *owner does not drink. Copy to: Clyde Hamptons, Rt 5, Abilene Tx

FOR LABORATORY USE ONLY

KEY PUNCHED [illegible]

CHEMICAL ANALYSIS

Laboratory No. 92 330W Date Received OCT 1 1967 Date Reported 10-19-67

	PPM	MPM		PPM	MPM
Silica	21		Carbonate		0
Calcium	364	18.20	Bicarbonate	200	3.28
Magnesium	119	9.80	Sulfate	510	10.70
Sodium	540	23.66	Chloride	1800	50.80
	Total	52.1	Fluoride	0.9	
☐ Potassium			Nitrate	121	1.95
☐ Manganese		PPM 45.5	pH	7.3	Total 52
☐ Boron		RAH 6.33	1/ Dissolved Solids (sum)	3070	
☐ Total Iron		RHO —	Phenolphthalein Alkalinity as C aCO_3	0	
☐ (other)			Total Alkalinity as C aCO_3	(3.28) 164	
Specific Conductance (micromhos/cm3)	4740		Total Hardness as C aCO_3	(28.00) 1400	
Dilated Conductance (micromhos/cm3)	41 x 153 = 6273				

*☐ Items will be analyzed if checked.

Total Iron requires separate sample.

Analyst [illegible] OCT 20 67

Checked by [illegible]

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer ?Alluvium -- Q2 Field No. _____ State Well No. PY-30-27-903

Owner's Well No. House County Jones

1. Location: NE 1/4, NE 1/4 Sec. 13, Block _____ Survey Blind Asylum
1155 ft. N. Hamby & Lawn; N. on F.M. 1082 on W. side road

2. Owner: Tony P. Vaughn Address: 315 Austin, Borger, Texas
Tenant: J. D. Watts Address: Rt. 1, Box 431, Abilene, Tex
Driller: Unknown Address: _____

3. Elevation of Ground is 1713 ft. above msl, determined by Topo

4. Drilled: Unknown 19__; (Dug) Cable Tool, Rotary, _____

5. Depth: Rept. _____ ft. Meas. 15.3 ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfr. Ruth-Berry Type Jet
No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel Elect. Make & Model _____ HP. 1/3

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. Unknown

10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.

11. Water Level: 13.1 ft. rept. meas. 9-19 19 67 above below Top bricked which is 0.8 ft. above below surface.
_____ ft. rept. meas. 19__ above below which is _____ ft. above below surface.
_____ ft. rept. meas. 19__ above below which is _____ ft. above below surface.
_____ ft. rept. meas. 19__ above below which is _____ ft. above below surface.

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used, _____

13. Quality: (Remarks on taste, odor, color, etc.) Occupant claims contaminated by sewage
Temp. 73 °F, Date sampled for analysis 9-19-67 Laboratory SWD
Temp. _____ °F, Date sampled for analysis _____ Laboratory _____
Temp. _____ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log,
Formation Samples, Pumping Test,

15. Record by: K. Price Date 9-19 19 67
Source of Data Mr. Watts & Observation

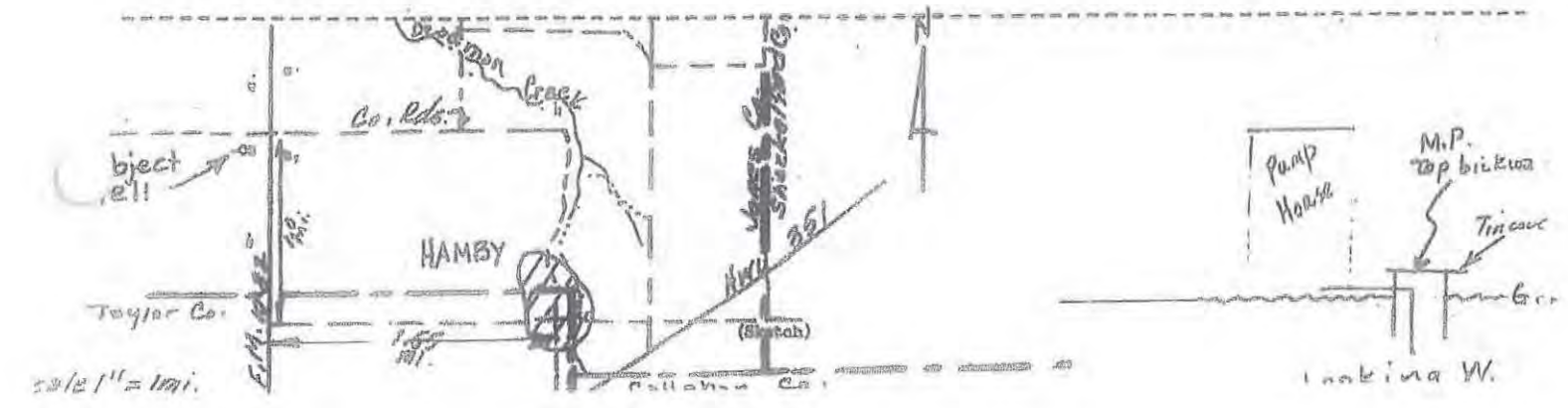
16. Remarks: * Drinks Abilene city water
Geology Unknown

CASING & BLANK PIPE
Cemented From _____ ft. to _____ ft.

Diam. (in.)	Type	Setting, ft. From	Setting, ft. To
36	Bricked	+0.8	T.D

WELL SCREEN
Screen Openings _____

Diam. (in.)	Type	Setting, ft. From	Setting, ft. To
36	brick-ed open @ bottom		



CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratori
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. PY- 30-27-903

House Well

Date Collected 9/19/67

By R. Rice

Location NENE Sec. 13, Blind Asylum, 0.55mi. W. Hamby & 1.0 mi. N. on E. R.R. ok. w. side road

Source (type of well) Ref Owner Ray E. Vaughn, 315 Austin, Borger, Texas

Date Drilled Unknown Depth 15.3 ft. Dia -

Producing interval Unknown Water Level 12.9 LSD ft.

Sampled after pumping bld. hrs. Yield Unknown GPM meas. est. Temperature 72 °F

Point of collection Well Appearance

(clear) - turbid - colored

Use D* Remarks Send copy to owner as above -- E. copy

* tenant does not drink fo: J. D. Watts, Rt. 1, Box 431, Abilene, Tx.

FOR LABORATORY USE ONLY

KEY PUNCHED

OCT 11 1967

CHEMICAL ANALYSIS

Laboratory No. A23286W Date Received Date Reported 10-17-67

	PPM	MPM			PPM	MPM
Silica	19			Carbonate		0
Calcium	412	20.60	15.66	Bicarbonate	176	2.88
Magnesium	130	10.72	3.32	Sulfate	328	6.83
Sodium	491	21.36		Chloride	1490	42.00
Total	53			Fluoride	0.8	
☐ Potassium				Nitrate	90	1.45
☐ Manganese		ppm 10.3		pH 7.0	Total	53
☐ Boron		ppm 5.39		1/ Dissolved Solids (sum)		3050
☐ Total Iron		ppm -		Phenolphthalein Alkalinity as C CO_3		0
☐ (other)				Total Alkalinity as C CO_3 (2.88)		144
Specific Conductance (micromhos/cm3)		4960		Total Hardness as C CO_3 (31.32)		1570
Diluted Conductance (micromhos/cm3)		41 x 160 = 6560				

OCT 20 67

"☐" items will be analyzed if checked.

Analyst

Total Iron requires separate sample.

Checked by

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Deadman Cr.

Aquifer Alluvium - Ogallala Co. S. Place State Well No. FY-30-27-904

Owner's Well No. Well County Jones

1. Location: NW¼, SW¼ Sec. 7, Block —, Survey Blind Asylum
1.55mi. W. Hwy 6 & 1.45mi. N. on F.M. 1082 on E. side road.
2. Owner: J. M. Foster Address: R.F.D. Box 416-A, Abilene, Tex.
Tenant: Same (Farms) Address:
Driller: Unknown Address:
3. Elevation of Ground is 1706 ft. above msl, determined by Topo
4. Drilled: about 1910 Dug, Cable Tool, Rotary,
5. Depth: Rept. ft. Meas. 30 ft.
6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed
7. Pump: Mfgr. Goulds? Type Jet
No. Stages, Bowls Diam. in., Setting ft.
Column Diam. in., Length Tailpipe ft.
8. Motor: Fuel Elect. Make & Model HP. 1/3
9. Yield: Flow gpm, Pump gpm, Meas., Rept., Est. Strong
10. Performance Test: Date Length of Test Made by
Static Level ft. Pumping Level ft. Drawdown ft.
Production gpm Specific Capacity gpm/ft.
11. Water Level: 11.0 ft. rept. meas. 9-20 19 67 above below Top rockwall which is 2.9 ft. above below surface.
ft. rept. meas. 19 above below which is ft. above below surface.
ft. rept. meas. 19 above below which is ft. above below surface.
ft. rept. meas. 19 above below which is ft. above below surface.
12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used.
13. Quality: (Remarks on taste, odor, color, etc.) Mr. reported unfit for human consumption
Temp. 71 °F, Date sampled for analysis 9-20-67 Laboratory SHD
Temp. °F, Date sampled for analysis Laboratory
Temp. °F, Date sampled for analysis Laboratory
14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log,
Formation Samples, Pumping Test,
15. Record by: R. Price Date 9-20 19 67
Source of Data Mr. Foster
16. Remarks:
Geology Unknown
located at back porch of
old abandoned house.

CASING & BLANK PIPE

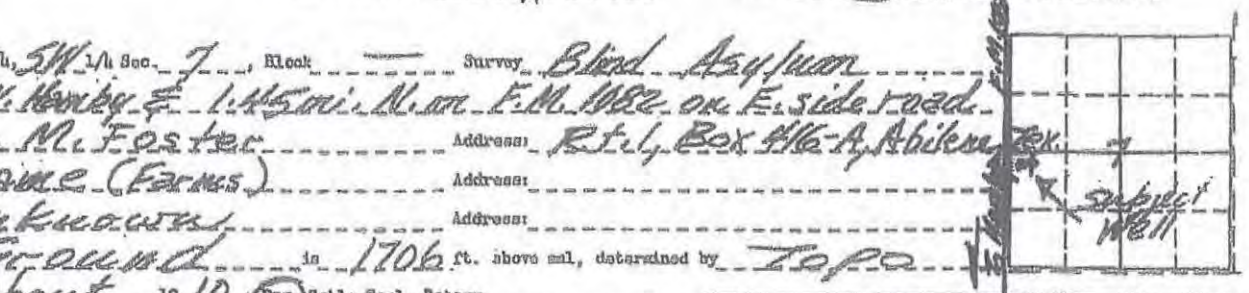
Cemented From ft. to ft.

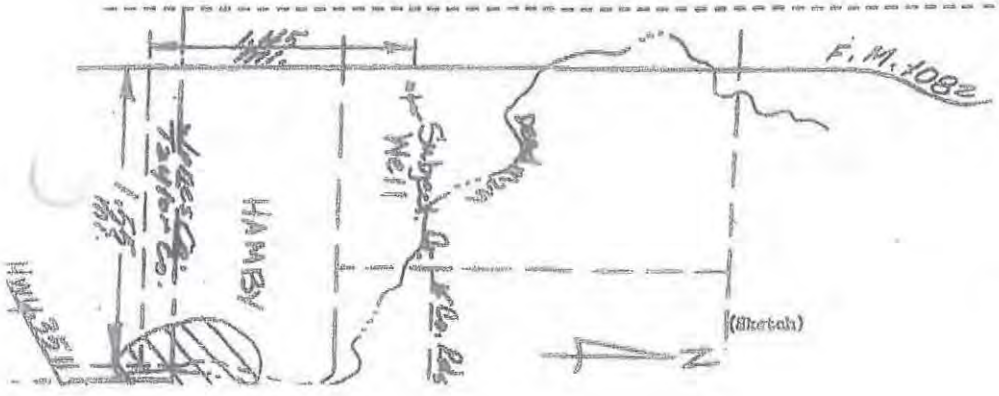
Diam. (in.)	Type	Setting, ft. from	to
36	rockwall	+2.9	T.D.

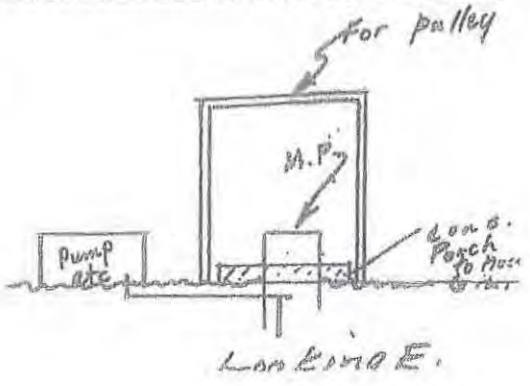
WELL SCREEN

Screen Openings

Diam. (in.)	Type	Setting, ft. from	to
36	rockwall open	@ bottom	







CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratori
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. FY-30-27-904

S. Place Well No.

Date Collected 9/20/67

By R. Price

Location NW SW Sec. 7, Blind Asylum, 0.65 mi. N. Hamby & 1.45 mi. W. on F.M. 1082 out E. Sidetrad

Source (type of well) Tst Owner T.M. Foster, Rt. 1, Box 416-A, Abilene, Te

Date Drilled about 1910 Depth 30 ft. Dia. -

Producing intervals Unknown Water level 13.1 L.S.D. ft.

Sampled after pumping bld hrs. Yield Strong GPM meas. est. Temperature 71 °F

Point of collection Well Appearance clear - turbid - colored

Use Not Used Remarks Send copy to owner as listed above

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS

Laboratory No. 423066 Date Received OCT 1 1967 Date Reported 10-20-67

	PPM	MPM		PPM	MPM
Silica	11		Carbonate	0	0
Calcium	62	3.12	Bicarbonate	142	2.32
Magnesium	17	1.38	Sulfate	86	1.80
Sodium	84	3.66	Chloride	130	3.65
	Total	8.16	Fluoride	0.5	
☐ Potassium			Nitrate	26	0.41
☐ Manganese		% Na 44.9	pH	7.4	Total 8.18
☐ Boron		SAR 1.73	1/Dissolved Solids (sum)	487	
☐ Total Iron		RSC —	Phenolphthalein Alkalinity as C aCO_3	0	
☐ (other)			Total Alkalinity as C aCO_3	(2.32) 116	
Specific Conductance (micromhos/cm³)	856		Total Hardness as C aCO_3	(4.50) 225	
Dilution Conductance (micromhos/cm³)	5 = 190				

"☐" items will be analyzed if checked. 950

Analyst OCT 20 67

Total Iron requires separate sample.

Checked by Ma

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Deadmon Cr

Aquifer Alluvium = Qal Field No. _____ State Well No. PY-30-27-905

Owner's Well No. Field well County Jones

1. Location: NW¼ SW 1/4 Sec. 8, Block _____ Survey Blind Asylum
1 mi N. Hawley, 0.55 mi N & 0.35 mi N & 30 yds E. of road in pasture

2. Owner: R. T. Bynum Address: 1501 N. 14th, Abilene, Tex.
Tenant: Dave Massey Address: Rt. 1, Abilene, Texas
Driller: Unknown Address: _____



3. Elevation of Ground in 1701 ft. above msl, determined by Topo

4. Drilled: Cold 19___, (Dug) Cable Tool, Rotary, _____

5. Depth: Rept. _____ ft. Meas. 21.1 ft.

6. Completion: (Open Hole), Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfgr. _____ Type Unequiped
No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel _____ Make & Model _____ HP. _____

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. Strong

10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.

CASING & BLANK PIPE
Cemented From _____ ft. to _____ ft.

Diam. (in.)	Type	Setting, ft. from	to
36	brickwall	+2.6	T.D.

11. Water Level: 14.6 ft. rept. meas. 9-20 19 67 above (below) Top brickwall which is 2.6 ft. above (below) surface.
_____ ft. rept. meas. _____ 19___ above (below) _____ which is _____ ft. above (below) surface.
_____ ft. rept. meas. _____ 19___ above (below) _____ which is _____ ft. above (below) surface.
_____ ft. rept. meas. _____ 19___ above (below) _____ which is _____ ft. above (below) surface.

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, (Not Used) _____

13. Quality: (Remarks on taste, odor, color, etc.) _____

Temp. 85° F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

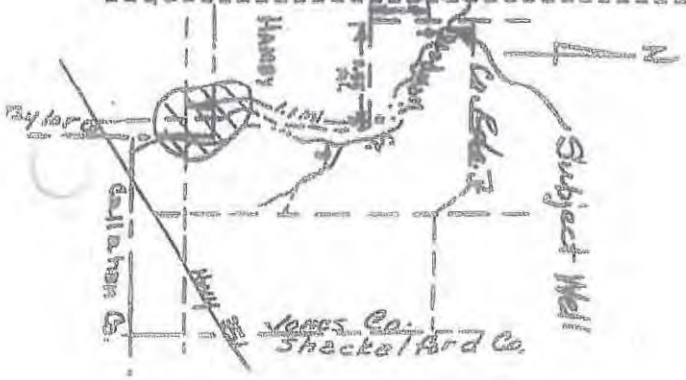
14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log,
Formation Samples, Pumping Test, _____

15. Record by: R. Price Date 9-20 1967
Source of Data Mr. Massey

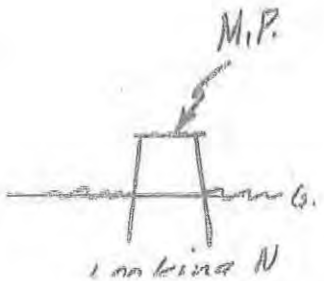
16. Remarks: Geology Unknown
located 30 yds. E. of
Co. Road & on S. bank
of Deadman Creek

WELL SCREEN
Screen Openings _____

Diam. (in.)	Type	Setting, ft. from	to
36	bricked open @ bottom		



(Sketch)



TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Deadman Cr. Alluvium Qal Field No. _____ State Well No. PY-30-27-906

Owner's Well No. W. Hse. County Jones

1. Location: SE 1/4 NW 1/4 Sec. 8, Block _____ Survey Blind Asylum
1 mi. N. Hamby & Anson NW of W. of barns to well

2. Owner: R. T. Bynum Address: 1601 N. 14th, Abilene, Tex.
Tenant: Doyle Massey Address: Rt. 1, Abilene, Texas
Driller: Unknown Address: _____

3. Elevation of Ground is 1708 ft. above msl, determined by Topo

4. Drilled: 1925 [19]20's Dug, Cable Tool, Rotary, _____

5. Depth: Repr. _____ ft. Meas. 26.1 ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfgr. Jacuzzi Type Jet
No. Stages _____, Bowl Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel Electric Make & Model _____ HP. 1/2

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Repr., Est. Strong

10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.

CASING & BLANK PIPE
Cemented From _____ ft. to _____ ft.

Diam. (in.)	Type	Setting, ft. from	to
36	brickwall	top	T.D.

11. Water Level: 16.1 ft. rept. meas. 9-20 1967 above/below Top brickwall which is 0.7 ft. above/below surface
_____ ft. rept. meas. 19__ above/below _____ which is _____ ft. above/below surface
_____ ft. rept. meas. 19__ above/below _____ which is _____ ft. above/below surface
_____ ft. rept. meas. 19__ above/below _____ which is _____ ft. above/below surface

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used. _____

13. Quality: (Remarks on taste, odor, color, etc.) Claims "unfit for human consumption"
Temp. 71 °F, Date sampled for analysis 9-20-67 Laboratory SWB
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

WELL SCREEN
Screen Openings _____

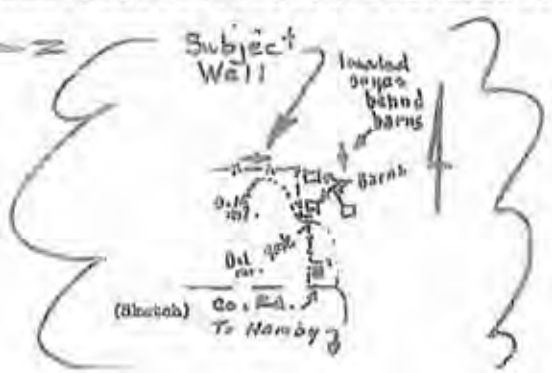
Diam. (in.)	Type	Setting, ft. from	to
36	brickwall open @ bottom		

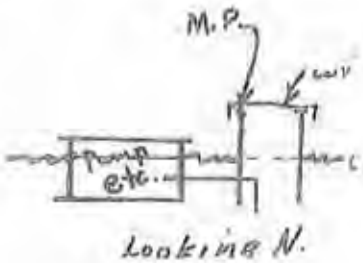
14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test, _____

15. Record by R. Price Date 9-20 1967
Source of Data Mr. Massey

16. Remarks: Do not drink - use town Abilene City Water
Geology Waterman







CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. BY-30-27-906

W. House Well (Massey)

Date Collected 9/20/67

By R. Price

Location SE NW Sec. 8, Blind Asylum, 1 mi. N. Hamby & 0.1 mi. NW & W. of barns

Source (type of well) Irr Owner R. T. Bynum, 1501 N. 14th, Abilene, Te

Date Drilled 1920's Depth 26.1 ft. WEF —

Producing intervals Undrawn Water level 15.4 L.S.D. ft.

Sampled after pumping bld. hrs. Yield Strong GPM meas. est. Temperature 71 °F

Point of collection well Appearance (clear) - turbid - colored

Use D* S.S. Remarks Send copy to owner as above &

* - Tenant does not drink Copy to: Dave Massey, R.F.D. Abilene

KEY PUNCHED

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS

Laboratory No. 923024 Date Received OCT 11 1967 Date Reported 10-20-67

	PPM	EPM		PPM	EPM
Silica	16		Carbonate		0
Calcium	131	6.54	Bicarbonate	311 (153)	5.10
Magnesium	34	2.77	Sulfate	129	2.68
Sodium	150	6.50	Chloride	266	7.50
Total		15.81	Fluoride	0.6	
☐ Potassium			Nitrate	29	0.47
☐ Manganese		%Na 41.1	pH	7.4	Total 15.75
☐ Boron		SAR 3.01	1/ Dissolved Solids (sum)		910
☐ Total Iron		RSC —	Phenolphthalein Alkalinity as C aCO_3		0
☐ (other)			Total Alkalinity as C aCO_3	(5.10)	255
Specific Conductance (micromhos/cm3)		1560	Total Hardness as C aCO_3	(9.31)	466
Diluted Conductance (micromhos/cm3)		11 x 166 = 1826			

4.66 / 1.31

OCT 20 67

☐ * items will be analyzed if checked. Analyst

Total Iron requires separate sample. Checked by

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

TEXAS WATER DEVELOPMENT BOARD

WELL REPORT

Deadman Cr.

Aquifer Alluvium - Qal Field No. _____ State Well No. PY-30-207-9

Owner's Well No. N. House County Jones

1. Location: SE 1/4 SW 1/4 Sec. 8 Block _____ Survey Blind Asylums
1.1 mi. N. Hamby & 0.1 mi. E. behind barns

2. Owner: Mrs. T. C. Bynum Address: 1501 N. 14th, Abilene, Texas
Tenant: Dave Massey Address: Rt. 1, Abilene, Texas
Driller: Unknown Address: _____

3. Elevation of Ground is 1708 ft. above msl, determined by Topo

4. Drilled: 19 17 Dug Cable Tool, Rotary, _____

5. Depth: Rept. _____ ft. Meas. 17.9 ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfgr. Fairbanks Type Recip.
No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel Elect. Make & Model _____ HP. 1/2

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. Bail

10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.

11. Water Level: 15.3 ft. rept. meas. 9-20 1967 above below Top brickwall which is 2.8 ft. above below surf
_____ ft. rept. meas. _____ 19 _____ above below which is _____ ft. above below
_____ ft. rept. meas. _____ 19 _____ above below which is _____ ft. above below surface
_____ ft. rept. meas. _____ 19 _____ above below which is _____ ft. above below surface

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used _____

13. Quality: (Remarks on taste, odor, color, etc.) _____
Temp. NST °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test, _____

15. Record by: L. Pryor Date 9-20 1967
Source of Data Mrs. Massey

16. Remarks:
Geology Outcrop

CASING & BLANK PIPE
Cemented From _____ ft. to _____ ft.

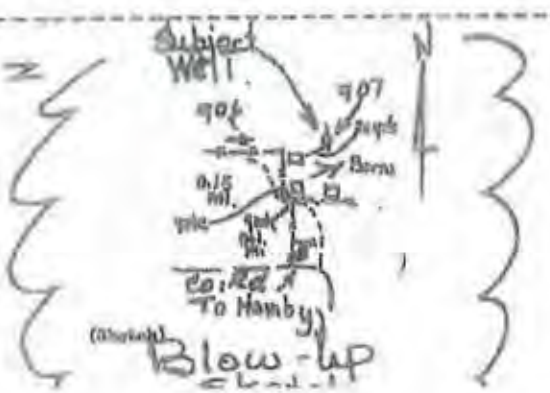
Diam. (in.)	Type	Setting, ft. From	To
36	brickwall	+2.8	T.D.

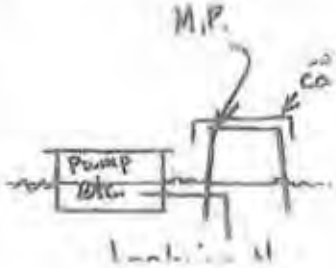
WELL SCREEN
Screen Openings _____

Diam. (in.)	Type	Setting, ft. From	To
36	brickwall open bottom		









GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Dead man Cr.

Aquifer Alluvium - Qal Owner's Well No. Summer Home State Well No. FY-20-27-208

County Jones

Co. Rds.

1. Location: Walk NE 1/4 Sec. 11, Block —, Survey Blind Asylum
0.45mi. S. Center Hamby, 0.65mi. NE on Hwy 351, 0.45mi. N., thru locked gate 0.55 mi. NW by drive

2. Owner: L. I. Bynum Address: 1501 N. 14th, Abilene, Tex.
Tenant: Dave Massey (Mgr.) Address: Rt 1, Abilene, Texas
Driller: Unknown Address:

3. Elevation of Ground is 1710 ft. above msl, determined by Topo

4. Drilled: Unknown 19— (Dug), Cable Tool, Rotary,

5. Depth: Rept. — ft. Meas. 23.8 ft.

6. Completion: (Open Hole), Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfgr. Power Equip. Co. Type Jet
No. Stages —, Bowls Diam. — in., Setting — ft.
Column Diam. — in., Length Tailpipe — ft.

8. Motor: Fuel Elect. Make & Model — HP. 1/2

9. Yield: Flow — gpm, Pump — gpm, Meas., Rept., Est. Unknown

10. Performance Test: Date — Length of Test — Made by —
Static Level — ft. Pumping Level — ft. Drawdown — ft.
Production — gpm Specific Capacity — gpm/ft.

11. Water Level: 12.5 ft. (rept. meas.) 9-20 1967 (above below) top brickwall which is 2.8 ft. (above below) surface.
— ft. rept. meas. — 19— above below — which is — ft. above below surface.
— ft. rept. meas. — 19— above below — which is — ft. above below surface.
— ft. rept. meas. — 19— above below — which is — ft. above below surface.

12. Use: (Dom.), (Stock) Public Supply, Ind., Irr., Waterflooding, Observation, Not Used.

13. Quality: (Remarks on taste, odor, color, etc.) Colours unfit for human consumption

Temp. 71 °F, Date sampled for analysis 9-20-67 Laboratory SHD
Temp. — °F, Date sampled for analysis — Laboratory —
Temp. — °F, Date sampled for analysis — Laboratory —

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test,

15. Record by: R. Price Date 9-20 1967
Source of Data Mr. Massey

16. Remarks: * Do not drink

Geology Unknown

(35) = gate symbol

CASING & BLANK PIPE

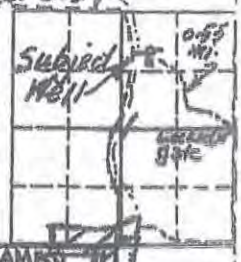
Cemented From — ft. to —

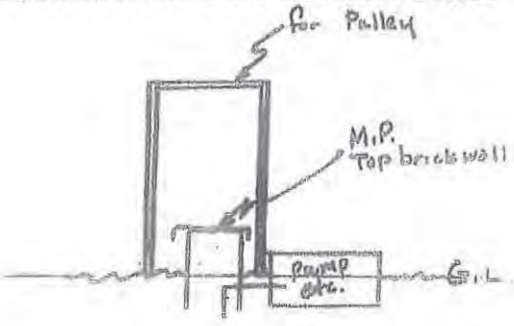
Diam. (in.)	Type	Setting, ft. from	to
36	brickwall	T28	T.D.

WELL SCREEN

Screen Openings

Diam. (in.)	Type	Setting, ft. from	to
36	brickwall open @ bottom		





(See sketch above)

(Sketch)

looking N.

CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratori
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. FY-30-27-90E

Surface Home Well #

Date Collected 9/20/67

By R. Price

Location NWNE Sec. 11, Blind Asylum, 0.45 mi. S of center of Hamby, 0.65 mi. N on 351, 0.65 mi. N, & 0.55 mi. NW by drive

Source (type of well) Jet Owner R. T. Byaum, 1501 N. 14th, Abilene, Tex

Date Drilled Unknown Depth 23.8 ft. WBF —

Producing intervals Unknown Water level 9.7 ft.

Sampled after pumping bld. hrs. Yield Unknown GPM Meas. est. Temperature 71 °F

Point of collection Well Appearance (clear) turbid - colored

Use D*E S. Remarks Send Copy to owner as above & Copy
*owner does not drink Tai Dave Massey, Rt 1, Abilene.

FOR LABORATORY USE ONLY

CHEMICAL ANALYSIS

OCT 11 1967

KEY PUNCHED

Laboratory No. 92332W Date Received _____ Date Reported 10-27-67

	PPM	EPM			PPM	EPM
Silica	20			Carbonate		0
Calcium	87	4.33	3.73 / 7.81	Bicarbonate	207 422	6.92
Magnesium	43	3.53		Sulfate	178	3.70
Sodium	171	7.44		Chloride	173	4.83
	Total	15.30		Fluoride	1.6	
☐ Potassium				Nitrate	3.0	
☐ Manganese		ppm 18.6		pH 7.7	Total	15.45
☐ Boron		SAR 3.76		1/ Dissolved Solids (ppm)	880	
☐ Total Iron		RSC —		Phenolphthalein Alkalinity as C CO_3	0	
☐ ____ (other)				Total Alkalinity as C CO_3 (6.92)	346	
Specific Conductance (micromhos/cm3)	1440			Total Hardness as C CO_3 (7.86)	393	
Diluted Conductance (micromhos/cm3)	11 x 154 = 1694					

"☐" items will be analyzed if checked.

Analyst _____ OCT 20 67

Total Iron requires separate sample.

Checked by _____

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Dead Man Cr.

Aquifer Alluvium - Qal Field No. E. Pace State Well No. PY-30-27-909

Owner's Well No. House County Jones

1. Location: SE 1/4, SE 1/4 Sec. 7, Block ——, Survey Blind Asy 6 W. side rd 1.55mi. W. Hamby, 6mi. S. on F.M. 1082, 1.05mi. E on Co. rd. & 0.05mi. N

2. Owner: J. D. Wells Address: Rt. 1, Abilene, Texas

Tenant: Same Address:

Driller: Unknown Address:

3. Elevation of Ground is 1711 ft. above msl, determined by Topo

4. Drilled: Yr. Old 19 (Dug) Cable Tool, Rotary,

5. Depth: Rept. 21 ft. Meas. 20.9 ft.

6. Completion: (Open Hole) Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfgr. ? (Yr. old) Type Recip.

No. Stages, Bowls Diam. in., Setting ft.

Column Diam. in., Length Tailpipe ft.

8. Motor: Fuel Elect. Make & Model HP. 1/3

9. Yield: Flow gpm, Pump gpm, Meas., Rept., Est. Unknown

10. Performance Test: Date Length of Test Made by

Static Level ft. Pumping Level ft. Drawdown ft.

Production gpm Specific Capacity gpm/ft.

11. Water Level: 19.93 ft. rept. (meas.) 7-29 19 53 above (below) Top brick Curb which is 3.0 ft. above (below) surface.

18.3 ft. rept. (meas.) 9-26 19 67 above (below) Top rock U-bd. Cover which is 2.9 ft. above (below) surface.

ft. rept. (meas.) 19 above (below) which is ft. above (below) surface.

ft. rept. (meas.) 19 above (below) which is ft. above (below) surface.

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, (Not Used)

13. Quality: (Remarks on taste, odor, color, etc.)

Temp. 70 °F, Date sampled for analysis 9-26-67 Laboratory SHD

Temp. 67 °F, Date sampled for analysis 4-2-68 Laboratory SDA - Edgecliff

Temp. °F, Date sampled for analysis Laboratory

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test,

15. Record by: R. Price Date 9-26 19 67

Source of Data Mr. J. D. Wells

16. Remarks: Geology Unknown

This is well M-3 of Bulletin 5418.

CASING & BLANK PIPE

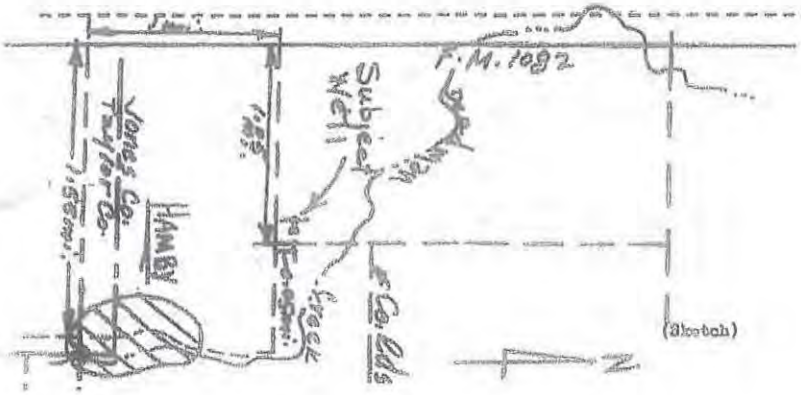
Cemented From ft. to ft.

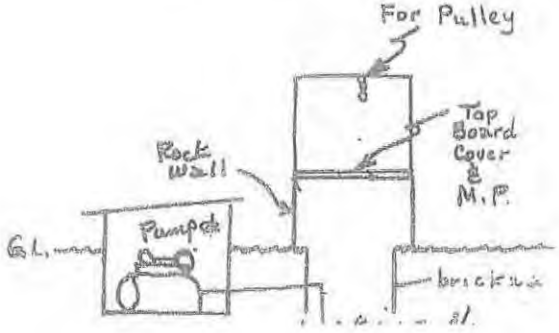
Diam. (in.)	Type	Setting, ft. From	to
42 Rep. 36	rockwall	+2.9	0
	brickwall	0	TD

WELL SCREEN

Screen Openings

Diam. (in.)	Type	Setting, ft. From	to
42	brickwall open @ bot.		





CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. FY-30-27-909

E. Price Well @ house

Date Collected 9/26/67

By R. Price

Location SESE Sec. 7, Blind Asylum, 1.55 mi. W. Hamby, 1.0 mi. N, 1.05 mi. E. & 0.05 mi. N. of W. side road

Source (type of well) Recip Owner J. D. Watts, Rt. 1, Abilene, Texas

Date Drilled Y. old Depth 20.9 ft. WBF –

Producing intervals Unknown Water level 15.4 L.S.D. ft.

Sampled after pumping bld hrs. Yield Unknown GPM meas. est. Temperature 70 °F

Point of collection well Appearance (clear) - turbid - colored

Use Not Used Remarks Send copy to owner as listed above

FOR LABORATORY USE ONLY

KEY PUNCHED

CHEMICAL ANALYSIS

Laboratory No. 913004 Date Received OCT 1 1 1967 Date Reported 10-26-67

	PPM	MPM			PPM	MPM
Silica	21			Carbonate		0
Calcium	85	4.24	3.25 / 1.19	Bicarbonate	365	5.98
Magnesium	27	2.25		Sulfate	247	5.15
Sodium	249	10.84		Chloride	198	5.58
	Total	12.33		Fluoride	1.1	
☐ Potassium				Nitrate	63	1.02
☐ Manganese		ppm 62.6		pH 7.6	Total	17.73
☐ Boron		SAR 6.02		1/ Dissolved Solids (ppm)	1040	
☐ Total Iron		RSC –		Phenolphthalein Alkalinity as C CO_3	0	
☐ (other)				Total Alkalinity as C CO_3	(5.98) 299	
Specific Conductance (micromhos/cm3)	1690			Total Hardness as C CO_3	(6.49) 325	
Diluted Conductance (micromhos/cm3)	11 = 180					
	1980					

☐ items will be analyzed if checked.

Analyst OCT 20 67

Checked by

Real Iron requires separate sample.

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

CHEMICAL WATER ANALYSIS REPORT

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas State Department of Health Laboratories
1100 West 49th Street
Austin 5, Texas

Send report to:

Ground Water Division
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

County Jones

State Well No. FY-30-27-909

E. Place Well @ house

Date Collected 4/8/68

By R. Price

Location SE SE Sec. 7, Blind Asylum, 1.65 mi. W. Hamby, 1.0 mi. N. & 1.05 mi. E. of 0.05 mi. N. on W. side road

Source (type of well) Reciprocating Owner J. D. Watts, Rt. 1, Abilene, Texas

Date Drilled V. old Depth 20.9 ft. WBU Dead Man Creek Alluvium

Producing intervals Unknown Water level 15.4 L.S.D. ft.

Sampled after pumping bld. hrs. Yield Unknown GPM Meas. est. Temperature 67 °F

Point of collection well Appearance (clear) - turbid - colored

Use Not Used Remarks Send copy only to Tex. Wtr. Dev. Board Abilene Field Office

FOR LABORATORY USE ONLY

KEY PUNCHED APR 30 1968

CHEMICAL ANALYSIS

APR 23 1968

Laboratory No. 101233W Date Received _____ Date Reported _____

	PPM	EPM		PPM	EPM
Silica			Carbonate		
Calcium			Bicarbonate		
Magnesium			Sulfate		
Sodium			Chloride		
Total			Fluoride		
☐ Potassium			Nitrate		
☑ NH_3-N	<0.2		pH	Total	
☑ NO_3-N	<0.1		SAR		
☑ ABS	<0.02		RSC		
☑ LAS (other)			1/ Dissolved Solids (sum)		
			Phenolphthalein Alkalinity as C aCO_3		
			Total Alkalinity as C aCO_3		
			Total Hardness as C aCO_3		

Specific Conductance (micromhos/cm3) _____

Diluted Conductance (micromhos/cm3) _____ x _____

"☐" items will be analysed if checked.

Total Iron requires separate sample.

Analyst _____

Checked by _____ MAY - 2 1968

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL REPORT

Dezaiman Cr.

Aquifer Lower Clear Fork - Q2 / Field No. _____ State Well No. PY-30-27-910

Owner's Well No. House County Jones

1. Location: NW¼ NW¼ Sec. 12 Block _____ Survey Blind Asylum
1.55mi. W. Hamby & 0.9mi. N. on F.M. 1082 on E. side road.

2. Owner: Mrs. H.M. McBeath Address: 302 Palo, Abilene, Texas
Tenant: J.D. Watts (leases) Address: Rt 1, Abilene, Texas
Driller: Ed Chapman Address: Anson, Texas

3. Elevation of Ground is 1714 ft. above msl, determined by topo

4. Drilled: April 1966 Dug, Cable Tool, (Rotary)

5. Depth: Rept. 26 ft. Meas. 25 ft.

6. Completion: Open Hole, Straight Wall, Underreamed, (Gravel Packed)

7. Pump: Mfgr. ? (Located Wellbore) Type Jet
No. Stages _____ Bowls Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel Elect Make & Model _____ HP. ½ ?

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. Strong

10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.

11. Water Level: 11.99 ft. (rept. meas.) 9-26 1967 (above below) tape portable which is 1.0 ft. (above below) surface
_____ ft. (rept. meas.) 19 (above below) which is _____ ft. (above below) surface.
_____ ft. (rept. meas.) 19 (above below) which is _____ ft. (above below) surface.
_____ ft. (rept. meas.) 19 (above below) which is _____ ft. (above below) surface.

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, (Not Used)

13. Quality: (Remarks on taste, odor, color, etc.) It is reported that water is unfit for human use

Temp. 18.2°C, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: (Driller's Log) Radioactivity Log, Electric Log, Formation Samples, Pumping Test,

15. Record by: R. Price Date 9-26 1967
Source of Data Mr. J.D. Watts & Mr. Chapman

16. Remarks: bk. bag:
0-3 topsoil
3-4 caliche
4-12 sd.
12-24 sd & gravel (ult. bearing)
24-25 red clay

CASING & BLANK PIPE

Cemented From _____ ft. to _____ ft.

Diam. (in.)	Type	Setting, ft. From	Setting, ft. To
24	galv.	+0.1	T.D.

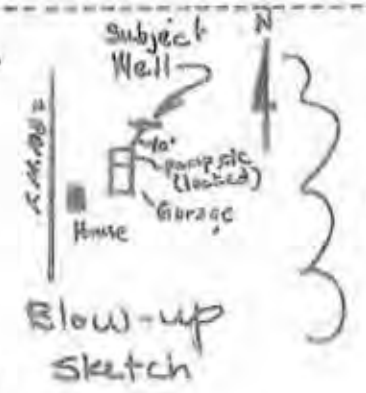
WELL SCREEN

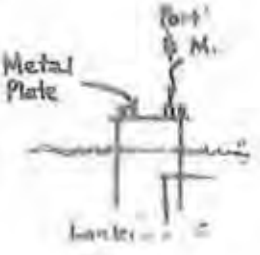
Screen Openings

Diam. (in.)	Type	Setting, ft. From	Setting, ft. To
24	Perf. galv.	21	25









GW 1

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Deadman Cr.

Aquifer Albuquerque - Q2/ Prod. Fm. Waterflood State Well No. PY-30-27-911

Owner's Well No. Supply Well County Jones

1. Location: SW 1/4, SE 1/4 Sec. 6, Block _____ Survey Blind Asylum
1.65 mi. N. Hamby, 1.1 mi. N on FM 1082 & 0.35 mi. W on N. side rd.
2. Owner: Sinclair Brass Drilling Co. Address: Box 247, Abilene, Texas
Tenant: Toby Vaughan (Surface) Address: 315 Austin, Bacon, Texas
Driller: M. & M. Water Wells Address: Anson
3. Elevation of Ground is 1710 ft. above msl, determined by Topo
4. Drilled: 4-9 1946 Dug, Cable Tool, Rotary,
5. Depth: Rept. 35 ft. Meas. _____ ft.
6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed
7. Pump: Mfgr. Sears Roebuck Type Jet
No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.
Column Diam. _____ in., Length Tailpipe _____ ft.
8. Motor: Fuel Electricity Make & Model Sears HP. 1/2
9. Yield: Flow _____ gpm, Pump 17 gpm, Meas. (Rept), Est. Take 125 BPD
10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.
11. Water Level: 15 ft. rept. meas. 9-20 1967 above (below) ground level which is @ ft. above (below) surface.
_____ ft. rept. meas. 19__ above below which is _____ ft. above below surface.
_____ ft. rept. meas. 19__ above below which is _____ ft. above below surface.
_____ ft. rept. meas. 19__ above below which is _____ ft. above below surface.
12. Use: Dom., Stock, Public Supply (Ind.) Irr., (Waterflooding) Observation. Not Used. Supply well using fresh water
13. Quality: (Remarks on taste, odor, color, etc.)
Temp. 77 °F, Date sampled for analysis _____ Laboratory _____
Temp. ? °F, Date sampled for analysis 7-31-68 Laboratory Halliburton Co.
Temp. ___ °F, Date sampled for analysis _____ Laboratory _____
14. Other data available as circled: (Driller's Log) Radioactivity Log, Electric Log,
Formation Samples, Pumping Test,
15. Record by: E. Price Date 9-20 1967
Source of Data driller's log & Observations
16. Remarks: Drlr's Log
0-5' Top Soil — Waterflooding
5-14 Red sand — Tannehill Sand at
14-25 Sd & gravel — 1700 ±
25-32 Wtr. gravel
32-35 Shale

CASING & BLANK PIPE

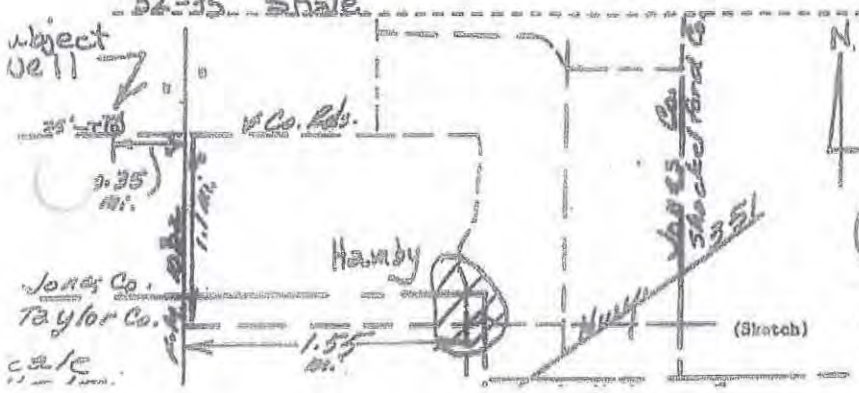
Cemented From _____ ft. to _____ ft.

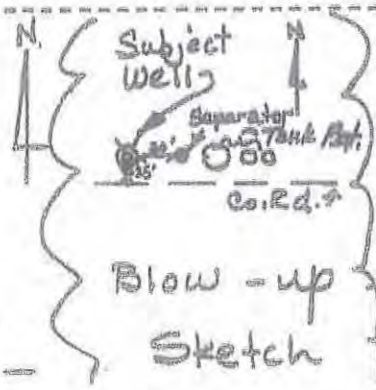
Diam. (in.)	Type	Setting, ft. from	to
7	O.E.	0	35

WELL SCREEN

Screen Openings

Diam. (in.)	Type	Setting, ft. from	to
7	Perf.	20	25





U.T.M. —

Sealed & covered w/ insulation



File original copy with
Texas Water Development Board
P. O. Box 12386, Capitol Station
Austin, Texas 78711

State of Texas

DRILLERS LOG AND WELL DATA REPORT

For use by TWDB only
Well No. 30-27-1A
Located on map
By AP Date 4-12-66
Map no. 127

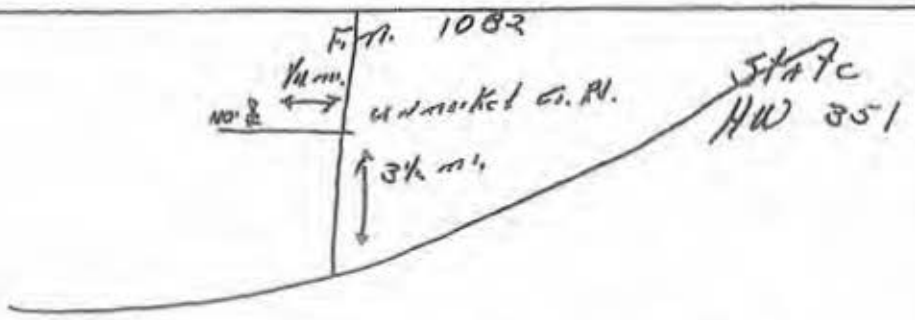
1) Well Owner: Schkade Bros. Drilling Co.
(Name) (Street or RFD) (City) (State)

2) Land Owner:
(Name) (Street or RFD) (City) (State)

3) Intended use: Industrial ☐ Municipal ☐ Irrigation ☐ Other: Supply well

4) Location of well: County Jones Labor League Abstract No.
NW¼ NE¼ SW¼ SE¼ of Section Block No. Survey
(Give as many as are known)

miles to direction
(mi., ft., etc.)
from
(Name)



Abilene

Sketch map of well location with distances from two section or survey lines, and to landmarks, roads, and creeks. PY 30-27-911

DRILLERS LOG OF WELL

Method of drilling: Cable Tools Diameter of hole 8 in. Date drilled 4-7-66

All measurements made from ft. above ground level.

From (ft)	To (ft)	Description and color of formation material	From (ft)	To (ft)	Description and color of formation material
0	5	Top Soil			
5	14	Red Sand			
14	25	Sand & Gravel			
25	32	Water Gravel			
32	35	Shale			

(Use continuation sheets if necessary)

COMPLETION DATA

COMPLETION

Straight wall ☐
Under reamed ☐
Gravel packed ☒
Open hole ☐
Other Water in this area is unsafe for Human Cons. Well drilled for Water Feed purpose

Remarks ↓

CASING

Type: Old ☒ New ☐
Cemented from ft.
to ft.

Diameter (inches)	Setting from (ft)	Setting to (ft)
7	0	20

SCREEN

Type Steel
Perforated ☒ Slotted ☐

Diameter (inches)	Setting from (ft)	Setting to (ft)
24"	20	35

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.

R. J. T. Hankey (Signature) W. W. Water Wells (Company Name) Reg. No. 153

Depth -

HALLIBURTON COMPANY
DALLAS DIVISION

Deadman Co.
Alluvium - Qal

LABORATORY WATER ANALYSIS

No. AT1-367-68

To Schkade Bros. Drilling Co.

Date 7-31-68

Petroleum Bldg.

Abilene, Texas

This report is the property of Halliburton Company and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management; it may however, be used in the course of regular business operations by any person or concern and employees thereof receiving such report from Halliburton Company.

Submitted by

Date Rec. 7-31-68

Well No. Depth

Formation (Fresh Water)

County Field

Source Supply Wells

Sample Markings	Harp	Vaughn	Joe H. Scott
Resistivity @ °F			
Specific Gravity @ °F	1.001	1.001	
pH	6.6	6.4	6.5
Total Dissolved Solids			
Calcium (Ca)	210	211	178 *MPL
Magnesium (Mg)			
Chlorides (Cl)	996	1,038	297
Sulfates (SO_4)	310	270	420
Bicarbonates (HCO_3)			

KEY PUNCHED

Unable to Calc.
% Na & SAR

*Milligrams per liter

Respectfully submitted,

Analyst: Cagle

cc:

HALLIBURTON COMPANY

By John Cagle
DIVISION CHEMIST

Notice

This report is limited to the described sample tested. Any user of this report agrees that Halliburton shall not be liable for any loss or damage, whether it be to act or omission, resulting from such report or its use.

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas Department of Health Laboratories
1100 West 49th Street
Austin, Texas 78756

TDWR ONLY

Organization No. _____ Lab No. _____

Work No. _____

CHEMICAL WATER ANALYSIS REPORT

Send report to:

Data Collection and Evaluation Section
Texas Department of Water Resources
P.O. Box 13087
Austin, Texas 78711

County 127 Jones

State Well No. 30-27-911

Well No. _____

Date Collected 07-31-68

Owner _____ Send copy to owner Sample No. _____ By _____

Address _____ Well Location _____

Date Drilled _____ Depth 35 ft. WBF 001 Source (type of well) _____

Producing intervals _____ Water level _____ ft. Sample depth _____ ft.

Sampled after pumping _____ hrs. Yield _____ GPM (meas. est.) Temperature _____ °F _____ °C

Point of collection _____ Appearance ☐ clear ☐ turbid ☐ colored ☐ other

Use Ind Remarks _____

(FOR LABORATORY USE ONLY)

CHEMICAL ANALYSIS

KEY PUNCHED

Laboratory No. _____ Date Received _____ Date Reported _____

		MG/L	ME/L
Silica	00955		
Calcium	00910	211	
Magnesium	00920		
Sodium	00929		
	Total		
☐ Potassium	00937		
[3]☐ Manganese	01055		
☐ Boron	01022		
[3]☐ Total Iron	01045		
☐ (other) _____			

%Na _____

SAR _____

RSC _____

Specific Conductance (micromhos/cm³) 00095 _____

Diluted Conductance (micromhos/cm³):

_____ X _____ = _____

		MG/L	ME/L
Carbonate	00445		
Bicarbonate	00440		
Sulfate	00945	270	
Chloride	00940	1038	
Fluoride	00951		
Nitrate	71850		
pH	00403	6.4	
	Total		
[1]Dissolved Solids (residue at 180°C)	70300		
Phenolphthalein Alkalinity as C aCO_3	00415		
Total Alkalinity as C aCO_3	00410		
Total Hardness as C aCO_3	00900		

[2]Nitrogen Cycle

Ammonia - N	00610	
Nitrite - N	00615	
Nitrate - N	00620	
Organic Nitrogen	00605	

"☐" items will be analyzed if checked.

[1] Bicarbonate reported in this analysis can be converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure used in the computation of dissolved solids.
[2] Nitrogen cycle requires separate sample.
[3] Total Iron and Manganese require separate sample.

Analyst _____ Checked By _____

TDWR-0148 (Rev. 9-26-83)

CITY OF ABILENE

QUALITY CONTROL DIVISION

ENVIRONMENTAL LABORATORY REPORT

4209 EAST LAKE ROAD ABILENE, TEXAS 79601

(915) 676-6041

ENPROTEC
Attn: Oljm Macnamara
17 Windmill Circle
Abilene, TX 79606

SAMPLE DATE: 10/13/93

ANALYSIS		RESULTS
LAB ID NO		4214
CUSTOMER ID		MW-5
SAMPLE SOURCE		Well
pH	(S.U.)	7.2
CHLORIDES	(mg/L)	3200
SULFATES	(mg/L)	1600
NITRATE-N	(mg/L)	15
T.D.S.	(mg/L)	7800
F. COLIFORM	(CFU/100ml)	0*
CHROMIUM	(mg/L)	<0.008
NICKEL	(mg/L)	<0.02
ARSENIC	(mg/L)	<0.07

*BUT TNTC OTHER BACTERIA PRESENT

Roy W. Foster, Lab Supervisor

DATE: 10-19-93

CHAIN OF CUSTODY RECORD

ENPROTEC
Engineering solutions with a view for tomorrow.
17 Windmill Circle, Abilene, Texas 79606
P. O. Box 5198, Abilene, Texas 79608
Phone 915/698-5560 Fax 915/695-3299

Project No. HT 11093 ABILENE WWTP
Project Location HAMBY TX
Sampled By D. MACNAMARA
Client Name CITY OF ABILENE
Sample Preservation Method COOLER

Sample Number	Date	Time	Composite	Grab	Sample Description	Number & Type of Containers	Analysis Required: pH	Cl	SO4	TPS	NO2	F. Coliform	Cr, Ni, As			Remarks
MW-5	10/13/95	8:55A		/	GROUNDWATER	2		/	/	/	/	/	/			

▸ ▸ ▸ REQUEST 5-DAY TURNAROUND FOR FAX COPY ♦ ♦ ♦ PLEASE RETURN COOLER ♦ ♦ THANKS ! ◂ ◂ ◂

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Wm Macnamara	10/13/95	9:20	B Votrubla				
Representing: ENPROTEC		Representing: City of Abilene Env. Lab		Representing:		Representing:	
Sample Condition: ____ Temp: ____		Sample Condition: ____ Temp: ____		Sample Condition: ____ Temp: ____		Sample Condition: ____ Temp: ____	

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Check One: □ Shipped-Carrier ____ □ Delivered	Date:	Time
Representing:		Representing:		Sample Intact? □ Yes □ No Observed Headspace? □ Yes □ No		
Sample Condition: ____ Temp: ____		Sample Condition: ____ Temp ____		Remarks:		

CITY OF ABILENE

QUALITY CONTROL DIVISION

ENVIRONMENTAL LABORATORY REPORT

4209 EAST LAKE ROAD ABILENE, TEXAS 79601

(915) 676-6041

ENPROTEC
Attn: Olin Macnamara
17 Windmill Circle
Abilene, TX 79606

SAMPLE DATE: 10/6/93

ANALYSIS		RESULTS	RESULTS	RESULTS	RESULTS
LAB ID NO		4098	4099	4100	4101
CUSTOMER ID		MW-1	MW-2	MW-3	MW-4
SAMPLE SOURCE		Well	Well	Well	Well
CHLORIDES	(mg/L)	340	550	1625	240
SULFATES	(mg/L)	90	290	<2	350
T.D.S. (Dried)	(mg/L)	1,600	1,600	3,400	1,300

Roy W. Foster

Roy W. Foster, Lab Supervisor

DATE: 10-12-93

CHAIN OF CUSTODY RECORD

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P. O. Box 5198, Abilene, Texas 79608
Phone 915/698-5560 Fax 915/695-3299

Project No. ABILENE WASTEWATER TREATMENT PLANT
Project Location HUMBY, TX
Sampled By CHRIS MACNAMARA
Client Name CITY OF ABILENE
Sample Preservation Method ICE

Sample Number	Date	Time	Composite	Grab	SAMPLE DESCRIPTION	Number & Type of Containers	Analysis Required	TDS	Cl	SO4							Remarks
MW-1	10/6/93	9:52		✓	GROUNDWATER	1 Ltr.		✓	✓	✓							
-2	"	9:44		✓	"	"		"	"	"							
-3	"	10:10		✓	"	"		"	"	"							
-4	"	10:46		✓	"	"		"	"	"							

▸ ▸ ▸ REQUEST 5-DAY TURNAROUND FOR FAX COPY ♦ ♦ ♦ PLEASE RETURN COOLER ♦ ♦ THANKS ! ◂ ◂ ◂

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Chris Macnamara	10/6/93	1112	Barbara Botello				
Representing: ENPROTEC		Representing: Abilene Env. Lab		Representing:		Representing:	
Sample Condition: ____ Temp: ____		Sample Condition: ____ Temp: ____		Sample Condition: ____ Temp: ____		Sample Condition: ____ Temp: ____	

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Check One: ☐ Shipped-Carrier ____ ☐ Delivered	Date:	Time
Representing:		Representing:		Sample Intact? ☐ Yes ☐ No Observed Headspace? ☐ Yes ☐ No		
Sample Condition: ____ Temp: ____		Sample Condition: ____ Temp: ____		Remarks:		

CITY OF ABILENE

QUALITY CONTROL DIVISION

ENVIRONMENTAL LABORATORY REPORT

4209 EAST LAKE ROAD ABILENE, TEXAS 79601

(915) 676-6041

ENPROTEC
Attn: Olin Macnamara
17 Windmill Circle
Abilene, TX 79606

SAMPLE DATE: 9/13/93

ANALYSIS	RESULTS
LAB ID NO	3734
CUSTOMER ID	MW-1
SAMPLE SOURCE	Groundwater
NITRATE-N (mg/L)	43

Roy W. Foster, Lab Supervisor

DATE: 9-15-93

CHAIN OF CUSTODY RECORD

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P. O. Box 5198, Abilene, Texas 79608
Phone 915/698-5560 Fax 915/695-3299

Project No. 110.93
Project Location ABILENE WWTP
Sampled By O. MACNAMARA
Client Name CITY OF ABILENE
Sample Preservation Method ICE

Sample Number	Date	Time	Composite	Grab	Sample Description	Number & Type of Containers	Analysis Required NO3	Remarks
MW-1	9/12/95	4:25p		/	GROUNDWATER	1 plastic	✓	

REQUEST 5-DAY TURNAROUND FOR FAX COPY ◆ ◆ ◆ PLEASE RETURN COOLER ◆ ◆ THANKS ! ◀ ◀ ◀

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	9/13/95	1638					
Representing: ENPROTEC			Representing: City of Ab. Env. Lab	Representing:			Representing:
Sample Condition: ____ Temp: ____			Sample Condition: ____ Temp: ____	Sample Condition: ____ Temp: ____			Sample Condition: ____ Temp: ____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Check One: ☐ Shipped-Carrier ____ ☐ Delivered	Date:	Time
Representing:		Representing:		Sample Intact? ☐ Yes ☐ No Observed Headspace? ☐ Yes ☐ No		
Sample Condition: ____ Temp: ____		Sample Condition: ____ Temp: ____		Remarks:		

CITY OF ABILENE

QUALITY CONTROL DIVISION

ENVIRONMENTAL LABORATORY REPORT

4209 EAST LAKE ROAD ABILENE, TEXAS 79601

(915) 676-6041

ENPROTEC
Attn: Olin
17 Windmill Circle
Abilene, TX 79605

SAMPLE DATE: 8/30/93 and 9/2/93

ANALYSIS		RESULTS	RESULTS	RESULTS	RESULTS
LAB ID NO		3515	3516	3517	3518
CUSTOMER ID		PROJ.110.93	PROJ 110.93	PROJ 110.93	PROJ 110.93
SAMPLE SOURCE		MW-1	MW-2	MW-3	MW-4
pH	(S.U.)	6.7	7.5	7.1	7.4
FECAL COLIFORM	(mg/L)				
NITRATE-NITROGEN	(mg/L)	47	<0.1	1.2	1.9
CHROMIUM	(mg/L)	<0.008	<0.008	<0.008	<0.008
NICKEL	(mg/L)	<0.02	<0.02	<0.02	<0.02
ARSENIC	(mg/L)	<0.07	<0.07	<0.07	<0.07

SAMPLE DATE: 9/2/93

ANALYSIS	RESULTS	RESULTS	RESULTS	RESULTS
LAB ID NO	3604	3605	3606	3607
CUSTOMER ID	MW-1	MW-2	MW-3	MW-4
SAMPLE SOURCE	HWWTP	HWWTP	HWWTP	HWWTP
FECAL COLIFORM	0	0	0	0

Roy W. Foster, Lab Supervisor

DATE: 9-3-93

CHAIN OF CUSTODY RECORD

ENPROTEC
Engineering solutions with a view for tomorrow.
17 Windmill Circle Abilene, Texas 79606
P. O. Box 5198 Abilene, Texas 79608
Phone 915/698-5580 Fax 915/695-3299

Project No. @ HOT 110:93
Project Location ABILENE WASTEWATER TREATMENT PLANT
Sampled By QUIN HALLMARK
Client Name CITY OF ABILENE
Sample Preservation Method ICE

Sample Number	Date	Time	Composite	Grab	Sample Description	Number & Type of Containers	Analysis Required: Fecal Coliforms	Remarks
MW-1	9/2/93	9.55A		✓	Collection Water	4 plastic	✓	
-2	〃	9.40A		✓	〃	〃	✓	
-3	〃	9.30A		✓	〃	〃	✓	
-4	〃	9.45A		✓	〃	〃	✓	

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Quin Mac	9/2/93	1020	Barbara Johnson				
Representing: ENPROTEC			Representing: Environmental Lab	Representing:			Representing:
Sample Condition: ____ Temp: ____			Sample Condition: ____ Temp: ____	Sample Condition: ____ Temp: ____			Sample Condition: ____ Temp: ____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Check One: ☐ Shipped-Carrier ____ ☐ Delivered	Date:	Time:
Representing:			Representing:	Sample Intact? ☐ Yes ☐ No Observed Headspace? ☐ Yes ☐ No		
Sample Condition: ____ Temp: ____			Sample Condition: ____ Temp: ____	Remarks:		

CHAIN OF CUSTODY RECORD

ENPROTEC
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17 Windmill Circle, Abilene, Texas 79606
P. O. Box 5198, Abilene, Texas 79608
Phone915/698-5560 Fax 915/695-3299

Project No. 110.93
Project Location ABILENE WASTEWATER PLANT
Sampled By OLIN MACNAMARA
Client Name CITY OF ABILENE
Sample Preservation Method ICE

Sample Number	Date	Time	Composite	Grab	Sample Description	Number & Type of Containers	Analysis Required: As Discussed	Remarks
MW-1	8/30/93	3:15		✓	GROUNDWATER	2		
MW-2	"	2:45		✓		2		
MW-3	"	2:30		✓		2		
MW-4	"	~~2:15~~		✓		2		
		3:30						

REQUEST 5-DAY TURNAROUND FOR FAX COPY ◆ ◆ ◆ PLEASE RETURN COOLER ◆ ◆ THANKS !

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Olin MacNamara	8/30/93	1520	Barbara Ortula				
Representing: ENPROTEC			Representing: Environmental Lab	Representing:			Representing:
Sample Condition:_____ Temp:_____			Sample Condition:____ Temp:___	Sample Condition:_____ Temp:_____			Sample Condition:_____ Temp:____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Check One: ☐ Shipped-Carrier_____ ☐ Delivered	Date:	Time
Representing:			Representing:	Sample Intact? ☐ Yes ☐ No Observed Headspace? ☐ Yes ☐ No		
Sample Condition:_____Temp:_____			Sample Condition:_____ Temp:_____	Remarks:		

ENPROTEC
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HYDRAULIC CONDUCTIVITY
ASTM D5084
METHOD C
(FALLING HEAD RISING TAILWATER)

DATE: 07-31-93

PROJECT NAME: City of Abilene Wastewater Treatment Facility

PROJECT NUMBER: HOT 110.93

SAMPLE LOCATION: Monitor Well MW-2, 5-6.5 Feet Below Ground Level

DESCRIPTION OF SOIL: Clay: Bluish Gray, Plastic, Firm, with Interlensed White, Crumbly Chalk

TYPE OF SPECIMEN: Undisturbed

PERMEANT: H_2O

	INITIAL	FINAL
DIAMETER OF SAMPLE(in)	2.68	2.68
AREA OF SAMPLE(in^2),A	6.42	6.42
LENGTH OF SAMPLE(in),L	4.23	4.22
MOISTURE CONTENT(%)	23.60	23.70
DRY DENSITY(pcf)	102.30	102.50
SATURATION(%)	98.30	99.40
SPECIFIC GRAVITY = 2.70 (ASSUMED)		

k_{20} = 7.59E-09 cm/sec

(or)

k_{20} = 7.59E-11 m/sec

$k_{20} = kRt$

Rt as defined by ASTM D5084

17 Windmill Circle Abilene, TX 79606 915/698-5560 915/695-3299 FAX

QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

A. SAMPLING PROCEDURES:

Considerable attention must be given to Quality Assurance/Quality Control (QA/QC) during an investigation to reduce or eliminate the possibility of cross-contamination from previous jobs or sample locations. In general, decontamination of field equipment consists of either a high pressure, hot water wash (steam cleaning) or a detergent solution (Alconox) wash followed by de-ionized, distilled, or clean water rinse(s). Other decontamination procedures (such as solvent rinses) may be required depending on the site-specific contaminants of interest.

The decontamination procedures will be performed before any equipment is used initially at a site and after each subsequent use. The fluids and solids generated during decontamination will be properly stored and disposed of in accordance with applicable regulations.

A.1 Soil Sample Collection and Documentation:

Recovered soil samples are handled as follows:

1. A portion of the sample is transferred into appropriate glass sample jars with a stainless steel lab spoon.
2. The sample jars are sealed with a Teflon lid. The jars are appropriately labeled with a sample tag as described under paragraph A.10. Complete all chain-of-custody documents and record sampling activities on the Field Activity Log (such as date, location, parameters, decontamination procedures, etc.). Reference paragraphs A.10 and A.11.
3. A second portion of the sample is transferred into a zip-lock bag for organic field screening and geologic analysis.
4. The field sample is labeled with the sample identification number and date and time of collection.

5. The field sample is disturbed in the bag, placed in the sun and allowed to come to equilibrium over a 20 to 25 minute period to maximize organic vapors in the headspace. After the time period, the organic vapors in the headspace are analyzed (using a H-NU Model 101 Photo-Ionization Analyzer) by inserting the H-NU inlet probe into the zip-lock bag headspace. The vapors in the headspace are evacuated through the H-NU analyzer and the organic vapor concentration is recorded.

6. The labeled sample jar for organic analysis is placed in an appropriate carrying container maintained at approximately 40° Fahrenheit throughout the sampling and transportation process.

7. Adequately prepared equipment, (paragraph A.4), is prepared for the next sampling event.

A.2 Soil Sample Container Type and Sample Presentation Methods:

Soil samples collected for laboratory analysis are placed in one-half (1/2) pint mason jars (not allowing for headspace) and sealed with a teflon lid immediately following recovery of the sample. Soil samples collected for organic laboratory analysis are placed in an appropriate sample container and kept chilled to approximately forty degrees (40°) Fahrenheit. The soil samples are shipped to the laboratory for analysis in a timely fashion and in accordance with holding times and other sample preservation requirements.

A.3 Sampling Devices:

The device selected to collect the soil sample is dependent upon the access to the soil being sampled. The following soil sampling methods are employed as dictated by the sampling situation:

- In shallow and/or stable excavations, soil samples are obtained from undisturbed areas using stainless steel lab spoons or stainless steel hand trowels.

- Soil sampling in deep and/or unstable excavations is accomplished using the on-site excavating equipment. Excavated material is brought to the surface in the equipment (i.e. - backhoe bucket) and samples are obtained from the middle of the soil mass using stainless steel lab spoons or stainless steel hand trowels.
- Soil boring soil samples are obtained using split-spoon or Shelby (thin-walled) tube samplers advanced through the hollow-stem auger to collect undisturbed soil samples in general conformance with ASTM Methods D 1586-84 or 1587-83. Soils are transferred to the sample jar using stainless steel lab spoons.
- Spoil pile soil samples are obtained using a stainless steel hand trowel or stainless steel lab spoon.
- Composite samples are blended in a stainless steel bowl prior to transfer (using a stainless steel lab spoon) to the sample jar.

A.4 Decontamination Procedures:

Decontamination procedures are performed before any equipment is used initially at a site and after each subsequent use. The fluids and solids generated during decontamination are containerized, properly stored and disposed of in accordance with applicable regulations.

Prior to drilling or excavation activities, a decontamination (decon) area and sampling area are prepared. The areas are established upwind from the drilling or excavation area. The decon area consists of the following components:

- 6' x 3' ground cover sheet;
- One (1) two-gallon wash bucket filled with 1.5 gallons of distilled water and two (2) tablespoons of laboratory grade detergent (Alconox);
- One (1) two-gallon rinse bucket filled with 1.5 gallons of distilled water;
- Distilled water for final rinsing;
- One (1) hand brush; and
- One (1) box disposable safety gloves.

All non-dedicated devices employed in the soil sampling process (for example, split-spoon samplers, soil augers, etc.) are decontaminated between successive, or at the end of, sampling activities. The following decontamination procedure is utilized:

- Drill rigs, augers, drill rods, and drill bits are steam-cleaned prior to use. Visible soil and grease are removed at this time. If the split-spoon sampler is not steam-cleaned, it is washed with the decon equipment discussed above;
- Check for adhered organics with a clean laboratory tissue or an organic vapor analyzer;
- Air dry the equipment;
- Double rinse with de-ionized, distilled water; and
- Air dry the equipment.

A.5 Groundwater Sample Collection and Documentation:

Procedures employed to collect groundwater samples are controlled by the type of chemical analyses to be performed on the samples. Because of the susceptibility to degradation of certain potential contaminants (i.e., volatile organic compounds), the following groundwater sampling procedures are utilized:

1. Complete well purging utilizing a pump or bailer. Reference paragraph A.12.
2. Using a bladder pump or bailer, collect the sample into an appropriate glass jar or VOA bottle. Centrifugal or submersible pumps are not acceptable. Reference paragraph A.7.
3. Check that a Teflon liner is present in each lid, then secure lid tightly.
4. Label the sample jar or VOA bottle with the appropriate sample tag, clearly addressing all the categories or parameters. Complete all chain-of-custody documents and record sampling activities on the Field Activity Log (such as date, location, parameters, decontamination procedures, etc.).

5. Place labeled sample jar or VOA bottle in an appropriate carrying container maintained at a minimum of 40° Fahrenheit throughout the sampling and transportation process. Reference paragraph A.6.

6. Adequately decontaminate all used equipment and prepare for the next sampling event. Reference paragraph A.8.

A.6 Groundwater Sample Container Type and Sample Preservation Methods:

Groundwater samples collected for laboratory analysis are placed in appropriately sized jars and/or 40 milliliter VOA vials usually provided by the laboratory. The jars are sealed with a teflon lid (not allowing for headspace) immediately following recovery of the sample. The samples are placed in an appropriate sample container and kept chilled to approximately 40° Fahrenheit. The groundwater samples are shipped to the laboratory for analysis in a timely fashion and in accordance with holding times and other sample preservation requirements.

A.7 Sampling Devices:

The most convenient and economical method utilized for collection of groundwater samples is a manual bailer. The bailer is either constructed of PVC tubing or teflon tubing and is fitted with a bottom valve. An alternative method utilized when available is a bladder type pump. Under no circumstances is a centrifugal or submersible pump utilized for sample collection. However, a centrifugal or submersible pump can be utilized to purge the well prior to sample collection.

A.8 Decontamination Procedures:

Decontamination procedures are performed before any equipment is used initially at a site and after each subsequent use. The fluids generated during decontamination are containerized, properly stored and disposed of in accordance with applicable regulations.

Prior to sampling activities, a decon area is established. The decon area consists of the following components:

- 6' x 3' ground cover sheet;
- One (1) two-gallon wash bucket filled with 1.5 gallons of distilled water and two (2) tablespoons of laboratory grade detergent (Alconox);
- One (1) two-gallon rinse bucket filled with 1.5 gallons of distilled water;
- One (1) hand brush; and
- One (1) box disposable safety gloves.

All non-dedicated sampling devices employed in the groundwater sampling process are decontaminated between purging and sampling activities. The following decontamination procedure is utilized prior to purging and/or sampling activities:

- The bailer is disassembled and washed in a wash solution (Alconox);
- The bailer is rinsed in a water rinse;
- The bailer is allowed to air dry;
- The bailer is double rinsed with de-ionized, distilled water;
- The bailer is air dried; and
- The bailer is fitted with new cord.

A.9 Rinsate Blanks:

To monitor sampling performance, rinsate blanks are collected as quality control samples. Rinsate blanks are collected at random times during cleaning operations by Hibbs and Todd personnel.

A.10 Data Collection Documentation:

Hibbs and Todd documents the handling and history of all samples collected and all other site activities. A Field Log is maintained to assure that the integrity of the sample(s) is maintained and documented from the time of collection through analysis and data reduction.

The following types of information are generally entered into the Field Log:

- Date
- Client
- Field Location
- Enprotec Field Crew
- Ambient Weather Conditions
- Instrument Problems
- Site Visitors
- Delays
- Unusual Situation
- Subcontractors
- Accidents
- Work Progress
- Quality Control
- Site Schedules

All samples collected are properly identified by labeling. Either Hibbs and Todd or laboratory supplied labels are affixed to the sample bottle prior to the filling of the container(s).

The following labeling information is supplied for every sample bottle:

- Sample Identification Number
- Initials of Sample Collector
- Date and Time of Collection
- Hibbs and Todd Identification
- Hibbs and Todd Project Number
- Project Location
- Requested Analyses

A.11 Sample Custody:

The Chain-of-Custody Form is used to document the shipment of samples from the on-site representative to the laboratory. One Chain-of-Custody Form is placed in each sample shipment container along with the samples. The custody form is filled out by the on-site representative at the time of sampling. The original is stored in a zip-lock bag and delivered with the samples to the laboratory. The second part of the form is retained by the representative for the project files. The following information is shown on the custody form:

- Project Number and Location
- Laboratory
- Sampler(s)
- Sample Identity
- Date Sampled
- Sample Bottle/Container Description and Totals
- Signatures of individuals involved in the transfer of the samples and the date and time of possession
- Delivery Method

Hibbs and Todd is responsible for the maintenance and custody of any samples collected until those samples are delivered to the laboratory or common carrier. When the laboratory receives the sample container the status of the samples is noted. The laboratory opens the container and signs and dates the Chain-of-Custody Form and indicates the status of the sample seals as noted before the sample containers are opened.

A.12 Well Purging:

Prior to the collection of groundwater samples, the monitor wells are purged to remove the stagnant water in the well bore and to allow "fresh" groundwater from outside the well bore to enter the casing. The purging process is necessary in order to obtain a groundwater sample which represents the undisturbed aquifer conditions.

The amount of water purged from the well is dependent on the volume of water present in the well, as measured by the distance from the water level to the bottom of the well and the diameter of the well. The purge volume (V) is calculated as follows:

1. Measure the water level (WL) depth - WL in feet below the top of casing (BTOC);
2. Measure the total depth of the well casing (TD) in feet BTOC; and
3. Calculate the well volume (V).

V (in gallons) = TD(feet) - WL(feet) x D^2(well diameter in inches) x 0.0408 x (actual number of well volumes to be purged). As a minimum, three well volumes will be purged from all wells unless the well bails dry.

If a well will not produce a sufficient amount of water for the removal of the three purge volumes, several options will be considered. The options are based on the time required for water-level recovery and the purging and sampling equipment.

The options are presented as follows:

- If the water level recovers to static level within 0.5 to 1 hour, the purge will be repeated until three (3) well volumes are removed.
- If the water level recovers within eight (8) hours, purging will be performed once early in the day and sampling will be performed after the water level has recovered to within 80 percent of the static water level.
- If the water level does not recover to within 80 percent of the static water level after 24 hours, purging will be performed once on one day and the sample will be collected the next day.

A minimum of three (3) field indicator parameters are proposed to be measured during the purging procedure regardless of the sample type or well recovery. The three (3) field indicator parameters proposed are pH, specific conductivity, and temperature. These parameters are measured to document that the purging procedure

is adequate and that the stagnant water in the well has been removed. The pH, specific conductivity and temperature will begin to stabilize as purging continues and should completely stabilize at the end of well purging. The minimum three-casing-volume water removal prior to sampling will be used as a general guideline only. Water samples will not be collected until the field chemical parameters have stabilized, even if the minimum volume of water has been removed from the well.

A.13 Static Groundwater Elevation Measurements:

Correct and accurate measurement of water levels in wells is a critical part of any field investigation. The data generated by these measurements will be used to calculate the direction, gradient and velocity of the groundwater underlying the site.

Depth to groundwater measurements are taken following a minimum 24-hour period from development of the last well. All monitor wells are measured within the same time period, and just prior to sampling. The water levels are obtained using an electronic gauging tape (audible alarm type) referenced to the top of well casing. Each well casing and the adjacent natural ground surface was surveyed on-site and tied to a temporary benchmark (TBM) established on-site.

The electronic gauging tape is decontaminated before every measurement. As a minimum, decontamination is performed by rinsing the wetted end of the tape with distilled water, or equivalent, and wiping dry with a clean paper towel.

Water-level measuring procedures include:

- Decontaminate the sounder.
- Review previous depth to water data and, if available, take copies as a field reference.

- The sounder is slowly lowered into the well until the buzzer, indicator light and/or needle is activated by contact with water. The sounder is lowered and raised at least three (3) times to verify that the true depth to water is measured.

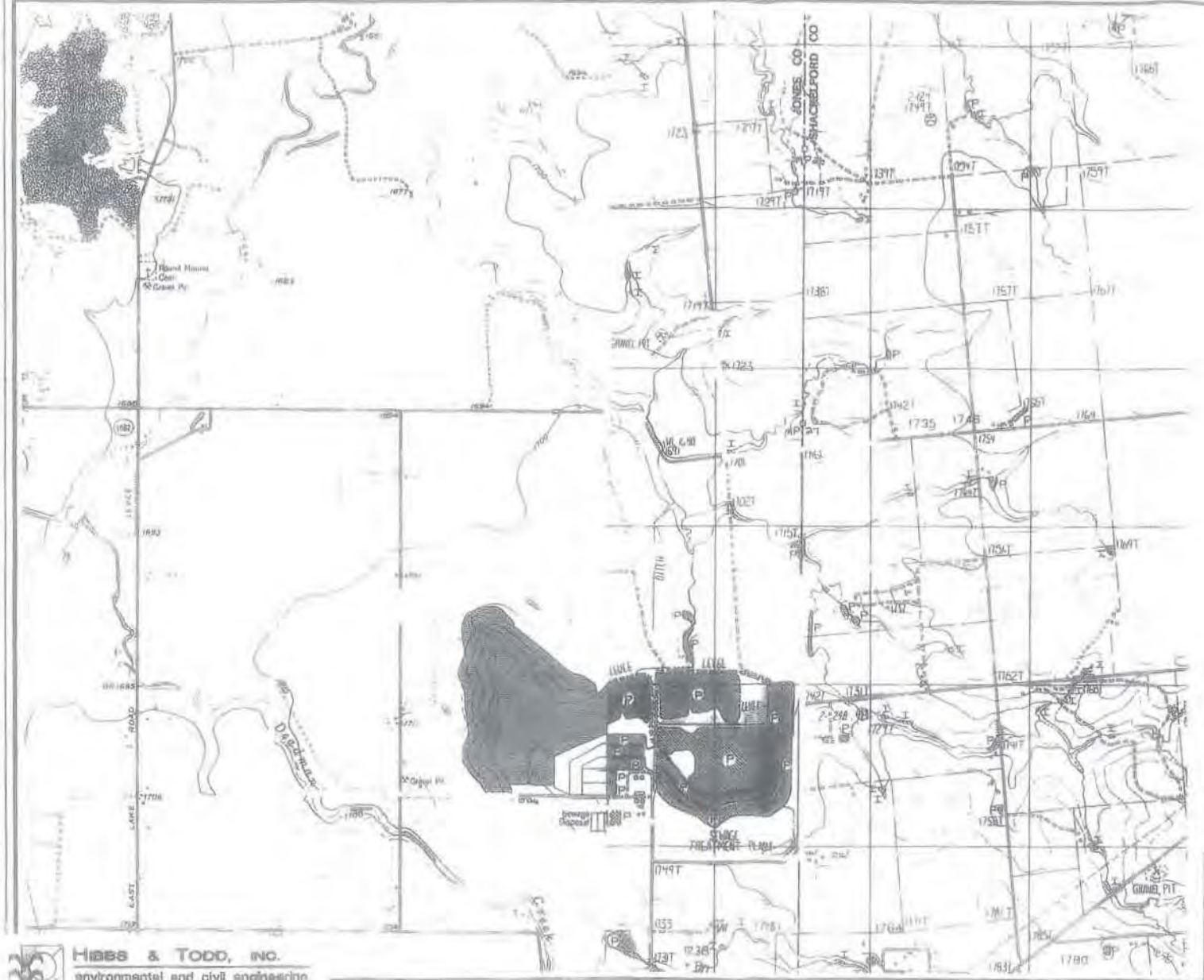
B. LABORATORY PROTOCOL:

Laboratories used have been audited to assure compliance with appropriate QA/QC procedures including method blanks, spikes, and duplicates. Each laboratory used can provide QA/QC documentation upon request.

Analytical data submitted by the laboratory is reviewed by the Project Manager. The Project Manager reviews duplicate sample data and field blank data for anomalous or suspect readings which may indicate laboratory problems. If problems are detected, the laboratory manager is immediately notified and the laboratory is required to substantiate the analytical data or make necessary changes in the reported data to reflect true sample concentrations.

If necessary, suspect sample are re-analyzed if adequate material is available. If left-over samples are not available, then the data set for the suspect sample is documented as suspect and evaluated from this point of view and appropriate action determined.

Laboratory documents are also reviewed to assure that holding times for the various analyses were not exceeded prior to sample analysis. If holding times were exceeded prior to analyses, the pertinent data is evaluated with this in mind and appropriate action is determined.



1000 0 2000

SCALE IN FEET

LEGEND

BOUNDARY OF CITY PROPERTY

NOTE: 10 FOOT CONTOUR INTERVALS

FIGURE 1

CITY OF ABILENE
WASTEWATER TREATMENT PLANT
SITE MAP
USGS TOPOGRAPHIC MAP
HAMBY AND FLATTOP, TEXAS
7.5 MINUTE QUADRANGLES

PROJECT NO.: RH23-210 DATE: 10/18/93

HIBBS & TODD, INC.
environmental and civil engineering

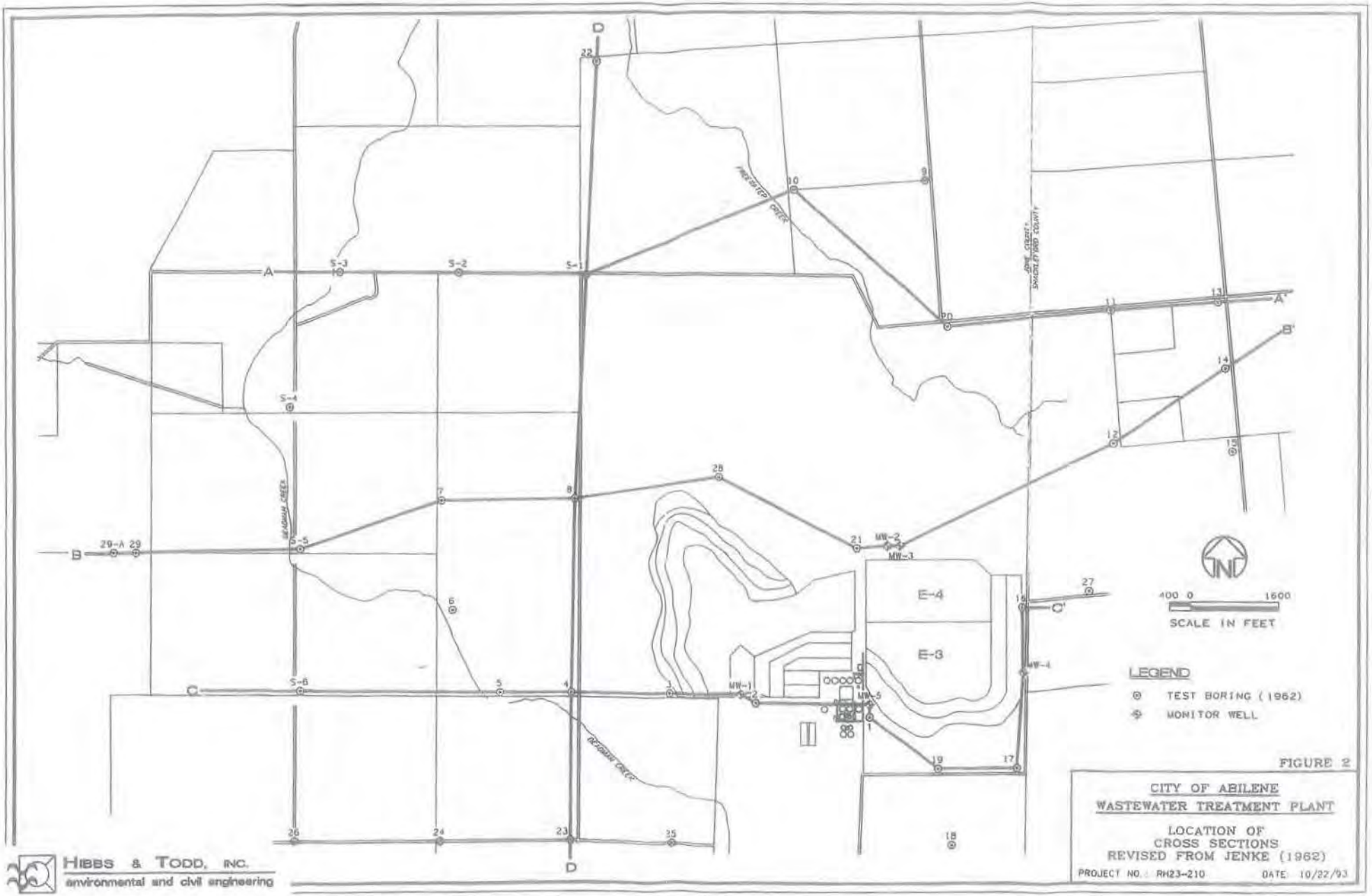


FIGURE 2

CITY OF ABILENE
WASTEWATER TREATMENT PLANT

LOCATION OF
CROSS SECTIONS
REVISED FROM JENKE (1962)

PROJECT NO.: RH23-210 DATE: 10/22/93

HIBBS & TODD, INC.
environmental and civil engineering

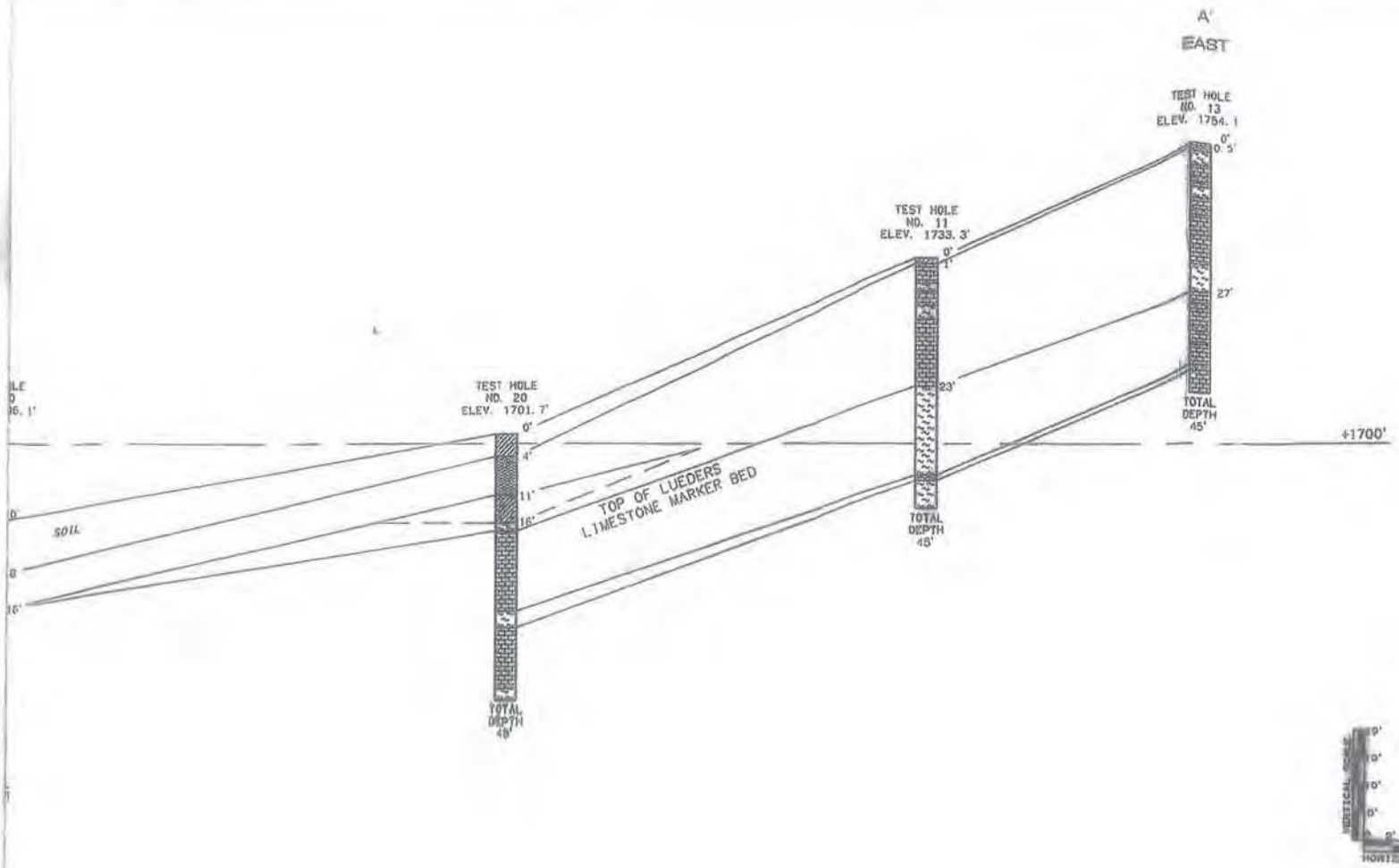


FIGURE 3

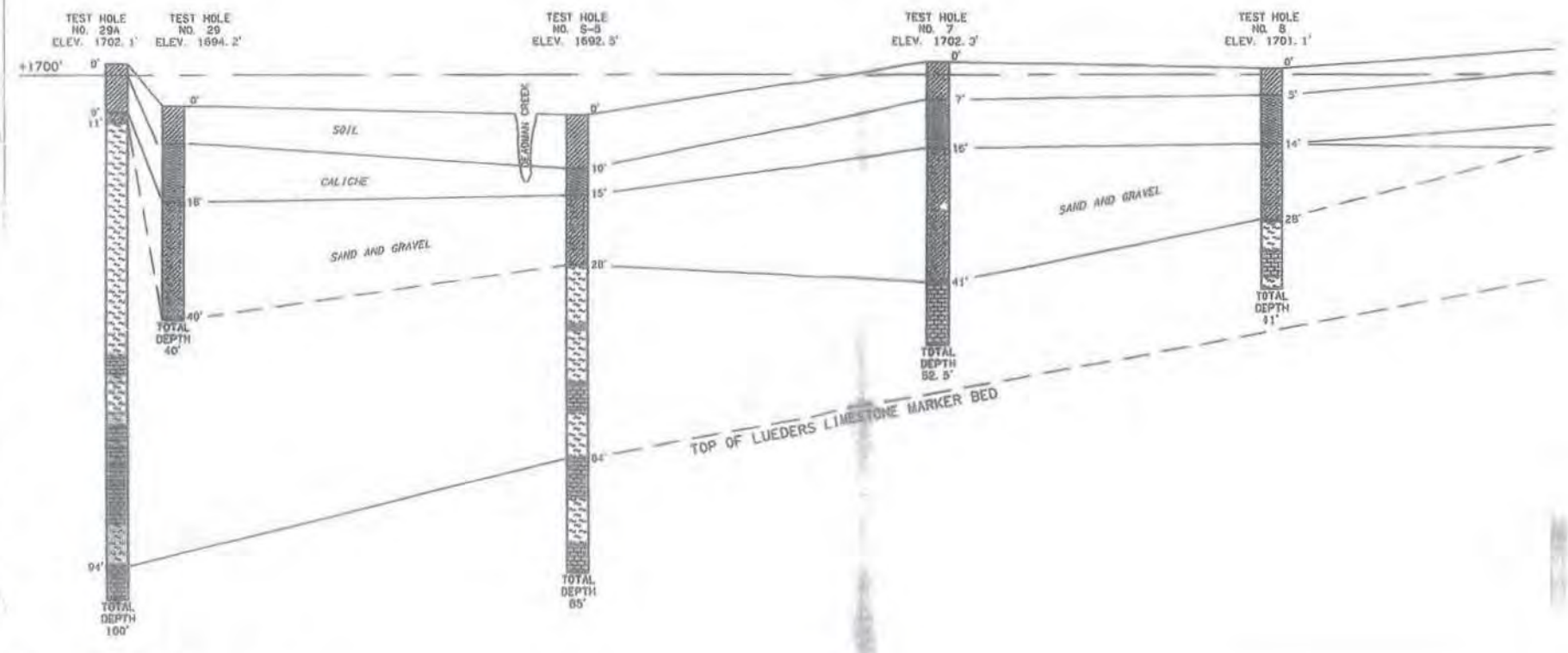
CITY OF ABILENE
WASTEWATER TREATMENT PLANT

WEST TO EAST
CROSS SECTION A-A'
REVISED FROM JENKE (1962)

PROJECT NO. : 8423-210 DATE: 10/18/93

B

WEST

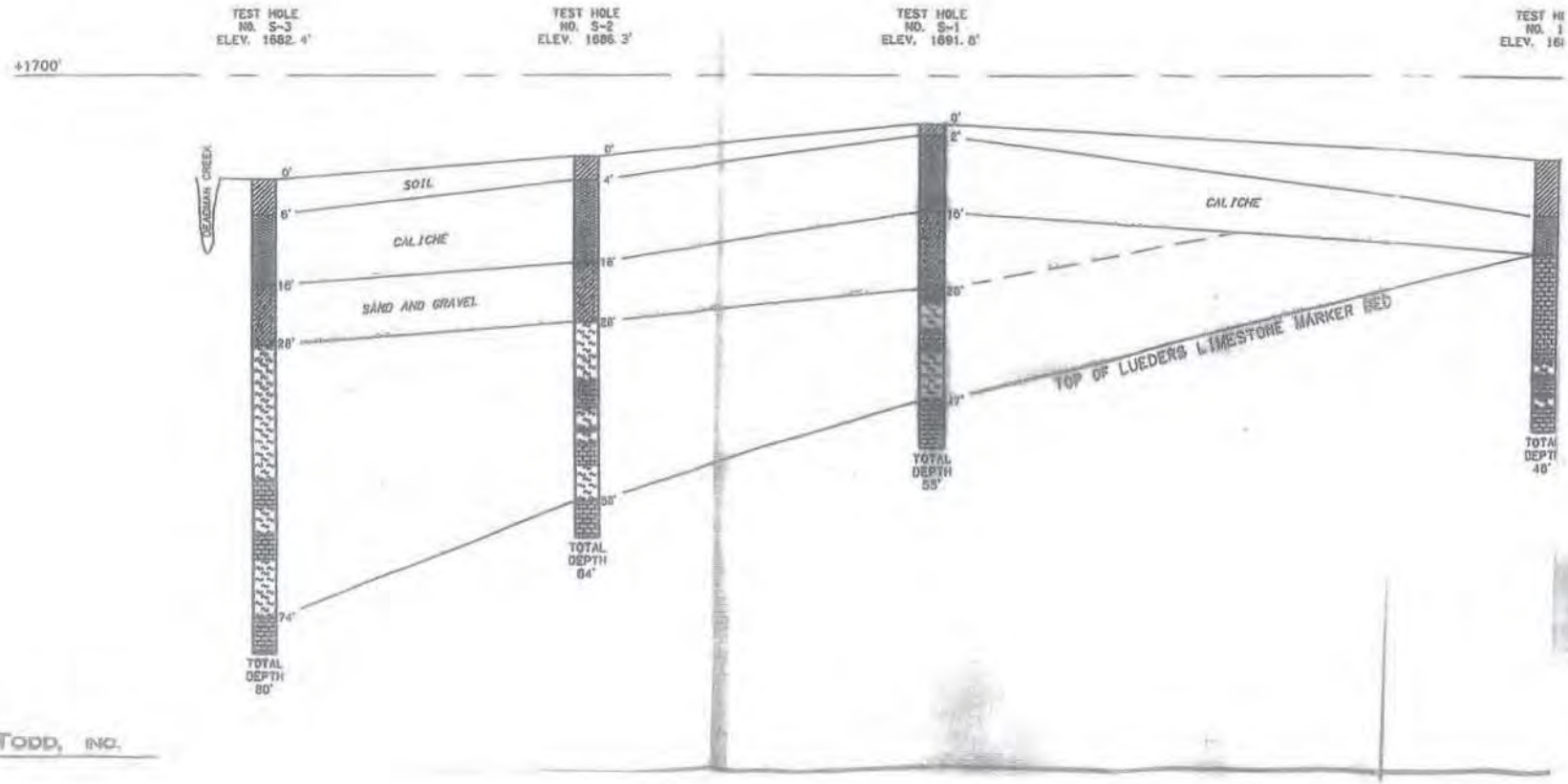


HEBBS & TODD, INC.

environmental and civil engineering

A

WEST



HIBBS & TODD, INC.

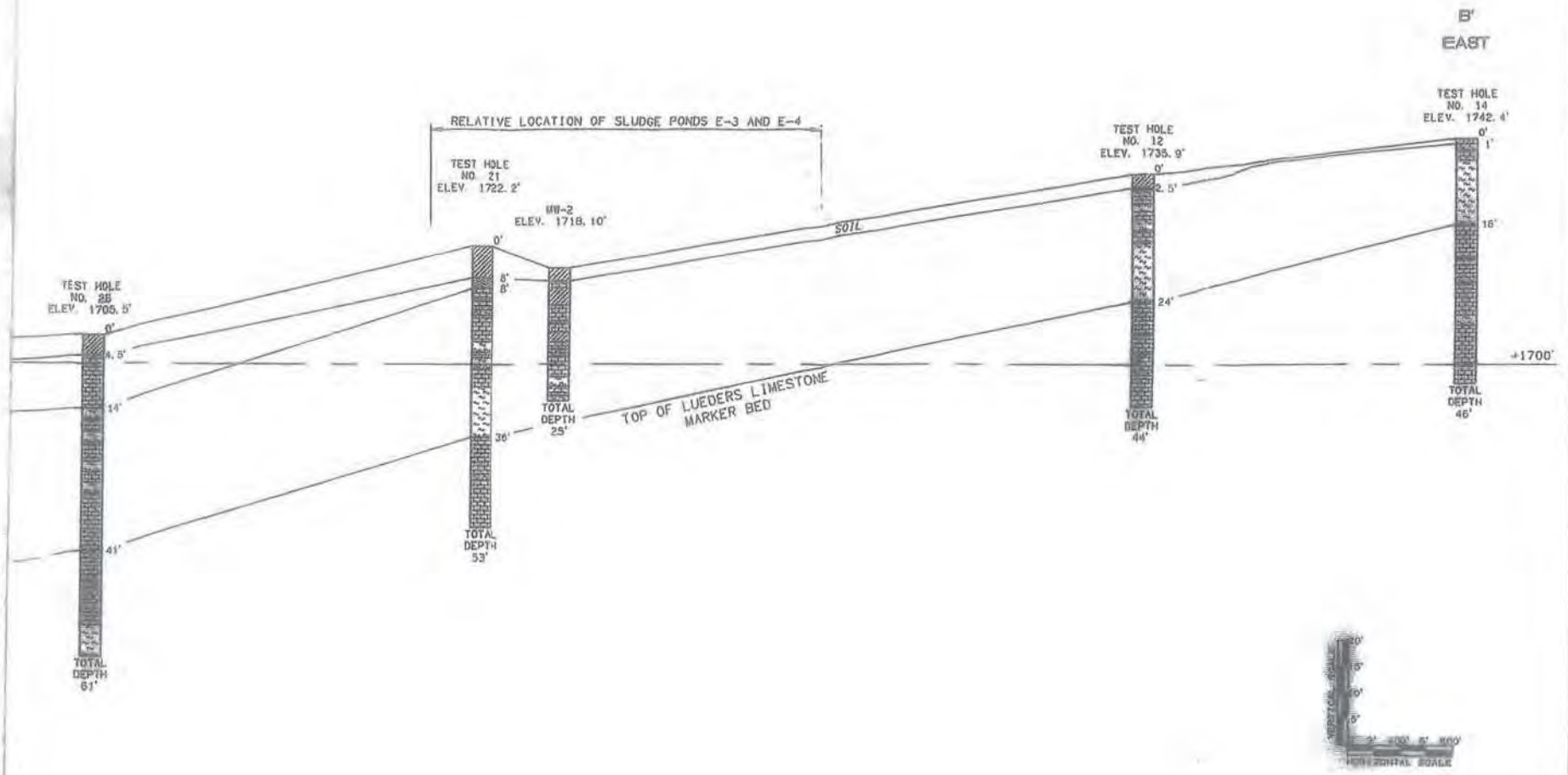


FIGURE 4

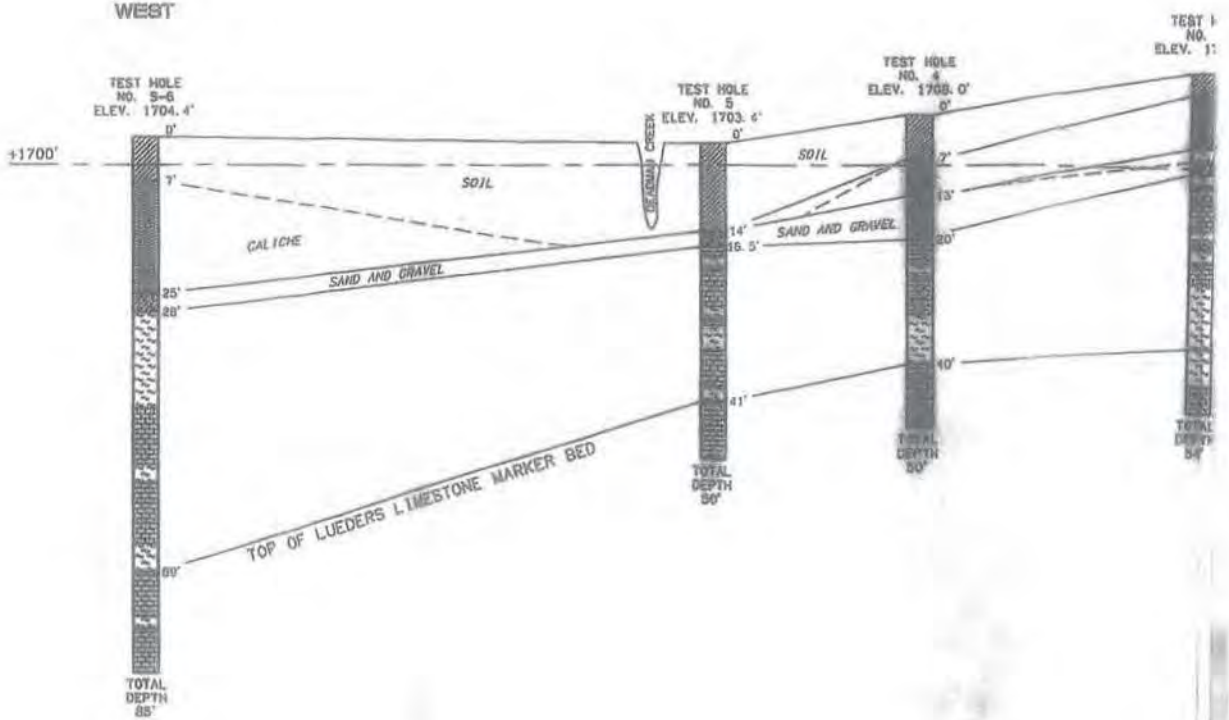
CITY OF ABILENE
WASTEWATER TREATMENT PLANT

WEST TO EAST
CROSS SECTION B-B'
REVISED FROM JENKE (1962)

PROJECT NO.: 6103-210 DATE: 10/18/93

C

WEST


TEST HOLE NO. S-6 ELEV. 1704.4'
0'
+1700'
7'
SOIL
CALICHE
SAND AND GRAVEL
25'
28'
60'
TOP OF LUEDERS LIMESTONE MARKER BED
TOTAL DEPTH 85'
DRAW CREEK
TEST HOLE NO. 5 ELEV. 1703.6'
0'
SOIL
14'
16.5'
SAND AND GRAVEL
41'
TOTAL DEPTH 50'
TEST HOLE NO. 4 ELEV. 1708.0'
0'
7'
13'
20'
40'
TOTAL DEPTH 50'
TEST H
NO.
ELEV. 1
TOTAL
84'

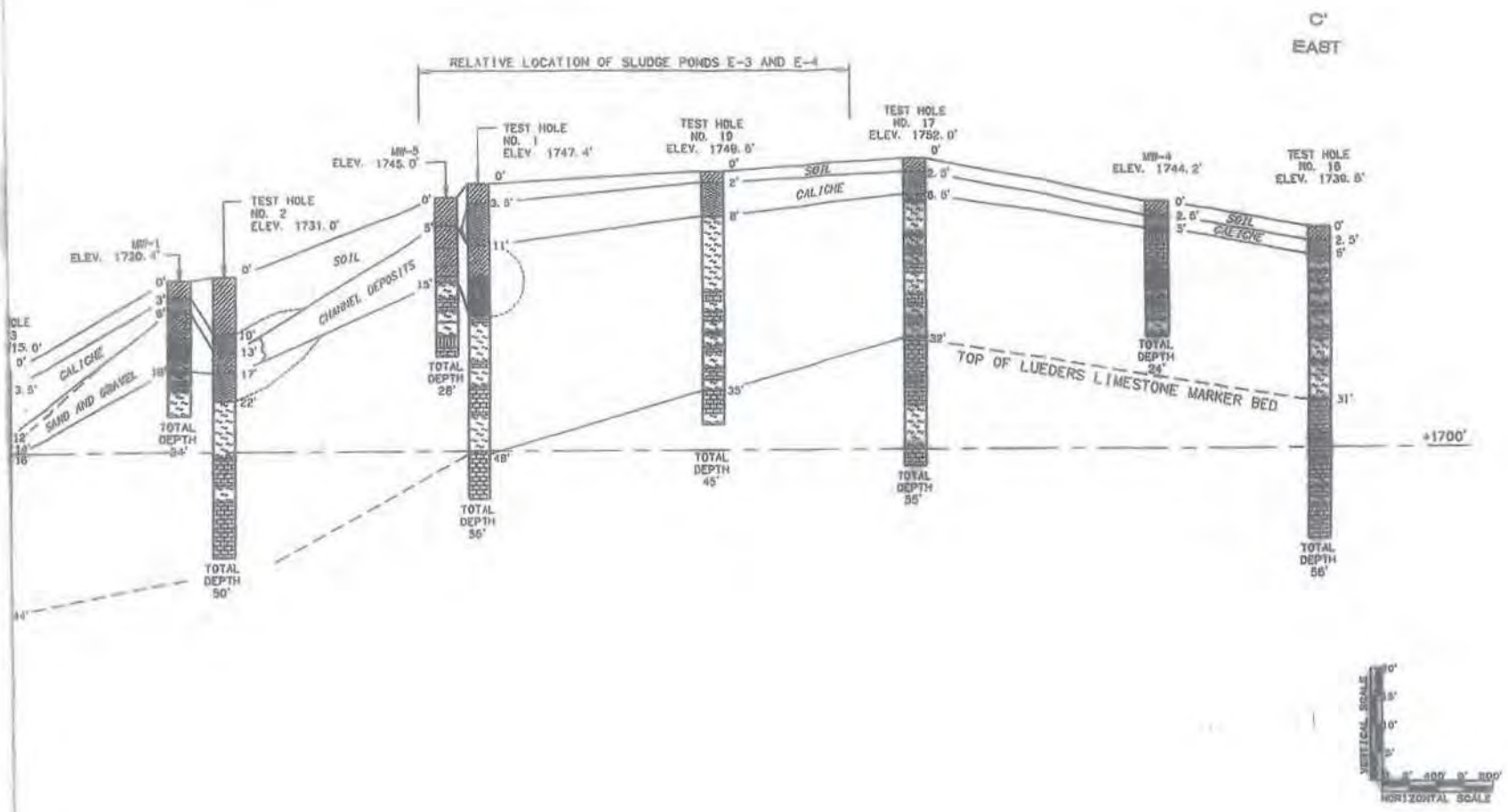


FIGURE 5

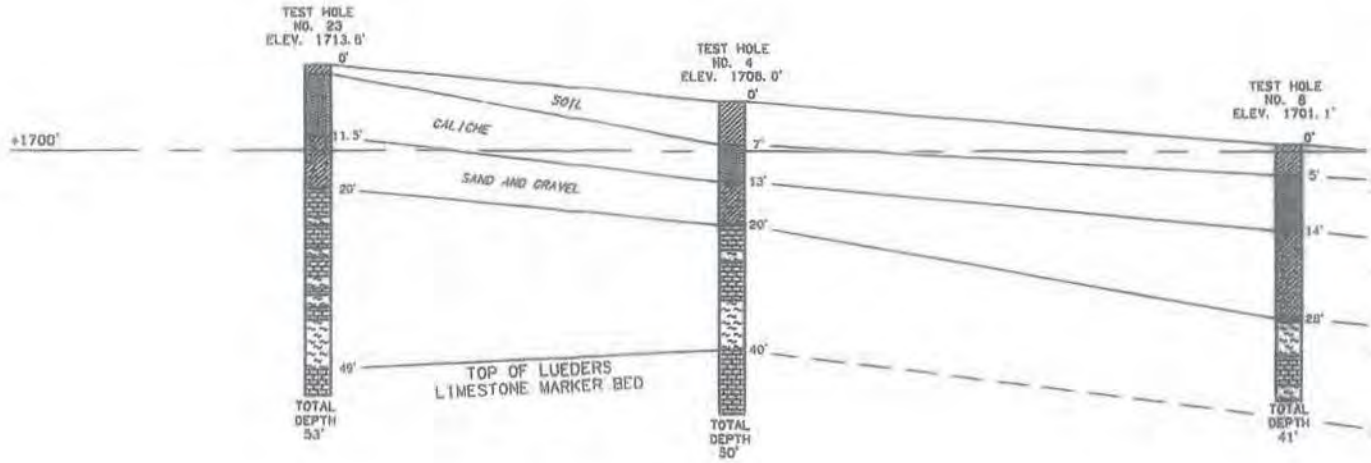
CITY OF ABILENE
WASTEWATER TREATMENT PLANT

WEST TO EAST
CROSS SECTION C-C'
REVISED FROM JENKE (1982)

PROJECT NO.: RH23-210 DATE: 10/18/93

D

SOUTH


TEST HOLE
NO. 23
ELEV. 1713.6'
0'
11.5'
20'
49'
TOTAL
DEPTH
53'
TEST HOLE
NO. 4
ELEV. 1708.0'
0'
7'
13'
20'
40'
TOTAL
DEPTH
30'
TEST HOLE
NO. 8
ELEV. 1701.1'
0'
5'
14'
28'
TOTAL
DEPTH
41'
+1700'
SOIL
CALICHE
SAND AND GRAVEL
TOP OF LUEDERS
LIMESTONE MARKER BED

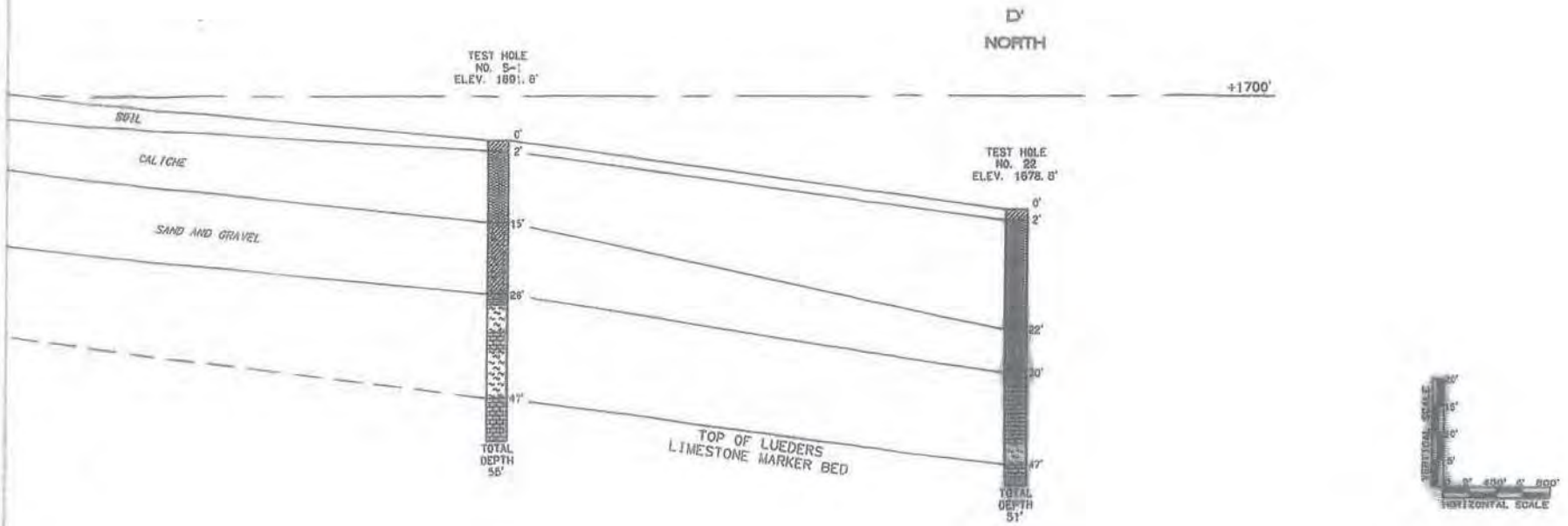


FIGURE 6

CITY OF ABILENE
WASTEWATER TREATMENT PLANT

SOUTH TO NORTH
CROSS SECTION D-D'
REVISED FROM JENKE (1962)

PROJECT NO. 9623-210 DATE: 10/18/93

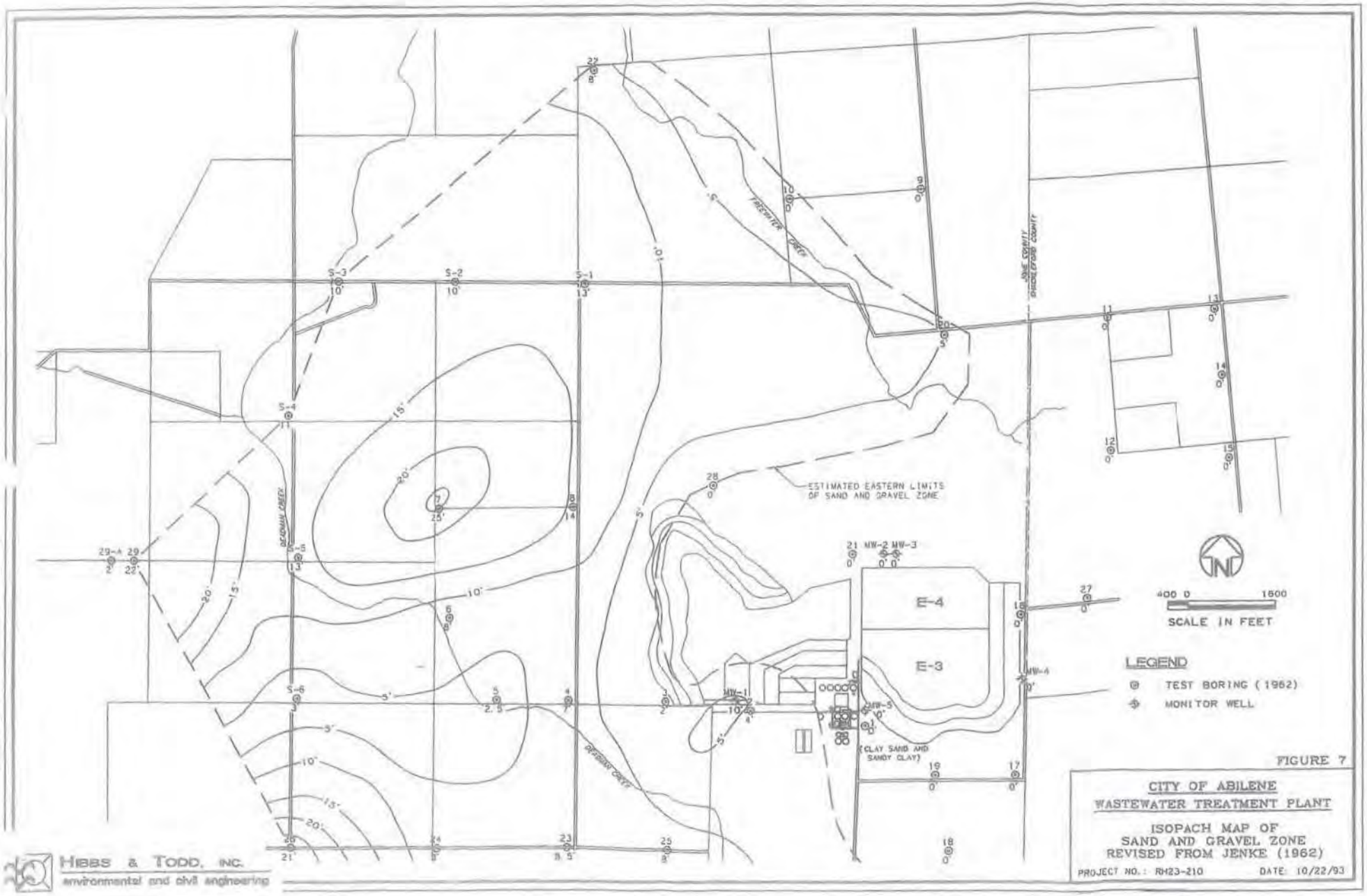


FIGURE 7

CITY OF ABILENE
WASTEWATER TREATMENT PLANT

ISOPACH MAP OF
SAND AND GRAVEL ZONE
REVISED FROM JENKE (1962)

PROJECT NO.: RH23-210 DATE: 10/22/93

HIBBS & TODD, INC.
environmental and civil engineering

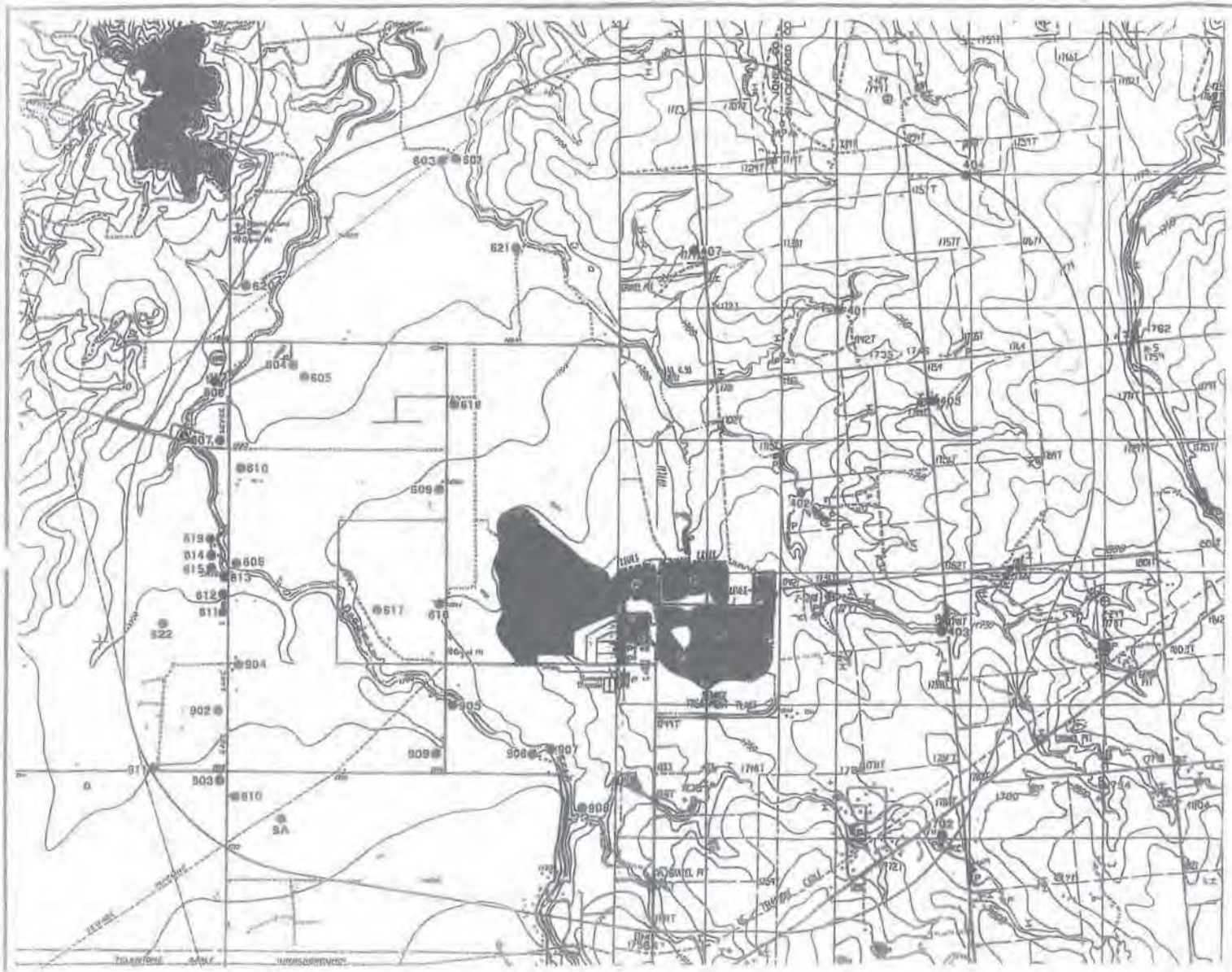


FIGURE 8

CITY OF ABILENE
WASTEWATER TREATMENT PLANT
WATER WELL LOCATION MAP
NOT TO SCALE: REDUCED FROM USGS TOPO INCLUDED WITH GI WATER WELL SEARCH REPORT.
PROJECT NO.: RH23-210 DATE: 10/18/93

HIBBS & TODD, INC.
environmental and civil engineering

Attachment SSTR 4.0-4.B

Site Development Plan (SDS-E3)

Site Plan View

Cross-Section View of the Disposal

Copy of Deed

Source:
Attachment SSTR 4.0-4.B is extracted in its entirety from the previous permit renewal application, prepared by Plummer. The following attachment was Attachment R in the Abilene Hamby WRF Permit Renewal Application, dated 09/04/2018. Attachment R is copied herein and serves as Attachment SSTR 4.0-4.B (with no changes or modifications) in the 2024 Abilene Hamby WRF Minor Amendment Application with Renewal.

ATTACHMENT R

Site Development Plan
SSTR 4.0 Section 4.B

ATTACHMENT R.1

Site Plan View

ALAN PLUMMER ASSOCIATES, INC.
ENVIRONMENTAL ENGINEERS AND SCIENTISTS



TEXAS REGISTERED ENGINEERING FIRM F-13
M:\Projects\0922\016-0112-0 Wrk Prod\2-9 GIS\Att R1 SitePlanXsections.mxd

Feet
0
600

N

Legend

ACTIVE SLUDGE DISPOSAL SITE

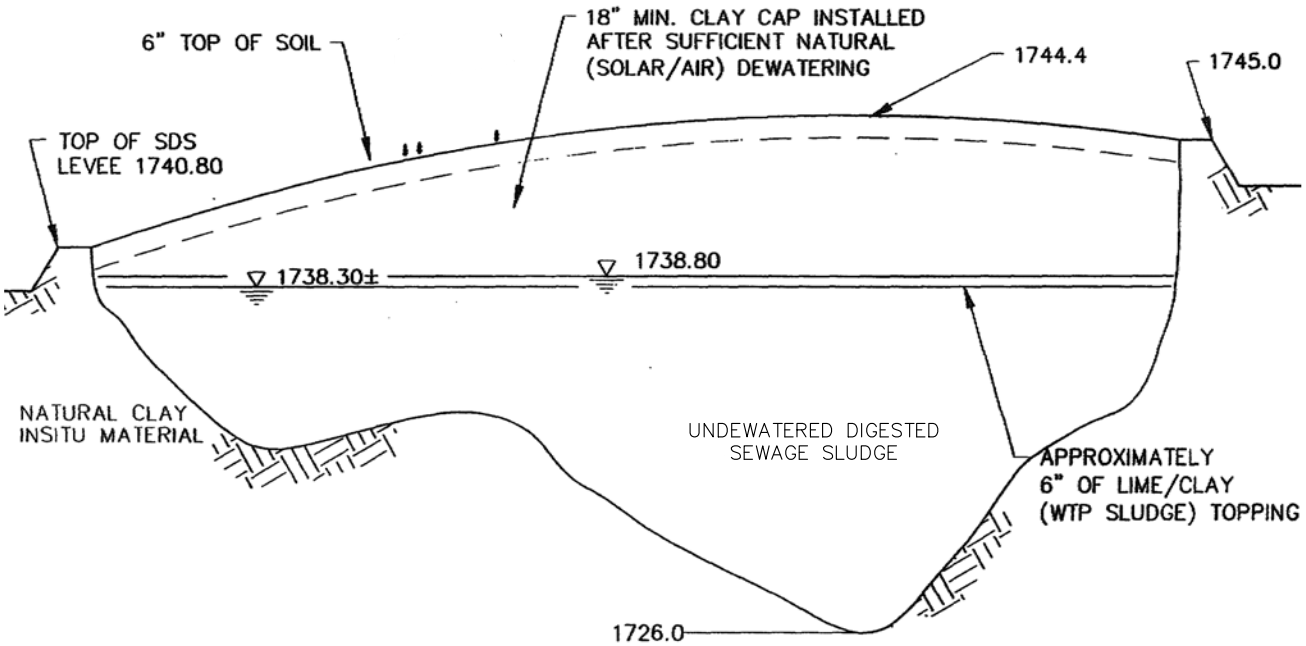
ATTACHMENT R.1
CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY
TPDES PERMIT RENEWAL APPLICATION
SITE PLAN VIEW

ATTACHMENT R.2

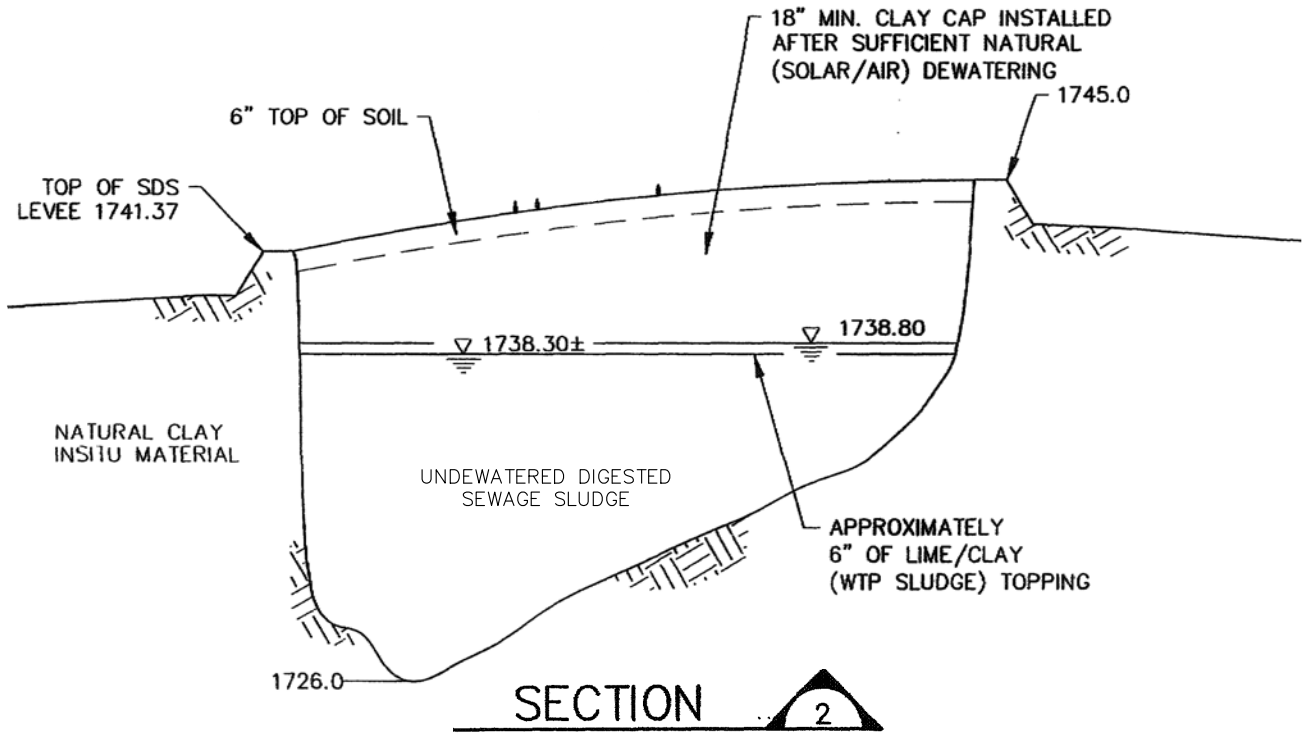
Cross-sectional View of the Disposal Site

ALAN PLUMMER ASSOCIATES, INC.
ENVIRONMENTAL
ENGINEERS AND SCIENTISTS

NOT TO SCALE



SECTION 1



SECTION 2

ATTACHMENT R.2
CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY
TPDES PERMIT RENEWAL APPLICATION
CROSS SECTIONS OF SLUDGE DISPOSAL SITE

TEXAS REGISTERED ENGINEERING FIRM F-13
8/31/2018 11:41 AM m:\Projects\0922\016-01\2-0 wrk prod\2-1 ACAD\FIGURES\ATT-R.dwg Briand

ATTACHMENT R.3

Copy of Deed

971142

HIBBS & TODD

Engineering solutions with a view for tomorrow.

FIELD NOTES
FOR
POND E-3
CITY OF ABILENE WASTEWATER TREATMENT PLANT

BEING all that certain lot tract or parcel of land out of the West 82.92 acres and the East 82.92 acres of a 165.84 acre tract, said 165.84 acre tract composed of:

80 acres out of Section 9, Blind Asylum Lands,
26.84 acres out of Survey 53, Block 14, T & P Ry. Co.,
59 acres out of Survey 54, Block 14, T & P Ry. Co.

all situated in Jones County, Texas, said the West 82.92 acres conveyed to the City of Abilene as recorded in Volume 454, page 214 of the Deed Records of Jones County, Texas, said the East 82.92 acres tract conveyed to the City of Abilene as recorded in Volume 458, page 6 of the Deed Records of Jones County, Texas and being more particularly described as follows:

BEGINNING at a 1/2" iron rod, set at the inside grade-break at the Northwest corner of said Pond E-3, from said 1/2" iron rod, the Northwest corner of the West 82.92 acres bears North 09 degrees 51 minutes 00 seconds West a distance of 1211.69 feet;

THENCE along the inside grade-break as follow:

North 89 degrees 39 minutes 00 seconds East a distance of 2309.93 feet to a 1/2" iron rod, set for corner;

South 42 degrees 43 minutes 21 seconds East a distance of 21.87 feet to a point for corner;

South 16 degrees 27 minutes 10 seconds East a distance of 26.41 feet to a point for corner;

South 00 degrees 43 minutes 21 seconds East a distance of 981.10 feet to a point for corner;

South 07 degrees 22 minutes 01 seconds West a distance of 102.67 feet to a point for corner;

South 23 degrees 47 minutes 39 seconds West a distance of 89.65 feet to a point for corner;

South 49 degrees 48 minutes 14 seconds West a distance of 60.16 feet to a point for corner;

P.O. Box 5052
Abilene, Texas 79608
915/698-9996 FAX 915/695-3299

6310 Genoa Ave., Suite E
Lubbock, Texas 79424
806/794-1100 FAX 806/794-0778

Official Public Records
Vol 92, Page 764
Apr 22, 1997

South 63 degrees 22 minutes 55 seconds West a distance of 132.21 feet to a point for corner;

South 75 degrees 02 minutes 03 seconds West a distance of 145.40 feet to a point for corner;

South 89 degrees 28 minutes 40 seconds West a distance of 484.38 feet to a point for corner;

South 72 degrees 43 minutes 11 seconds West a distance of 98.71 feet to a point for corner;

South 64 degrees 02 minutes 54 seconds West a distance of 154.41 feet to a point for corner;

South 88 degrees 18 minutes 08 seconds West a distance of 99.86 feet to a point for corner;

North 82 degrees 37 minutes 09 seconds West a distance of 96.08 feet to a point for corner;

North 75 degrees 50 minutes 15 seconds West a distance of 104.18 feet to a point for corner;

North 68 degrees 02 minutes 27 seconds West a distance of 134.28 feet to a point for corner;

North 61 degrees 11 minutes 22 seconds West a distance of 115.98 feet to a point for corner;

North 46 degrees 13 minutes 45 seconds West a distance of 262.75 feet to a point for corner;

North 32 degrees 31 minutes 15 seconds West a distance of 341.86 feet to a point for corner;

North 43 degrees 59 minutes 55 seconds West a distance of 213.07 feet to a point for corner;

North 51 degrees 13 minutes 59 seconds West a distance of 162.01 feet to a point for corner;

North 62 degrees 53 minutes 25 seconds West a distance of 94.78 feet to a point for corner;

North 44 degrees 55 minutes 27 seconds West a distance of 55.38 feet to a point for corner;

North 21 degrees 38 minutes 59 seconds West a distance of 33.02 feet to a point for corner;

Pond E-3
Abilene WWTP

North 00 degrees 06 minutes 53 seconds West a distance of 411.70 feet to a point for corner;

North 26 degrees 13 minutes 17 seconds East a distance of 28.78 feet to a point for corner;

North 58 degrees 20 minutes 32 seconds East a distance of 24.30 feet to the place of beginning, containing 64.413 acres of land, which 28.242 acres lying in the West 82.92 acres, and 36.171 acres lying in the East 82.92 acres.

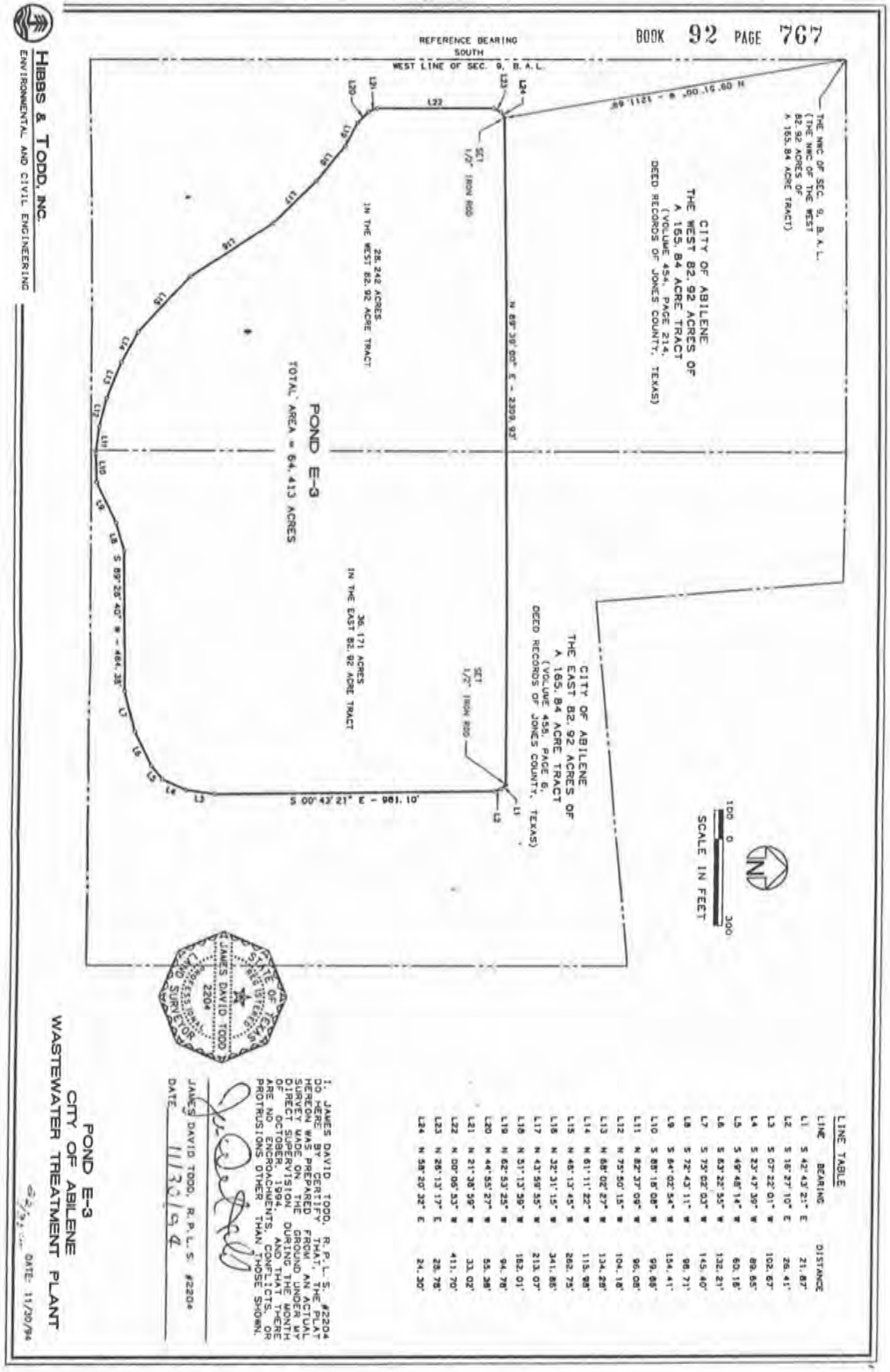
I, James David Todd, R.P.L.S. #2204, do hereby certify that the above field notes was prepared from an actual survey made on the ground under my direct supervision during the month of October, 1994.



James David Todd, R.P.L.S. #2204

Date: 11/30/94

Pond E-3
Abilene WWTP



LINE TABLE

LINE	BEARING	DISTANCE
L1	S 42° 43' 21" E	21.87'
L2	S 16° 37' 10" E	26.41'
L3	S 07° 22' 01" W	102.67'
L4	S 23° 47' 39" W	69.85'
L5	S 49° 48' 14" W	60.18'
L6	S 83° 32' 55" W	132.21'
L7	S 75° 02' 03" W	145.40'
L8	S 72° 43' 11" W	98.71'
L9	S 84° 02' 54" W	154.41'
L10	S 88° 18' 08" W	99.88'
L11	N 82° 37' 09" W	96.08'
L12	N 75° 50' 15" W	104.18'
L13	N 68° 02' 27" W	134.28'
L14	N 61° 11' 22" W	115.98'
L15	N 48° 13' 43" W	282.75'
L16	N 32° 31' 15" W	341.88'
L17	N 43° 59' 55" W	213.07'
L18	N 51° 13' 59" W	182.01'
L19	N 62° 53' 25" W	94.78'
L20	N 44° 55' 27" W	55.38'
L21	N 21° 38' 59" W	33.02'
L22	N 00° 06' 53" W	411.70'
L23	N 26° 13' 17" E	28.78'
L24	N 58° 20' 32" E	24.30'

STATE OF TEXAS
JAMES DAVID TODD
2204
REGISTERED PROFESSIONAL LAND SURVEYOR

I, JAMES DAVID TODD, R.P.L.S. #2204 DO HEREBY CERTIFY THAT THE PLAT HEREON WAS PREPARED FROM AN ACTUAL SURVEY MADE ON THE GROUND UNDER MY DIRECT SUPERVISION DURING THE MONTH OF OCTOBER, 1994 AND THAT THERE ARE NO ENCROACHMENTS, CONFLICTS OR PROTRUSIONS OTHER THAN THOSE SHOWN.

JAMES DAVID TODD, R.P.L.S. #2204
DATE 11/30/94

HIBBS & TODD, INC.
ENVIRONMENTAL AND CIVIL ENGINEERING

POND E-3
CITY OF ABILENE
WASTEWATER TREATMENT PLANT

DATE: 11/30/94

FILED FOR RECORD 22 DAY OF April A.D., 1997, 8:45 A.M.

RECORDED 23 DAY OF April A.D., 1997, 3 P.M.

MARGARET JONES, COUNTY CLERK, ANSON, JONES COUNTY, TEXAS.....

AFFIDAVIT REGARDING SURFACE DISPOSAL OF SLUDGE

STATE OF TEXAS §

COUNTY OF JONES §

In accordance with 30 Texas Administrative Code Section 312.62, this affidavit is being recorded to give notice that the property described herein is used for surface disposal of sewage sludge generated by the City of Abilene, Texas, at the Hamby Wastewater Treatment Facility (WWTF). The City of Abilene is authorized to dispose of sewage sludge at the Hamby WWTF pursuant to Texas Pollutant Discharge Elimination System (TPDES) Permit Number WQ0010334-004, as issued by the Texas Commission on Environmental Quality.

The property upon which sewage sludge will be disposed of is described as a single pond located in the Blind Asylum Lands and T. & P. R.R. Co. surveys of Jones County, Texas, being part of: an 82.92-acre tract of land described in a deed to the City of Abilene in Volume 454, Page 214; and an 82.92-acre tract of land described in a deed to the City of Abilene in Volume 458, Page 6, each as recorded in the Official Public Records of Jones County. The pond is more specifically described in the metes and bounds description in Volume 92, Pages 764-766, and as shown on the drawing in Volume 92, Page 767, each as recorded in the Official Public Records of Jones County.

The sludge to be disposed of on the property is municipal sewage sludge that has been stabilized by anaerobic digestion. Based on analytical data the sludge is not a hazardous material. More specific information on the sludge to be disposed of on the property may be obtained by contacting the Director, City of Abilene Water Utilities Department, P.O. Box 60, Abilene, Texas 79604.

WITNESS BY HAND(S) ON THIS 8 DAY OF October, 2008

Larry Gilley, City Manager
City of Abilene, Texas

SWORN TO AND SUBSCRIBED BEFORE ME ON THIS 8 DAY OF October 2008

NOTARY PUBLIC
STATE OF TEXAS
AUDRIA HAMMOND
Notary Public State of Texas
My Commission Expires
05-03-2010

Notary Public, State of Texas
Notary's Printed Name: AUDRIA HAMMOND
My Commission Expires: 05-03-2010

Official Public Record
Volume 292, Page 121
Jones County, Texas
Recorded October 30, 2008

Attachment SSTR 4.0-5.A
Groundwater Monitoring Data

City of Abilene
Environmental Laboratory Report

RECEIVED Date: 3/15/24 AB

4209 East Lake Road
Phone: (325) 676-6043

Abilene, TX 79601
Fax: (325) 676-6044

Report To

Larry Bailey
INDUSTRIAL WASTE OFFICE
4209 E. Lake Rd.
Abilene, TX 79601

Sample Information

Project: Hamby Monitoring Wells
Project Number: [none]
Collector:
Collector Phone: 676-6041
Date Received: 02/21/24 11:33
Received By:
Report Date: 03/14/2024

MW-1 C4B2104-01 Date Sample: 21-Feb-2024 10:56

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Ammonia as N	**0.03**	mg/L	0.1	SM 4500-NH3-	CB42113	JH	2/21/24 14:00	J
Nitrate as N	**0.51**	mg/L	0.25	SM 4500-NO3-	CB42206	KDW	2/22/24 10:01	
Nitrite as N	ND	mg/L	0.03	SM 4500-NO3	CB42206	KDW	2/22/24 10:01	
Phosphorus, Total as P	ND	mg/L	0.050	SM 4500 P B-	CC41322	KDW	3/13/24 14:21	
Total Dissolved Solids	**1470**	mg/L	25.0	SM 2540 C	CB42620	WDJ	2/26/24 17:01	
Total Kjeldahl Nitrogen	**0.69**	mg/L	0.50	SM 4500 N-org	CC40815	JH	3/13/24 9:00	QM-08
Total Nitrogen	**1.20**	mg/L	1.00	SM 4500N	CC41318	RMK	3/13/24 9:00	
E. coli	ND	MPN/100 ml	1.1	SM 9223	CB42209	KLG	2/21/24 13:25	<
Conductivity @ 25C	**2570**	umhos/cm	1.00	SM 2510 B	CB42908	DC	2/29/24 14:05	

MW-2 C4B2104-02 Date Sample: 21-Feb-2024 10:17

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Ammonia as N	**0.03**	mg/L	0.1	SM 4500-NH3-	CB42113	JH	2/21/24 14:00	J
Nitrate as N	**0.16**	mg/L	0.25	SM 4500-NO3-	CB42206	KDW	2/22/24 10:01	J
Nitrite as N	ND	mg/L	0.03	SM 4500-NO3	CB42206	KDW	2/22/24 10:01	
Phosphorus, Total as P	ND	mg/L	0.050	SM 4500 P B-	CC41322	KDW	3/13/24 14:21	
Total Dissolved Solids	**1500**	mg/L	25.0	SM 2540 C	CB42620	WDJ	2/26/24 17:01	
Total Kjeldahl Nitrogen	**0.20**	mg/L	0.50	SM 4500 N-org	CC40815	JH	3/13/24 9:00	J, QM-08
Total Nitrogen	**0.37**	mg/L	1.00	SM 4500N	CC41318	RMK	3/13/24 9:00	

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

MW-2 C4B2104-02 Date Sample: 21-Feb-2024 10:17

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
E. coli	ND	MPN/100 ml	1.1	SM 9223	CB42209	KLG	2/21/24 13:25	<
Conductivity @ 25C	**2630**	**umhos/cm**	1.00	SM 2510 B	CB42908	DC	2/29/24 14:05	

MW-3 C4B2104-03 Date Sample: 21-Feb-2024 10:24

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Ammonia as N	**3.2**	**mg/L**	0.1	SM 4500-NH3-	CB42113	JH	2/21/24 14:00	
Nitrate as N	**0.13**	**mg/L**	0.25	SM 4500-NO3-	CB42206	KDW	2/22/24 10:01	J
Nitrite as N	**0.004**	**mg/L**	0.03	SM 4500-NO3-	CB42206	KDW	2/22/24 10:01	J
Phosphorus, Total as P	**0.097**	**mg/L**	0.050	SM 4500 P B-F	CC41322	KDW	3/13/24 14:21	
Total Dissolved Solids	**20800**	**mg/L**	25.0	SM 2540 C	CB42620	WDJ	2/26/24 17:01	
Total Kjeldahl Nitrogen	**8.68**	**mg/L**	0.50	SM 4500 N-org	CC40815	JH	3/13/24 9:00	QM-08
Total Nitrogen	**8.81**	**mg/L**	1.00	SM 4500N	CC41318	RMK	3/13/24 9:00	
E. coli	ND	MPN/100 ml	1.1	SM 9223	CB42209	KLG	2/21/24 13:25	<
Conductivity @ 25C	**29700**	**umhos/cm**	1.00	SM 2510 B	CB42908	DC	2/29/24 14:05	

MW-4 C4B2104-04 Date Sample: 21-Feb-2024 9:55

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Ammonia as N	**0.1**	**mg/L**	0.1	SM 4500-NH3-	CB42113	JH	2/21/24 14:00	
Nitrate as N	**1.76**	**mg/L**	0.25	SM 4500-NO3-	CB42206	KDW	2/22/24 10:01	
Nitrite as N	ND	mg/L	0.03	SM 4500-NO3	CB42206	KDW	2/22/24 10:01	
Phosphorus, Total as P	**0.135**	**mg/L**	0.050	SM 4500 P B-F	CC41322	KDW	3/13/24 14:21	
Total Dissolved Solids	**3910**	**mg/L**	25.0	SM 2540 C	CB42620	WDJ	2/26/24 17:01	
Total Kjeldahl Nitrogen	**0.74**	**mg/L**	0.50	SM 4500 N-org	CC40815	JH	3/13/24 9:00	QM-08
Total Nitrogen	**2.51**	**mg/L**	1.00	SM 4500N	CC41318	RMK	3/13/24 9:00	
E. coli	ND	MPN/100 ml	1.1	SM 9223	CB42209	KLG	2/21/24 13:25	<
Conductivity @ 25C	**6270**	**umhos/cm**	1.00	SM 2510 B	CB42908	DC	2/29/24 14:05	

MW-5 C4B2104-05 Date Sample: 21-Feb-2024 10:42

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Ammonia as N	**0.03**	**mg/L**	0.1	SM 4500-NH3-	CB42113	JH	2/21/24 14:00	J
Nitrate as N	**9.57**	**mg/L**	0.25	SM 4500-NO3-	CB42206	KDW	2/22/24 10:01	
Nitrite as N	ND	mg/L	0.03	SM 4500-NO3	CB42206	KDW	2/22/24 10:01	
Phosphorus, Total as P	**0.052**	**mg/L**	0.050	SM 4500 P B-F	CC41322	KDW	3/13/24 14:21	
Total Dissolved Solids	**6460**	**mg/L**	25.0	SM 2540 C	CB42620	WDJ	2/26/24 17:01	
Total Kjeldahl Nitrogen	**0.44**	**mg/L**	0.50	SM 4500 N-org	CC40815	JH	3/13/24 9:00	J, QM-08
Total Nitrogen	**10.01**	**mg/L**	1.00	SM 4500N	CC41318	RMK	3/13/24 9:00	
E. coli	ND	MPN/100 ml	1.1	SM 9223	CB42209	KLG	2/21/24 13:25	<
Conductivity @ 25C	**11500**	**umhos/cm**	1.00	SM 2510 B	CB42908	DC	2/29/24 14:05	

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

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Convential Chemistry Parameters by Standard Methods - Quality Control

City of Abilene

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch CB42113 - Gen Prep - ISE									
Blank (CB42113-BLK1)				Prepared & Analyzed: 02/21/24					
Ammonia as N	ND	0.1	mg/L						
Blank (CB42113-BLK2)				Prepared & Analyzed: 02/21/24					
Ammonia as N	ND	0.1	mg/L						
LCS (CB42113-BS1)				Prepared & Analyzed: 02/21/24					
Ammonia as N	4.8	0.1	mg/L	5.00		95.6	90-110		
Duplicate (CB42113-DUP1)		**Source: C4B2001-01**		Prepared & Analyzed: 02/21/24					
Ammonia as N	0.9	0.1	mg/L		0.9			0.816	15
Matrix Spike (CB42113-MS1)		**Source: C4B2001-01**		Prepared & Analyzed: 02/21/24					
Ammonia as N	3.7	0.1	mg/L	3.00	0.9	92.3	90-110		
Batch CB42206 - Gen Prep - Wet Chem									
Blank (CB42206-BLK1)				Prepared & Analyzed: 02/22/24					
NO3 + NO2 as N	ND	0.25	mg/L						
Nitrite as N	ND	0.03	"						
LCS (CB42206-BS1)				Prepared & Analyzed: 02/22/24					
NO3 + NO2 as N	2.98	0.25	mg/L	3.00		99.3	90-110		
LCS (CB42206-BS2)				Prepared & Analyzed: 02/22/24					
Nitrite as N	0.32	0.03	mg/L	0.300		106	90-110		
Duplicate (CB42206-DUP1)		**Source: C4B2104-01**		Prepared & Analyzed: 02/22/24					
NO3 + NO2 as N	0.53	0.25	mg/L		0.51			3.28	15
Nitrite as N	0.004	0.03	"		ND				15

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch CB42206 - Gen Prep - Wet Chem									
Matrix Spike (CB42206-MS1)		**Source: C4B2104-01**		Prepared & Analyzed: 02/22/24					
NO3 + NO2 as N	3.36	0.25	mg/L	3.00	0.51	95.1	90-110		
Matrix Spike (CB42206-MS2)		**Source: C4B2104-01**		Prepared & Analyzed: 02/22/24					
Nitrite as N	0.31	0.03	mg/L	0.300	ND	103	90-110		
Batch CB42620 - Gen Prep - Wet Chem									
Blank (CB42620-BLK1)				Prepared & Analyzed: 02/26/24					
Total Dissolved Solids	ND	25.0	mg/L						
LCS (CB42620-BS1)				Prepared & Analyzed: 02/26/24					
Total Dissolved Solids	986	25.0	mg/L	1000		98.6	90-110		
Duplicate (CB42620-DUP1)		**Source: C4B2104-01**		Prepared & Analyzed: 02/26/24					
Total Dissolved Solids	1500	25.0	mg/L		1470			2.16	10
Batch CC40815 - Gen Prep - ISE									
Blank (CC40815-BLK1)				Prepared: 03/05/24 Analyzed: 03/13/24					
Total Kjeldahl Nitrogen	ND	0.50	mg/L						
LCS (CC40815-BS1)				Prepared: 03/05/24 Analyzed: 03/13/24					
Total Kjeldahl Nitrogen	5.59	0.50	mg/L	6.67		83.9	85-115		
Duplicate (CC40815-DUP1)		**Source: C4B1215-01**		Prepared: 03/05/24 Analyzed: 03/13/24					
Total Kjeldahl Nitrogen	1.10	0.50	mg/L		1.08			2.42	15

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

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Convential Chemistry Parameters by Standard Methods - Quality Control

City of Abilene

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch CC40815 - Gen Prep - ISE									
Matrix Spike (CC40815-MS1)		**Source: C4B1215-01**		Prepared: 03/05/24 Analyzed: 03/13/24					
Total Kjeldahl Nitrogen	6.71	0.50	mg/L	6.67	1.08	84.5	85-115		
Batch CC41322 - Gen Prep - Wet Chem									
Blank (CC41322-BLK1)				Prepared & Analyzed: 03/13/24					
Phosphorus, Total as P	ND	0.050	mg/L						
Blank (CC41322-BLK2)				Prepared & Analyzed: 03/13/24					
Phosphorus, Total as P	ND	0.050	mg/L						
LCS (CC41322-BS1)				Prepared & Analyzed: 03/13/24					
Phosphorus, Total as P	1.037	0.050	mg/L	1.00		104	90-110		
Duplicate (CC41322-DUP1)		**Source: C4B2104-01**		Prepared & Analyzed: 03/13/24					
Phosphorus, Total as P	ND	0.050	mg/L		ND				15
Matrix Spike (CC41322-MS1)		**Source: C4B2104-01**		Prepared & Analyzed: 03/13/24					
Phosphorus, Total as P	0.273	0.050	mg/L	0.250	ND	109	90-110		

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

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Miscellaneous Physical/Chemicals Parameters by SM - Quality Control

City of Abilene

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch CB42908 - Gen Prep - Wet Chem									
Blank (CB42908-BLK1)				Prepared & Analyzed: 02/29/24					
Conductivity @ 25C	ND	1.00	umhos/cm						
LCS (CB42908-BS1)				Prepared & Analyzed: 02/29/24					
Conductivity @ 25C	1440	1.00	umhos/cm	1410		102	90-110		
Duplicate (CB42908-DUP1)		**Source: C4B2104-01**		Prepared & Analyzed: 02/29/24					
Conductivity @ 25C	2570	1.00	umhos/cm		2570			0.0779	15

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

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Microbiological Parameters by Standard Methods - Quality Control

City of Abilene

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch CB42209 - Gen Prep-Bacteria									
Blank (CB42209-BLK1)				Prepared & Analyzed: 02/21/24					
E. coli	ND	1.1	MPN/100 ml						

Notes and Definitions

QM-08	Batch is accepted based on matrix spike recoveries and RPD values.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
<	Less than stated value
ND	Analyte NOT DETECTED at or below the reporting limit
NR	Not Reported
RPD	Relative Percent Difference

We are an Approved Public Water System Laboratory (AL2210001) for: Alkalinity, Chlorine Dioxide (2 methods), Free and Total Chlorine (2 methods), pH, POE Chlorite, Temperature, Turbidity (2 methods).

We are an Approved Drinking Water Laboratory (T104704320) for: Alkalinity, Calcium, Chlorine Dioxide (2 methods), Chlorite, Conductivity, Hardness, pH, Phosphate, Silica, Temperature, TOC, Total Chlorine, Turbidity, UV254.

We are not NELAP accredited in the DW matrix for: Alkalinity, Ammonia, Beryllium, Bromide, Chlorine Dioxide, Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Molybdenum, pH, Phosphate, Silver, TOC, UV254

We are not NELAP accredited in the NPW matrix for: Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Silver. We are not a certified calibration laboratory.

Robert Mitchell for QC Manager, signing in place of

Michael Michaud
Laboratory Manager

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CITY OF ABILENE ENVIRONMENTAL — LABORATORY CHAIN OF CUSTODY

CITY OF ABILENE
INDUSTRIAL WASTE OFFICE

4209 East Lake Road
Abilene, TX 79601
(325) 676-6041
Fax: (325) 676-6044

ACCREDITED TNI LABORATORY

PROJECT
Weekly Monitoring
Monthly Monitoring
Monthly Monitoring
Well

Project ID: Hamby WRF Quarterly Monitoring Wells
Comments:

Sampler Signature / Name: L~ Z. Bf / Larry L Bailey

Lab Use Only Laboratory ID	Sample ID	Collection Date	Collection Time	Lab Use Only - Preservative: Write check mark for each appropriately preserved bottle. Note improper preservation in comments box. Bottle	T obs	T cor	pH	Ice?	preserv.	Matrix Type	Grab/ Comp	Container Type (P/G)	# Bottles	Bottle	A	A	A	A	A	B	B	B	C						
														Total Nitrogen	Nitrite Nitrogen	Nitrate Nitrogen	Conductivity	TDS	Total Phosphorus	Ammonia Nitrogen	TKN	E.Coli						
CMB2104 -01	Monitor Well #1	02/21/24	1056	A	11.8	-	x	Y	None	W W	G	P	3	√	√	√	√	√	√	√	√	√						
				B	12.3	-	(<2)	Y	H2SO4																				
				C	11.2	-		Y	None																				
-02	Monitor Well #2	02/21/24	1017	A	8.4	-		Y	None	W W	G	P	3	√	√	√	√	√	√	√	√	√						
				B	7.4	-	(<2)	Y	H2SO4																				
				C	6.1	-		Y	None																				
-03	Monitor Well #3	02/21/24	1024	A	10.4	-		Y	None	W W	G	P	3	√	√	√	√	√	√	√	√	√						
				B	11.0	-	(<2)	Y	H2SO4																				
				C	6.2	-		Y	None																				
-04	Monitor Well #4	02/21/24	0955	A	8.7	-		Y	None	W W	G	P	3	√	√	√	√	√	√	√	√	√						
				B	4.0	-	(<2)	Y	H2SO4																				
				C	4.1	-		Y	None																				
-05	Monitor Well #5	02/21/24	1042	A	17.7	-		Y	None	W W	G	P	3	√	√	√	√	√	√	√	√	√						
				B	9.3	-	(<2)	Y	H2SO4																				
				C	9.3	-		Y	None																				

Preservatives: Metals=HNO3, FOG/TPH=H2SO4, Cyanide=NaOH

Note: pH&Temp taken in field are on grab samples

Relinquished By: L~ Z. Bf — Date: 2/21/24 Time: 11:33

Received By: Dan Mc — Date: 2.21.24 Time: 11:33

Relinquished By: _____ — Date: _____ Time: _____

Received By: _____ — Date: _____ Time: _____

Comments
Password: (EA000344D)
pH paper lot:
Thermometer number: IR6
Correction Factor add : 0.0°
x pH checked on 3-11-24

Temperatures circled do not conform to federal regulations.
* On ice, but inadequate time to reach ≤6° C.
** Circle the metals to be analyzed Ag Al As Ba Be Ca Cd Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Se Si Sr Zn __ __ __(__ Total __ Dissolved)
*** Industrial Waste Metals

Revised 01/03/2020

City of Abilene
Environmental Laboratory Report

4209 East Lake Road
Phone: (325) 676-6043

Abilene, TX 79601
Fax: (325) 676-6044

Report To

Larry Bailey
INDUSTRIAL WASTE OFFICE
4209 E. Lake Rd.
Abilene, TX 79601

Sample Information

Project: Hamby Monitoring Wells
Project Number: [none]
Collector:
Collector Phone: 676-6041
Date Received: 10/10/23 12:40
Received By:
Report Date: 11/01/2023

MW-1 C3J1009-01 Date Sample: 10-Oct-2023 11:32

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Ammonia as N	**0.04**	mg/L	0.1	SM 4500-NH3-	CJ31905	DC	10/19/23 9:00	J
Nitrite as N	**0.03**	mg/L	0.03	SM 4500-NO3-	CJ31104	BP	10/11/23 9:00	
NO3 + NO2 as N	**4.79**	mg/L	0.25	SM 4500-NO3-	CJ31104	BP	10/11/23 9:00	
Phosphorus, Total as P	**0.072**	mg/L	0.050	SM 4500 P B-F	CJ32702	BP	10/27/23 10:0	
Total Dissolved Solids	**1300**	mg/L	25.0	SM 2540 C	CJ31107	BP	10/10/23 13:0	
Total Kjeldahl Nitrogen	**0.66**	mg/L	0.50	SM 4500 N-org	CJ31205	JH	10/16/23 12:5	QM-09, QR-(
Total Nitrogen	**5.45**	mg/L	1.00	SM 4500N	CJ31610	RMK	10/16/23 12:5	
E. coli	ND	MPN/100 ml	1.1	SM 9223	CJ31118	JH	10/10/23 13:4	<
Conductivity @ 25C	**1930**	umhos/cm	1.00	SM 2510 B	CJ31013	AGS	10/10/23 13:2	

MW-2 C3J1009-02 Date Sample: 10-Oct-2023 10:28

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Ammonia as N	**0.03**	mg/L	0.1	SM 4500-NH3-	CJ31905	DC	10/19/23 9:00	J
Nitrite as N	**0.005**	mg/L	0.03	SM 4500-NO3-	CJ31104	BP	10/11/23 9:00	J
NO3 + NO2 as N	ND	mg/L	0.25	SM 4500-NO3	CJ31104	BP	10/11/23 9:00	J
Phosphorus, Total as P	ND	mg/L	0.050	SM 4500 P B-	CJ32702	BP	10/27/23 10:0	
Total Dissolved Solids	**1350**	mg/L	25.0	SM 2540 C	CJ31107	BP	10/10/23 13:0	
Total Kjeldahl Nitrogen	**0.22**	mg/L	0.50	SM 4500 N-org	CJ31205	JH	10/16/23 12:5	J, QM-09, QI
Total Nitrogen	**0.34**	mg/L	1.00	SM 4500N	CJ31610	RMK	10/16/23 12:5	J
E. coli	ND	MPN/100 ml	1.1	SM 9223	CJ31118	JH	10/10/23 13:4	<

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

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MW-2 C3J1009-02 Date Sample: 10-Oct-2023 10:28

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Conductivity @ 25C	2240	umhos/cm	1.00	SM 2510 B	CJ31013	AGS	10/10/23 13:2(	

MW-3 C3J1009-03 Date Sample: 10-Oct-2023 10:40

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Ammonia as N	2.4	mg/L	0.1	SM 4500-NH3-	CJ31905	DC	10/19/23 9:00	
Nitrite as N	0.14	mg/L	0.03	SM 4500-NO3-	CJ31104	BP	10/11/23 9:00	
NO3 + NO2 as N	0.50	mg/L	0.25	SM 4500-NO3-	CJ31104	BP	10/11/23 9:00	
Phosphorus, Total as P	0.230	mg/L	0.050	SM 4500 P B-F	CJ32702	BP	10/27/23 10:0	
Total Dissolved Solids	18400	mg/L	25.0	SM 2540 C	CJ31107	BP	10/10/23 13:0(	
Total Kjeldahl Nitrogen	6.48	mg/L	0.50	SM 4500 N-org	CJ31205	JH	10/16/23 12:5	OM-09, OR-(
Total Nitrogen	6.98	mg/L	1.00	SM 4500N	CJ31610	RMK	10/16/23 12:5	
E. coli	ND	MPN/100 ml	1.1	SM 9223	CJ31118	JH	10/10/23 13:4	<
Conductivity @ 25C	26900	umhos/cm	1.00	SM 2510 B	CJ31013	AGS	10/10/23 13:2(	

MW-4 C3J1009-04 Date Sample: 10-Oct-2023 9:58

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Ammonia as N	0.03	mg/L	0.1	SM 4500-NH3-	CJ31905	DC	10/19/23 9:00	J
Nitrite as N	0.005	mg/L	0.03	SM 4500-NO3-	CJ31104	BP	10/11/23 9:00	J
NO3 + NO2 as N	7.88	mg/L	0.25	SM 4500-NO3-	CJ31104	BP	10/11/23 9:00	J
Phosphorus, Total as P	0.092	mg/L	0.050	SM 4500 P B-F	CJ32702	BP	10/27/23 10:0	
Total Dissolved Solids	1700	mg/L	25.0	SM 2540 C	CJ31107	BP	10/10/23 13:0(	
Total Kjeldahl Nitrogen	0.56	mg/L	0.50	SM 4500 N-org	CJ31205	JH	10/16/23 12:5	OM-09, OR-(
Total Nitrogen	8.45	mg/L	1.00	SM 4500N	CJ31610	RMK	10/16/23 12:5	
E. coli	ND	MPN/100 ml	1.1	SM 9223	CJ31118	JH	10/10/23 13:4	<
Conductivity @ 25C	2490	umhos/cm	1.00	SM 2510 B	CJ31013	AGS	10/10/23 13:2(	

MW-5 C3J1009-05 Date Sample: 10-Oct-2023 11:08

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Ammonia as N	0.03	mg/L	0.1	SM 4500-NH3-	CJ31905	DC	10/19/23 9:00	J
Nitrite as N	0.004	mg/L	0.03	SM 4500-NO3-	CJ31104	BP	10/11/23 9:00	J
NO3 + NO2 as N	9.73	mg/L	0.25	SM 4500-NO3-	CJ31104	BP	10/11/23 9:00	J
Phosphorus, Total as P	0.067	mg/L	0.050	SM 4500 P B-F	CJ32702	BP	10/27/23 10:0	
Total Dissolved Solids	7180	mg/L	25.0	SM 2540 C	CJ31107	BP	10/10/23 13:0(	
Total Kjeldahl Nitrogen	0.14	mg/L	0.50	SM 4500 N-org	CJ31205	JH	10/16/23 12:5	J, OM-09, OI
Total Nitrogen	9.86	mg/L	1.00	SM 4500N	CJ31610	RMK	10/16/23 12:5	
E. coli	ND	MPN/100 ml	1.1	SM 9223	CJ31118	JH	10/10/23 13:4	<
Conductivity @ 25C	11100	umhos/cm	1.00	SM 2510 B	CJ31013	AGS	10/10/23 13:2(	

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch CJ31104 - Gen Prep - Wet Chem									
Blank (CJ31104-BLK1)				Prepared & Analyzed: 10/11/23					
NO3 + NO2 as N	ND	0.25	mg/L						
Nitrite as N	0.005	0.03	"						
LCS (CJ31104-BS1)				Prepared & Analyzed: 10/11/23					
NO3 + NO2 as N	2.99	0.25	mg/L	3.00		99.7	90-110		
LCS (CJ31104-BS2)				Prepared & Analyzed: 10/11/23					
Nitrite as N	0.32	0.03	mg/L	0.300		108	90-110		
Duplicate (CJ31104-DUP1)		Source: C3J1009-01		Prepared & Analyzed: 10/11/23					
NO3 + NO2 as N	5.07	0.25	mg/L		4.79			5.66	15
Nitrite as N	0.03	0.03	"		0.03			0.00	15
Matrix Spike (CJ31104-MS1)		Source: C3J1009-01		Prepared & Analyzed: 10/11/23					
NO3 + NO2 as N	7.80	0.25	mg/L	3.00	4.79	100	90-110		
Matrix Spike (CJ31104-MS2)		Source: C3J1009-01		Prepared & Analyzed: 10/11/23					
Nitrite as N	0.34	0.03	mg/L	0.300	0.03	101	90-110		
Batch CJ31107 - Gen Prep - Wet Chem									
Blank (CJ31107-BLK1)				Prepared & Analyzed: 10/10/23					
Total Dissolved Solids	ND	25.0	mg/L						
LCS (CJ31107-BS1)				Prepared & Analyzed: 10/10/23					
Total Dissolved Solids	1020	25.0	mg/L	1000		102	90-110		

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch CJ31107 - Gen Prep - Wet Chem									
Duplicate (CJ31107-DUP1)		**Source: C3J1009-01**		Prepared & Analyzed: 10/10/23					
Total Dissolved Solids	1240	25.0	mg/L		1300			4.20	10
Batch CJ31205 - Gen Prep - ISE									
Blank (CJ31205-BLK1)				Prepared: 10/12/23 Analyzed: 10/16/23					
Total Kjeldahl Nitrogen	ND	0.50	mg/L						
LCS (CJ31205-BS1)				Prepared: 10/12/23 Analyzed: 10/16/23					
Total Kjeldahl Nitrogen	5.68	0.50	mg/L	6.67		85.2	85-115		
Duplicate (CJ31205-DUP1)		**Source: C3J0311-02**		Prepared: 10/12/23 Analyzed: 10/16/23					
Total Kjeldahl Nitrogen	0.32	0.50	mg/L		0.27			15.4	15
Matrix Spike (CJ31205-MS1)		**Source: C3J0311-02**		Prepared: 10/12/23 Analyzed: 10/16/23					
Total Kjeldahl Nitrogen	5.77	0.50	mg/L	6.67	0.27	82.5	85-115		
Batch CJ31905 - Gen Prep - ISE									
Blank (CJ31905-BLK1)				Prepared & Analyzed: 10/19/23					
Ammonia as N	ND	0.1	mg/L						
Blank (CJ31905-BLK2)				Prepared & Analyzed: 10/19/23					
Ammonia as N	0.03	0.1	mg/L						
LCS (CJ31905-BS1)				Prepared & Analyzed: 10/19/23					
Ammonia as N	5.2	0.1	mg/L	5.00		103	90-110		

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch CJ31905 - Gen Prep - ISE									
Duplicate (CJ31905-DUP1)		**Source: C3J1901-01**		Prepared & Analyzed: 10/19/23					
Ammonia as N	0.07	0.1	mg/L		0.07			1.63	15
Matrix Spike (CJ31905-MS1)		**Source: C3J1901-01**		Prepared & Analyzed: 10/19/23					
Ammonia as N	3.1	0.1	mg/L	3.00	0.07	101	90-110		
Batch CJ32702 - Gen Prep - Wet Chem									
Blank (CJ32702-BLK1)				Prepared & Analyzed: 10/27/23					
Phosphorus, Total as P	ND	0.050	mg/L						
Blank (CJ32702-BLK2)				Prepared & Analyzed: 10/27/23					
Phosphorus, Total as P	ND	0.050	mg/L						
LCS (CJ32702-BS1)				Prepared & Analyzed: 10/27/23					
Phosphorus, Total as P	1.025	0.050	mg/L	1.00		102	90-110		
Duplicate (CJ32702-DUP1)		**Source: C3J2402-03**		Prepared & Analyzed: 10/27/23					
Phosphorus, Total as P	0.178	0.050	mg/L		0.175			1.70	15
Matrix Spike (CJ32702-MS1)		**Source: C3J2402-03**		Prepared & Analyzed: 10/27/23					
Phosphorus, Total as P	0.446	0.050	mg/L	0.250	0.175	108	90-110		

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

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Miscellaneous Physical/Chemicals Parameters by SM - Quality Control

City of Abilene

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch CJ31013 - Gen Prep - Wet Chem									
Blank (CJ31013-BLK1)				Prepared & Analyzed: 10/10/23					
Conductivity @ 25C	ND	1.00	umhos/cm						
LCS (CJ31013-BS1)				Prepared & Analyzed: 10/10/23					
Conductivity @ 25C	1380	1.00	umhos/cm	1410		98.2	90-110		
Duplicate (CJ31013-DUP1)		Source: C3J1009-01		Prepared & Analyzed: 10/10/23					
Conductivity @ 25C	1930	1.00	umhos/cm		1930			0.00	15

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

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Microbiological Parameters by Standard Methods - Quality Control

City of Abilene

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch CJ31118 - Gen Prep-Bacteria									
Blank (CJ31118-BLK1)				Prepared & Analyzed: 10/10/23					
E. coli	ND	1.1	MPN/100 ml						

Notes and Definitions

QR-04	Sample and/or Duplicate are less than the reporting limit. Batch not controlled by RPD.
QM-09	The MS was outside of accepted Quality Control range. This batch was accepted because the LCS and the RPD show that the analysis is in control.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
<	Less than stated value
ND	Analyte NOT DETECTED at or below the reporting limit
NR	Not Reported
RPD	Relative Percent Difference

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We are an Approved Drinking Water Laboratory (T104704320) for: Alkalinity, Calcium, Chlorine Dioxide (2 methods), Chlorite, Conductivity, Hardness, pH, Phosphate, Silica, Temperature, TOC, Total Chlorine, Turbidity, UV254.

We are not NELAP accredited in the DW matrix for: Alkalinity, Ammonia, Beryllium, Bromide, Chlorine Dioxide, Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Molybdenum, pH, Phosphate, Silver, TOC, UV254

We are not NELAP accredited in the NPW matrix for: Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Silver.

Michael Michaud
Laboratory Manager

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CITY OF ABILENE ENVIRONMENTAL — LABORATORY CHAIN OF CUSTODY

CITY OF ABILENE
INDUSTRIAL WASTE OFFICE

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(325) 676-6041
Fax: (325) 676-6044

ACCREDITED TNI LABORATORY

PROJECT
Weekly Monitoring
Monthly Monitoring
Monthly Monitoring
Well

Project ID: Hamby WWTP Semi-Annual Monitoring Wells
Comments:

Sampler Signature / Name: L. Z. B / Larry L. Bailey

Lab Use Only Laboratory ID	Sample ID	Collection Date	Collection Time	Lab Use Only - Preservative: Write check mark for each appropriately preserved bottle. Note improper preservation in comments box. Bottle	T obs	T cor	pH	Ice?	preserv.	Matrix Type	Grab/ Comp	Container Type (P/G)	# Bottles	Total Nitrogen	Nitrite Nitrogen	Nitrate Nitrogen	Conductivity	TDS	Total Phosphorus	Ammonia Nitrogen	TKN	E.Coli	Temp (in field)	pH (in field)				
				Bottle										Bottle A	A	A	A	A	B	B	B	C						
C3J1009 -01	Monitor Well #1	10/10/23	1132 (1135)	A	8.6	8.6		Y	NONE	W W	G	P	3	√	√	√	√	√	√	√	√	√	24.2°C	6.86				
				B	15.8	15.8		Y	H2SO4																			
				C	7.1	7.1		Y	NONE																			
-02	Monitor Well #2	10/10/23	1028 (1033)	A	9.1	9.1		Y	NONE	W W	G	P	3	√	√	√	√	√	√	√	√	√	23.8°C	7.27				
				B	10.4	10.4		Y	H2SO4																			
				C	4.0	4.0		Y	NONE																			
-03	Monitor Well #3	10/10/23	1040 (1044)	A	12.1	12.1		Y	NONE	W W	G	P	3	√	√	√	√	√	√	√	√	√	24.9°C	6.53				
				B	10.3	10.3		Y	H2SO4																			
				C	5.8	5.8		Y	NONE																			
-04	Monitor Well #4	10/10/23	0958 (1002)	A	4.1	4.1		Y	NONE	W W	G	P	3	√	√	√	√	√	√	√	√	√	22.4°C	7.09				
				B	5.9	5.9		Y	H2SO4																			
				C	4.1	4.1		Y	NONE																			
-05	Monitor Well #5	10/10/23	1108 (1112)	A	10.1	10.1		Y	NONE	W W	G	P	3	√	√	√	√	√	√	√	√	√	22.6°C	7.17				
				B	11.5	11.5		Y	H2SO4																			
				C	7.6	7.6		Y	NONE																			

Preservatives: Metals=HNO3, FOG/TPH=H2SO4, Cyanide=NaOH

Note: pH&Temp taken in field are on grab samples

Relinquished By: L. Z. B — Date: 10/10/23 Time: 12:40

Received By: Dan — Date: 10.10.23 Time: 12:40

Relinquished By: _____ Date: _____ Time: _____

Received By: _____ Date: _____ Time: _____

Comments

Password: _____
pH paper lot: _____
Thermometer number: IR-6
Correction Factor add: 0.0°

Temperatures circled do not conform to federal regulations.

* On ice, but inadequate time to reach ≤6° C.

** Circle the metals to be analyzed Ag Al As Ba Be Ca Cd Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Se Si Sr Zn __ __ __ (__ Total __ Dissolved)

*** Industrial Waste Metals

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1076577

Printed 10/25/2023 11:36

ABLN-W

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

TABLE OF CONTENTS

HAMBY WRF MONITORING WELLS

This report consists of this Table of Contents and the following pages:

Report Name	Description	Pages
1076577_r02_01_ProjectSamples	SPL Kilgore Project P:1076577 C:ABLN Project Sample Cross Reference t:304	2
1076577_r03_03_ProjectResults	SPL Kilgore Project P:1076577 C:ABLN Project Results t:304 PO: 41505	8
76577_r10_05_ProjectQC	SPL Kilgore Project P:1076577 C:ABLN Project Quality Control Groups	4
1076577_r99_09_CoC__1_of_1	SPL Kilgore CoC ABLN 1076577_1_of_1	2
	Total Pages:	16

Email: Kilgore.projectmanager@spl-inc.com

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SAMPLE CROSS REFERENCE

Project 1076577

City of Abilene
Larry L. Bailey
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Abilene, TX 79601

Bottle 01 Amber 32 Oz
Bottle 02 16 oz HNO3 Metals Plastic
Bottle 03 Prepared Bottle: ICP Preparation for Metals (Batch 1085741) Volume: 50.00000 mL <== Derived from 02 (50 ml)
Bottle 04 Prepared Bottle:PCBL 2 mL Autosampler Vial (Batch 1085758) Volume: 10.00000 mL <== Derived from 01 (942 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
EPA 8082	04	1085758	10/12/2023	1087565	10/24/2023
EPA 6020A	03	1085741	10/12/2023	1085927	10/12/2023
EPA 6010C	03	1085741	10/12/2023	1085985	10/13/2023

Sample	Sample ID	Taken	Time	Received
2238962	*Monitor Well #5*	10/10/2023	11:08:00	10/11/2023

Bottle 01 Amber 32 Oz
Bottle 02 16 oz HNO3 Metals Plastic
Bottle 03 Prepared Bottle: ICP Preparation for Metals (Batch 1085741) Volume: 50.00000 mL <== Derived from 02 (50 ml)
Bottle 04 Prepared Bottle:PCBL 2 mL Autosampler Vial (Batch 1085758) Volume: 10.00000 mL <== Derived from 01 (985 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
EPA 8082	04	1085758	10/12/2023	1087565	10/24/2023
EPA 6020A	03	1085741	10/12/2023	1085927	10/12/2023
EPA 6010C	03	1085741	10/12/2023	1085985	10/13/2023

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2238958 Monitor Well #2 — Received: 10/11/2023

Non-Potable Water — Collected by: Client — City of Abilene — PO: 41505
Taken: 10/10/2023 10:28:00

EPA 6010C — Prepared: 1085741 10/12/2023 10:00:00 — Analyzed 1085985 10/13/2023 12:02:00 ESG

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Potassium	9.06	mg/L	0.500		7440-09-7	03

EPA 6020A — Prepared: 1085741 10/12/2023 10:00:00 — Analyzed 1085927 10/12/2023 18:27:00 JC2

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Cadmium, Total	<0.00012	mg/L	0.00012		7440-43-9	03
NELAC	Copper, Total	0.000701	mg/L	0.001	J	7440-50-8	03
C	Lead, Total	<0.000549	mg/L	0.000549		7439-92-1	03
C	Nickel, Total	0.00203	mg/L	0.001		7440-02-0	03
NELAC	Zinc, Total	0.00767	mg/L	0.001		7440-66-6	03

EPA 8082 — Prepared: 1085758 10/12/2023 13:25:00 — Analyzed 1087565 10/24/2023 04:35:00 BLF

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	PCB-1016	<0.207	ug/L	0.207	X	12674-11-2	04
NELAC	PCB-1221	<0.205	ug/L	0.205		11104-28-2	04
NELAC	PCB-1232	<0.205	ug/L	0.205		11141-16-5	04
NELAC	PCB-1242	<0.205	ug/L	0.205		53469-21-9	04
NELAC	PCB-1248	<0.205	ug/L	0.205		12672-29-6	04
NELAC	PCB-1254	<0.205	ug/L	0.205		11097-69-1	04
NELAC	PCB-1260	<0.205	ug/L	0.205		11096-82-5	04

2238960 Monitor Well #3 — Received: 10/11/2023

Non-Potable Water — Collected by: Client — City of Abilene — PO: 41505
Taken: 10/10/2023 10:40:00

EPA 6010C — Prepared: 1085741 10/12/2023 10:00:00 — Analyzed 1085985 10/13/2023 12:15:00 ESG

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Potassium	87.7	mg/L	0.500		7440-09-7	03

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2238961 **Monitor Well #4** Received: 10/11/2023

Non-Potable Water | Collected by: Client | City of Abilene | PO: 41505
Taken: 10/10/2023 09:58:00

EPA 6020A Prepared: 1085741 10/12/2023 10:00:00 Analyzed 1085927 10/12/2023 18:36:00 JC2

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Zinc, Total	0.0114	mg/L	0.001		7440-66-6	03

EPA 8082 Prepared: 1085758 10/12/2023 13:25:00 Analyzed 1087565 10/24/2023 05:12:00 BLF

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	PCB-1016	<0.214	ug/L	0.214	X	12674-11-2	04
NELAC	PCB-1221	<0.212	ug/L	0.212		11104-28-2	04
	PCB-1232	<0.212	ug/L	0.212		11141-16-5	04
C	PCB-1242	<0.212	ug/L	0.212		53469-21-9	04
NELAC	PCB-1248	<0.212	ug/L	0.212		12672-29-6	04
NELAC	PCB-1254	<0.212	ug/L	0.212		11097-69-1	04
NELAC	PCB-1260	<0.212	ug/L	0.212		11096-82-5	04

2238962 **Monitor Well #5** Received: 10/11/2023

Non-Potable Water | Collected by: Client | City of Abilene | PO: 41505
Taken: 10/10/2023 11:08:00

EPA 6010C Prepared: 1085741 10/12/2023 10:00:00 Analyzed 1085985 10/13/2023 12:21:00 ESG

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Potassium	15.3	mg/L	0.500		7440-09-7	03

EPA 6020A Prepared: 1085741 10/12/2023 10:00:00 Analyzed 1085927 10/12/2023 18:41:00 JC2

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	Cadmium, Total	<0.00012	mg/L	0.00012		7440-43-9	03
NELAC	Copper, Total	0.00774	mg/L	0.001		7440-50-8	03
NELAC	Lead, Total	0.00116	mg/L	0.001		7439-92-1	03
NELAC	Nickel, Total	0.00718	mg/L	0.001		7440-02-0	03
NELAC	Zinc, Total	0.0164	mg/L	0.001		7440-66-6	03

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City of Abilene
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2238958 Monitor Well #2 — Received: 10/11/2023

41505

10/10/2023

EPA 200.2 2.8	*Prepared:*	*1085741*	*10/12/2023*	*10:00:00*	*Analyzed*	*1085741*	*10/12/2023*	*10:00:00*	*HLT*	
z **Liquid Metals Digestion**	**50/50**	**ml**								02
EPA 3510C	*Prepared:*	*1085758*	*10/12/2023*	*13:25:00*	*Analyzed*	*1085758*	*10/12/2023*	*13:25:00*	*MCC*	
PCB Liq-Liq Extr. W/Hex Exch.	**10/975**	**ml**								01
EPA 8082	*Prepared:*	*1085758*	*10/12/2023*	*13:25:00*	*Analyzed*	*1087565*	*10/24/2023*	*04:35:00*	*BLF*	
NELAC **Polychlorinated Biphenyls**	**Entered**									04

2238960 Monitor Well #3 — Received: 10/11/2023

41505

10/10/2023

EPA 200.2 2.8	*Prepared:*	*1085741*	*10/12/2023*	*10:00:00*	*Analyzed*	*1085741*	*10/12/2023*	*10:00:00*	*HLT*	
z **Liquid Metals Digestion**	**50/50**	**ml**								02
EPA 3510C	*Prepared:*	*1085758*	*10/12/2023*	*13:25:00*	*Analyzed*	*1085758*	*10/12/2023*	*13:25:00*	*MCC*	
PCB Liq-Liq Extr. W/Hex Exch.	**10/1000**	**ml**								01
EPA 8082	*Prepared:*	*1085758*	*10/12/2023*	*13:25:00*	*Analyzed*	*1087565*	*10/24/2023*	*04:54:00*	*BLF*	
NELAC **Polychlorinated Biphenyls**	**Entered**									04

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City of Abilene
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Abilene, TX 79601

Project
1076577

Printed: 10/25/2023

Qualifiers:

J - Analyte detected below quantitation limit

X - Standard roads higher than desired.

We report results on an As Received (or Wet) basis unless marked Dry Weight.

Unless otherwise noted, testing was performed at SPL, Inc.- Kilgore laboratory which holds International, Federal, and state accreditations. Please see our Websites for details.

(N)ELAC - Covered in our NELAC scope of accreditation
z -- Not covered by our NELAC scope of accreditation

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RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the Result column, or interferences prevent it, we work to have our RL at or below the MAL.

Trey Peery, MA, Project Manager

QUALITY CONTROL

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ABLN-W

City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79601

Project 1076577

Printed 10/25/2023

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Nickel, Total	1085741	0.454	0.470	0.500	85.0 - 115	90.8	94.0	mg/L	3.46	20.0
Zinc, Total	1085741	0.466	0.476	0.500	85.0 - 115	93.2	95.2	mg/L	2.12	20.0

LDR

Parameter	Reading	Known	Units	Recover%	Limits%	File
Cadmium, Total	10.3	10	mg/L	103	90.0 - 110	125530166
Copper, Total	9.62	10	mg/L	96.2	90.0 - 110	125530166
Lead, Total	9.26	10	mg/L	92.6	90.0 - 110	125530166
Nickel, Total	9.55	10	mg/L	95.5	90.0 - 110	125530166
Zinc, Total	9.91	10	mg/L	99.1	90.0 - 110	125530166

MRL Check

Parameter	Reading	Known	Units	Recover%	Limits%	File
Copper, Total	0.00104	0.001	mg/L	104	25.0 - 175	125530162
Lead, Total	0.000877	0.001	mg/L	87.7	25.0 - 175	125530162

MSD

rameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Cadmium, Total	2238660	0.233	0.230	ND	0.250	70.0 - 130	93.2	92.0	mg/L	1.30	20.0
Copper, Total	2238660	0.474	0.477	ND	0.500	70.0 - 130	94.8	95.4	mg/L	0.631	20.0
Lead, Total	2238660	0.441	0.444	ND	0.500	70.0 - 130	88.2	88.8	mg/L	0.678	20.0
Nickel, Total	2238660	0.463	0.468	0.00045	0.500	70.0 - 130	92.5	93.5	mg/L	1.08	20.0
Zinc, Total	2238660	0.518	0.517	0.0418	0.500	70.0 - 130	95.2	95.0	mg/L	0.210	20.0
Cadmium, Total	2239133	0.207	0.225	ND	0.250	70.0 - 130	82.8	90.0	mg/L	8.33	20.0
Copper, Total	2239133	0.429	0.466	0.0173	0.500	70.0 - 130	82.3	89.7	mg/L	8.60	20.0

Analytical Set 1085985 — EPA 6010C

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Potassium	1085741	ND	0.00267	0.500	mg/L	125531318

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Potassium	26.8	25.0	mg/L	107	90.0 - 110	125531310
Potassium	25.6	25.0	mg/L	102	90.0 - 110	125531317
Potassium	26.0	25.0	mg/L	104	90.0 - 110	125531326
Potassium	24.8	25.0	mg/L	99.2	90.0 - 110	125531336
Potassium	25.2	25.0	mg/L	101	90.0 - 110	125531337

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Potassium	49.9	50.0	mg/L	99.8	95.0 - 105	125531304

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Potassium	26.7	25.0	mg/L	107	90.0 - 110	125531308

QUALITY CONTROL

SPL The Science of Sure

ABLN-W

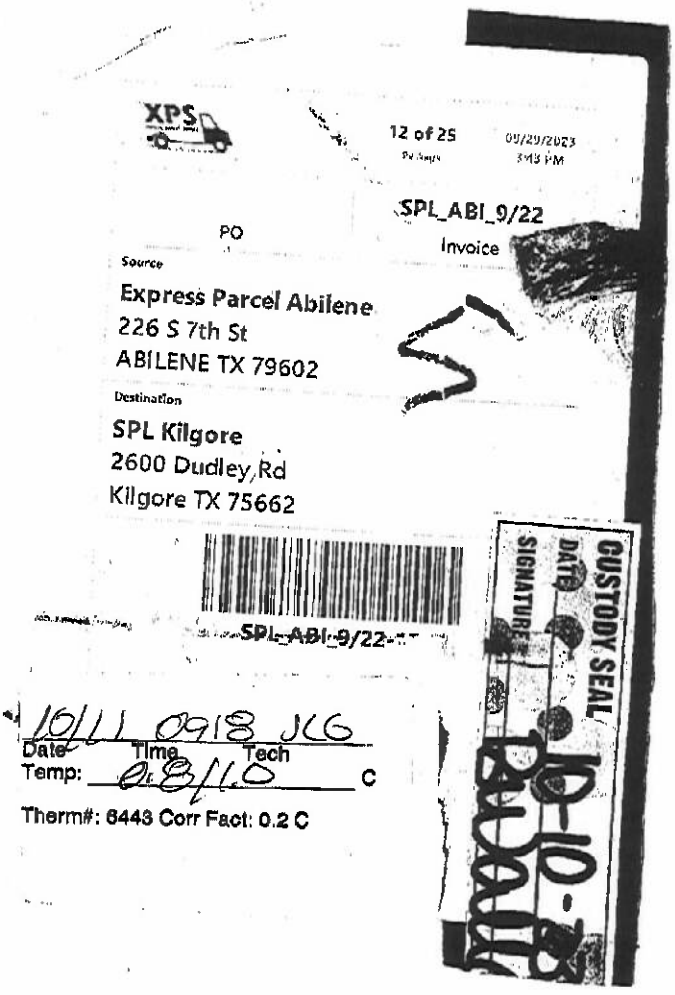
City of Abilene
Larry L. Bailey
4209 East Lake Rd.
Abilene, TX 79602

Project
1076577

Printed 10/25/2023

* Out RPD is Relative Percent Difference: abs(r1-r2) / mean(r1,r2) * 100% Recover% is Recovery Percent: result / known * 100%

Blank - Method Blank (reagent water or other blank matrices that contains all reagents except standard(s) and is processed simultaneously with and under the same conditions as samples; carried through preparation and analytical procedures exactly like a sample; monitors); CCV - Continuing Calibration Verification (same standard used to prepare the curve; typically a mid-range concentration; verifies the continued validity of the calibration curve); MSD - Matrix Spike Duplicate (replicate of the matrix spike; same solution and amount of target analyte added to the MS is added to a third aliquot of sample; quantifies matrix bias and precision.); ICV - Initial Calibration Verification; LCS Dup - Laboratory Control Sample Duplicate (replicate LCS; analyzed when there is insufficient sample for duplicate or MSD; quantifies accuracy and precision.); LDR - Linear Dynamic Range Standard; MRL Check - Minimum Reporting Limit Check Std; Surrogate - Surrogate (mimics the analyte of interest but is unlikely to be found in environmental samples; added to analytical samples for QC purposes. **ANSI/ASQC E4 1994 Ref #4 TRADE QA Resources Guide.)


XPS
12 of 25
09/29/2023
SPL_ABI_9/22
PO
Invoice
Source
Express Parcel Abilene
226 S 7th St
ABILENE TX 79602
Destination
SPL Kilgore
2600 Dudley Rd
Kilgore TX 75662
SPL_ABI_9/22
CUSTODY SEAL
DATE
SIGNATURE
10/11 0918 JCG
Date Time Tech
Temp: 0.8/1.0 C
Therm#: 6443 Corr Fact: 0.2 C

Attachment SSTR 4.0-5.B
Groundwater Monitoring Well Program

(AAR: SSTR 1.0-1.A, SSTR 4.0-4.B)

ATTACHMENT SSTR 4.0-5.B

CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY
TPDES PERMIT MINOR AMENDMENT WITH RENEWAL APPLICATION

GROUNDWATER MONITORING WELL PROGRAM

The City of Abilene (City) Hamby Water Reclamation Facility (WRF) is authorized in the existing Texas Pollutant Discharge Elimination System (TPDES) permit (WQ0010334004) to dispose of sludge from the Hamby WRF in a sludge disposal site (SDS). The City conducts groundwater monitoring at the SDS in accordance with the existing permit. The following is an excerpt from the existing permit regarding the groundwater monitoring requirements:

SECTION V.D. Monitoring Requirements

6. Groundwater monitoring

A minimum of four groundwater monitoring wells shall be installed and maintained at the sludge disposal site. One groundwater monitoring well shall be located up-gradient and three shall be located down-gradient from the sludge disposal site. The groundwater monitoring wells shall be screened to monitor the first water bearing zone.

Prior to further sludge disposal the permittee shall initiate groundwater monitoring. Groundwater shall be analyzed according to the schedule below:

Parameter	Units	Sampling Frequency
Total Nitrogen	mg/L	Quarterly
Nitrate Nitrogen	mg/L	Quarterly
Ammonia Nitrogen	mg/L	Quarterly
Phosphorus	mg/L	Quarterly
Total Dissolved Solids	mg/L	Quarterly
Electrical Conductivity	micromhos/cm	Quarterly
E. Coli	Colonies MPN/100mL	Quarterly
Water Level	ft	Quarterly
Potassium	mg/L	2/year
Cadmium	mg/L	2/year
Lead	mg/L	2/year
Zinc	mg/L	2/year
Copper	mg/L	2/year
Nickel	mg/L	2/year
pH	standard	2/year
Polychlorinated Biphenyl	mg/L	2/year

COMPLIANCE

Five groundwater monitoring wells are monitoring at the SDS. Test results have been submitted to the TCEQ as required in the existing permit. The most recent analytical test results for the monitoring requirements are included in Attachment SSTR 4.0-5.A.

Attachment WS 3.0-3.A
Storage and Evaporation Ponds Data Table and Map

ATTACHMENT WS 3.0-3.A
CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY

EFFLUENT STORAGE AND EVAPORATION PONDS

Pond Number	Surface Area (acres)	Storage Volume (acre-feet)[1]	Dimensions	Liner Type
8	28.0	224	See pond map	See note 2
9	23.1	185	See pond map	See note 2
10	21.8	174	See pond map	See note 2
11	8.3	66	See pond map	See note 2
Subtotal	81.2	649		
E1	35.9	283	See pond map	See note 2
E2	28.9	231	See pond map	See note 2
RO-1[3]	95.8	766	See pond map	Clay[4]
RO-2[3]	7.6	61	See pond map	Clay[4]
Subtotal	168.2	1,345		
EQ[5]	34.6	277	See pond map	Clay[4]

1. Estimated volume allowing for a two-feet freeboard for the ponds. Ponds are estimated to average 8 feet in depth (from bottom to the two-foot freeboard line on the pond embankment).
2. Lining is not necessary due to the poor quality of groundwater beneath the site; monitoring wells are installed around the storage ponds.
3. RO Concentrate Evaporation Basin 1 (RO-1 and RO-2) are hydraulically connected via pipe.
4. Liner installation reports for RO-1 / RO-2 and for EQ are found in Attachment WS 3.0-3.B.
5. Pond sizing information for Flow Equalization Basin (EQ) is provided here for informational purposes. EQ is used for temporary influent flow diversion during high flows; it is not used for effluent.



Attachment Worksheet 3.0-3.A
City of Abilene
Hamby Water Reclamation Facility
TPDES Permit Renewal Application
Effluent Pond Map

Attachment WS 3.0-3.B
Liner Certifications

RO Concentrate Evaporation Ponds
EQ Storage Pond

Enprotec / Hibbs & Todd

February 8, 2016

Mr. Rodney Taylor
Director of Water Utilities
City of Abilene
P.O. Box 60
Abilene, Texas 79604

Re: Liner Certification
RO Concentrate Evaporation Basin
Hamby Wastewater Treatment Plant
Abilene, Texas

Dear Mr. Taylor:

Enprotec/Hibbs & Todd, Inc. (eHT) has reviewed the soil type and placement requirements for pond liner construction as described by the *Texas Commission on Environmental Quality* (TCEQ). eHT has also reviewed the construction materials testing documents provided by Geotec Labs during the reconstruction of the RO Concentrate Evaporation Basin at the Hamby Wastewater Treatment Plant. Undisturbed Shelby tube samples were recently obtained to determine the in-situ permeability of the clay liner for the pond. Based upon the field and laboratory information, the clay liner appears to meet the requirements of the TCEQ for placed and in-situ clay liners.

We appreciate the opportunity to be of further service to the City of Abilene. If there are any further questions please do not hesitate to call.

Sincerely,

Enprotec/Hibbs & Todd, Inc.

8 FEB 16

STATE OF TEXAS
GARY SCOTT YUNGBLUT
85640
LICENSED
PROFESSIONAL ENGINEER

G. Scott Yungblut, P.E.

GSY/jd

Attachments
c: eHT File 4864A3

Environmental, Civil & Geotechnical Engineers

Abilene Office
402 Cedar
Abilene, Texas 79601
P.O. Box 3097
Abilene, Texas 79604
325.698.5560 | 325.691.0058 fax

Lubbock Office
6310 Genoa Avenue, Suite E
Lubbock, Texas 79424
806.794.1100 | 806.794.0778 fax

Granbury Office
2901 Glen Rose Hwy, Suite 107
Granbury, Texas 76048
817.579.6791 | 817.579.8491 fax

Plano Office
One Preston Park
2301 Ohio Drive, Suite 105
Plano, Texas 75093
972.599.3480 | 972.599.3513 fax

www.e-ht.com

PE Firm Registration No. 1151
PG Firm Registration No. 50103
RPLS Firm Registration Nos. 10011900 & 10007300

HAMBY RO CONCENTRATE EVAPORATION BASIN
SUMMARY OF LABORATORY TESTS

Sample #	Location		Moisture Content (%)	Dry Density (pcf)	Falling Head Permeability (cm/sec)
	Lat	Long			
S-1	32 32 39.5	-99 37 25.4	23.4	98.8	1.53×10^{-8}
S-2	32 32 39.4	-99 37 32.9	26.9	88.7	3.30×10^{-8}
S-3	32 32 37.1	-99 37 40.9	24.2	93.7	7.41×10^{-8}
S-4	32 32 35.1	-99 37 45.9	29.1	89.7	7.62×10^{-9}
S-5	32 32 29.7	-99 37 46.4	28.7	89.8	89.8×10^{-8}
			-200 Sieve	**Liquid Limit**	**Plasticity Index**
S-1			77.5	68	49
S-4			84.6	69	48

GEOTEC LABS
A DIVISION OF ENPROTEC / HIBBS & TODD, INC
402 CEDAR
P O BOX 3097
FAX 325 690 9127
ABILENE TX 79604-3097
TEL 325 698 5563
www e-ht com

COMPACTION TEST REPORT

BILL TO:	eHT 402 CEDAR ST ABILENE TX 79601	REPORT NO:	A 45179-15
		DATE TESTED:	01-28-15
PROJECT:	ABILENE HAMBY WWTP IMPROVEMENTS	TECHNICIAN:	MARC BURSON

LOCATION	PERCENT MOISTURE	DRY DENSITY LBS/CU.FT	MAXIMUM DRY DENSITY LBS/CU.FT	PERCENT OPTIMUM MOISTURE	PERCENT COMPACTION
Location					
49 *re-test*	22.0	97.5	102.6	20.1	95.0
46 *re-test*	21.7	98.4	102.6	20.1	95.9
43 *re-test*	21.8	97.8	102.6	20.1	95.3

** ± 2% to Above Optimum Moisture * Minimum Density 95.0%

Material Description: dark brown sandy clay

Tested in accordance with ASTM D 698 Method A ASTM D 2922 ASTM D 3017

REPORT DISTRIBUTION	GEOTEC LABS
e-mail group	C.M.T. MANAGER - G. SCOTT YUNGBLUT, P.E.

Results shown on this report are for the exclusive use of the client for whom they were obtained and apply only to the samples tested and/or inspected
They are not intended to be indicative of the qualities of apparently identical products The use of our name must receive prior approval
Firm Registration No 1151
PG Firm Registration No 50103
RPLS Firm Nos 10011900 & 10007300

GEOTEC LABS A DIVISION OF ENPROTEC / HIBBS & TODD, INC.

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ABILENE TX 79601

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ABILENE TX 79604-3097

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www.e-ht.com

MOISTURE DENSITY CURVE REPORT

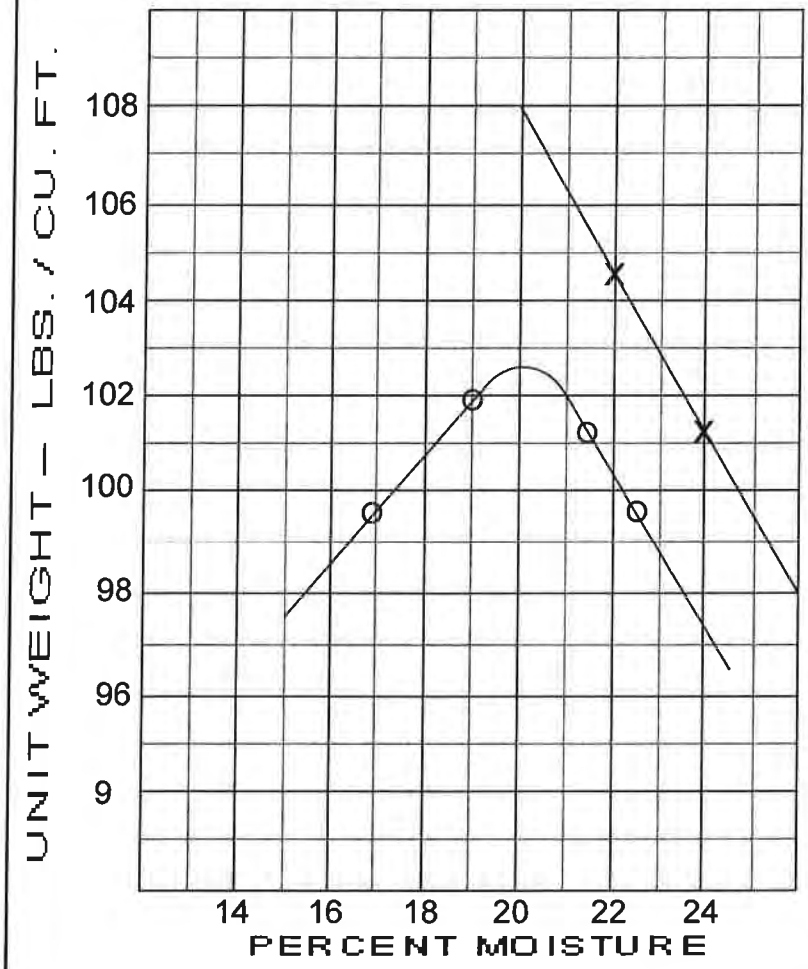
BILL TO: eHT
402 CEDAR
ABILENE TX 79601

REPORT NO: A 43248-14

DATE TESTED: 02-18-14

PROJECT: ABILENE HAMBY WWTP IMPROVEMENTS
BERM FILL

TECHNICIAN: ROBERTO DE LUNA



USE / LOCATION

berm fill

DESCRIPTION OF MATERIAL

dark brown sandy clay

TRIAL NUMBER	PERCENT MOISTURE	UNIT DRY WEIGHT lbs / cu ft
1	16.9	99.6
2	19.0	101.9
3	21.5	101.3
4	22.5	99.7

OPTIMUM MOISTURE (PERCENT): 20.1

MAXIMUM DENSITY (lbs/cu.ft.): 102.6

ESTIMATED SPECIFIC GRAVITY - ZERO AIR VOIDS @ 2.65

Tested in accordance with ASTM 698 Method A

REPORT DISTRIBUTION	GEOTEC LABS
e-mail group eHT # 4864 A2	C.M.T. MANAGER - G. SCOTT YUNGBLUT, P.E.

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COMPACTION TEST REPORT

BILL TO: eHT
402 CEDAR ST
ABILENE TX 79601

REPORT NO: A 45097-15

DATE TESTED: 01-15-15

PROJECT: ABILENE HAMBY WWTP IMPROVEMENTS

TECHNICIAN: MARC BURSON

LOCATION	PERCENT MOISTURE	DRY DENSITY LBS/CU.FT	MAXIMUM DRY DENSITY LBS/CU.FT	PERCENT OPTIMUM MOISTURE	PERCENT COMPACTION
Basin #7 Location					
12	18.9	100.3	102.6	20.1	97.8
11	19.3	101.7	102.6	20.1	99.4
10	18.8	101.0	102.6	20.1	98.4
09	20.7	98.4	102.6	20.1	95.9
8	18.3	104.1	102.6	20.1	101.5
7	21.7	99.4	102.6	20.1	96.9
6	20.2	101.3	102.6	20.1	98.7
5	19.1	99.4	102.6	20.1	96.9
4	21.7	97.9	102.6	20.1	95.4
3	20.0	100.2	102.6	20.1	97.7
2	21.4	103.5	102.6	20.1	100.9
1	20.2	99.5	102.6	20.1	97.0

** -2% to Above Optimum Moisture

* Minimum Density 95.0%

Material Description: [1] dark brown sandy clay

Tested in accordance with ASTM D 698 Method A ASTM D 2922 ASTM D 3017

REPORT DISTRIBUTION	GEOTEC LABS
e-mail group	C.M.T. MANAGER - G. SCOTT YUNGBLUT, P.E.

Results shown on this report are for the exclusive use of the client for whom they were obtained and apply only to the samples tested and/or inspected. They are not intended to be indicative of the qualities of apparently identical products. The use of our name must receive prior approval.
Firm Registration No. 1151
PG Firm Registration No. 50103
RPLS Firm Nos. 10011900 & 10007300

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ABILENE TX 79604-3097
TEL 325 698 5563
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COMPACTION TEST REPORT

BILL TO: eHT
402 CEDAR ST
ABILENE TX 79601

REPORT NO: A 45101-15

DATE TESTED: 01-16-15

PROJECT: ABILENE HAMBY WWTP IMPROVEMENTS

TECHNICIAN: MARC BURSON

LOCATION	PERCENT MOISTURE	DRY DENSITY LBS/CU.FT	MAXIMUM DRY DENSITY LBS/CU.FT	PERCENT OPTIMUM MOISTURE	PERCENT COMPACTION
Basin #7					
Location					
13	21.6	98.7	102.6	20.1	96.2
14	19.7	98.5	102.6	20.1	96.0
15	19.1	98.4	102.6	20.1	95.9
16	19.5	103.7	102.6	20.1	101.1
19	20.0	103.0	102.6	20.1	100.4
18	19.3	98.6	102.6	20.1	96.1
17	18.1	99.2	102.6	20.1	96.7
20	18.6	101.7	102.6	20.1	99.1
21	19.6	98.2	102.6	20.1	95.7
22	20.7	103.5	102.6	20.1	100.9
25 (*marked 25 should be 24)*	19.8	98.0	102.6	20.1	95.5
23	18.7	103.6	102.6	20.1	101.0
25	19.7	97.6	102.6	20.1	95.1
27	19.0	100.8	102.6	20.1	98.2

** -2% to Above Optimum Moisture

* Minimum Density 95.0%

Material Description: [1] dark brown sandy clay

Tested in accordance with ASTM D 698 Method A ASTM D 2922 ASTM D 3017

REPORT DISTRIBUTION	GEOTEC LABS
e-mail group	C.M.T. MANAGER - G. SCOTT YUNGBLUT, P.E.

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PG Firm Registration No. 50103
RPLS Firm Nos. 10011900 & 10007300

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COMPACTION TEST REPORT

BILL TO: eHT
402 CEDAR ST
ABILENE TX 79601

REPORT NO: A 45112-15

DATE TESTED: 01-19-15

PROJECT: ABILENE HAMBY WWTP IMPROVEMENTS

TECHNICIAN: DAVID STOCKDELL

LOCATION	PERCENT MOISTURE	DRY DENSITY LBS/CU.FT	MAXIMUM DRY DENSITY LBS/CU.FT	PERCENT OPTIMUM MOISTURE	PERCENT COMPACTION
Location					
29	18.7	105.5	102.6	20.1	102.9
30	21.6	100.3	102.6	20.1	97.8
32	20.3	103.7	102.6	20.1	101.1
33	18.3	104.6	102.6	20.1	102.0
35	18.1	102.8	102.6	20.1	100.2
37	17.3 *	110.0	102.6	20.1	107.3
39	19.7	102.6	102.6	20.1	100.1
40	18.5	112.4	102.6	20.1	109.6
41	18.2	97.5	102.6	20.1	95.0
42	23.2	97.8	102.6	20.1	95.3

** -2% to Above Optimum Moisture

* Minimum Density 95.0%

Material Description: dark brown sandy clay

Tested in accordance with ASTM D 698 Method A ASTM D 2922 ASTM D 3017

REPORT DISTRIBUTION	GEOTEC LABS
e-mail group	C.M.T. MANAGER - G. SCOTT YUNGBLUT, P.E.

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Firm Registration No. 1151
PG Firm Registration No. 50103
RPLS Firm Nos. 10011900 & 10007300

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ABILENE TX 79604-3097
TEL 325 698 5563
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COMPACTION TEST REPORT

BILL TO:	eHT 402 CEDAR ST ABILENE TX 79601	REPORT NO:	A 45151-15
		DATE TESTED:	01-27-15
PROJECT:	ABILENE HAMBY WWTP IMPROVEMENTS	TECHNICIAN:	CODY HALLFORD

LOCATION	PERCENT MOISTURE	DRY DENSITY LBS/CU.FT	MAXIMUM DRY DENSITY LBS/CU.FT	PERCENT OPTIMUM MOISTURE	PERCENT COMPACTION
Location					
50	21.3	99.8	102.6	20.1	97.3
48	27.7	98.1	102.6	20.1	95.6
45	25.0	98.0	102.6	20.1	95.5
44	22.0	97.5	102.6	20.1	95.0
47	20.6	102.5	102.6	20.1	99.9
49	28.0 **	85.2	102.6	20.1	83.0 *
46	27.5 **	88.2	102.6	20.1	86.0 *
43	23.3 **	93.0	102.6	20.1	90.7 *

** ± 2% to Above Optimum Moisture

* Minimum Density 95.0%

Material Description: dark brown sandy clay

Tested in accordance with ASTM D 698 Method A ASTM D 2922 ASTM D 3017

REPORT DISTRIBUTION	GEOTEC LABS
e-mail group	C.M.T. MANAGER - G. SCOTT YUNGBLUT, P.E.

Results shown on this report are for the exclusive use of the client for whom they were obtained and apply only to the samples tested and/or inspected.
They are not intended to be indicative of the qualities of apparently identical products. The use of our name must receive prior approval.
Firm Registration No. 1151
PG Firm Registration No. 50103
RPLS Firm Nos. 10011900 & 10007300

GEOTEC LABS
A DIVISION OF ENPROTEC / HIBBS & TODD, INC
402 CEDAR
P O BOX 3097
FAX 325 690 9127
ABILENE TX 79604-3097
TEL 325 698 5563
www.e-ht.com

COMPACTION TEST REPORT

BILL TO:	eHT 402 CEDAR ST ABILENE TX 79601	REPORT NO:	A 45179-15
		DATE TESTED:	01-28-15
PROJECT:	ABILENE HAMBY WWTP IMPROVEMENTS	TECHNICIAN:	MARC BURSON

LOCATION	PERCENT MOISTURE	DRY DENSITY LBS/CU.FT	MAXIMUM DRY DENSITY LBS/CU.FT	PERCENT OPTIMUM MOISTURE	PERCENT COMPACTION
Location					
49 *re-test*	22.0	97.5	102.6	20.1	95.0
46 *re-test*	21.7	98.4	102.6	20.1	95.9
43 *re-test*	21.8	97.8	102.6	20.1	95.3

** ± 2% to Above Optimum Moisture

* Minimum Density 95.0%

Material Description: dark brown sandy clay

Tested in accordance with ASTM D 698 Method A ASTM D 2922 ASTM D 3017

REPORT DISTRIBUTION	GEOTEC LABS
e-mail group	C.M.T. MANAGER - G. SCOTT YUNGBLUT, P.E.

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Firm Registration No. 1151
PG Firm Registration No 50103
RPLS Firm Nos 10011900 & 10007300

Enprotec / Hibbs & Todd

January 22, 2015

Mr. Tommy O'Brien, P.E.
Director of Water Utilities
City of Abilene
P.O. Box 60
Abilene, Texas 79604

Re: Liner Certification
Flow Equalization Basin
Hamby Wastewater Treatment Plant
Abilene, Texas

Dear Mr. O'Brien:

Enprotec/Hibbs & Todd, Inc. (eHT) has reviewed the requirements of the *Texas Commission on Environmental Quality Chapter 217 – Design Criteria for Domestic Wastewater Systems* along with the construction materials testing documents provided by Geotec Labs during the refurbishing of the Flow Equalization Basin at the above referenced project. Based upon the field and laboratory testing performed during the basin renovation, the clay liner appears to meet the requirements of §217.203 (d) (2) for placed liners. Copies of the field and laboratory tests are attached.

We appreciate the opportunity to be of further service to the City of Abilene. If there are any questions please do not hesitate to call.

Sincerely,

Enprotec/Hibbs & Todd, Inc.

JAN 15

STATE OF TEXAS
GARY SCOTT YUNGBLUT
85640
LICENSED
PROFESSIONAL ENGINEER

G. Scott Yungblut, P.E.
Geotechnical Engineer

Attachments

c: Mr. Cliff Moore – TCEQ Region 3
eHT File 4864A3

GEOTEC LABS A DIVISION OF ENPROTEC / HIBBS & TODD, INC.

402 CEDAR
ABILENE TX 79601

P O BOX 3097
ABILENE TX 79604-3097

TEL 325 698 5563
FAX 325 690 9127
www.e-ht.com

MOISTURE DENSITY CURVE REPORT

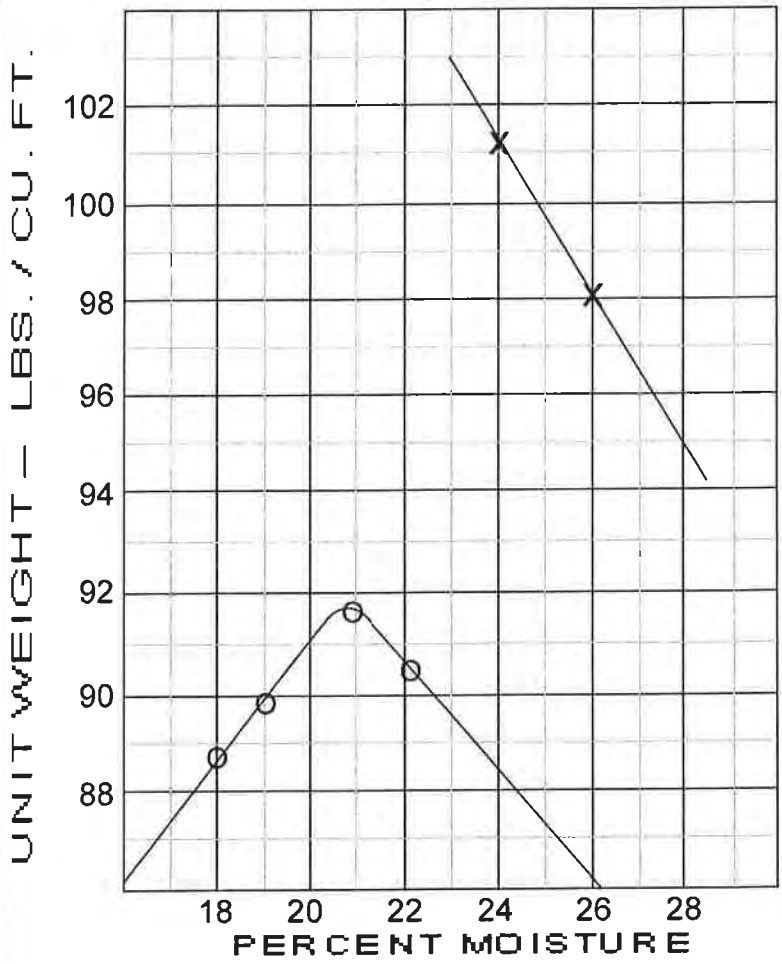
BILL TO: eHT
402 CEDAR
ABILENE TX 79601

REPORT NO: A 44069-14

DATE TESTED: 06-19-14

PROJECT: ABILENE HAMBY WWTP IMPROVEMENTS

TECHNICIAN: DAVID STOCKDELL



USE / LOCATION

P 1

DESCRIPTION OF MATERIAL

Dark brown sandy clay

TRIAL NUMBER	PERCENT MOISTURE	UNIT DRY WEIGHT lbs / cu ft
1	18.0	88.7
2	19.1	89.8
3	21.0	91.7
4	22.3	90.5

OPTIMUM MOISTURE (PERCENT): 20.9

MAXIMUM DENSITY (lbs/cu.ft.): 91.7

ESTIMATED SPECIFIC GRAVITY - ZERO AIR VOIDS @ 2.65

Tested in accordance with ASTM 698 Method A

REPORT DISTRIBUTION

e-mail group

eHT #
4864 A

GEOTEC LABS

C.M.T. MANAGER - G. SCOTT YUNGBLUT, P.E.

The results shown on this report are for the exclusive use of the client for whom they were obtained and apply to the samples tested and/or inspected. They are not intended to be indicative of the qualities of apparently identical products. The use of our name must receive prior written approval.

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ABILENE TX 79604-3097
TEL 325 698 5563
www e-ht com

COMPACTION TEST REPORT

BILL TO:	eHT 402 CEDAR ST ABILENE TX 79601	REPORT NO:	A 44421-14
		DATE TESTED:	09-05-14
PROJECT:	ABILENE HAMBY WWTP IMPROVEMENTS	TECHNICIAN:	CODY HALLFORD

LOCATION	PERCENT MOISTURE	DRY DENSITY LBS/CU.FT	MAXIMUM DRY DENSITY LBS/CU.FT	PERCENT OPTIMUM MOISTURE	PERCENT COMPACTION
Lagoon					
Section 3	22.8	88.9	91.7	20.9	97.0
Section 2	25.0	89.7	91.7	20.9	97.8
Section 1	21.5	99.8	97.1	19.0	102.9

** -2% to Above Optimum Moisture * Minimum Density 95.0%

Material Description: dark brown sandy clay

Tested in accordance with ASTM D 698 Method A ASTM D 2922 ASTM D 3017

REPORT DISTRIBUTION	GEOTEC LABS
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Firm Registration No 1151
PG Firm Registration No 50103
RPLS Firm Nos 10011900 & 10007300

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ABILENE TX 79604-3097
TEL 325 698 5563
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COMPACTION TEST REPORT

BILL TO:	eHT 402 CEDAR ST ABILENE TX 79601	REPORT NO:	A 44437-14
		DATE TESTED:	09-10-14
PROJECT:	ABILENE HAMBY WWTP IMPROVEMENTS	TECHNICIAN:	CODY HALLFORD

LOCATION	PERCENT MOISTURE	DRY DENSITY LBS/CU.FT	MAXIMUM DRY DENSITY LBS/CU.FT	PERCENT OPTIMUM MOISTURE	PERCENT COMPACTION
Lagoon					
Section 4	25.4	90.4	91.7	20.9	98.6
Section 5	22.8	91.5	91.7	20.9	99.8
Section 6	24.3	91.0	91.7	20.9	99.3

** -2% to Above Optimum Moisture * Minimum Density 95.0%

Material Description: dark brown sandy clay

Tested in accordance with ASTM D 698 Method A ASTM D 2922 ASTM D 3017

REPORT DISTRIBUTION	GEOTEC LABS
e-mail group	C.M.T. MANAGER - G. SCOTT YUNGBLUT, P.E.

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ABILENE TX 79604-3097
TEL 325 698 5563
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COMPACTION TEST REPORT

BILL TO:	eHT 402 CEDAR ST ABILENE TX 79601	REPORT NO:	A 44447-14
		DATE TESTED:	09-11-14
PROJECT:	ABILENE HAMBY WWTP IMPROVEMENTS	TECHNICIAN:	CODY HALLFORD

LOCATION	PERCENT MOISTURE	DRY DENSITY LBS/CU.FT	MAXIMUM DRY DENSITY LBS/CU.FT	PERCENT OPTIMUM MOISTURE	PERCENT COMPACTION
Lagoon					
Section 7	21.0	94.7	[1] 97.1	19.0	97.6
Section 8	23.0	93.4	97.1	19.0	96.1
Section 9	20.4	96.8	97.1	19.0	99.8
Section 12	19.3	96.5	97.1	19.0	99.5
Section 11	25.0	95.0	97.1	19.0	97.9
Section 10	22.5	100.7	[2] 102.7	17.5	98.1

** -2% to Above Optimum Moisture

* Minimum Density 95.0%

Material Description: [1] dark brown sandy clay
[2] dark brown sandy clay

Tested in accordance with ASTM D 698 Method A ASTM D 2922 ASTM D 3017

REPORT DISTRIBUTION	GEOTEC LABS
e-mail group	C.M.T. MANAGER - G. SCOTT YUNGBLUT, P.E.

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ABILENE TX 79604-3097
TEL 325 698 5563
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COMPACTION TEST REPORT

BILL TO:	eHT 402 CEDAR ST ABILENE TX 79601	REPORT NO:	A 44476-14
		DATE TESTED:	09-16-14
PROJECT:	ABILENE HAMBY WWTP IMPROVEMENTS	TECHNICIAN:	CODY HALLFORD

LOCATION	PERCENT MOISTURE	DRY DENSITY LBS/CU.FT	MAXIMUM DRY DENSITY LBS/CU.FT	PERCENT OPTIMUM MOISTURE	PERCENT COMPACTION
Lagoon					
Section 15	23.0	92.4	[1] 97.1	19.0	95.2
Section 18	19.9	95.6	97.1	19.0	98.5
Section 17	22.0	92.2	97.1	19.0	95.0
Section 14	23.4	96.5	97.1	19.0	99.4
Section 13	22.0	91.7	[2] 91.7	20.9	100.0
Section 16	22.6	92.0	97.1	19.0	100.3
Section 19	23.3	91.9	97.1	19.0	100.3
Section 20	22.3	93.9	97.1	19.0	96.8
Section 21	17.3	92.2	97.1	19.0	95.0

** -2% to Above Optimum Moisture * Minimum Density 95.0%

Material Description: [1] dark brown sandy clay
[2] dark brown sandy clay

Tested in accordance with ASTM D 698 Method A ASTM D 2922 ASTM D 3017

REPORT DISTRIBUTION	GEOTEC LABS
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TEL 325 698 5563
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COMPACTION TEST REPORT

BILL TO: eHT
402 CEDAR ST
ABILENE TX 79601

REPORT NO: A 44522-14

DATE TESTED: 09-23-14

PROJECT: ABILENE HAMBY WWTP IMPROVEMENTS

TECHNICIAN: CODY HALLFORD

LOCATION	PERCENT MOISTURE	DRY DENSITY LBS/CU.FT	MAXIMUM DRY DENSITY LBS/CU.FT	PERCENT OPTIMUM MOISTURE	PERCENT COMPACTION
Lagoon					
Section 22	21.9	94.9	[1] 91.7	20.9	97.7
Section 25	22.8	88.4	91.7	20.9	96.4
Section 26	20.4	94.2	91.7	20.9	102.8
Section 23	20.0	97.9	[2] 102.7	17.5	95.3
Section 24	20.1	98.6	102.7	17.5	96.0
Section 33	21.0	98.1	102.7	17.5	95.5
Section 34	21.4	97.9	102.7	17.5	95.3
Section 28	21.0	93.3	[3] 97.1	19.0	96.1
Section 29	17.6	97.8	97.1	19.0	100.7
Section 30	23.1	93.4	97.1	19.0	96.2
Section 31	20.0	94.1	97.1	19.0	96.9
Section 32	20.0	95.8	97.1	19.0	98.7
Section 27	20.2	99.8	102.7	17.5	97.2

** -2% to Above Optimum Moisture

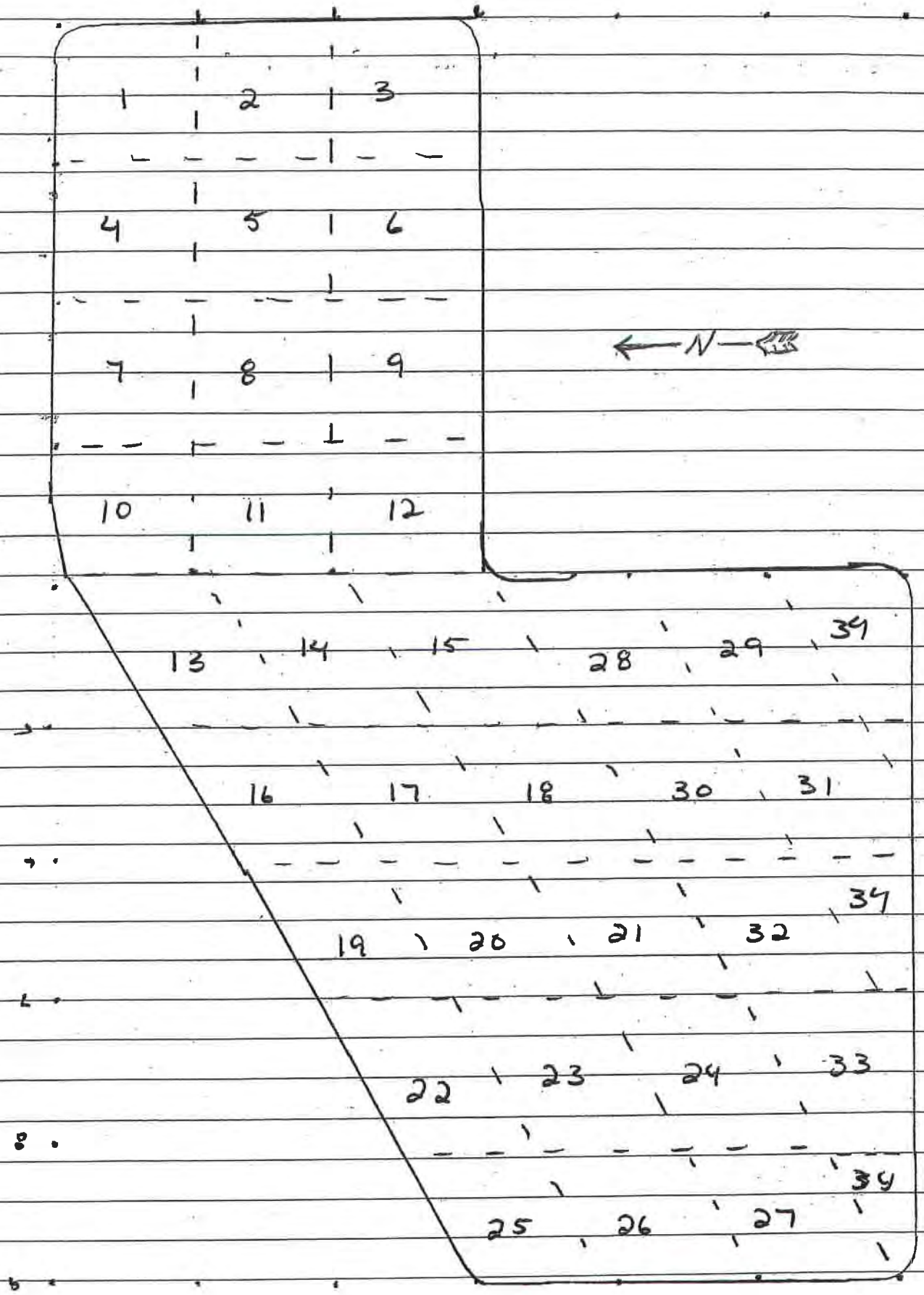
* Minimum Density 95.0%

Material Description: [1] dark brown sandy clay
[2] dark brown sandy clay
[3] dark brown sandy clay

Tested in accordance with ASTM D 698 Method A ASTM D 2922 ASTM D 3017

REPORT DISTRIBUTION	GEOTEC LABS
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PG Firm Registration No 50103
RPLS Firm Nos 10011900 & 10007300



EQ BASIN
· Hamby WWTP Ph. 2
4864 A-2

TEAM Consultants, Inc.

Geotechnical, Environmental, Construction Materials Testing

October 1, 2014
TEAM Project No. 122001
Report No. 32

Enprotec
402 Cedar Street
Abilene, Texas 79601

Attn: Mr. Scott Yungblut, PE

Re: Laboratory Soil Tests
Project No.: 4863 A3
Location: Hamby WWTP – EQ Basin

Gentlemen:

Submitted here is our report of the laboratory permeability tests completed on five samples delivered to TEAM Consultants, Inc., September 29, 2014. A permeability test was completed on each sample in accordance with Corps of Engineers EM 1110-2-1906, Appendix VII, and the results of these tests are presented on the attached summary. Photocopies of the laboratory test data sheets are also attached for your reference.

We appreciate the opportunity to be of assistance to you with this project. Should you have any questions, or if we may be of further assistance, please call

Very truly yours,
TEAM Consultants, Inc.



Matthew Hannah, ET
Technical Services Supervisor

MH/ms
Attachments

2970 S. Walton Walker, Suite 101 Dallas, TX 75211 (214) 331-4395 Fax (214) 331-4458
3101 Pleasant Valley, Suite 101 Arlington, TX 76015 (817) 467-5500 Fax (817) 468-9920

SUMMARY OF LABORATORY TEST RESULTS

ENPROTEC Project No. 4863 A3
Hamby WWTP – EQ Basin

SAMPLE LOCATION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	FALLING HEAD PERMEABILITY (cm/sec)
Area 6	15.9	103.6	6.55×10^{-8}
Area 10	16.6	101.3	5.59×10^{-8}
Area 19	15.5	104.0	1.27×10^{-8}
Area 24	16.2	105.2	2.94×10^{-8}
Area 28	23.8	97.2	9.35×10^{-9}

PERMEABILITY TEST

(EM 1110-2-1906 30 NOV 70)

Project: Enprotec, Project #4863 A3 Project No.: 122001 Date: 9/29/2014

Sample No: Area 6 Date Sampled: n/a

Material Description: Dark brown clay with sand

SAMPLE MEASUREMENTS

Wet weight sample+ring:	322.6	g
Ring weight:	207.0	g
Wet weight of sample:	115.6	g
Diameter:	6.35	cm
Area:	31.67	cm^2
Thickness:	1.897	cm
Unit dry weight:	103.6	pcf

MOISTURE CONTENT

Tare No.:	667	
Wet weight+tare:	357.0	g
Dry weight+tare:	323.3	g
Tare weight:	111.4	g
Dry weight of sample:	211.9	g
Weight of moisture:	33.7	g
Percent moisture:	15.9	%

PERMEABILITY DATA

Date & Time	Elapsed Time (t) sec	Burrette Readings (H_0) cm	Burrette Readings (H_1) cm	Permeability (k) Single	Permeability (k) Cumulative
9/30/14 01:30 PM		64.7			
9/30/14 01:45 PM	900		63.9	6.87E-08	
9/30/14 02:00 PM	900		63.2	6.08E-08	
9/30/14 02:15 PM	900		62.4	7.03E-08	
9/30/14 02:30 PM	900		61.7	6.23E-08	
	3,600				6.55E-08

Tube No.: 14

Area of Tube: 0.0829 cm^2

Confining Load: 0.625 tsf

$$K = \left[\frac{axL}{Axt}\right] x \ln\left[\frac{H_0}{H_1}\right] x R_T$$

K = 6.55E-08 cm/sec

Remarks: A temperature correction factor (R_T) of 1.00 is used as this test was performed within a laboratory environment maintained at or slightly above 68°F.

Tested by: Matt Hannah

Computed by: Matt Hannah

Checked by: Matt Hannah

PERMEABILITY TEST

(EM 1110-2-1906 30 NOV 70)

Project: Enprotec, Project #4863 A3 Project No.: 122001 Date: 9/29/2014

Sample No: Area 10 Date Sampled: n/a

Material Description: Dark brown clay with sand

SAMPLE MEASUREMENTS

Wet weight sample+ring:	320.3	g
Ring weight:	207.0	g
Wet weight of sample:	113.2	g
Diameter:	6.35	cm
Area:	31.67	cm^2
Thickness:	1.890	cm
Unit dry weight:	101.3	pcf

MOISTURE CONTENT

Tare No.:	664	
Wet weight+tare:	367.0	g
Dry weight+tare:	329.8	g
Tare weight:	106.0	g
Dry weight of sample:	223.9	g
Weight of moisture:	37.1	g
Percent moisture:	16.6	%

PERMEABILITY DATA

Date & Time	Elapsed Time (t) sec	Burrette Readings (H_0) cm	Burrette Readings (H_1) cm	Permeability (k) Single	Permeability (k) Cumulative
9/30/14 10:00 AM		66.6			
9/30/14 10:30 AM	1,800		65.3	5.42E-08	
9/30/14 10:45 AM	900		64.6	5.92E-08	
9/30/14 11:00 AM	900		64.0	5.13E-08	
9/30/14 11:15 AM	900		63.3	6.04E-08	
	4,500				5.59E-08

Tube No.: 15

Area of Tube: 0.0829 cm^2

Confining Load: 0.625 tsf

$$K = \left[\frac{axL}{Axt}\right] x \ln\left[\frac{H_0}{H_1}\right] x R_T$$

K = 5.59E-08 cm/sec

Remarks: A temperature correction factor (R_T) of 1.00 is used as this test was performed within a laboratory environment maintained at or slightly above 68°F.

Tested by: Matt Hannah

Computed by: Matt Hannah

Checked by: Matt Hannah

PERMEABILITY TEST

(EM 1110-2-1906 30 NOV 70)

Project: Enprotec, Project #4863 A3 Project No.: 122001 Date: 9/29/2014

Sample No: Area 19 Date Sampled: n/a

Material Description: Dark brown clay with sand

SAMPLE MEASUREMENTS

Wet weight sample+ring:	322.2	g
Ring weight:	207.0	g
Wet weight of sample:	115.2	g
Diameter:	6.35	cm
Area:	31.67	cm^2
Thickness:	1.890	cm
Unit dry weight:	104.0	pcf

MOISTURE CONTENT

Tare No.:	663	
Wet weight+tare:	334.6	g
Dry weight+tare:	303.4	g
Tare weight:	102.5	g
Dry weight of sample:	200.9	g
Weight of moisture:	31.2	g
Percent moisture:	15.5	%

PERMEABILITY DATA

Date & Time	Elapsed Time (t) sec	Burrette Readings (H_0) cm	Burrette Readings (H_1) cm	Permeability (k) Single	Permeability (k) Cumulative
9/30/14 10:00 AM		67.5			
9/30/14 10:30 AM	1,800		67.1	1.63E-08	
9/30/14 11:30 AM	3,600		66.5	1.23E-08	
9/30/14 12:30 PM	3,600		65.9	1.25E-08	
9/30/14 01:45 PM	4,500		65.2	1.17E-08	
	13,500				1.27E-08

Tube No.: 18

Area of Tube: 0.0829 cm^2

Confining Load: 0.625 tsf

$$K = \left[\frac{axL}{Axt}\right] x \ln\left[\frac{H_0}{H_1}\right] x R_T$$

K = 1.27E-08 cm/sec

Remarks: A temperature correction factor (R_T) of 1.00 is used as this test was performed within a laboratory environment maintained at or slightly above 68°F.

Tested by: Matt Hannah

Computed by: Matt Hannah

Checked by: Matt Hannah

PERMEABILITY TEST

(EM 1110-2-1906 30 NOV 70)

Project: Enprotec, Project #4863 A3 Project No.: 122001 Date: 9/29/2014

Sample No: Area 24 Date Sampled: n/a

Material Description: Dark brown clay with sand

SAMPLE MEASUREMENTS			MOISTURE CONTENT		
Wet weight sample+ring:	324.2	g	Tare No.:	623	
Ring weight:	207.0	g	Wet weight+tare:	341.0	g
Wet weight of sample:	117.1	g	Dry weight+tare:	308.2	g
Diameter:	6.35	cm	Tare weight:	105.4	g
Area:	31.67	cm^2	Dry weight of sample:	202.8	g
Thickness:	1.890	cm	Weight of moisture:	32.8	g
Unit dry weight:	105.2	pcf	Percent moisture:	16.2	%

PERMEABILITY DATA

Date & Time	Elapsed Time (t) sec	Burrette Readings (H_0) cm	Burrette Readings (H_1) cm	Permeability (k) Single	Permeability (k) Cumulative
9/30/14 01:30 PM		66.2			
9/30/14 01:45 PM	900		65.9	2.50E-08	
9/30/14 02:00 PM	900		65.5	3.35E-08	
9/30/14 02:15 PM	900		65.2	2.52E-08	
9/30/14 02:30 PM	900		64.8	3.38E-08	
	3,600				2.94E-08

Tube No.: 16

Area of Tube: 0.0829 cm^2

Confining Load: 0.625 tsf

$$K = \left[\frac{axL}{Axt}\right] x \ln\left[\frac{H_0}{H_1}\right] x R_T$$

K = 2.94E-08 cm/sec

Remarks: A temperature correction factor (R_T) of 1.00 is used as this test was performed within a laboratory environment maintained at or slightly above 68°F.

Tested by: Matt Hannah

Computed by: Matt Hannah

Checked by: Matt Hannah

PERMEABILITY TEST

(EM 1110-2-1906 30 NOV 70)

Project: Enprotec, Project #4863 A3 Project No.: 122001 Date: 9/29/2014

Sample No: Area 28 Date Sampled: n/a

Material Description: Dark brown clay with sand

SAMPLE MEASUREMENTS

Wet weight sample+ring:	322.4	g
Ring weight:	207.0	g
Wet weight of sample:	115.4	g
Diameter:	6.35	cm
Area:	31.67	cm^2
Thickness:	1.890	cm
Unit dry weight:	97.2	pcf

MOISTURE CONTENT

Tare No.:	630	
Wet weight+tare:	343.9	g
Dry weight+tare:	297.8	g
Tare weight:	103.6	g
Dry weight of sample:	194.1	g
Weight of moisture:	46.2	g
Percent moisture:	23.8	%

PERMEABILITY DATA

Date & Time	Elapsed Time (t) sec	Burrette Readings (H_0) cm	(H_1) cm	Permeability (k) Single	Cumulative
9/30/14 10:00 AM		67.5			
9/30/14 10:30 AM	1,800		67.2	1.22E-08	
9/30/14 11:30 AM	3,600		66.7	1.03E-08	
9/30/14 12:30 PM	3,600		66.3	8.27E-09	
9/30/14 01:45 PM	4,500		65.8	8.32E-09	
	13,500				9.35E-09

Tube No.: 17

Area of Tube: 0.0829 cm^2

Confining Load: 0.625 tsf

$$K = \left[\frac{axL}{Axt}\right] x \ln\left[\frac{H_0}{H_1}\right] x R_T$$

K = 9.35E-09 cm/sec

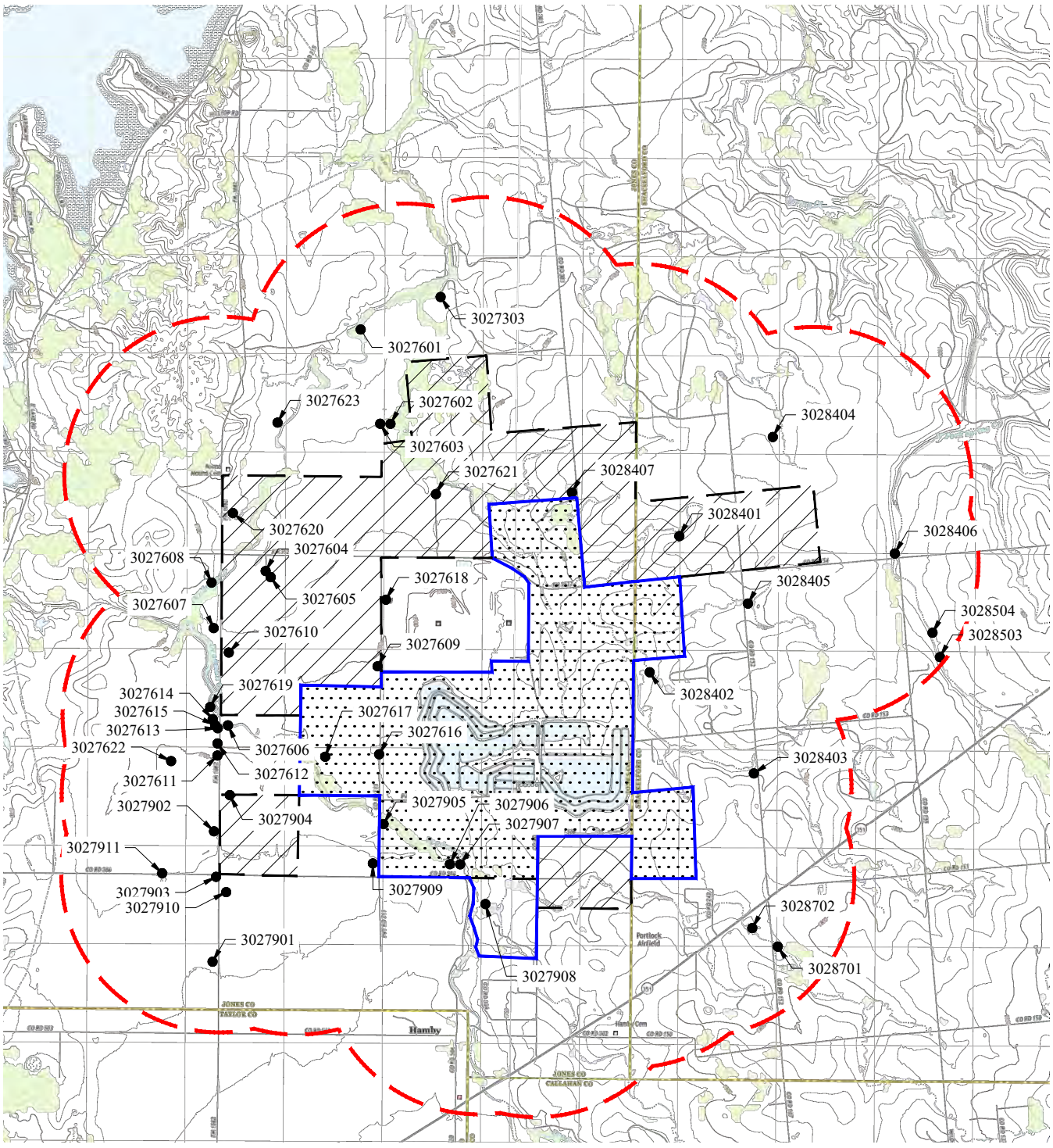
Remarks: A temperature correction factor (R_T) of 1.00 is used as this test was performed within a laboratory environment maintained at or slightly above 68°F.

Tested by: Matt Hannah

Computed by: Matt Hannah

Checked by: Matt Hannah

Attachment WS 3.0-6.A
USGS Topographic Map – Well information



LEGEND

- APPLICANT'S PROPERTY BOUNDARY
- 1 MILE BUFFER AROUND OFF SITE IRRIGATION
- ON - SITE IRRIGATION
- OFF - SITE IRRIGATION
- GROUNDWATER WELLS

N

2000 0 5000

SCALE IN FEET

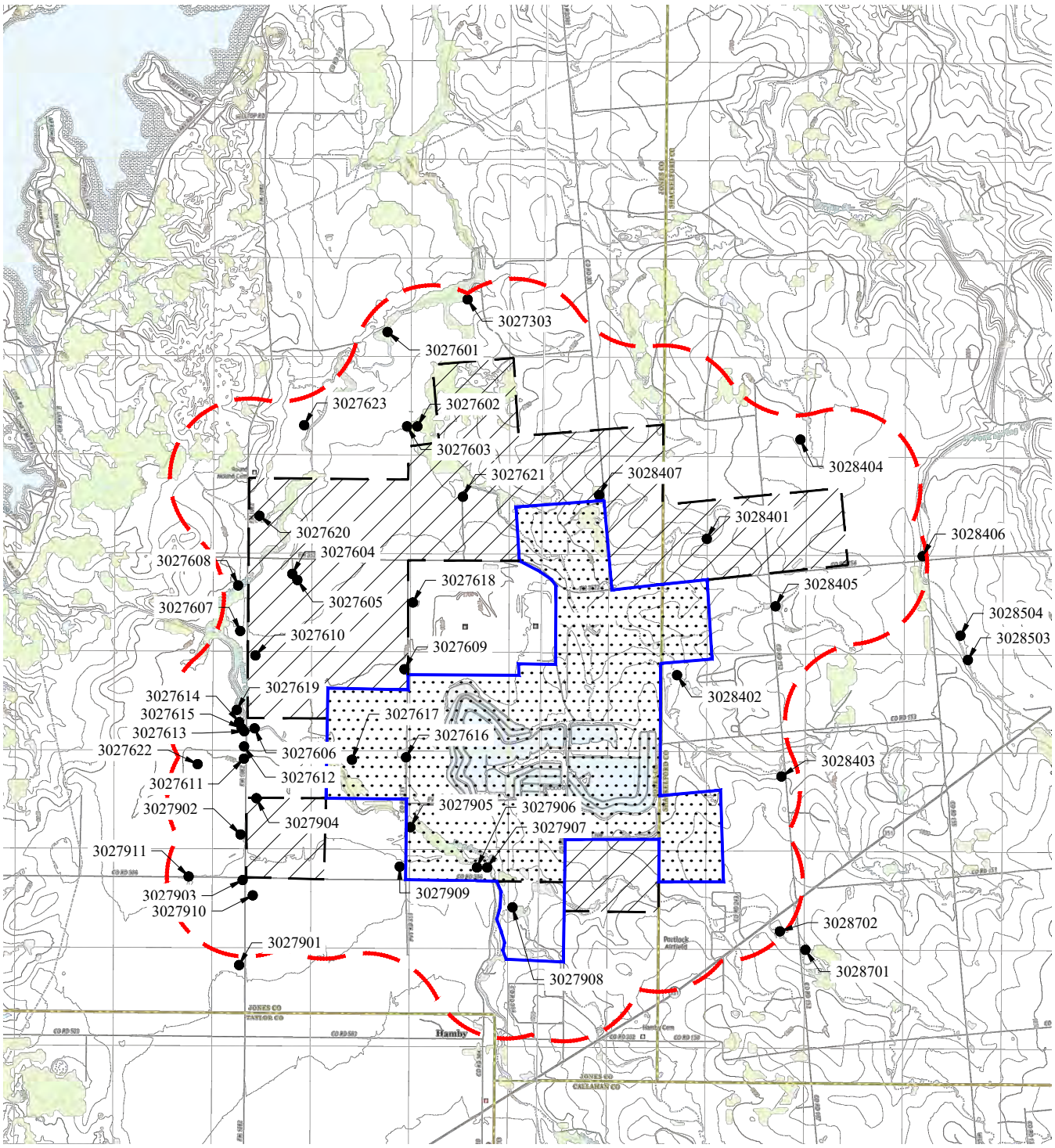
CITY OF ABILENE
HAMBY WATER
RECLAMATION FACILITY
WQ0010334004

WELL MAP
(1 - MILE RADIUS)

8801 04/09/2024

Enprotec | Hibbs & Todd
402 Cedar Street • Abilene, Texas 79601 • T: (325) 698-5560 • F: (325) 690-3240 • www.e-ht.com
PE Firm Registration No. 1151 • PG Firm Registration No. 50103 • RPLS Firm Registration No. 10011900

P:\Projects\Abilene, City of\8801 Hamby WRF Permit Renewal 2024\10 CAD\CAD DRAWINGS\8801 - WELLS (1 MILE).dwg



LEGEND

- APPLICANT'S PROPERTY BOUNDARY
- 1/2 MILE BUFFER AROUND OFF SITE IRRIGATION
- ON - SITE IRRIGATION
- OFF - SITE IRRIGATION
- GROUNDWATER WELLS

N

2000 0 5000

SCALE IN FEET

CITY OF ABILENE
HAMBY WATER
RECLAMATION FACILITY
WQ0010334004

WELL MAP
(1/2 - MILE RADIUS)

8801 04/09/2024

Enprotec | Hibbs & Todd
402 Cedar Street • Abilene, Texas 79601 • T: (325) 698-5560 • F: (325) 690-3240 • www.a-ht.com
PE Firm Registration No. 1151 • PG Firm Registration No. 50103 • RPLS Firm Registration No. 10011900

P:\Projects\Abilene, City of\8801 Hamby WRF Permit Renewal 2024\10 CAD\CAD DRAWINGS\8801 - WELLS (.5 MILE).dwg

Attachment WS 3.0-6.B
Water Well Data

ATTACHMENT WS 3.0-6.B
CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY
TPDES PERMIT MINOR AMENDMENT WITH RENEWAL APPLICATION

WELL INFORMATION
WELLS WITHIN 0-5-MILE RADIUS

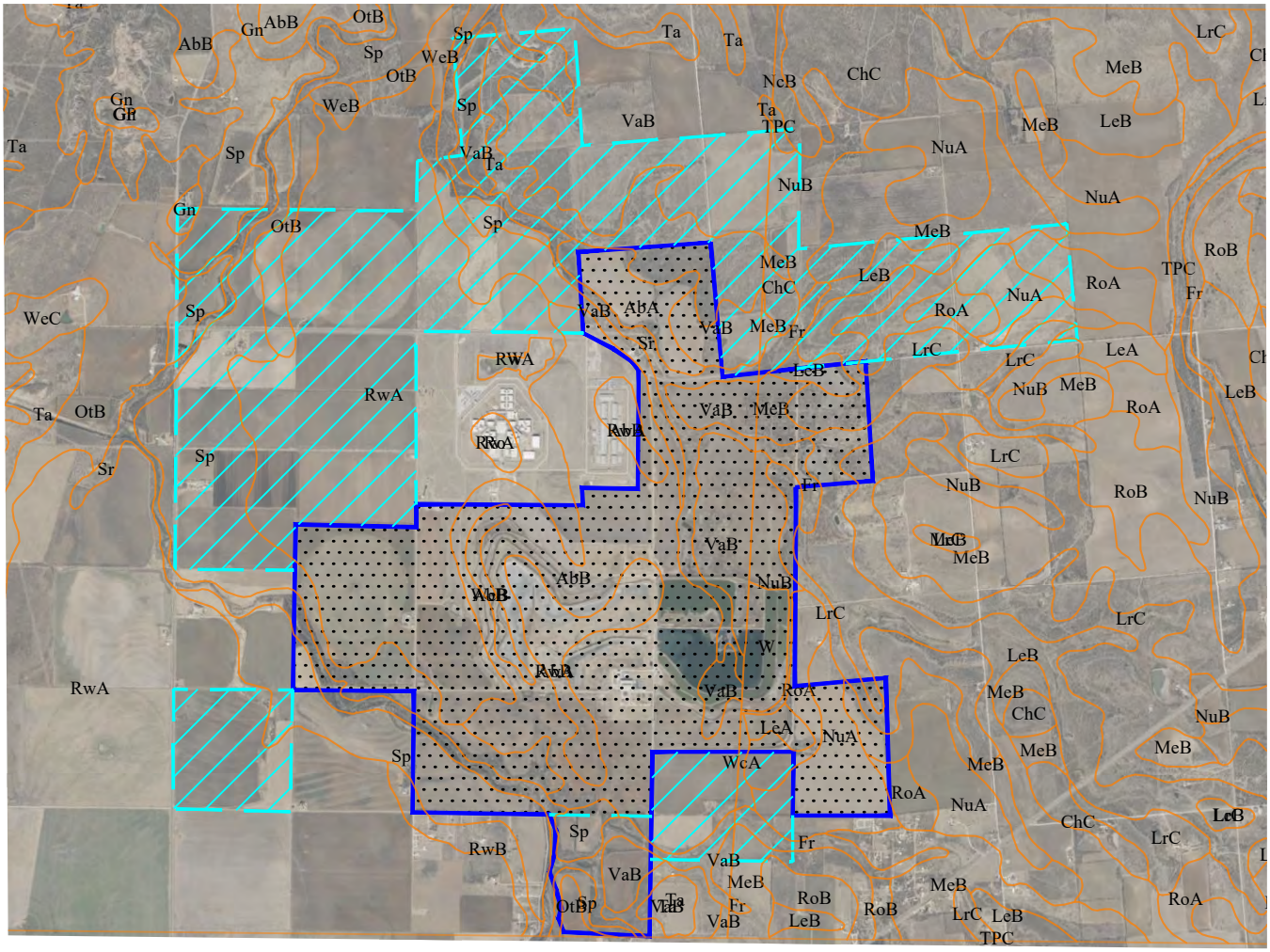
Well ID	Well Use	Producing? Y/N	Open, cased, capped, or plugged?	Proposed Best Management Practice
3027303	Unused	No Data	No Data	-
3027601	Domestic	No Data	No Data	-
3027602	Stock	No Data	No Data	-
3027603	Unused	No Data	No Data	-
3027604	Domestic	No Data	No Data	-
3027605	Stock	No Data	No Data	-
3027606	Domestic	No Data	No Data	-
3027607	Domestic	No Data	No Data	-
3027608	Unused	No Data	No Data	-
3027609	Unused	No Data	No Data	-
3027610	Stock	No Data	No Data	-
3027611	Domestic	No Data	No Data	-
3027612	Unused	No Data	No Data	-
3027613	Irrigation	No Data	No Data	-
3027614	Irrigation	No Data	No Data	-
3027615	Irrigation	No Data	No Data	-
3027616	Domestic	No Data	No Data	-
3027617	Unused	No Data	No Data	-
3027618	Unused	No Data	No Data	-
3027619	Stock	No Data	No Data	-
3027620	Unused	No Data	No Data	-
3027621	Stock	No Data	No Data	-
3027622	Industrial	No Data	No Data	-
3027623	Unused	No Data	No Data	-
3027902	Domestic	No Data	No Data	-
3027903	Domestic	No Data	No Data	-
3027904	Unused	No Data	No Data	-
3027905	Unused	No Data	No Data	-
3027906	Domestic	No Data	No Data	-
3027907	Unused	No Data	No Data	-
3027908	Domestic	No Data	No Data	-
3027909	Unused	No Data	No Data	-
3027910	Unused	No Data	No Data	-
3027911	Industrial	No Data	No Data	-
3028401	Unused	No Data	No Data	-
3028402	Unused	No Data	No Data	-
3028403	Unused	No Data	No Data	-
3028404	Unused	No Data	No Data	-
3028405	Unused	No Data	No Data	-

ATTACHMENT WS 3.0-6.B
CITY OF ABILENE
HAMBY WATER RECLAMATION FACILITY
TPDES PERMIT MINOR AMENDMENT WITH RENEWAL APPLICATION

WELL INFORMATION
WELLS WITHIN 0-5-MILE RADIUS

Well ID	Well Use	Producing? Y/N	Open, cased, capped, or plugged?	Proposed Best Management Practice
3028406	Stock	No Data	No Data	-
3028407	Unused	No Data	No Data	-
3028702	Unused	No Data	No Data	-

Attachment WS 3.0-8.A
Soil Survey Map



LEGEND

- APPLICANT'S PROPERTY BOUNDARY
- ON - SITE IRRIGATION
- OFF - SITE IRRIGATION

CITY OF ABILENE
HAMBY WATER
RECLAMATION FACILITY
WQ0010334004

SOIL PLAN

8801

04/09/2024

Enprotec | Hibbs & Todd
402 Cedar Street • Abilene, Texas 79601 • T: (325) 698-5560 • F: (325) 690-3240 • www.e-ht.com
PE Firm Registration No. 1151 • PG Firm Registration No. 50103 • RPLS Firm Registration No. 10011900

P:\Projects\Abilene, City of\8801 Hamby WRF Permit Renewal 2024\10 CAD\CAD DRAWINGS\8801 - PLANT (SOIL).dwg

Attachment WS 3.0-8.B
Soil Analysis

City of Abilene
Environmental Laboratory Report

4209 East Lake Road
Phone: (325) 676-6043

Abilene, TX 79601
Fax: (325) 676-6044

Report To

John Holton
HAMBY WASTEWATER TREATMENT PLAN
19000 County Road 309
Abilene, TX 79601

Sample Information

Project: Annual Soil Samples
Project Number: [none]
Collector:
Collector Phone: -
Date Received: 01/22/24 14:14
Received By:
Report Date: 02/20/2024

FRANKE 0-6" C4A2214-01

Date Sample: 19-Jan-2024 16:00

Sample Type:

Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	19.10	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	914	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.60	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	933	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	5500	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	550	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	59	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	550	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	190	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	280	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	3.00	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	14.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

FRANKE 6-18" C4A2214-02

Date Sample: 19-Jan-2024 16:00

Sample Type:

Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	28.40	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	1000	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.50	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1030	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	4600	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	610	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	110	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	670	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	210	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	320	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

FRANKE 6-18" C4A2214-02 Date Sample: 19-Jan-2024 16:00

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
SAR	3.10	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	20.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

FRANKE 18-30" C4A2214-03 Date Sample: 19-Jan-2024 16:00

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	24.40	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	705	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.50	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	729	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	6600	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	590	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	35	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	440	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	290	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	440	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	4.00	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	31.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit

Notes and Definitions

Sub-Agri Subcontracted to Servitech of Amarillo TX (A certified Agriculture Laboratory).

ND Analyte NOT DETECTED at or below the reporting limit

NR Not Reported

RPD Relative Percent Difference

We are an Approved Public Water System Laboratory (AL2210001) for: Alkalinity, Chlorine Dioxide (2 methods), Free and Total Chlorine (2 methods), pH, POE Chlorite, Temperature, Turbidity (2 methods).

We are an Approved Drinking Water Laboratory (T104704320) for: Alkalinity, Calcium, Chlorine Dioxide (2 methods), Chlorite, Conductivity, Hardness, pH, Phosphate, Silica, Temperature, TOC, Total Chlorine, Turbidity, UV254.

We are not NELAP accredited in the DW matrix for: Alkalinity, Ammonia, Beryllium, Bromide, Chlorine Dioxide, Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Molybdenum, pH, Phosphate, Silver, TOC, UV254

We are not NELAP accredited in the NPW matrix for: Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Silver. We are not a certified calibration laboratory.

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

Michael Michaud
Laboratory Manager

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ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

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CITY OF ABILENE ENVIRONMENTAL — LABORATORY CHAIN OF CUSTODY

4209 East Lake Road Abilene, TX 79601
(325) 676-6041 Fax: (325) 676-6044

NELAP ACCREDITED LABORATORY

PROJECT

SOIL T104704320-19-21

Client Name: Hamby WRF Phone: 325-548-2237
Address: 19000 Cr 309 Fax: 325-548-2017
Abilene,TX 79601

Sampler Signature / Name: Jerry Bartlett / Jerry Bartlett

Invoice Paid

Invoice # _____

Lab Use Only Laboratory ID	Sample ID	Collection Date	Collection Time	Preservative (Write check mark for each appropriately preserved bottle. Note improper preservation in comments box.) Lab Use Only	Matrix Type	Grab/ Comp	Container Type (P/G)	# Bottles	pH	Conductivity	SAR	Metals-Mehlich	NO_2^-	NO_3^-	TN	~~Metals Hg~~	TKN
C4A2214 -01	FRANKE Sec A 0-6"	1-19-24	1 PM / 4 PM	Temp: 21.5/Cf=21.5 Ice* pH <2	S	g	p	1	x	x	x	x	x	x	x		x
-02	FRANKE Sec A 6-18"	"	"	Temp: 21.5/Cf=21.5 Ice* pH <2	S	g	p	1	x	x	x	x	x	x	x		x
-03	FRANKE Sec A 18-30"	"	"	Temp: 21.5/Cf=21.5 Ice* pH <2	S	g	p	1	x	x	x	x	x	x	x		x
				Temp: Ice* pH <2													
				Temp: Ice* pH <2													
				Temp: Ice* pH <2													

Relinquished By: Jerry Bartlett Date: 1-22-24 Time: 14:14
Received By: Date: 1.22.24 Time: 14:14
Relinquished By: Date: Time:
Received By: Date: Time:

Comments
Other Preservative:
Password:
Thermometer number: IR-6
Cf= 0.0°

Temperatures circled do not conform to federal regulations.
* On ice, but inadequate time to reach ≤6° C.
** Circle the metals to be analyzed Ag Al As Ba Be (Ca) Cd Cr Cu Fe Hg (K) (Mg) Mn Mo (Na) Ni Pb Se Si Sr Zn P S _(X Total _ Dissolved)
Revised 01/01/2011

CITY OF ABILENE ENVIRONMENTAL — LABORATORY CHAIN OF CUSTODY

4209 East Lake Road, Abilene, TX 79601
(325) 676-6041 Fax: (325) 676-6044

PROJECT

SOIL T104704320-19-21

Client Name: Hamby WRF
Address: 19000 Cr 309
Abilene, TX 79601

Phone: 325-548-2237
Fax: 325-548-2017

Sampler Signature / Name: Jerry Bartlett / Jerry Bartlett

Invoice Paid

Invoice # _____

Lab Use Only Laboratory ID	Sample ID	Collection Date	Collection Time	Preservative (Write check mark for each appropriately preserved bottle. Note improper preservation in comments box. Lab Use Only)	Matrix Type	Grab/ Comp	Container Type (P/G)	# Bottles	pH	Conductivity	SAR	Metals-Mehlich	NO_2^-	NO_3^-	TN	~~Metals Hg~~	TKN
24A2214 -01	FRANKE Sec A 0-6"	1-19-24	1 PM / 4 PM	Temp: 21.5/CF=21.5 Ice* pH <2	S	g	p	1	x	x	x	x	x	x	x		x
-02	FRANKE Sec A 6-18"	"	"	Temp: 21.5/CF=21.5 Ice* pH <2	S	g	p	1	x	x	x	x	x	x	x		x
-03	FRANKE Sec A 18-30"	"	"	Temp: 21.5/CF=21.5 Ice* pH <2	S	g	p	1	x	x	x	x	x	x	x		x
				Temp: Ice* pH <2													
				Temp: Ice* pH <2													
				Temp: Ice* pH <2													

Relinquished By: Jerry Bartlett Date: 1-22-24 Time: 14:14
Received By: Date: 1.22.24 Time: 14:14
Relinquished By: Date: Time:
Received By: Date: Time:

Comments
Other Preservative:
Password:
Thermometer number: IR-6
CF= 0.00°

Temperatures circled do not conform to federal regulations.
* On ice, but inadequate time to reach ≤6° C.
** Circle the metals to be analyzed Ag Al As Ba Be (Ca) Cd Cr Cu Fe Hg (K) (Mg) Mn Mo (Na) Ni Pb Se Si Sr Zn P S __(X Total __ Dissolved)
Revised 01/01/2011

City of Abilene
Environmental Laboratory Report

4209 East Lake Road
Phone: (325) 676-6043

Abilene, TX 79601
Fax: (325) 676-6044

Report To

John Holton
HAMBY WASTEWATER TREATMENT PLAN
19000 County Road 309
Abilene, TX 79601

Sample Information

Project: Annual Soil Samples
Project Number: [none]
Collector:
Collector Phone: -
Date Received: 02/07/24 12:26
Received By:
Report Date: 02/20/2024

FRANKE sec B 0-6" C4B0717-01

Date Sample: 07-Feb-2024 11:00

Sample Type:

Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	15.00	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	1130	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.60	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1150	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	6400	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	570	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	45	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	560	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	200	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	370	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	2.90	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	18.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

FRANKE sec B 6-18" C4B0717-02

Date Sample: 07-Feb-2024 11:00

Sample Type:

Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	13.90	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	902	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.70	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	916	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	6700	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	550	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	36	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	520	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	210	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	280	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

FRANKE sec B 6-18" C4B0717-02 Date Sample: 07-Feb-2024 11:00

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
SAR	3.30	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	17.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

FRANKE sec B 18-30" C4B0717-03 Date Sample: 07-Feb-2024 11:00

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	18.00	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	635	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.50	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	653	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	7800	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	590	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	14	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	360	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	320	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	450	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	4.00	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	35.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit

Notes and Definitions

Sub-Agri Subcontracted to Servitech of Amarillo TX (A certified Agriculture Laboratory).

ND Analyte NOT DETECTED at or below the reporting limit

NR Not Reported

RPD Relative Percent Difference

We are an Approved Public Water System Laboratory (AL2210001) for: Alkalinity, Chlorine Dioxide (2 methods), Free and Total Chlorine (2 methods), pH, POE Chlorite, Temperature, Turbidity (2 methods).

We are an Approved Drinking Water Laboratory (T104704320) for: Alkalinity, Calcium, Chlorine Dioxide (2 methods), Chlorite, Conductivity, Hardness, pH, Phosphate, Silica, Temperature, TOC, Total Chlorine, Turbidity, UV254.

We are not NELAP accredited in the DW matrix for: Alkalinity, Ammonia, Beryllium, Bromide, Chlorine Dioxide, Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Molybdenum, pH, Phosphate, Silver, TOC, UV254

We are not NELAP accredited in the NPW matrix for: Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Silver. We are not a certified calibration laboratory.

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

CITY OF ABILENE ENVIRONMENTAL — LABORATORY CHAIN OF CUSTODY

4209 East Lake Road Abilene, TX 79601
(325) 676-6041 Fax: (325) 676-6044

PROJECT

SOIL T104704320-19-21

Client Name: Hamby WRF Phone: 325-548-2237
Address: 19000 Cr 309 Fax: 325-548-2017
Abilene, TX 79601

Invoice Paid

Invoice #

Sampler Signature / Name: Joshua Harvey / Joshua Harvey

Lab Use Only Laboratory ID	Sample ID	Collection Date	Collection Time	Preservative (Write check mark for each appropriately preserved bottle. Note improper preservation in comments box. Lab Use Only)	Matrix Type	Grab/ Comp	Container Type (P/G)	# Bottles	pH	Conductivity	SAR	Metals-Mehlich	NO_2^-	NO_3^-	TN	TKN
CYB0717 -01	FRANKE Sec B 0-6"	2-7-24	9 AM 11 AM	Temp: 18.3/CF=18.3 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-02	FRANKE Sec B 6-18"	"	"	Temp: 17.4/CF=17.4 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-03	FRANKE Sec B 18-30"	"	"	Temp: 17.4/CF=17.4 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
				Temp: Ice* pH <2												
				Temp: Ice* pH <2												
				Temp: Ice* pH <2												

Relinquished By: Joshua Harvey Date: 2.7.24 Time: 12:26
Received By: Dan Uhr Date: 2.7.24 Time: 12:26
Relinquished By: Date: Time:
Received By: Date: Time:

Comments
Other Preservative:
Password:
Thermometer number: IR-6
CF=0.0°

Temperatures circled do not conform to federal regulations.
* On ice, but inadequate time to reach ≤6° C.
** Circle the metals to be analyzed Ag Al As Ba Be (Ca) Cd Cr Cu Fe Hg (K) (Mg) Mn Mo (Na) Ni Pb Se Si Sr Zn P S (X Total __ Dissolved)
Revised 01/01/2011

CITY OF ABILENE ENVIRONMENTAL — LABORATORY CHAIN OF CUSTODY

4209 East Lake Road, Abilene, TX 79601
(325) 676-6041 Fax: (325) 676-6044

PROJECT

SOIL T104704320-19-21

Client Name: Hamby WRF
Address: 19000 Cr 309
Abilene,TX 79601

Phone: 325-548-2237
Fax: 325-548-2017

Sampler Signature / Name: Joshua Harvey / Joshua Harvey

Invoice Paid

Invoice # _____

Lab Use Only Laboratory ID	Sample ID	Collection Date	Collection Time	Preservative (Write check mark for each appropriately preserved bottle. Note improper preservation in comments box. Lab Use Only)	Matrix Type	Grab/ Comp	Container Type (P/G)	# Bottles	pH	Conductivity	SAR	Metals-Mehlich	NO_2^-	NO_3^-	TN	TKN
C4B0717 -01	FRANKE Sec B 0-6"	2-7-24	9 AM 11 AM	Temp: 18.3/CF= 18.3 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-02	FRANKE Sec B 6-18"	"	"	Temp: 17.4/CF=17.4 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-03	FRANKE Sec B 18-30"	"	"	Temp: 17.4/CF=17.4 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
				Temp: Ice* pH <2												
				Temp: Ice* pH <2												
				Temp: Ice* pH <2												

Relinquished By: Joshua Harvey Date: JH 2.7.24 Time: 12:26
Received By: Dan Winn Date: 2.7.24 Time: 12:26
Relinquished By: _____ Date: _____ Time: _____
Received By: _____ Date: _____ Time: _____

Comments
Other Preservative: _____
Password: _____
Thermometer number: IR-6
Cf=0.0°

Temperatures circled do not conform to federal regulations.
* On ice, but inadequate time to reach ≤6° C.
** Circle the metals to be analyzed Ag Al As Ba Be (Ca) Cd Cr Cu Fe Hg (K) (Mg) Mn Mo (Na) Ni Pb Se Si Sr Zn P S _(X Total _ Dissolved)
Revised 01/01/2011

City of Abilene
Environmental Laboratory Report

4209 East Lake Road
Phone: (325) 676-6043

Abilene, TX 79601
Fax: (325) 676-6044

Report To

John Holton
HAMBY WASTEWATER TREATMENT PLAN
19000 County Road 309
Abilene, TX 79601

Sample Information

Project: Annual Soil Samples
Project Number: [none]
Collector:
Collector Phone: -
Date Received: 01/19/24 14:13
Received By:
Report Date: 02/20/2024

Powers 0-6"

C4A1910-01 **Date Sample: 19-Jan-2024 14:00**

Sample Type:

Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	1.70	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	1230	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.50	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1230	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	8400	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	560	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	50	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	340	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	140	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	270	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	2.70	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	29.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Powers 6-18"

C4A1910-02 **Date Sample: 19-Jan-2024 14:00**

Sample Type:

Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	2.40	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	1370	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.40	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1370	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	8000	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	510	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	42	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	340	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	180	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	410	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

Powers 6-18''

C4A1910-02 **Date Sample: 19-Jan-2024 14:00**

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
SAR	3.20	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	32.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Powers 18-30''

C4A1910-03 **Date Sample: 19-Jan-2024 14:00**

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	3.50	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	1700	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.50	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1700	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	7800	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	560	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	45	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	320	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	220	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	370	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	3.80	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	41.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit

Notes and Definitions

Sub-Agri Subcontracted to Servitech of Amarillo TX (A certified Agriculture Laboratory).

ND Analyte NOT DETECTED at or below the reporting limit

NR Not Reported

RPD Relative Percent Difference

We are an Approved Public Water System Laboratory (AL2210001) for: Alkalinity, Chlorine Dioxide (2 methods), Free and Total Chlorine (2 methods), pH, POE Chlorite, Temperature, Turbidity (2 methods).

We are an Approved Drinking Water Laboratory (T104704320) for: Alkalinity, Calcium, Chlorine Dioxide (2 methods), Chlorite, Conductivity, Hardness, pH, Phosphate, Silica, Temperature, TOC, Total Chlorine, Turbidity, UV254.

We are not NELAP accredited in the DW matrix for: Alkalinity, Ammonia, Beryllium, Bromide, Chlorine Dioxide, Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Molybdenum, pH, Phosphate, Silver, TOC, UV254

We are not NELAP accredited in the NPW matrix for: Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Silver. We are not a certified calibration laboratory.

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

CITY OF ABILENE ENVIRONMENTAL — LABORATORY CHAIN OF CUSTODY

4209 East Lake Road Abilene, TX 79601
(325) 676-6041 Fax: (325) 676-6044

NELAP ACCREDITED LABORATORY

PROJECT

SOIL

T104704320-19-21

Client Name: Hamby WRF Phone: 325-548-2237
Address: 19000 Cr 309 Fax: 325-548-2017
Abilene,TX 79601

Sampler Signature / Name: ~~Jerry Bartlett~~ Jerry Bartlett

Invoice Paid

Invoice # _____

Lab Use Only Laboratory ID	Sample ID	Collection Date	Collection Time	Preservative (Write check mark for each appropriately preserved bottle. Note improper preservation in comments box.) Lab Use Only	Matrix Type	Grab/ Comp	Container Type (P/G)	# Bottles	pH	Conductivity	SAR	Metals-Mehlich	NO_2^-	NO_3^-	TN	~~Metals-Hg~~	TKN
CUA910 -01	POWERS 0-6"	1-19-24	12N 2PM	Temp: 10.8/Cf=10.8 Ice* pH <2	S	g	p	1	X	X	X	X	X	X	X		X
-02	POWERS 6-18"	"	"	Temp: 13.3/Cf=13.3 Ice* pH <2	S	g	p	1	X	X	X	X	X	X	X		X
-03	POWERS 18-30"	"	"	Temp: 13.1/Cf=13.1 Ice* pH <2	S	g	p	1	X	X	X	X	X	X	X		X
				Temp: Ice* pH <2													
				Temp: Ice* pH <2													
				Temp: Ice* pH <2													

Relinquished By: Jerry Bartlett Date: 1-19-24 Time: 14:13
Received By: Jan Uen Date: 1.19.24 Time: 14:13
Relinquished By: _____ Date: _____ Time: _____
Received By: _____ Date: _____ Time: _____

Comments
Other Preservative: _____
Password: _____
Thermometer number: IR6
Cf=0.0°

Temperatures circled do not conform to federal regulations.
* On ice, but inadequate time to reach ≤6° C.
** Circle the metals to be analyzed Ag Al As Ba Be (Ca) Cd Cr Cu Fe Hg (K) (Mg) Mn Mo (Na) Ni Pb Se Si Sr Zn P S __(X Total __ Dissolved)
Revised 01/01/2011

CITY OF ABILENE ENVIRONMENTAL LABORATORY CHAIN OF CUSTODY

4209 East Lake Road Abilene, TX 79601
(325) 676-6041 Fax: (325) 676-6044

PROJECT

SOIL

T104704320-19-21

Client Name: Hamby WRF
Address: 19000 Cr 309
Abilene,TX 79601

Phone: 325-548-2237
Fax: 325-548-2017

Sampler Signature / Name: Jerry Bartlett Jerry Bartlett

Invoice Paid

Invoice # _____

Lab Use Only Laboratory ID	Sample ID	Collection Date	Collection Time	Preservative (Write check mark for each appropriately preserved bottle. Note improper preservation in comments box. Lab Use Only)	Matrix Type	Grab/ Comp	Container Type (P/G)	# Bottles	pH	Conductivity	SAR	Metals-Mehlich	NO_2^-	NO_3^-	TN	Metals-Hg	TKN
CUA910 -01	POWERS 0-6"	1-19-24	12N 2PM	Temp: 10.8/CF=10.8 Ice* pH <2		g	p	1	X	X	X	X	X	X	X		X
-02	POWERS 6-18"	"	"	Temp: 13.3/CF=13.3 Ice* pH <2		g	p	1	X	X	X	X	X	X	X		X
-03	POWERS 18-30"	"	"	Temp: 13.1/CF=13.1 Ice* pH <2		g	p	1	X	X	X	X	X	X	X		X
				Temp: Ice* pH <2													
				Temp: Ice* pH <2													
				Temp: Ice* pH <2													

Relinquished By: Jerry Bartlett Date: 1-19-24 Time: 14:13
Received By: Ian Uhm Date: 1.19.24 Time: 14:13
Relinquished By: _____ Date: _____ Time: _____
Received By: _____ Date: _____ Time: _____

Comments
Other Preservative: _____
Password: _____
Thermometer number: IR-6
CF=0.0°

Temperatures circled do not conform to federal regulations.
* On ice, but inadequate time to reach ≤6° C.
** Circle the metals to be analyzed Ag Al As Ba Be (Ca) Cd Cr Cu Fe Hg (K) (Mg) Mn Mo (Na) Ni Pb Se Si Sr Zn P S (X Total __ Dissolved)
Revised 01/01/2011

City of Abilene
Environmental Laboratory Report

4209 East Lake Road
Phone: (325) 676-6043

Abilene, TX 79601
Fax: (325) 676-6044

Report To

John Holton
HAMBY WASTEWATER TREATMENT PLAN
19000 County Road 309
Abilene, TX 79601

Sample Information

Project: Annual Soil Samples
Project Number: [none]
Collector:
Collector Phone: -
Date Received: 02/08/24 10:37
Received By:
Report Date: 02/20/2024

Cooley Sec A 0-6" — C4B0811-01

Date Sample: 07-Feb-2024 16:30

Sample Type:

Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	7.80	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	1050	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.50	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1060	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	6200	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	520	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	20	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	570	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	160	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	260	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	2.50	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	11.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Cooley Sec A 6-18" — C4B0811-02

Date Sample: 07-Feb-2024 16:30

Sample Type:

Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	19.70	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	993	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.40	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1010	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	6500	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	500	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	12	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	480	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	220	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	430	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

Cooley Sec A 6-18" C4B0811-02

Date Sample: 07-Feb-2024 16:30

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
SAR	3.10	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	28.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Cooley Sec A 18-30" C4B0811-03

Date Sample: 07-Feb-2024 16:30

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	15.40	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	1010	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.30	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1020	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	6600	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	490	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	14	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	480	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	200	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	420	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	2.90	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	31.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Cooley Sec B 0-6" C4B0811-04

Date Sample: 07-Feb-2024 16:30

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	8.00	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	994	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.60	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1000	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	7200	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	520	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	18	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	520	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	200	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	270	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	2.80	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	19.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Cooley Sec B 6-18" C4B0811-05

Date Sample: 07-Feb-2024 16:30

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	19.90	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	866	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.40	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	886	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	7400	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	500	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	12	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	440	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	230	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	400	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	3.00	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	36.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

Cooley Sec B 18-30" C4B0811-06 Date Sample: 07-Feb-2024 16:30

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	**26.40**	**mg/L**	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	**830**	**mg/kg**	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	**8.30**	**pH Units**		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	**856**	**mg/kg**		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	**7600**	**mg/kg**	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	**440**	**mg/kg**	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	**8.0**	**mg/kg**	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	**350**	**mg/kg**	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	**240**	**mg/kg**	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	**520**	**umhos/cm**	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	**3.40**	**Units**		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	**39.0**	**mg/kg**	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit

Notes and Definitions

Sub-Agri Subcontracted to Servitech of Amarillo TX (A certified Agriculture Laboratory).

ND Analyte NOT DETECTED at or below the reporting limit

NR Not Reported

RPD Relative Percent Difference

We are an Approved Public Water System Laboratory (AL2210001) for: Alkalinity, Chlorine Dioxide (2 methods), Free and Total Chlorine (2 methods), pH, POE Chlorite, Temperature, Turbidity (2 methods).

We are an Approved Drinking Water Laboratory (T104704320) for: Alkalinity, Calcium, Chlorine Dioxide (2 methods), Chlorite, Conductivity, Hardness, pH, Phosphate, Silica, Temperature, TOC, Total Chlorine, Turbidity, UV254.

We are not NELAP accredited in the DW matrix for: Alkalinity, Ammonia, Beryllium, Bromide, Chlorine Dioxide, Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Molybdenum, pH, Phosphate, Silver, TOC, UV254

We are not NELAP accredited in the NPW matrix for: Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Silver. We are not a certified calibration laboratory.

Michael Michaud
Laboratory Manager

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

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ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

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CITY OF ABILENE ENVIRONMENTAL — LABORATORY CHAIN OF CUSTODY

4209 East Lake Road Abilene, TX 79601
(325) 676-6041 Fax: (325) 676-6044

PROJECT

SOIL

T104704320-19-21

Client Name: Hamby WRF
Address: 19000 Cr 309
Abilene,TX 79601

Phone: 325-548-2237
Fax: 325-548-2017

Invoice Paid

Invoice #

Sampler Signature / Name: Joshua Harvey / Joshua Harvey

Lab Use Only Laboratory ID	Sample ID	Collection Date	Collection Time	Preservative (Write check mark for each appropriately preserved bottle. Note improper preservation in comments box. Lab Use Only)	Matrix Type	Grab/ Comp	Container Type (P/G)	# Bottles	pH	Conductivity	SAR	Metals-Mehlich	NO_2^-	NO_3^-	TN	TKN
CHB0811 -01	Cooley Sec A 0-6"	2-7-24	2:20PM 4:30"	Temp: 21.6/CF=21.6 Ice* pH <2		g	p	1	X	X	X	X	X	X	X	X
-02	Cooley Sec A 6-18"	"	"	Temp: 21.8/CF=21.9 Ice* pH <2		g	p	1	X	X	X	X	X	X	X	X
-03	Cooley Sec A 18-30"	"	"	Temp: 21.3/CF=21.3 Ice* pH <2		g	p	1	X	X	X	X	X	X	X	X
-04	Cooley Sec B 0-6"	"	"	Temp: 21.8/CF=21.8 Ice* pH <2		g	p	1	X	X	X	X	X	X	X	X
-05	Cooley Sec B 6-18"	"	"	Temp: 20.3/CF=20.3 Ice* pH <2		g	p	1	X	X	X	X	X	X	X	X
-06	Cooley Sec B 18-30"	"	"	Temp: 20.3/CF=20.3 Ice* pH <2		g	p	1	X	X	X	X	X	X	X	X

Relinquished By: Joshua Harvey Date: 2.8.24 Time: 10:37

Received By: Date: 2.8.24 Time: 10:37

Relinquished By: Date: Time:

Received By: Date: Time:

Comments

Other Preservative:

Password:

Thermometer number: IR-6

CF = 0.0°

Temperatures circled do not conform to federal regulations.

* On ice, but inadequate time to reach ≤6° C.

** Circle the metals to be analyzed Ag Al As Ba Be (Ca) Cd Cr Cu Fe Hg (K) (Mg) Mn Mo (Na) Ni Pb Se Si Sr Zn P S _(X Total _ Dissolved)

Revised 01/01/2011

CITY OF ABILENE ENVIRONMENTAL — LABORATORY CHAIN OF CUSTODY

4209 East Lake Road Abilene, TX 79601
(325) 676-6041 Fax: (325) 676-6044

PROJECT

SOIL

T104704320-19-21

Client Name: Hamby WRF Phone: 325-548-2237
Address: 19000 Cr 309 Fax: 325-548-2017
Abilene, TX 79601

Invoice Paid

Invoice #

Sampler Signature / Name: Joshua Harvey / Joshua Harvey

Lab Use Only Laboratory ID	Sample ID	Collection Date	Collection Time	Preservative (Write check mark for each appropriately preserved bottle. Note improper preservation in comments box.) Lab Use Only	Matrix Type	Grab/ Comp	Container Type (P/G)	# Bottles	pH	Conductivity	SAR	Metals-Mehlich	NO_3^-	NO_2^-	TN	TKN
CM B0811 -01	Cooley Sec A 0-6"	2-7-24	2:20PM 4:30"	Temp: 21.6/CF=21.6 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-02	Cooley Sec A 6-18"	"	"	Temp: 21.8/CF=21.9 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-03	Cooley Sec A 18-30"	"	"	Temp: 21.3/CF=21.3 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-04	Cooley Sec B 0-6"	"	"	Temp: 21.8/CF=21.8 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-05	Cooley Sec B 6-18"	"	"	Temp: 20.3/CF=20.3 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-06	Cooley Sec B 18-30"	"	"	Temp: 20.3/CF=20.3 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x

Relinquished By: Joshua Harvey Date: 2.8.24 Time: 10:37
Received By: Date: 2.8.24 Time: 10:37
Relinquished By: Date: Time:
Received By: Date: Time:

Comments
Other Preservative:
Password:
Thermometer number: IR-6
CF = 0.0°

Temperatures circled do not conform to federal regulations.
* On ice, but inadequate time to reach ≤6° C.
** Circle the metals to be analyzed Ag Al As Ba Be (Ca) Cd Cr Cu Fe Hg (K) (Mg) Mn Mo (Na) Ni Pb Se Si Sr Zn P S (X Total _ Dissolved)
Revised 01/01/2011

City of Abilene
Environmental Laboratory Report

4209 East Lake Road
Phone: (325) 676-6043

Abilene, TX 79601
Fax: (325) 676-6044

Report To

John Holton
HAMBY WASTEWATER TREATMENT PLAN
19000 County Road 309
Abilene, TX 79601

Sample Information

Project: Annual Soil Samples
Project Number: [none]
Collector:
Collector Phone: -
Date Received: 02/08/24 10:37
Received By:
Report Date: 02/20/2024

Holmes Sec A 0-6'' C4B0810-01

Date Sample: 07-Feb-2024 14:30

Sample Type:

Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	1.00	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	<, Sub-Agri
Total Kjeldahl Nitrogen	1090	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.40	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1090	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	6200	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	430	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	25	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	490	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	130	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	210	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	1.90	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	15.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Holmes Sec A 6-18'' C4B0810-02

Date Sample: 07-Feb-2024 14:30

Sample Type:

Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	1.00	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	<, Sub-Agri
Total Kjeldahl Nitrogen	904	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.50	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	905	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	6200	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	430	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	11	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	440	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	130	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	220	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

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Holmes Sec A 6-18" C4B0810-02

Date Sample: 07-Feb-2024 14:30

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
SAR	2.00	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	14.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Holmes Sec A 18-30" C4B0810-03

Date Sample: 07-Feb-2024 14:30

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	1.20	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	846	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.50	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	847	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	7000	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	440	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	7.0	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	370	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	150	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	300	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	2.10	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	26.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Holmes Sec B 0-6" C4B0810-04

Date Sample: 07-Feb-2024 14:30

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	1.10	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	1280	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.50	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1280	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	6900	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	490	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	17	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	560	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	140	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	200	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	2.20	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	10.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Holmes Sec B 6-18" C4B0810-05

Date Sample: 07-Feb-2024 14:30

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	1.60	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	1190	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.60	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1190	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	7100	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	460	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	9.0	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	490	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	150	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	200	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	2.40	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	13.0	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

C4B0810-06

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

Holmes Sec B 18-30" C4B0810-06 Date Sample: 07-Feb-2024 14:30

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	**1.00**	**mg/L**	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	**1090**	**mg/kg**	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	**8.60**	**pH Units**		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	**1100**	**mg/kg**		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	**7600**	**mg/kg**	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	**460**	**mg/kg**	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	**7.0**	**mg/kg**	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	**470**	**mg/kg**	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	**160**	**mg/kg**	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	**210**	**umhos/cm**	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	**2.60**	**Units**		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	**15.0**	**mg/kg**	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit

Notes and Definitions

Sub-Agri	Subcontracted to Servitech of Amarillo TX (A certified Agriculture Laboratory).
<	Less than stated value
ND	Analyte NOT DETECTED at or below the reporting limit
NR	Not Reported
RPD	Relative Percent Difference

We are an Approved Public Water System Laboratory (AL2210001) for: Alkalinity, Chlorine Dioxide (2 methods), Free and Total Chlorine (2 methods), pH, POE Chlorite, Temperature, Turbidity (2 methods).

We are an Approved Drinking Water Laboratory (T104704320) for: Alkalinity, Calcium, Chlorine Dioxide (2 methods), Chlorite, Conductivity, Hardness, pH, Phosphate, Silica, Temperature, TOC, Total Chlorine, Turbidity, UV254.

We are not NELAP accredited in the DW matrix for: Alkalinity, Ammonia, Beryllium, Bromide, Chlorine Dioxide, Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Molybdenum, pH, Phosphate, Silver, TOC, UV254

We are not NELAP accredited in the NPW matrix for: Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Silver. We are not a certified calibration laboratory.

Michael Michaud
Laboratory Manager

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

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CITY OF ABILENE ENVIRONMENTAL — LABORATORY CHAIN OF CUSTODY

4209 East Lake Road, Abilene, TX 79601
(325) 676-6041 Fax: (325) 676-6044

NELAP ACCREDITED LABORATORY

PROJECT

SOIL

T104704320-19-21

Client Name: Hamby WRF
Address: 19000 Cr 309
Abilene, TX 79601

Phone: 325-548-2237
Fax: 325-548-2017

Sampler Signature / Name: Joshua Harvey / Joshua Harvey

Invoice Paid

Invoice #

Lab Use Only Laboratory ID	Sample ID	Collection Date	Collection Time	Preservative (Write check mark for each appropriately preserved bottle. Note improper preservation in comments box. Lab Use Only)	Matrix Type	Grab/ Comp	Container Type (P/G)	# Bottles	pH	Conductivity	SAR	Metals-Mehlich	NO_2^-	NO_3^-	TN	TKN
CHB0810 -01	Holmes Sec A 0-6"	2.7.24	12:00 PM 2:30 PM	Temp: 21.2/CF= 21.2 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-02	Holmes Sec A 6-18"	"	"	Temp: 21.2/CF= 21.2 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-03	Holmes Sec A 18-30"	"	"	Temp: 21.2/CF= 21.2 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-04	Holmes Sec B 0-6"	"	"	Temp: 21.8/CF= 21.8 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-05	Holmes Sec B 6-18"	"	"	Temp: 20.6/CF= 20.6 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-06	Holmes Sec B 18-30"	"	"	Temp: 20.2/CF= 20.2 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x

Relinquished By: Joshua Harvey — Date: 2.8.24 Time: 10:37
Received By: — Date: 2.8.24 Time: 10:37
Relinquished By: — Date: ____ Time: ____
Received By: — Date: ____ Time: ____

Comments
Other Preservative: ____
Password: ____
Thermometer number: IR-6
CF = 0.0°

Temperatures circled do not conform to federal regulations.
* On ice, but inadequate time to reach ≤6° C.
** Circle the metals to be analyzed Ag Al As Ba Be (Ca) Cd Cr Cu Fe Hg (K) (Mg) Mn Mo (Na) Ni Pb Se Si Sr Zn P S (x Total __ Dissolved)
Revised 01/01/2011

CITY OF ABILENE ENVIRONMENTAL — LABORATORY CHAIN OF CUSTODY

4209 East Lake Road Abilene, TX 79601
(325) 676-6041 Fax: (325) 676-6044

PROJECT

SOIL

T104704320-19-21

Client Name: Hamby WRF Phone: 325-548-2237
Address: 19000 Cr 309 Fax: 325-548-2017
Abilene, TX 79601

Invoice Paid

Invoice #

Sampler Signature / Name: Joshua Harvey / Joshua Harvey

Lab Use Only Laboratory ID	Sample ID	Collection Date	Collection Time	Preservative (Write check mark for each appropriately preserved bottle. Note improper preservation in comments box.) Lab Use Only	Matrix Type	Grab/ Comp	Container Type (P/G)	# Bottles	pH	Conductivity	SAR	Metals-Mehlich	NO_2^-	NO_3^-	TN	TKN
CHB0810 -01	Holmes Sec A 0-6"	2.7.24	12:00 PM 2:30 PM	Temp: 21.2/CF = 21.2 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-02	Holmes Sec A 6-18"	"	"	Temp: 21.2/CF = 21.2 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-03	Holmes Sec A 18-30"	"	"	Temp: 21.2/CF = 21.2 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-04	Holmes Sec B 0-6"	"	"	Temp: 21.8/CF = 21.8 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-05	Holmes Sec B 6-18"	"	"	Temp: 20.6/CF = 20.6 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x
-06	Holmes Sec B 18-30"	"	"	Temp: 20.2/CF = 20.2 Ice* pH <2		g	p	1	x	x	x	x	x	x	x	x

Relinquished By: Joshua Harvey Date: 2.8.24 Time: 10:37
Received By: Dan Ware Date: 2.8.24 Time: 10:37
Relinquished By: Date: Time:
Received By: Date: Time:

Comments
Other Preservative:
Password:
Thermometer number: IR-6
CF = 0.0°

Temperatures circled do not conform to federal regulations.
* On ice, but inadequate time to reach ≤6° C.
** Circle the metals to be analyzed Ag Al As Ba Be (Ca) Cd Cr Cu Fe Hg (K) (Mg) Mn Mo (Na) Ni Pb Se Si Sr Zn P S (X Total) Dissolved)
Revised 01/01/2011

City of Abilene
Environmental Laboratory Report

4209 East Lake Road
Phone: (325) 676-6043

Abilene, TX 79601
Fax: (325) 676-6044

Report To

John Holton
HAMBY WASTEWATER TREATMENT PLAN
19000 County Road 309
Abilene, TX 79601

Sample Information

Project: Annual Soil Samples
Project Number: [none]
Collector:
Collector Phone: -
Date Received: 01/19/24 14:13
Received By:
Report Date: 02/20/2024

Trails Sec A 0-6" C4A1911-01

Date Sample: 18-Jan-2024 15:00

Sample Type:

Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	2.20	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	1460	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.30	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1460	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	7000	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	240	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	10	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	440	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	47	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	160	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	0.600	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	9.00	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Trails Sec A 6-18" C4A1911-02

Date Sample: 18-Jan-2024 15:00

Sample Type:

Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	1.40	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	1370	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.30	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1370	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	7300	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	210	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	4.0	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	450	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	31	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	170	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

Trails Sec A 6-18" C4A1911-02

Date Sample: 18-Jan-2024 15:00

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
SAR	0.400	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	6.00	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Trails Sec A 18-30" C4A1911-03

Date Sample: 18-Jan-2024 15:00

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	1.60	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	1180	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.40	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1180	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	8000	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	180	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	2.0	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	320	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	41	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	210	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	0.500	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	6.00	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Trails Sec B 0-6" C4A1911-04

Date Sample: 19-Jan-2024 11:00

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	1.70	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	1310	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.30	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1310	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	8400	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	240	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	4.0	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	470	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	38	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	190	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	0.400	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	6.00	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Trails Sec B 6-18" C4A1911-05

Date Sample: 19-Jan-2024 11:00

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	1.40	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	1290	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.40	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1290	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	9600	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	210	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	4.0	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	470	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	36	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	210	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	0.400	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	9.00	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

Trails Sec B 18-30" C4A1911-06 Date Sample: 19-Jan-2024 11:00

Sample Type: Analyte	Result	Units	Minimum Reporting Limit	Method	Batch	Analyst	Analysis Date	Notes
Nitrate as N	1.40	mg/L	1.25	SM 4500-NO3-	CB42005	RMK	2/19/24 15:48	Sub-Agri
Total Kjeldahl Nitrogen	1100	mg/kg	0.50	SM 4500 N-org	CB42009	RMK	2/19/24 15:48	Sub-Agri
pH @ 25C	8.40	pH Units		SW846 9045D	CB42006	RMK	2/19/24 15:48	Sub-Agri
Total Nitrogen	1100	mg/kg		SM 4500N	CB42007	RMK	2/19/24 15:48	Sub-Agri
Calcium	10000	mg/kg	0.0040	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Magnesium	220	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Phosphorus	4.0	mg/kg	0.00080	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Potassium	340	mg/kg	0.032	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sodium	59	mg/kg	0.020	EPA 6010A	CB42003	RMK	2/19/24 15:48	Sub-Agri
Conductivity @ 25C	230	umhos/cm	1.00	SM 2510 B	CB42001	RMK	2/19/24 15:48	Sub-Agri
SAR	0.700	Units		SW 846 6010B	CB42003	RMK	2/19/24 15:48	Sub-Agri
Sulfur	8.00	mg/kg	0.0500	EPA 6010 A	CB42003	RMK	2/19/24 15:48	Sub-Agri

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit

Notes and Definitions

Sub-Agri Subcontracted to Servitech of Amarillo TX (A certified Agriculture Laboratory).

ND Analyte NOT DETECTED at or below the reporting limit

NR Not Reported

RPD Relative Percent Difference

We are an Approved Public Water System Laboratory (AL2210001) for: Alkalinity, Chlorine Dioxide (2 methods), Free and Total Chlorine (2 methods), pH, POE Chlorite, Temperature, Turbidity (2 methods).

We are an Approved Drinking Water Laboratory (T104704320) for: Alkalinity, Calcium, Chlorine Dioxide (2 methods), Chlorite, Conductivity, Hardness, pH, Phosphate, Silica, Temperature, TOC, Total Chlorine, Turbidity, UV254.

We are not NELAP accredited in the DW matrix for: Alkalinity, Ammonia, Beryllium, Bromide, Chlorine Dioxide, Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Molybdenum, pH, Phosphate, Silver, TOC, UV254

We are not NELAP accredited in the NPW matrix for: Customer Defined Methods, Color, DOC, Free Chlorine, Legionella, Silver. We are not a certified calibration laboratory.

Michael Michaud
Laboratory Manager

ND=not detected; <= less than; ug/L = ppb; mg/L = ppm; mg/kg = ppm

Note: This report may not be reproduced except in full, without written approval of the laboratory.

CITY OF ABILENE ENVIRONMENTAL — LABORATORY CHAIN OF CUSTODY

4209 East Lake Road Abilene, TX 79601
(325) 676-6041 Fax: (325) 676-6044

NELAP ACCREDITED LABORATORY

PROJECT

SOIL T104704320-19-21

Client Name: Hamby WRF Phone: 325-548-2237
Address: 19000 Cr 309 Fax: 325-548-2017
Abilene, TX 79601

Sampler Signature / Name: Jerry Bartlett / Jerry Bartlett

Invoice Paid

Invoice #

Lab Use Only Laboratory ID	Sample ID	Collection Date	Collection Time	Preservative (Write check mark for each appropriately preserved bottle. Note improper preservation in comments box.) Lab Use Only	Matrix Type	Grab/ Comp	Container Type (P/G)	# Bottles	pH	Conductivity	SAR	Metals-Mehlich	NO_2^-	NO_3^-	TN	~~Metals-Hg~~	TKN
C4A1901 -01	TRAILS Sec A 0-6"	1-19-24	12N / 3PM	Temp: 19.8/CF=19.8 Ice* pH <2	S	g	p	1	X	X	X	X	X	X	X		X
-02	TRAILS Sec A 6-18"	"	"	Temp: 16.9/CF16.9 Ice* pH <2	S	g	p	1	X	X	X	X	X	X	X		X
-03	TRAILS Sec A 18-30"	"	"	Temp: 17.0/CF=17.0 Ice* pH <2	S	g	p	1	X	X	X	X	X	X	X		X
-04	TRAILS Sec B 0-6"	1-19-24	8AM / 11AM	Temp: 15.8/CF=15.8 Ice* pH <2	S	g	p	1	X	X	X	X	X	X	X		X
-05	TRAILS Sec B 6-18"	"	"	Temp: 13.6/CF=13.6 Ice* pH <2	S	g	p	1	X	X	X	X	X	X	X		X
-06	TRAILS Sec B 18-30"	"	"	Temp: 14.0/CF=14.0 Ice* pH <2	S	g	p	1	X	X	X	X	X	X	X		X

Relinquished By: Jerry Bartlett Date: 1-19-24 Time: 14:13
Received By: Date: 1.19.24 Time: 14:13
Relinquished By: Date: Time:
Received By: Date: Time:

Comments
Other Preservative:
Password:
Thermometer number: 3R-6
CF=0.0°

Temperatures circled do not conform to federal regulations.
* On ice, but inadequate time to reach ≤6° C.
** Circle the metals to be analyzed Ag Al As Ba Be (Ca) Cd Cr Cu Fe Hg (K) (Mg) Mn Mo (Na) Ni Pb Se Si Sr Zn P S (X Total) Dissolved)
Revised 01/01/2011

CITY OF ABILENE ENVIRONMENTAL — LABORATORY CHAIN OF CUSTODY

4209 East Lake Road Abilene, TX 79601
(325) 676-6041 Fax: (325) 676-6044

NELAP ACCREDITED LABORATORY

PROJECT

SOIL T104704320-19-21

Client Name: Hamby WRF Phone: 325-548-2237
Address: 19000 Cr 309 Fax: 325-548-2017
Abilene,TX 79601

Sampler Signature / Name: Jerry Bartlett / Jerry Bartlett

Invoice Paid

Invoice # _____

Lab Use Only Laboratory ID	Sample ID	Collection Date	Collection Time	Preservative (Write check mark for each appropriately preserved bottle. Note improper preservation in comments box. Lab Use Only)	Matrix Type	Grab/ Comp	Container Type (P/G)	# Bottles	pH	Conductivity	SAR	Metals-Mehlich	NO_2^-	NO_3^-	TN	~~Metals-Hg~~	TKN
C4A1901 -01	TRAILS Sec A 0-6"	1-19-24	12N / 3PM	Temp: 19.8/CF=19.8 Ice* pH <2		g	p	1	X	X	X	X	X	X	X		X
-02	TRAILS Sec A 6-18"	"	"	Temp: 16.9/CF16.9 Ice* pH <2		g	p	1	X	X	X	X	X	X	X		X
-03	TRAILS Sec A 18-30"	"	"	Temp: 17.0/CF=17.0 Ice* pH <2		g	p	1	X	X	X	X	X	X	X		X
-04	TRAILS Sec B 0-6"	1-19-24	8AM / 11AM	Temp: 15.8/CF=15.8 Ice* pH <2		g	p	1	X	X	X	X	X	X	X		X
-05	TRAILS Sec B 6-18"	"	"	Temp: 13.6/CF=13.6 Ice* pH <2		g	p	1	X	X	X	X	X	X	X		X
-06	TRAILS Sec B 18-30"	"	"	Temp: 14.0/CF=14.0 Ice* pH <2		g	p	1	X	X	X	X	X	X	X		X

Relinquished By: Jerry Bartlett Date: 1-19-24 Time: 14:13
Received By: Date: 1.19.24 Time: 14:13
Relinquished By: Date: _____ Time: _____
Received By: Date: _____ Time: _____

Comments
Other Preservative: _____
Password: _____
Thermometer number: 3A-6
CF=0.0°

Temperatures circled do not conform to federal regulations.
* On ice, but inadequate time to reach ≤6° C.
** Circle the metals to be analyzed Ag Al As Ba Be (Ca) Cd Cr Cu Fe Hg (K) (Mg) Mn Mo (Na) Ni Pb Se Si Sr Zn P S __(Total __Dissolved)
Revised 01/01/2011

servi tech

ID:

CHAIN-OF-CUSTODY / ANALYTICAL REQUEST DOCUMENT

1602 Parkwest Drive, Hastings, NE 68901 | 1816 East Wyatt Earp, Dodge City, KS 67801 | 6921 Bell Street, Amarillo, TX 79109 | 800-557-7509

Required Client Information: Section A

Company: Abilene Environmental Lab
Address: 209 E Lake Rd
Abilene, TX 79601
Phone: 325-676-6041 Fax:

Required Client Information: Section B

Report To: Mike Michaud
Invoice To: City of Abilene
P.O.: 241440
Project Name: Hamby - Annual Soils
Project Number:

Page: 1 of 3

Client Information (Check quote/contract):
Requested Due Date: *TAT:

* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.

Turn Around Time (TAT) in calendar days.

To Be Completed by ServiTech — Section C

Quote Reference:
Subcontract Lab:
Carrier:
Shipping Cost:

Requested Analysis or Packages:
1. M3TCEQ 6.
2. ESCAR 7.
3. NH4N 8.
4. TKN 9.
5. IRRIG 10.

Section D — **Required** Client Information:

SAMPLE ID
Sample IDs MUST BE UNIQUE

(Lab Use Only) LAB#

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
OTHER WATER	AQ
ENV. SOIL	SL
SOLID WASTE	SW
AG SOIL	AS
FEED	FD
FERTILIZER	FT
PLANT	PT
OTHER	OT

SAMPLE ID	MATRIX CODE	DATE COLLECTED (mm/dd/yy)	TIME COLLECTED (hh:mm a/p)	#Containers	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	1	2	3	4	5	6	7	8	9	10	Remarks/Field Reading
C4A1910-01	AS	1/19/24	14:00 p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	0-6"
C4A1910-02	AS	1/19/24	14:00 p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	6-18"
C4A1910-03	AS	1/19/24	14:00 p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	18-30"
C4A1911-01	AS	1/18/24	15:00 p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	0-6"
C4A1911-02	AS	1/18/24	15:00 p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	6-18"
C4A1911-03	AS	1/18/24	15:00 p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	18-30"
C4A1911-04	AS	1/19/24	11:00 a	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	0-6"
C4A1911-05	AS	1/19/24	11:00 a	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	6-18"
C4A1911-06	AS	1/19/24	11:00 a	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	18-30"
C4A2214-01	AS	1/19/24	16:00 p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	0-6"
C4A2214-02	AS	1/19/24	16:00 p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	6-18"
C4A2214-03	AS	1/19/24	16:00 p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	18-30"

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Mike Michaud
SIGNATURE of SAMPLER:
DATE signed: (MM / DD / YY) 2-13-24

Lab Use Only — Paid
Sample Acceptable: Yes No
Comments: CSX
Container: U B N S H O
Temp: I °C Date/Initial:

Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time

Samples received after 3:00 PM will be processed the next business day.

servi tech

ID:

CHAIN-OF-CUSTODY / ANALYTICAL REQUEST DOCUMENT

1602 Parkwest Drive, Hastings, NE 68901 | 1816 East Wyatt Earp, Dodge City, KS 67801 | 6921 Bell Street, Amarillo, TX 79109 | 800-557-7509

Section A — Client Information:

lene Environmental Lab
09 E Lake Rd
ilene, TX 79601
-676-6041 | Fax:

Section B — Required Client Information:

Report To: Mike Michaud
Invoice To: City of Abilene
P.O.: 241440
Project Name: Hamby - Annual Soils
Project Number:

Page: 2 of 3

Client Information (Check quote/contract)
Requested Due Date: | *TAT

* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.

Turn Around Time (TAT) in calendar days.

Section C — To Be Completed by ServiTech

Quote Reference:
Subcontract Lab:
Carrier:
Shipping Cost:

Requested Analysis or Packages:
1. M3TCEQ
2. ESCAR
3. NH4N
4. TKN
5. IRRIG
6.
7.
8.
9.
10.

Section D — Required Client Information:

SAMPLE ID
Sample IDs MUST BE UNIQUE

(Lab Use Only) LAB#

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
OTHER WATER	AQ
ENV. SOIL	SL
SOLID WASTE	SW
AG SOIL	AS
FEED	FD
FERTILIZER	FT
PLANT	PT
OTHER	OT

LAB#	SAMPLE ID	MATRIX CODE	DATE COLLECTED (mm / dd / yy)	TIME COLLECTED (hh:mm a/p)	#Containers	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	1	2	3	4	5	6	7	8	9	10	Remarks/Field Reading
	C4B0717-01	AS	2/7/24	11:00a	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	0-6"
	C4B0717-02	AS	2/7/24	11:00a	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	6-18"
	C4B0717-03	AS	2/7/24	11:00a	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	18-30"
	C4B0810-01	AS	2/7/24	14:30p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	0-6"
	C4B0810-02	AS	2/7/24	14:30p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	6-18"
	C4B0810-03	AS	2/7/24	14:30p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	18-30"
	C4B0810-04	AS	2/7/24	14:30p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	0-6"
	C4B0810-05	AS	2/7/24	14:30p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	6-18"
	C4B0810-06	AS	2/7/24	14:30p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	18-30"
	C4B0811-01	AS	2/7/24	16:30p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	0-6"
	C4B0811-02	AS	2/7/24	16:30p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	6-18"
	C4B0811-03	AS	2/7/24	16:30p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	18-30"

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: M. Ke Michel
SIGNATURE of SAMPLER:
DATE signed: (MM / DD / YY) 2-13-24

e Only | Paid
Acceptable | Yes | No
ents: CSX
ner: U B N S H O
°C Date/Initial:

Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time

Samples received after 3:00 PM will be processed the next business day.

servi tech

ID:

CHAIN-OF-CUSTODY / ANALYTICAL REQUEST DOCUMENT

1602 Parkwest Drive, Hastings, NE 68901 | 1816 East Wyatt Earp, Dodge City, KS 67801 | 6921 Bell Street, Amarillo, TX 79109 | 800-557-7509

Section A — Required Client Information:

Company: Abilene Environmental Lab
Address: 209 E Lake Rd
Abilene, TX 79601
Phone: 325-676-6041
Fax:

Section B — Required Client Information:

Report To: Mike Michaud
Invoice To: City of Abilene
P.O.: 241440
Project Name: Hamby - Annual Soils
Project Number:

Page: 3 of 3

Client Information (Check quote/contract):
Requested Due Date: *TAT:

* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.

Turn Around Time (TAT) in calendar days.

Section C — To Be Completed by ServiTech

Quote Reference:
Subcontract Lab:
Carrier:
Shipping Cost:

Requested Analysis or Packages:
1. M3TCEQ
2. ESCAR
3. NH4N
4. TKN
5. IRRIG
6.
7.
8.
9.
10.

Section D — Required Client Information:

SAMPLE ID

Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
OTHER WATER	AQ
ENV. SOIL	SL
SOLID WASTE	SW
AG SOIL	AS
FEED	FD
FERTILIZER	FT
PLANT	PT
OTHER	OT

(Lab Use Only) LAB#	SAMPLE ID	MATRIX CODE	DATE COLLECTED (mm / dd / yy)	TIME COLLECTED (hh : mm a/p)	#Containers	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	1	2	3	4	5	6	7	8	9	10	Remarks/Field Reading
	C4B0811-04	AS	2/7/24	16:30 p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	0-6"
	C4B0811-05	AS	2/7/24	16:30 p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	6-18"
	C4B0811-06	AS	2/7/24	16:30 p	1	X						☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	18-30"
	Irrigation 2/12/24	AQ	2/12/24	13:15 p	1	X						☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	
												☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
												☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
												☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
												☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
												☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
												☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
												☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
												☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: M. Ia Michaud
SIGNATURE of SAMPLER:
DATE signed: (MM / DD / YY) 2-13-24

Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time

Use Only: Paid
Sample Acceptable: Yes No
Comments: CSX
Container: U B N S H O
Temp: I °C Date/Initial:

Samples received after 3:00 PM will be processed the next business day.

SOIL ANALYSIS REPORT

CLIENT:	CITY OF ABILENE ENV LAB PO BOX 60 ABILENE, TX 79604
52653	

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6921 S. Bell
Amarillo, TX 79109
800.557.7509
806.677.0093
Fax 806.677.0329

LAB NO:	35195 - 35204
INVOICE NO:	170702
DATE RECEIVED:	02/14/2024
DATE REPORTED:	02/19/2024

SOIL ANALYSIS RESULTS FOR: HAMBY 2024 **FIELD ID:**

METHOD USED:			1:2 Soil-Water		1:2 Soil-Water	XSt.(i)	LOI(r)	Cd Reduction		Mehlich 3 ICP										
Lab Number	Sample ID	Sample Depth	Soil pH	Buffer pH	Sat. Salts mmho/cm	Excess Lime	% Organic Matter	Nitrate-Nitrogen ppm	Nitrate-Nitrogen lb. N/A	Phosphorus ppm P	Potassium ppm K	Sulfur ppm	Sulfur lb. S/A	Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Iron ppm Fe	Manganese ppm Mn	Copper ppm Cu	Boron ppm B
35195	C4A1910-01	0 - 6	8.5		0.27	Hi	1.7	1.7	3	50	345	29	52	8410	562	143					
35196	C4A1910-02	6 - 18	8.4		0.41	Hi	2.1	2.4	9	42	338	32	115	8040	511	181					
35197	C4A1910-03	18 - 30	8.5		0.37	Hi	2.5	3.5	13	45	321	41	148	7770	561	223					
35198	C4A1911-01	0 - 6	8.3		0.16	Lo	2.1	2.2	4	10	437	9	16	7000	238	47					
35199	C4A1911-02	6 - 18	8.3		0.17	Lo	2.1	1.4	5	4	446	6	22	7290	210	31					
35200	C4A1911-03	18 - 30	8.4		0.21	Hi	1.9	1.6	6	2	318	6	22	8050	179	41					
35201	C4A1911-04	0 - 6	8.3		0.19	Hi	2.2	1.7	3	4	466	6	11	8360	237	38					
35202	C4A1911-05	6 - 18	8.4		0.21	Hi	2.0	1.4	5	4	468	9	32	9580	213	36					
35203	C4A1911-06	18 - 30	8.4		0.23	Hi	1.9	1.4	5	4	342	8	29	10300	223	59					
35204	C4A2214-01	0 - 6	8.6		0.28	Lo	1.5	19.1	34	59	552	14	25	5500	554	187					

METHOD USED:				KCl Extr.		Calculated	TKN	Sat. Paste					
Lab Number	Sample ID	Sample Depth	Date Sampled	Ammonium Nitrogen ppm	Ammonium Nitrogen lb. /A	Total N ppm	TKN ppm	Saturation % Sat	Electrical Conductivity mmho/cm	Calcium mg/L Ca	Magnesium mg/L Mg	Sodium mg/L Na	Sodium Adsorption Ratio
35195	C4A1910-01	0 - 6	01/19/24	3	5	1232	1230	54	0.82	69	17	97	2.7
35196	C4A1910-02	6 - 18	01/19/24	4	14	1372	1370	52	1.36	120	28	152	3.2
35197	C4A1910-03	18 - 30	01/19/24	4	14	1703	1699	58	1.20	96	24	161	3.8
35198	C4A1911-01	0 - 6	01/18/24	3	5	1465	1463	54	0.40	77	6	22	0.6
35199	C4A1911-02	6 - 18	01/18/24	2	7	1374	1373	58	0.39	83	4	13	0.4
35200	C4A1911-03	18 - 30	01/18/24	3	11	1182	1180	58	0.31	71	3	17	0.5
35201	C4A1911-04	0 - 6	01/19/24	3	5	1308	1306	60	0.40	78	4	15	0.4
35202	C4A1911-05	6 - 18	01/19/24	3	11	1292	1291	61	0.36	73	3	14	0.4
35203	C4A1911-06	18 - 30	01/19/24	3	11	1105	1104	59	0.36	69	4	22	0.7
35204	C4A2214-01	0 - 6	01/19/24	2	4	933	914	53	0.74	65	12	101	3.0

Analyses are representative of the samples submitted

Samples are retained 30 days after report of analysis

Explanations of soil analysis terms are available upon request

Reviewed and Approved By: Amy Meier, Data Review Coordinator

The reported analytical results apply only to the sample as it was supplied. The report may not be reproduced, except in full, without permission of ServiTech.
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SOIL ANALYSIS REPORT

CLIENT:	CITY OF ABILENE ENV LAB PO BOX 60 ABILENE, TX 79604
52653	

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6921 S. Bell
Amarillo, TX 79109
800.557.7509
806.677.0093
Fax 806.677.0329

LAB NO:	35205 - 35214
INVOICE NO:	170702
DATE RECEIVED:	02/14/2024
DATE REPORTED:	02/19/2024

SOIL ANALYSIS RESULTS FOR: HAMBY 2024 **FIELD ID:**

METHOD USED:			1:2 Soil-Water		1:2 Soil-Water	XSL(i)	LOI(r)	Cd Reduction		Mehlich 3 ICP										
Lab Number	Sample ID	Sample Depth	Soil pH	Buffer pH	Sol. Salts mmho/cm	Excess Lime	% Organic Matter	Nitrate-Nitrogen ppm	Nitrate-Nitrogen lb. N/A	Phosphorus ppm P	Potassium ppm K	Sulfur ppm	Sulfur lb. S/A	Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Iron ppm Fe	Manganese ppm Mn	Copper ppm Cu	Boron ppm B
35205	C4A2214-02	6 - 18	8.5		0.32	Lo	1.5	28.4	102	106	667	20	72	4620	606	214					
35206	C4A2214-03	18 - 30	8.5		0.44	Lo	1.1	24.4	88	35	442	31	112	6620	594	292					
35207	C4B0717-01	0 - 6	8.6		0.37	Lo	1.6	15.0	27	45	564	18	32	6350	569	197					
35208	C4B0717-02	6 - 18	8.7		0.28	Lo	1.4	13.9	50	36	518	17	61	6670	551	214					
35209	C4B0717-03	18 - 30	8.5		0.45	Hi	1.1	18.0	65	14	363	35	126	7820	590	315					
35210	C4B0810-01	0 - 6	8.4		0.21	Hi	1.7	<1.0	<2	25	491	15	27	6190	431	128					
35211	C4B0810-02	6 - 18	8.5		0.22	Lo	1.4	<1.0	<4	11	436	14	50	6160	431	126					
35212	C4B0810-03	18 - 30	8.5		0.30	Lo	1.3	1.2	4	7	374	26	94	6990	436	152					
35213	C4B0810-04	0 - 6	8.5		0.20	Hi	1.9	1.1	<2	17	559	10	18	6930	493	138					
35214	C4B0810-05	6 - 18	8.6		0.20	Hi	1.9	1.6	6	9	492	13	47	7090	465	148					

METHOD USED:				KCl Extr.		Calculated	TKN	Sat. Paste													
Lab Number	Sample ID	Sample Depth	Date Sampled	Ammonium Nitrogen ppm	Ammonium Nitrogen lb. /A	Total N ppm	TKN ppm	Saturation % Sat	Electrical Conductivity mmho/cm	Calcium mg/L Ca	Magnesium mg/L Mg	Sodium mg/L Na	Sodium Adsorption Ratio								
35205	C4A2214-02	6 - 18	01/19/24	2	7	1028	1000	57	0.78	67	13	107	3.1								
35206	C4A2214-03	18 - 30	01/19/24	2	7	729	705	59	1.00	86	15	153	4.0								
35207	C4B0717-01	0 - 6	02/07/24	2	4	1146	1131	55	0.58	59	10	93	2.9								
35208	C4B0717-02	6 - 18	02/07/24	2	7	916	902	56	0.60	54	9	98	3.3								
35209	C4B0717-03	18 - 30	02/07/24	2	7	653	635	61	0.90	73	12	139	4.0								
35210	C4B0810-01	0 - 6	02/07/24	3	5	1091	1090	55	0.51	79	10	68	1.9								
35211	C4B0810-02	6 - 18	02/07/24	2	7	905	904	52	0.58	72	10	68	2.0								
35212	C4B0810-03	18 - 30	02/07/24	2	7	847	846	54	0.82	104	13	86	2.1								
35213	C4B0810-04	0 - 6	02/07/24	2	4	1285	1284	55	0.48	56	9	68	2.2								
35214	C4B0810-05	6 - 18	02/07/24	3	11	1191	1189	57	0.45	53	8	71	2.4								

Analyses are representative of the samples submitted

Samples are retained 30 days after report of analysis

Explanations of soil analysis terms are available upon request

Reviewed and Approved By: Amy Meier, Data Review Coordinator

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SOIL ANALYSIS REPORT

CLIENT:	CITY OF ABILENE ENV LAB PO BOX 60 ABILENE, TX 79604
52653	

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6921 S. Bell
Amarillo, TX 79109
800.557.7509
806.677.0093
Fax 806.677.0329

LAB NO:	35215 - 35221
INVOICE NO:	170702
DATE RECEIVED:	02/14/2024
DATE REPORTED:	02/19/2024

SOIL ANALYSIS RESULTS FOR: HAMBY 2024 **FIELD ID:**

METHOD USED:			1:2 Soil-Water		1:2 Soil-Water	XSL(i)	LOI(r)	Cd Reduction		Mehlich 3 ICP										
Lab Number	Sample ID	Sample Depth	Soil pH	Buffer pH	Sol. Salts mmho/cm	Excess Lime	% Organic Matter	Nitrate-Nitrogen ppm	lb. N/A	Phosphorus ppm P	Potassium ppm K	Sulfur ppm	lb. S/A	Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Iron ppm Fe	Manganese ppm Mn	Copper ppm Cu	Boron ppm B
35215	C4B0810-06	18 - 30	8.6		0.21	Hi	1.7	1.0	<4	7	474	15	54	7650	459	164					
35216	C4B0811-01	0 - 6	8.5		0.26	Lo	1.7	7.8	14	20	573	11	20	6250	520	158					
35217	C4B0811-02	6 - 18	8.4		0.43	Lo	1.6	19.7	71	12	485	28	101	6530	500	221					
35218	C4B0811-03	18 - 30	8.3		0.42	Lo	1.6	15.4	55	14	478	31	112	6550	489	195					
35219	C4B0811-04	0 - 6	8.6		0.27	Hi	1.5	8.0	14	18	524	19	34	7150	516	198					
35220	C4B0811-05	6 - 18	8.4		0.40	Hi	1.6	19.9	72	12	437	36	130	7400	505	234					
35221	C4B0811-06	18 - 30	8.3		0.52	Hi	1.4	26.4	95	8	352	39	140	7550	445	241					

METHOD USED:				KCl Extr.		Calculated	TKN	Sat. Paste					
Lab Number	Sample ID	Sample Depth	Date Sampled	Ammonium Nitrogen ppm	lb. /A	Total N ppm	TKN ppm	Saturation % Sat	Electrical Conductivity mmho/cm	Calcium mg/L Ca	Magnesium mg/L Mg	Sodium mg/L Na	Sodium Adsorption Ratio
35215	C4B0810-06	18 - 30	02/07/24	2	7	1095	1094	52	0.44	55	8	77	2.6
35216	C4B0811-01	0 - 6	02/07/24	2	4	1057	1049	53	0.38	50	8	73	2.5
35217	C4B0811-02	6 - 18	02/07/24	2	7	1013	993	58	0.91	84	11	114	3.1
35218	C4B0811-03	18 - 30	02/07/24	2	7	1025	1010	54	0.87	105	15	119	2.9
35219	C4B0811-04	0 - 6	02/07/24	2	4	1002	994	54	0.58	63	9	91	2.8
35220	C4B0811-05	6 - 18	02/07/24	2	7	886	866	57	1.09	104	15	125	3.0
35221	C4B0811-06	18 - 30	02/07/24	2	7	856	830	58	1.00	142	17	160	3.4

Analyses are representative of the samples submitted

Samples are retained 30 days after report of analysis

Explanations of soil analysis terms are available upon request

Reviewed and Approved By: Amy Meier, Data Review Coordinator

Amy Meier

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Attachment WS 3.0-8.C
Soil Data

Source:
Attachment WS 3.0-8.C is extracted in its entirety from the previous permit renewal application, prepared by Plummer. The following attachment was Attachment K.7 in the Abilene Hamby WRF Permit Renewal Application, dated 09/04/2018. Attachment K.7 is copied herein and serves as Attachment WS 3.0-8.C (with no changes or modifications) in the 2024 Abilene Hamby WRF Minor Amendment Application with Renewal.

ATTACHMENT K.7

USDA Soil Data

ATTACHMENT K.7
SOIL DATA*

Engineering Properties – Jones County, Texas														
Map unit symbol and soil name	Pct. of map unit (%)	Hydrologic group	Depth (in)	USDA texture	Classification		Fragments		Percentage passing sieve number— (%)				Liquid limit (%)	Plasticity index
					Unified	AASHTO	>10 inches (%)	3-10 inches (%)	4	10	40	200		
AbA—Abilene clay loam, 0 to 1 percent slopes														
Abilene	98	C	0-7	Clay loam	CL	A-4, A-6	0	0	98-100	96-100	90-100	60-96	25-35	8-16
			7-36	Clay loam, silty clay	CH, CL	A-6, A-7	0	0	98-100	96-100	90-100	75-95	34-58	22-40
			36-64	Clay loam, clay, silty clay	CL	A-6, A-7-6	0	0	90-100	88-100	80-98	60-95	35-50	19-32
AbB—Abilene clay loam, 1 to 3 percent slopes														
Abilene	98	C	0-6	Clay loam	CL	A-4, A-6	0	0	98-100	96-100	90-100	60-96	25-35	8-16
			6-31	Clay loam, silty clay	CH, CL	A-6, A-7	0	0	98-100	96-100	90-100	75-95	34-58	22-40
			31-64	Clay loam, clay, silty clay	CL	A-6, A-7-6	0	0	90-100	88-100	80-98	60-95	35-50	19-32
Gn—Polar very														
Polar	100	A	0-6	Very gravelly sandy loam	GC, SC, SC-SM, SM	A-1, A-2	0	0-5	35-75	25-60	20-50	10-30	15-30	NP-11
			6-60	Very gravelly sandy loam, very gravelly loam, very gravelly loamy sand	GC, GC-GM, GM, SM	A-1, A-2	0	0-2	45-80	25-50	15-45	10-25	15-25	NP-8
GP—Pits, gravel														
Pits, gravel	100	D	0-40	Variable	—	—	—	—	—	—	—	—	0-14	—
OtB—Sagerton clay loam, moist, 1 to 3 percent slopes														
Sagerton, moist	85	C	0-6	Clay loam	CL	A-7-6, A-6	0	0	100	96-100	88-100	63-79	37-44	16-22
			6-15	Clay loam, clay	CH, CL	A-7-6	0	0	98-100	97-100	90-100	68-87	44-53	22-29
			15-38	Clay loam, clay, silty clay	CH, CL	A-7-6	0	0	98-100	95-100	89-100	67-87	44-53	22-29
			38-62	Clay loam, clay	CL, CH	A-7-6, A-6	0	0	95-100	90-100	79-100	57-86	37-57	16-32
			62-80	Clay loam, sandy clay	CL, CH	A-7-6, A-6	0	0	95-100	90-100	76-100	51-89	29-57	12-32
Ro—Roscoe clay, 0 to														
Roscoe	85	D	0-45	Clay	CH, CL	A-7-6	0	0-1	98-100	92-100	76-100	65-91	53-84	29-46
			45-64	Clay	CH, CL	A-7-6	0	0-1	98-100	93-100	76-100	66-91	50-69	29-44
RwA—Rowena clay loam, 0 to 1 percent slopes														
Rowena	99	C	0-10	Clay loam	CL	A-6, A-7-6	0	0	99-100	98-100	90-100	70-90	30-50	12-30
			10-36	Clay, clay loam, silty clay	CH, CL	A-7-6	0	0	98-100	96-100	90-100	75-98	41-60	25-40
			36-70	Clay, clay loam, silty clay	CL	A-6, A-7-6	0	0	85-100	80-100	75-100	65-95	30-50	15-30
			70-80	Clay, clay loam, silty clay	CL	A-6, A-7-6	0	0	85-100	80-100	75-100	65-95	30-50	15-30
RwB—Rowena clay loam, 1 to 3 percent slopes														
Rowena	99	C	0-10	Clay loam	CL	A-6, A-7-6	0	0	99-100	98-100	90-100	70-90	30-50	12-30
			10-36	Clay, clay loam, silty clay	CH, CL	A-7-6	0	0	98-100	96-100	90-100	75-98	41-60	25-40
			36-70	Clay, clay loam, silty clay	CL	A-6, A-7-6	0	0	85-100	80-100	75-100	65-95	30-50	15-30
			70-80	Clay, clay loam, silty clay	CL	A-6, A-7-6	0	0	85-100	80-100	75-100	65-95	30-50	15-30
Sp—Spur loam														

Map unit symbol and soil name	Pct. of map unit (%)	Hydrologic group	Depth (in)	USDA texture	Classification		Fragments		Percentage passing sieve number— (%)				Liquid limit (%)	Plasticity index
					Unified	AASHTO	>10 inches (%)	3-10 inches (%)	4	10	40	200		
Spur	100	B	0-18	Loam	CL	A-6	0	0	100	98-100	85-100	55-85	30-37	11-16
			18-60	Loam, clay loam, sandy	CL	A-6, A-7-6	0	0	100	98-100	80-100	55-85	28-45	11-25
Sr—Spur soils, broken														
Spur	100	B	0-18	Loam	CL	A-6	0	0	100	98-100	85-100	55-85	30-37	11-16
			18-60	Loam, clay loam, sandy	CL	A-6, A-7-6	0	0	100	98-100	80-100	55-85	28-45	11-25
Ta—Lueders complex														
Lueders	100	D	0-9	Very cobbly clay loam	CL, GC, SC	A-2, A-4,	0	20-50	40-75	35-70	30-65	25-60	25-49	8-25
			9-14	Extremely cobbly loam,	CL, GC, SC	A-2, A-4,	0	30-50	35-70	30-65	25-60	25-55	25-49	8-25
			14-40	Bedrock	—	—	—	—	—	—	—	—	—	—
VaB—Valera silty clay,														
Valera	100	C	0-12	Silty clay	CH, CL	A-7-6	0	0-2	85-100	75-100	75-95	75-90	41-62	20-38
			12-26	Silty clay, clay	CH, CL	A-7-6	0	0-2	85-100	75-100	75-95	75-90	41-62	20-38
			26-30	Cemented material	—	—	—	—	—	—	—	—	—	—
			30-40	Bedrock	—	—	—	—	—	—	—	—	—	—
WeB—Weymouth clay loam, 1 to 3 percent slopes														
Weymouth	100	B	0-6	Clay loam	CL	A-6	0	0	95-100	90-100	80-100	65-80	28-40	15-25
			6-40	Clay loam, sandy clay	CL	A-6	0	0	80-100	75-100	70-98	50-80	28-40	15-25
			40-62	Bedrock, shaly clay,	CL	A-6, A-7-6	—	0-5	95-100	90-100	80-100	60-90	30-50	15-30
ChC—Cho gravelly loam, undulating														
Cho	100	D	0-7	Gravelly loam	SC, GC, CL	A-6, A-7-6	0	0-5	60-85	55-80	50-80	40-70	30-50	11-26
			7-12	Cemented material	—	—	—	—	—	—	—	—	—	—
			12-54	Gravelly clay loam, very gravelly loam, gravelly loam	GC, GC-GM, SC, SC-SM	A-7-6, A-4, A-2, A-6	0	0-5	50-85	35-80	20-60	15-60	24-47	5-22
Fr—Frio silty clay, occasionally flooded														
Frio	99	C	0-30	Silty clay	CH, CL	A-7, A-6	0	0-2	90-100	85-100	85-100	69-100	36-59	17-34
			30-60	Silty clay, silty clay loam,	CH, CL	A-6, A-7	0	0-2	90-100	85-100	85-100	69-100	36-59	17-34
			60-80	Silty clay loam, clay	CL, CH	A-6, A-7	0	0-5	90-100	90-100	85-100	68-100	36-59	17-34
LeA—Leeray clay, 0 to														
Leeray	100	D	0-10	Clay	CL, CH	A-7-6	0	0-5	97-100	96-100	85-100	75-95	45-65	30-42
			10-33	Silty clay, clay	CH, CL	A-7-6	0	0-5	97-100	96-100	85-100	75-95	45-65	30-42
			33-48	Silty clay, clay	CH	A-7-6	0	0-5	95-100	95-100	85-100	75-95	51-70	30-45
			48-60	Silty clay, silty clay loam,	CH, CL	A-7-6	0	0-5	95-100	95-100	85-100	70-95	44-57	30-40
LeB—Leeray clay, 1 to														
Leeray	100	D	0-10	Clay	CL, CH	A-7-6	0	0-5	97-100	96-100	85-100	75-95	45-65	30-42
			10-18	Silty clay, clay	CH, CL	A-7-6	0	0-5	97-100	96-100	85-100	75-95	45-65	30-42
			18-36	Silty clay, clay	CH	A-7-6	0	0-5	95-100	95-100	85-100	75-95	51-70	30-45
			36-60	Clay, silty clay loam, silty	CH, CL	A-7-6	0	0-5	95-100	95-100	85-100	70-95	44-57	30-40
LrC—Lueders very gravelly clay loam, undulating														
Lueders	100	D	0-9	Very gravelly clay loam	GC, SC, CL	A-6, A-4,	0	20-50	40-75	35-70	30-65	25-60	25-49	8-25
			9-40	Bedrock	—	—	—	—	—	—	—	—	—	—

Map unit symbol and soil name	Pct. of map unit (%)	Hydrologic group	Depth (in)	USDA texture	Classification		Fragments		Percentage passing sieve number— (%)				Liquid limit (%)	Plasticity index
					Unified	AASHTO	>10 inches (%)	3-10 inches (%)	4	10	40	200		
MeB—Mereta silty clay,														
Mereta	100	D	0-5	Silty clay	CH, CL	A-7-6	0	0-5	90-100	85-100	80-97	60-85	41-52	20-30
			5-16	Silty clay, clay, clay loam	CL, CH	A-7-6, A-6	0-2	0-5	90-100	85-100	80-97	60-85	39-52	19-30
			16-20	Cemented material	—	—	—	—	—	—	—	—	—	—
			20-42	Loam, gravelly clay	SC, CL	A-6, A-7-6	0	0-5	80-95	75-90	60-85	45-70	38-50	18-28
NcB—Nukrum clay, 1 to 3 percent slopes														
Nukrum	100	C	0-24	Clay	CL, CH	A-7-6	0	0	95-100	90-100	90-100	80-95	45-68	27-45
			24-60	Clay, silty clay, clay loam	CL, CH	A-7-6	0	0	95-100	90-100	90-100	70-95	45-68	27-45
NuA—Nuvalde silty clay loam, 0 to 1 percent slopes														
Nuvalde	100	B	0-10	Silty clay loam	CH, CL	A-6, A-7-6	0	0	95-100	95-100	90-99	80-96	38-60	20-38
			10-34	Clay, clay loam, silty clay	CH, CL	A-7-6, A-6	0	0	95-100	95-100	85-100	70-98	38-58	20-36
			34-84	Silty clay loam, loam,	CL	A-7-6, A-6	0	0	85-100	85-100	75-98	65-90	30-50	14-30
NuB—Nuvalde silty clay loam, 1 to 3 percent slopes														
Nuvalde	100	B	0-11	Silty clay loam	CH, CL	A-7-6, A-6	0	0	95-100	95-100	90-99	80-96	38-60	20-38
			11-44	Silty clay loam, clay	CL, CH	A-7-6, A-6	0	0	95-100	95-100	85-100	70-98	38-58	20-36
			44-60	Clay loam, silty clay	CL	A-6, A-7-6	0	0	85-100	85-100	75-98	65-90	30-50	14-30
RoA—Rowena clay loam, 0 to 1 percent slopes														
Rowena	100	C	0-6	Clay loam	CL	A-7-6, A-6	0	0	99-100	98-100	90-100	70-90	30-50	12-30
			6-34	Clay loam, silty clay, clay	CH, CL	A-7-6	0	0	98-100	96-100	90-100	75-98	41-60	25-40
			34-60	Clay loam, silty clay	CL	A-7-6, A-6	0	0	85-100	80-100	75-100	65-95	30-50	15-30
			60-80	Clay loam, silty clay	CL	A-6, A-7-6	0	0	85-100	80-100	75-100	65-95	30-50	15-30
RoB—Rowena clay loam, 1 to 3 percent slopes														
Rowena	100	C	0-6	Clay loam	CL	A-6, A-7-6	0	0	99-100	98-100	90-100	70-90	30-50	12-30
			6-28	Clay loam, silty clay, clay	CH, CL	A-7-6	0	0	98-100	96-100	90-100	75-98	41-60	25-40
			28-60	Clay, silty clay loam, clay	CL	A-6, A-7-6	0	0	85-100	80-100	75-100	65-95	30-50	15-30
			60-80	Silty clay loam, clay, clay	CL	A-7-6, A-6	0	0	85-100	80-100	75-100	65-95	30-50	15-30
TPC—Throck- Palopinto association, undulating														
Throck	50	D	0-5	Silty clay	CL	A-7-6, A-6	0	0-2	95-100	95-100	90-100	70-98	35-50	18-31
			5-38	Silty clay loam, silty clay,	CL	A-6, A-7-6	0	0-2	80-100	75-100	75-100	70-98	35-50	18-31
			38-60	Silty clay, shaly clay, clay	CL	A-6, A-7-6	0	0	95-100	95-100	90-100	70-98	28-50	12-30
Palopinto	30	D	0-7	Very flaggy clay loam	CH, CL	A-6, A-7-6	2-15	10-25	85-100	85-100	75-100	70-95	39-58	17-31
			7-40	Bedrock	—	—	—	—	—	—	—	—	—	—
WcA—Wichita clay loam, 0 to 1 percent slopes														
Wichita	100	C	0-5	Clay loam	CL	A-6	0	0	98-100	96-100	90-100	70-90	28-40	11-20
			5-36	Clay loam, silty clay, clay	CL	A-7-6, A-6	0	0	98-100	96-100	90-100	70-98	36-50	20-30
			36-60	Clay loam, silty clay, clay	CL	A-6, A-7-6	0	0	96-100	90-100	80-100	65-95	30-50	15-30

*USDA Web Soil Survey (http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)

ATTACHMENT K.7
SOIL DATA*

Physical Soil Properties – Jones County, Texas															
Map symbol and soil name	Depth (in)	Sand (%)	Silt (%)	Clay (%)	Moist bulk density (g/cc)	Saturated hydraulic conductivity (µm/cm)	Available water capacity (in/in)	Linear extensibility (%)	Organic matter (%)	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
AbA—Abilene clay loam, 0 to 1 percent slopes														
Abilene	0-7	-35-	-33-	28-32- 35	1.30-1.65	4.00-14.00	0.17-0.20	3.0-5.9	1.0-3.0	0.37	0.37	5	6	48
	7-36	-30-	-30-	35-40- 45	1.30-1.60	1.40-4.00	0.14-0.18	3.0-5.9	1.0-2.0	0.28	0.28			
	36-64	-34-	-32-	22-34- 45	1.40-1.60	1.40-4.00	0.12-0.15	3.0-5.9	0.1-1.0	0.32	0.32			
AbB—Abilene clay loam, 1 to 3 percent slopes														
Abilene	0-6	-35-	-33-	28-32- 35	1.30-1.65	4.00-14.00	0.17-0.20	3.0-5.9	1.0-3.0	0.37	0.37	5	6	48
	6-31	-30-	-30-	35-40- 45	1.30-1.60	1.40-4.00	0.14-0.18	3.0-5.9	1.0-2.0	0.28	0.28			
	31-64	-34-	-32-	22-34- 45	1.40-1.60	1.40-4.00	0.12-0.15	3.0-5.9	0.1-1.0	0.32	0.32			
Gn—Polar very gravelly sandy loam, 3 to 12 percent slopes														
Polar	0-6	-67-	-15-	12-19- 25	1.40-1.60	14.00-42.00	0.03-0.09	0.0-2.9	0.5-1.0	0.10	0.28	2	6	48
	6-60	-67-	-15-	12-19- 25	1.40-1.60	14.00-42.00	0.03-0.08	0.0-2.9	0.1-0.5	0.10	0.28			
GP—Pits, gravel														
Pits, gravel	0-40	—	—	—	—	0.42-141.00	0.01-0.10	0.0-2.9	—	0.10		1	8	0
OtB—Sagerton clay loam, moist, 1 to 3 percent slopes														
Sagerton, moist	0-6	23-36- 44	21-35- 48	28-29- 35	1.35-1.55	4.00-14.00	0.11-0.15	3.4-5.4	1.0-2.5	0.32	0.32	5	6	48
	6-15	23-30- 44	14-28- 42	35-42- 45	1.45-1.65	1.40-4.00	0.08-0.15	4.0-7.5	0.9-2.0	0.32	0.32			
	15-38	19-24- 44	14-38- 46	35-38- 45	1.45-1.65	1.40-4.00	0.08-0.15	3.8-7.2	0.5-1.0	0.32	0.32			
	38-62	23-34- 44	14-35- 48	29-31- 50	1.45-1.76	1.40-14.00	0.07-0.13	1.8-6.0	0.0-0.8	0.32	0.32			
	62-80	23-34- 55	4-35- 53	20-31- 50	1.45-1.76	1.40-14.00	0.07-0.13	1.4-6.0	0.0-0.8	0.32	0.32			
Ro—Roscoe clay, 0 to 1 percent slopes, rarely ponded														
Roscoe	0-45	-22-	-28-	40-50- 60	1.20-1.45	0.01-0.42	0.12-0.18	9.0-25.0	1.0-3.0	0.32	0.32	5	7	38
	45-64	-22-	-28-	40-50- 60	1.35-1.50	0.01-0.42	0.12-0.17	6.0-8.9	0.1-0.5	0.32	0.32			
RwA—Rowena clay loam, 0 to 1 percent slopes														
Rowena	0-10	-32-	-31-	35-38- 40	1.35-1.50	1.40-4.00	0.15-0.20	3.0-5.9	2.0-4.0	0.32	0.32	5	6	48
	10-36	-28-	-29-	35-43- 50	1.35-1.50	1.40-4.00	0.14-0.18	6.0-8.9	1.0-2.0	0.32	0.32			
	36-70	-28-	-29-	35-43- 50	1.35-1.50	1.40-4.00	0.11-0.15	6.0-8.9	0.5-1.0	0.32	0.32			
	70-80	-28-	-29-	35-43- 50	1.35-1.50	1.40-4.00	0.11-0.15	6.0-8.9	0.5-1.0	0.32	0.32			
RwB—Rowena clay loam, 1 to 3 percent slopes														
Rowena	0-10	-32-	-31-	35-38- 40	1.35-1.50	1.40-4.00	0.15-0.20	3.0-5.9	2.0-4.0	0.32	0.32	5	6	48
	10-36	-28-	-29-	35-43- 50	1.35-1.50	1.40-4.00	0.14-0.18	6.0-8.9	1.0-2.0	0.32	0.32			
	36-70	-28-	-29-	35-43- 50	1.35-1.50	1.40-4.00	0.11-0.15	6.0-8.9	0.5-1.0	0.32	0.32			
	70-80	-28-	-29-	35-43- 50	1.35-1.50	1.40-4.00	0.11-0.15	6.0-8.9	0.5-1.0	0.32	0.32			
Sp—Spur loam														
Spur	0-18	-39-	-37-	20-24- 27	1.30-1.45	4.00-14.00	0.14-0.20	3.0-5.9	1.0-3.0	0.37	0.37	5	6	48
	18-60	-35-	-38-	20-28- 35	1.45-1.60	4.00-14.00	0.14-0.20	3.0-5.9	0.5-1.0	0.32	0.32			
Sr—Spur soils, broken														
Spur	0-18	-39-	-37-	20-24- 27	1.30-1.45	4.00-14.00	0.14-0.20	3.0-5.9	1.0-3.0	0.37	0.37	5	6	48

Map symbol and soil name	Depth (in)	Sand (%)	Silt (%)	Clay (%)	Moist bulk density (g/cc)	Saturated hydraulic conductivity (µm/cm)	Available water capacity (in/in)	Linear extensibility (%)	Organic matter (%)	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	18-60	-35-	-38-	20-28- 35	1.45-1.60	4.00-14.00	0.14-0.20	3.0-5.9	0.5-1.0	0.32	0.32			
Ta—Lueders complex														
Lueders	0-9	-35-	-38-	20-28- 35	1.10-1.35	4.00-14.00	0.08-0.14	0.0-2.9	1.0-6.0	0.10	0.37	1	6	48
	9-14	-35-	-38-	20-28- 35	1.35-1.55	4.00-14.00	0.05-0.10	0.0-2.9	0.5-1.0	0.10	0.37			
	14-40	—	—	—	—	0.42-14.00	—	—	0.5-1.0					
VaB—Valera silty clay, 1 to 3 percent slopes														
Valera	0-12	- 6-	-47-	40-48- 55	1.25-1.40	1.40-4.00	0.15-0.20	6.0-8.9	1.0-5.0	0.32	0.32	2	4	86
	12-26	-23-	-29-	40-48- 55	1.25-1.40	1.40-4.00	0.15-0.20	6.0-8.9	1.0-5.0	0.32	0.32			
	26-30	—	—	—	—	0.42-4.00	—	—	—					
	30-40	—	—	—	—	1.40-14.00	—	—	—					
W—Water														
Water	—	—	—	—	—	—	—	—	—					
WeB— Weymouth clay loam, 1 to 3 percent slopes														
Weymouth	0-6	-35-	-34-	27-31- 35	1.30-1.50	4.00-14.00	0.14-0.18	0.0-2.9	0.5-1.0	0.32	0.32	3	4L	86
	6-40	-35-	-38-	20-28- 35	1.35-1.55	4.00-14.00	0.10-0.18	0.0-2.9	0.1-0.5	0.32	0.32			
	40-62	-31-	-31-	27-39- 50	1.45-1.75	1.40-4.00	0.05-0.12	3.0-5.9	0.0-0.2	0.32	0.32			
ChC—Cho gravelly loam, undulating														
Cho	0-7	-37-	-35-	20-28- 35	1.30-1.50	4.00-14.00	0.07-0.12	0.0-2.9	1.0-2.0	0.17	0.32	2	5	56
	7-12	—	—	—	—	0.42-14.00	—	—	—					
	12-54	-35-	-38-	20-28- 35	1.40-1.60	4.00-14.00	0.05-0.10	0.0-2.9	0.1-1.0	0.15	0.32			
Fr—Frio silty clay, occasionally flooded														
Frio	0-30	- 8-	-52-	30-40- 50	1.25-1.45	1.40-4.00	0.14-0.20	3.0-5.9	1.0-4.0	0.32	0.32	5	4	86
	30-60	- 8-	-52-	30-40- 50	1.25-1.45	1.40-4.00	0.14-0.20	3.0-5.9	1.0-3.0	0.32	0.32			
	60-80	- 8-	-50-	35-43- 50	1.30-1.55	1.40-4.00	0.14-0.20	3.0-5.9	0.1-1.0	0.32	0.32			
LeA—Leeray clay, 0 to 1 percent slopes														
Leeray	0-10	-22-	-28-	40-50- 60	1.10-1.40	0.01-0.42	0.12-0.18	9.0-25.0	1.0-5.0	0.32	0.32	5	4	86
	10-33	-22-	-28-	40-50- 60	1.10-1.40	0.01-0.42	0.12-0.18	9.0-25.0	1.0-3.0	0.32	0.32			
	33-48	-22-	-28-	40-50- 60	1.30-1.45	0.01-0.42	0.12-0.18	9.0-25.0	0.1-1.0	0.32	0.32			
	48-60	- 8-	-50-	35-43- 50	1.35-1.60	0.01-0.42	0.10-0.15	6.0-8.9	0.1-1.0	0.32	0.32			
LeB—Leeray clay, 1 to 3 percent slopes														
Leeray	0-10	-22-	-28-	40-50- 60	1.10-1.40	0.01-0.42	0.12-0.18	9.0-25.0	1.0-5.0	0.32	0.32	5	4	86
	10-18	-22-	-28-	40-50- 60	1.10-1.40	0.01-0.42	0.12-0.18	9.0-25.0	1.0-3.0	0.32	0.32			
	18-36	-22-	-28-	40-50- 60	1.30-1.45	0.01-0.42	0.12-0.18	9.0-25.0	0.1-1.0	0.32	0.32			
	36-60	-28-	-29-	35-43- 50	1.35-1.60	0.01-0.42	0.10-0.15	6.0-8.9	0.1-1.0	0.32	0.32			
LrC—Lueders very gravelly clay loam, undulating														
Lueders	0-9	-35-	-38-	20-28- 35	1.10-1.35	4.00-14.00	0.08-0.14	0.0-2.9	1.0-6.0	0.10	0.37	1	6	48
	9-40	—	—	—	—	0.42-14.00	—	—	0.5-1.0					
MeB—Mereta silty clay, 1 to 3 percent slopes														
Mereta	0-5	- 8-	-50-	40-43- 45	1.25-1.45	1.40-4.00	0.15-0.20	3.0-5.9	1.0-8.0	0.32	0.32	2	4	86
	5-16	- 8-	-52-	35-40- 45	1.25-1.45	1.40-4.00	0.15-0.20	3.0-5.9	0.5-4.0	0.32	0.32			
	16-20	—	—	—	—	0.42-4.00	—	—	—					
	20-42	-32-	-31-	30-38- 45	1.40-1.65	4.00-14.00	0.02-0.08	3.0-5.9	0.1-0.5	0.32	0.32			

Map symbol and soil name	Depth (in)	Sand (%)	Silt (%)	Clay (%)	Moist bulk density (g/cc)	Saturated hydraulic conductivity (µm/cm)	Available water capacity (in/in)	Linear extensibility (%)	Organic matter (%)	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
NcB—Nukrum clay, 1 to 3 percent slopes														
Nukrum	0-24	-23-	-28-	38-49- 60	1.30-1.45	0.42-1.40	0.15-0.20	6.0-8.9	1.0-3.0	0.32	0.32	5	4	86
	24-60	-23-	-28-	38-49- 60	1.35-1.50	0.42-1.40	0.15-0.20	6.0-8.9	0.5-1.0	0.32	0.32			
NuA—Nuvalde silty clay loam, 0 to 1 percent slopes														
Nuvalde	0-10	- 9-	-54-	30-38- 45	1.10-1.40	4.00-14.00	0.14-0.20	6.0-8.9	1.0-3.0	0.24	0.24	5	4L	86
	10-34	-32-	-31-	30-38- 45	1.20-1.45	4.00-14.00	0.12-0.18	6.0-8.9	0.5-1.0	0.28	0.28			
	34-84	- 6-	-62-	24-32- 40	1.25-1.45	4.00-14.00	0.12-0.18	3.0-5.9	0.1-1.0	0.32	0.32			
NuB—Nuvalde silty clay loam, 1 to 3 percent slopes														
Nuvalde	0-11	- 9-	-54-	30-38- 45	1.10-1.40	4.00-14.00	0.14-0.20	6.0-8.9	1.0-3.0	0.24	0.24	5	4L	86
	11-44	-32-	-31-	30-38- 45	1.20-1.45	4.00-14.00	0.12-0.18	6.0-8.9	0.5-1.0	0.28	0.28			
	44-60	-27-	-42-	24-32- 40	1.25-1.45	4.00-14.00	0.12-0.18	3.0-5.9	0.1-1.0	0.32	0.32			
RoA—Rowena clay loam, 0 to 1 percent slopes														
Rowena	0-6	-32-	-31-	35-38- 40	1.35-1.50	1.40-4.00	0.15-0.20	3.0-5.9	2.0-4.0	0.32	0.32	5	6	48
	6-34	-28-	-29-	35-43- 50	1.35-1.50	1.40-4.00	0.14-0.18	6.0-8.9	1.0-2.0	0.32	0.32			
	34-60	-28-	-30-	35-43- 50	1.35-1.50	1.40-4.00	0.11-0.15	6.0-8.9	0.5-1.0	0.32	0.32			
	60-80	-28-	-30-	35-43- 50	1.35-1.50	1.40-4.00	0.11-0.15	6.0-8.9	0.5-1.0	0.32	0.32			
RoB—Rowena clay loam, 1 to 3 percent slopes														
Rowena	0-6	-32-	-31-	35-38- 40	1.35-1.50	1.40-4.00	0.15-0.20	3.0-5.9	2.0-4.0	0.32	0.32	5	6	48
	6-28	-28-	-29-	35-43- 50	1.35-1.50	1.40-4.00	0.14-0.18	6.0-8.9	1.0-2.0	0.32	0.32			
	28-60	-28-	-30-	35-43- 50	1.35-1.50	1.40-4.00	0.11-0.15	6.0-8.9	0.5-1.0	0.32	0.32			
	60-80	-28-	-30-	35-43- 50	1.35-1.50	1.40-4.00	0.11-0.15	6.0-8.9	0.5-1.0	0.32	0.32			
TPC—Throck- Palopinto association, undulating														
Throck	0-5	- 5-	-45-	40-50- 60	1.45-1.65	0.42-1.40	0.12-0.17	6.0-8.9	0.5-2.0	0.32	0.32	3	4L	86
	5-38	- 6-	-47-	35-48- 60	1.45-1.65	0.42-1.40	0.12-0.17	6.0-8.9	0.5-1.0	0.32	0.32			
	38-60	-28-	-29-	25-43- 60	1.55-1.90	0.42-1.40	0.05-0.12	6.0-8.9	0.5-1.0	0.32	0.32			
Palopinto	0-7	-35-	-33-	18-32- 35	1.25-1.45	4.00-14.00	0.07-0.10	3.0-4.0	4.0-6.0	0.05	0.32	1	6	48
	7-40	—	—	—	—	0.42-4.00	—	—	—					
W—Water														
Water	—	—	—	—	—	—	—	—	—					
WcA—Wichita clay loam, 0 to 1 percent slopes														
Wichita	0-5	-35-	-33-	28-32- 35	1.30-1.45	4.00-14.00	0.15-0.20	3.0-5.9	0.5-1.0	0.32	0.32	5	6	48
	5-36	-30-	-30-	35-40- 45	1.30-1.45	1.40-4.00	0.15-0.20	3.0-5.9	0.5-1.0	0.32	0.32			
	36-60	-30-	-30-	35-40- 45	1.35-1.50	1.40-4.00	0.12-0.18	3.0-5.9	0.5-1.0	0.32	0.32			

*USDA Web Soil Survey (http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)

Attachment WS 6.0-2.C
Effluent Parameters above the MAL

Effluent Parameters Above the MAL
Attachment WS 6.0-2.C

City of Abilene
Hamby Water Reclamation Facility
WQ0010334004

The following parameters were measured above the MAL in the POTW's effluent monitoring during the last three years, as copied from the City's TPDES Pretreatment Program Annual Report Forms for Influent and Effluent Monitoring Results. Samples are analyzed quarterly or semi-annually; if a constituent was not analyzed during the period, "Not Run" is entered. If a constituent tested above the MAL during at least one quarter, the concentration is entered with either additional concentrations above the MAL, "Not Run" or "<MAL" entered, as applicable.

Pollutant	MAL	Units	Effluent Concentration			
		2024 Dates	08-22-23	10-17-23	03-19-24	4th Q
Arsenic	0.5	µg/L	1.09	1.11	1.87	N/A
Copper	2	µg/L	12.6	20.6	18.3	N/A
Nickel	2	µg/L	2.6	<2	3.82	N/A
Zinc	5	µg/L	16.9	17.8	50.7	N/A
Phenols, Total	10	µg/L	26	14	<10	N/A
Bromoform	10	µg/L	17.6	Not Run	4.82	N/A
Chlorodibromomethane	10	µg/L	41.8	Not Run	17.0	N/A
Dichlorobromomethane	10	µg/L	26.6	Not Run	12.1	N/A
Aluminum	2.5	µg/L	47.1	Not Run	24.7	N/A
Barium	3	µg/L	90.3	Not Run	76.2	N/A
Fluoride	500	µg/L	835	Not Run	915	N/A
Nitrate-Nitrogen	100	µg/L	16100	Not Run	12400	N/A
TTHM (Total Trihalomethanes)	10	µg/L	95.4	Not Run	43.9	N/A
		2023 Dates	08-30-22	11-15-22	02-28-23	04-18-23
Arsenic	0.5	µg/L	<0.5	1.08	1.17	0.9
Copper	2	µg/L	14.3	7.26	8.21	21.9
Mercury	0.005	µg/L	0.00553	<0.005	<0.005	<0.005
Nickel	2	µg/L	3.42	3.35	2.84	2.07

Pollutant	MAL	Units	Effluent Concentration			
Zinc	5	µg/L	48.3	15.9	14.1	17.6
Bromoform	10	µg/L	15.9	Not Run	<10	Not Run
Chlorodibromomethane	10	µg/L	29.6	Not Run	<10	Not Run
Chloroform	10	µg/L	8.30	Not Run	<10	Not Run
Dichlorobromomethane	10	µg/L	17.4	Not Run	<10	Not Run
Bis (2-Ethylhexyl) Phthalate	10	µg/L	44.0	Not Run	<10	Not Run
4,4-DDT	0.02	µg/L	<0.02	Not Run	0.0255	Not Run
4,4-DDE	0.1	µg/L	<0.1	Not Run	0.329	Not Run
Aluminum	2.5	µg/L	63.2	Not Run	36.0	Not Run
Barium	3	µg/L	101	Not Run	85.1	Not Run
Fluoride	500	µg/L	720	Not Run	665	Not Run
Malathion	0.1	µg/L	<0.1	Not Run	0.119	Not Run
Nitrate-Nitrogen	100	µg/L	13700	Not Run	9230	Not Run
TTHM (Total Trihalomethanes)	10	µg/L	71.2	Not Run	<10	Not Run
		2022 Dates	09-14-21	10-20-21	02-16-22	06-07-22
Arsenic	0.5	µg/L	<0.5	<0.5	1.01	<0.5
Copper	2	µg/L	5.33	15.1	20.1	37.2
Nickel	2	µg/L	2.9	2.71	2.85	4.15
Zinc	5	µg/L	23.6	25.1	16.7	25.1
Bromoform	10	µg/L	16.1	Not Run	<10	Not Run
Chlorodibromomethane	10	µg/L	48.3	Not Run	15.2	Not Run
Chloroform	10	µg/L	15.5	Not Run	<10	Not Run
Dichlorobromomethane	10	µg/L	31.3	Not Run	11.0	Not Run
Aluminum	2.5	µg/L	18.3	Not Run	21.5	18.3
Barium	3	µg/L	72.2	Not Run	73.1	72.2
Fluoride	500	µg/L	860	Not Run	658	Not Run
Nitrate-Nitrogen	100	µg/L	14800	Not Run	10500	Not Run
TTHM (Total Trihalomethanes)	10	µg/L	111.2	Not Run	38.2	Not Run

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

PLAIN LANGUAGE SUMMARY FOR TPDES OR TLAP PERMIT APPLICATIONS

Plain Language Summary Template and Instructions for Texas Pollutant Discharge Elimination System (TPDES) and Texas Land Application (TLAP) Permit Applications

Applicants should use this template to develop a plain language summary as required by Title 30, Texas Administrative Code (30 TAC), Chapter 39, Subchapter H. Applicants may modify the template as necessary to accurately describe their facility as long as the summary includes the following information: (1) the function of the proposed plant or facility; (2) the expected output of the proposed plant or facility; (3) the expected pollutants that may be emitted or discharged by the proposed plant or facility; and (4) how the applicant will control those pollutants, so that the proposed plant will not have an adverse impact on human health or the environment.

Fill in the highlighted areas below to describe your facility and application in plain language. Instructions and examples are provided below. Make any other edits necessary to improve readability or grammar and to comply with the rule requirements.

If you are subject to the alternative language notice requirements in 30 TAC Section 39.426, **you must provide a translated copy of the completed plain language summary in the appropriate alternative language as part of your application package**. For your convenience, a Spanish template has been provided below.

ENGLISH TEMPLATE FOR TPDES or TLAP NEW/RENEWAL/AMENDMENT APPLICATIONS DOMESTIC WASTEWATER/STORMWATER

The following summary is provided for this pending water quality permit application being reviewed by the Texas Commission on Environmental Quality as required by 30 TAC Chapter 39. The information provided in this summary may change during the technical review of the application and is not a federal enforceable representation of the permit application.

City of Abilene (CN600242671) operates the Hamby Water Reclamation Facility (RN101611788), a domestic wastewater treatment plant. The facility is located at 19000 COUNTY ROAD 309, in Abilene, Jones County, Texas 79601. The City of Abilene has applied for a minor amendment with renewal of the existing permit, WQ0010334004, which authorizes the discharge of treated domestic wastewater at an annual average flow not to exceed 18,000,000 gallons per day via Outfall 001, an annual average flow of 4,000,000 gallons per day via Outfall 002, and an annual average flow of 7,000,000 gallons per day via Outfall 003. The current permit also authorizes the surface disposal of sewage sludge on 64 acres, and the disposal of treated domestic wastewater via irrigation on 1,960 acres of off-site properties and 335 acres of on-site properties. The minor amendment application provides information that the next active sewage sludge disposal site (SDS) will be SDS-E4 which is currently permitted but is only listed as a future site.

Discharges from the facility are expected to contain Carbonaceous Biological Oxygen Demand 5-day, Total Suspended Solids, Ammonia Nitrogen, Total Phosphorus, and E. Coli. Domestic wastewater is treated by a biological nutrient removal (BNR) system and a membrane bioreactor (MBR) system.

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PLANTILLA EN ESPAÑOL PARA SOLICITUDES NUEVAS/RENOVACIONES/ENMIENDAS DE TPDES o TLAP

AGUAS RESIDUALES Introduzca 'INDUSTRIALES' o 'DOMÉSTICAS' aquí **/AGUAS PLUVIALES**

El siguiente resumen se proporciona para esta solicitud de permiso de calidad del agua pendiente que está siendo revisada por la Comisión de Calidad Ambiental de Texas según lo requerido por el Capítulo 39 del Código Administrativo de Texas 30. La información proporcionada en este resumen puede cambiar durante la revisión técnica de la solicitud y no es una representación ejecutiva fedérale de la solicitud de permiso.

1. Introduzca el nombre del solicitante aquí (2. Introduzca el número de cliente aquí (es decir, CN6########).) 3. Elija del menú desplegable 4. Introduzca el nombre de la instalación aquí 5. Introduzca el número de entidad regulada aquí (es decir, RN1########), 6. Elija del menú desplegable 7. Introduzca la descripción de la instalación aquí. La instalación 8. Elija del menú desplegable. ubicada en 9. Introduzca la ubicación aquí, en 10. Introduzca el nombre de la ciudad aquí, Condado de 11. Introduzca el nombre del condado aquí, Texas 12. Introduzca el código postal aquí. 13. Introduzca el resumen de la petición de solicitud aquí. *<<Para las solicitudes de TLAP incluya la siguiente oración, de lo contrario, elimine:>>* Este permiso no autorizará una descarga de contaminantes en el agua en el estado.

Se espera que las descargas de la instalación contengan 14. Liste todos los contaminantes esperados aquí. 15. Introduzca los tipos de aguas residuales descargadas aquí. 16. Elija del menú desplegable tratado por 17. Introduzca una descripción del tratamiento de aguas residuales utilizado en la instalación aquí.

INSTRUCTIONS

1. Enter the name of applicant in this section. The applicant name should match the name associated with the customer number.
2. Enter the Customer Number in this section. Each Individual or Organization is issued a unique 11-digit identification number called a CN (e.g. CN123456789).
3. Choose “operates” in this section for existing facility applications or choose “proposes to operate” for new facility applications.
4. Enter the name of the facility in this section. The facility name should match the name associated with the regulated entity number.
5. Enter the Regulated Entity number in this section. Each site location is issued a unique 11-digit identification number called an RN (e.g. RN123456789).
6. Choose the appropriate article (a or an) to complete the sentence.
7. Enter a description of the facility in this section. For example: steam electric generating facility, nitrogenous fertilizer manufacturing facility, etc.
8. Choose “is” for an existing facility or “will be” for a new facility.
9. Enter the location of the facility in this section.
10. Enter the City nearest the facility in this section.
11. Enter the County nearest the facility in this section.
12. Enter the zip code for the facility address in this section.
13. Enter a summary of the application request in this section. For example: renewal to discharge 25,000 gallons per day of treated domestic wastewater, new application to discharge process wastewater and stormwater on an intermittent and flow-variable basis, or major amendment to reduce monitoring frequency for pH, etc. If more than one outfall is included in the application, provide applicable information for each individual outfall.
14. List all pollutants expected in the discharge from this facility in this section. If applicable, refer to the pollutants from any federal numeric effluent limitations that apply to your facility.
15. Enter the discharge types from your facility in this section (e.g., stormwater, process wastewater, once through cooling water, etc.)
16. Choose the appropriate verb tense to complete the sentence.
17. Enter a description of the wastewater treatment used at your facility. Include a description of each process, starting with initial treatment and finishing with the outfall/point of disposal. Use additional lines for individual discharge types if necessary.

Questions or comments concerning this form may be directed to the Water Quality Division’s Application Review and Processing Team by email at WQ-ARPTeam@tceq.texas.gov or by phone at (512) 239-4671.

Example

Individual Industrial Wastewater Application

The following summary is provided for this pending water quality permit application being reviewed by the Texas Commission on Environmental Quality as required by 30 TAC Chapter 39. The information provided in this summary may change during the technical review of the application and are not federal enforceable representations of the permit application.

ABC Corporation (CN600000000) operates the Starr Power Station (RN10000000000), a two-unit gas-fired electric generating facility. Unit 1 has a generating capacity of 393 megawatts (MWs) and Unit 2 has a generating capacity of 528 MWs. The facility is located at 1356 Starr Street, near the City of Austin, Travis County, Texas 78753.

This application is for a renewal to discharge 870,000,000 gallons per day of once through cooling water, auxiliary cooling water, and also authorizes the following waste streams monitored inside the facility (internal outfalls) before it is mixed with the other wastewaters authorized for discharge via main Outfall 001, referred to as “previously monitored effluents” (low-volume wastewater, metal-cleaning waste, and stormwater (from diked oil storage area yards and storm drains)) via Outfall 001. Low-volume waste sources, metal-cleaning waste, and stormwater drains on a continuous and flow-variable basis via internal Outfall 101.

The discharge of once through cooling water via Outfall 001 and low-volume waste and metal-cleaning waste via Outfall 101 from this facility is subject to federal effluent limitation guidelines at 40 CFR Part 423. The pollutants expected from these discharges based on 40 CFR Part 423 are: free available chlorine, total residual chlorine, total suspended solids, oil and grease, total iron, total copper, and pH. Temperature is also expected from these discharges. Additional potential pollutants are included in the Industrial Wastewater Application Technical Report, Worksheet 2.0.

Cooling water and boiler make-up water are supplied by Lake Starr Reservoir. The City of Austin municipal water plant (CN600000000, PWS 00000) supplies the facility’s potable water and serves as an alternate source of boiler make-up water. Water from the Lake Starr Reservoir is withdrawn at the intake structure and treated with sodium hypochlorite to prevent biofouling and sodium bromide as a chlorine enhancer to improve efficacy and then passed through condensers and auxiliary equipment on a once-through basis to cool equipment and condense exhaust steam.

Low-volume wastewater from blowdown of boiler Units 1 and 2 and metal-cleaning wastes receive no treatment prior to discharge via Outfall 101. Plant floor and equipment drains and stormwater runoff from diked oil storage areas, yards, and storm drains are routed through an oil and water separator prior to discharge via Outfall 101. Domestic wastewater, blowdown, and backwash water from the service water filter, clarifier, and sand filter are routed to the Starr Creek Domestic Sewage Treatment Plant, TPDES Permit No. WQ0010000001, for treatment and disposal. Metal-cleaning waste from equipment cleaning is generally disposed of off-site.

Enprotec | Hibbs & Todd

June 6, 2024

Via Email to Rachel.Ellis@tceq.texas.gov

Texas Commission on Environmental Quality
Water Quality Division
Applications Review and Processing Team (MC148)
P.O. Box 13087
Austin, Texas 78711-3087
Attn: Ms. Rachel Ellis

Re: Response to TCEQ Letter, dated June 03, 2024
Application to Renew Permit No.: WQ0010334004 (EPA I.D. No. TX0023973)
Applicant Name: City of Abilene (CN600242671)
Site Name: Hamby Water Reclamation Facility (RN101611788)
Type of Application: Renewal with changes

Dear Ms. Ellis:

The TCEQ letter, dated June 3, 2024, indicates that additional information is required before the application can be declared administratively complete. A copy of the referenced TCEQ correspondence is attached for reference. The response to the item listed in the referenced TCEQ correspondence is as follows:

1. *The following is a portion of the Notice of Receipt of Application and Intent to Obtain a Water Quality Permit which contains information relevant to your application. Please read it carefully and indicate if it contains any errors or omissions. The complete notice will be sent to you once the application is declared administratively complete.*

   APPLICATION. City of Abilene, P.O. Box 60, Abilene, Texas 79604, has applied to the Texas Commission on Environmental Quality (TCEQ) to renew Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0010334004 (EPA I.D. No. TX0023973) to authorize the discharge of treated wastewater at a volume not to exceed an annual average flow of 22,000,000 gallons per day. The current permit also authorizes the surface disposal of sewage sludge on 64 acres, and the disposal of treated domestic wastewater via irrigation on 1,960 acres of off-site properties and an additional 335 acres of on-site properties. The domestic wastewater treatment facility and on-site disposal areas are located at 19000 County Road 309, in the ~~c~~ City of Abilene, in Jones County, Texas 79601. The discharge route is from the plant site to via Outfall 001 to Freewater Creek; thence to Deadman Creek; thence to the Clear Fork Brazos River; via Outfall 002 to Kirby Lake; thence to Cedar Creek; thence to Fort Phantom Hill Reservoir; and via Outfall 003 directly to Fort Phantom Hill Reservoir. TCEQ received this application on May 28, 2024. The permit application will be available for viewing and copying at City of Abilene City Hall, Water Aadministration Cconference R~~r~~oom, 555 Walnut Street, Abilene, in Taylor County, Texas and at Hamby Water Reclamation Facility,

Cconference Room, 19000 County Road 309, Abilene, in Jones County, Texas prior to the date this notice is published in the newspaper. This link to an electronic map of the site or facility's general location is provided as a public courtesy and not part of the application or notice. For the exact location, refer to the application.
https://gisweb.tceq.texas.gov/LocationMapper/?marker=-99.622777,32.540277&level=18
Further information may also be obtained from City of Abilene at the address stated above or by calling Mr. Rodney Taylor, Director of Water Utilities, at 325-676-6452.

A few minor changes to the Notice of Receipt of Application and Intent to Obtain a Water Quality Permit (NORI) are suggested as indicated above in redline/strikeout.

- Capitalize City of Abilene.
- Capitalize the names of the rooms in which the permit application will be available for viewing to be consistent with Form 10053 Attachment DAR 1.0-8.D:
  - *Water Aadministration Cconference Rroom, 555 Walnut Street, Abilene…*
  - *Hamby Water Reclamation Facility, Cconference Room…*
- Add the number 0 to the address of the Hamby location where the permit application will be available for viewing: *19000 County Road 309 Abilene, in Jones County, Texas prior to....*

The response is provided as requested by the TCEQ original response deadline of June17, 2024. Please feel free to call me at 817-694-8382, contact me in writing in the Abilene office, or email me at luci.dunn@e-ht.com with any questions or comments.

Sincerely,

Enprotec / Hibbs & Todd, Inc.

Luci Dunn

Luci Dunn, P.E.
Senior Project Manager

LD/jd

Attachments:
TCEQ Administrative NOD Emails and Letter, dated 06/03/2024

c: Rodney Taylor, City of Abilene, via email to rodney.taylor@abilenetx.gov
Katherine Beeman, City of Abilene, via email to katherine.beeman@abilenetx.gov
Matthew Dane, City of Abilene, Via email to matthew.dane@abilenetx.gov
Peter Reale, Plummer, via email to preale@plummer.com
Jordan Hibbs, eHT, via email to jordan.hibbs@e-ht.com
Joshua Berryhill, eHT, via email joshua.berryhill@e-ht.com
Project File 8801 P:\Projects\TPDES Permit Applications\Abilene Hamby\8801 Hamby WRF Permit Minor Amend w Renewal 2024\20240603 Admin NOD\202406 Response to Abi Hamby TCEQ Admin NOD.docx

Luci Dunn

From: Rachel Ellis <Rachel.Ellis@tceq.texas.gov>
Sent: Monday, June 3, 2024 3:53 PM
To: Luci Dunn
Cc: rodney.taylor@abilenetx.gov
Subject: Application for Proposed Permit No. WQ0010334004-City of Abilene- Notice of Deficiency Letter
Attachments: wq0010334004-nod1.pdf

Caution: This is an external email that originated outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Ms. Dunn,

The attached Notice of Deficiency letter sent on June 3, 2024, requests additional information needed to declare the application administratively complete. Please send the complete response to my attention by June 17, 2024.

Thank you,

Rachel Ellis
Texas Commission on Environmental Quality
Water Quality Division
Application Review & Processing Team
Rachel.Ellis@tceq.texas.gov

Jon Niermann, *Chairman*
Bobby Janecka, *Commissioner*
Catarina R. Gonzales, *Commissioner*
Kelly Keel, *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

June 3, 2024

Ms. Luci Dunn, P.E.
Senior Project Manager
Enprotec / Hibbs & Todd, Inc.
P.O. Box 3097
Abilene, Texas 79604

RE: Application to Renew Permit No.: WQ0010334004 (EPA I.D. No. TX0023973)
Applicant Name: City of Abilene (CN600242671)
Site Name: Hamby Water Reclamation Facility (RN101611788)
Type of Application: Renewal with changes

VIA EMAIL

Dear Ms. Dunn:

We have received the application for the above referenced permit, and it is currently under review. Your attention to the following item(s) are requested before we can declare the application administratively complete. Please submit responses to the following items via email.

The following is a portion of the NORI which contains information relevant to your application. Please read it carefully and indicate if it contains any errors or omissions. The complete notice will be sent to you once the application is declared administratively complete.

APPLICATION. City of Abilene, P.O. Box 60, Abilene, Texas 79604, has applied to the Texas Commission on Environmental Quality (TCEQ) to renew Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0010334004 (EPA I.D. No. TX0023973) to authorize the discharge of treated wastewater at a volume not to exceed an annual average flow of 22,000,000 gallons per day. The current permit also authorizes the surface disposal of sewage sludge on 64 acres, and the disposal of treated domestic wastewater via irrigation on 1,960 acres of off-site properties and an additional 335 acres of on-site properties. The domestic wastewater treatment facility and on-site disposal areas are located at 19000 County Road 309, in the city of Abilene, in Jones County, Texas 79601. The discharge route is from the plant site to via Outfall 001 to Freewater Creek; thence to Deadman Creek; thence to the Clear Fork Brazos River; via Outfall 002 to Kirby Lake; thence to Cedar Creek; thence to Fort Phantom Hill Reservoir; and via Outfall 003 directly to Fort Phantom Hill Reservoir. TCEQ received this application on May 28, 2024. The permit application will be available for viewing and copying at City of Abilene City Hall, Water administration conference room, 555 Walnut Street, Abilene, in Taylor County, Texas and at Hamby Water Reclamation Facility, conference Room, 1900 County Road 309, Abilene, in Jones County, Texas prior to the date this notice is published in the newspaper. This link to an electronic map of the site or facility's general location is provided as a public courtesy and not part of the application or notice. For the exact location, refer to the application.

https://gisweb.tceq.texas.gov/LocationMapper/?marker=-99.622777,32.540277&level=18

Further information may also be obtained from City of Abilene at the address stated above or by calling Mr. Rodney Taylor, Director of Water Utilities, at 325-676-6452.

Please submit the complete response, addressed to my attention by June 17, 2024. If you should have any questions, please do not hesitate to contact me by phone at (512) 239-4658 or by email at rachel.ellis@tceq.texas.gov

Sincerely,

Rachel Ellis

Rachel Ellis
Applications Review and Processing Team (MC148)
Water Quality Division
Texas Commission of Environmental Quality

re

cc: Mr. Rodney Taylor, Director of Water Utilities, City of Abilene, P.O. Box 60, Abilene, Texas 79604

TPDES PERMIT NO.
WQ0010334004
[For TCEQ office use only - EPA I.D. No. TX0023973]

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
P.O. Box 13087
Austin, Texas 78711-3087

This is a renewal that replaces TPDES Permit No. WQ0010334004 issued on December 18, 2014.

PERMIT TO DISCHARGE WASTES
under provisions of
Section 402 of the Clean Water Act
and Chapter 26 of the Texas Water Code

City of Abilene

whose mailing address is

P.O. Box 60
Abilene, Texas 79604

is authorized to treat and discharge wastes from the Hamby Water Reclamation Facility, SIC Code 4952

located 19000 County Road 309, in Jones County, Texas 79601

via Outfall 001 to Freewater Creek, thence to Deadman Creek, thence to Clear Fork Brazos River in Segment 1232 of the Brazos River Basin; via Outfall 002 to Kirby Lake, thence to Cedar Creek, thence to Fort Phantom Hill Reservoir in Segment 1236 of the Brazos River Basin; and via Outfall 003 direct to Fort Phantom Hill Reservoir in Segment 1236 of the Brazos River Basin.

only according to effluent limitations, monitoring requirements, and other conditions set forth in this permit, as well as the rules of the Texas Commission on Environmental Quality (TCEQ), the laws of the State of Texas, and other orders of the TCEQ. The issuance of this permit does not grant to the permittee the right to use private or public property for conveyance of wastewater along the discharge route described in this permit. This includes, but is not limited to, property belonging to any individual, partnership, corporation, or other entity. Neither does this permit authorize any invasion of personal rights nor any violation of federal, state, or local laws or regulations. It is the responsibility of the permittee to acquire property rights as may be necessary to use the discharge route.

This permit shall expire at midnight, **five years from the date of issuance**.

ISSUED DATE: **November 27, 2019**

For the Commission

INTERIM AND FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS Outfall Number 001

1. During the period beginning upon the date of issuance and lasting through the date of expiration, the permittee is authorized to discharge subject to the following effluent limitations: The annual average flow of effluent shall not exceed 18.0 MGD*, nor shall the average discharge during any two-hour period (2-hour peak) exceed 16,667 gallons per minute (gpm).

Effluent Characteristic	Discharge Limitations				Min. Self-Monitoring Requirements	
	Daily Avg	7-day Avg	Daily Max	Single Grab	Report Daily Avg. & Daily Max.	
	mg/l (lbs/day)	mg/l	mg/l	mg/l	Measurement Frequency	Sample Type
Flow, MGD	Report	N/A	Report	N/A	Continuous	Totalizing Meter
Carbonaceous Biochemical Oxygen Demand (5-day)						
April - September	7 (1,051)	11	17	25	One/day	Composite
October - March	10 (1,501)	15	25	35	One/day	Composite
Total Suspended Solids	15 (2,252)	25	40	60	One/day	Composite
Ammonia Nitrogen						
April - September	2 (300)	5	7	15	One/day	Composite
October - March	3 (450)	5	7	15	One/day	Composite
E. coli, CFU or MPN per 100 ml	126	N/A	399	N/A	Five/Week	Grab

* The combined annual average discharge flow limits and the combined effluent load limits for CBOD5, TSS and NH3-N for Outfalls 001, 002, and 003 are specified on Page 47, in No. 23 of the Other Requirements section. (The general locations of the outfalls are located in Attachment A.)

2. The effluent shall contain a chlorine residual of at least 1.0 mg/l after a detention time of at least 20 minutes (based on peak flow) and shall be monitored daily by grab sample, when effluent is being discharged. The permittee shall dechlorinate the chlorinated effluent to less than 0.1 mg/l chlorine residual. When effluent is being discharged, the chlorine residual shall be monitored daily by grab sample after the dechlorination process. An equivalent method of disinfection may be substituted only with prior approval of the Executive Director.
3. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per day by grab sample.
4. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
5. Effluent monitoring samples shall be taken at the following location(s): See No. 24, in the Other Requirements section.
6. The effluent shall contain a minimum dissolved oxygen of 6.0 mg/l during the period of April – September and 5.0 mg/l during the period of October – March and shall be monitored once per day by grab sample.
7. The annual average flow and maximum 2-hour peak flow shall be reported monthly.

INTERIM AND FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS Outfall Number 002

1. During the period beginning upon the date of issuance and lasting through the date of expiration, the permittee is authorized to discharge subject to the following effluent limitations: The annual average flow of effluent shall not exceed 4.0 million gallons per day (MGD).*

Effluent Characteristic	Discharge Limitations				Min. Self-Monitoring Requirements	
	Daily Avg	7-day Avg	Daily Max	Single Grab	Report Daily Avg. & Daily Max.	
	mg/l (lbs/day)	mg/l	mg/l	mg/l	Measurement Frequency	Sample Type
Flow, MGD	Report	N/A	Report	N/A	Continuous	Totalizing Meter
Carbonaceous Biochemical Oxygen Demand (5-day)						
April - September	7 (234)	11	17	25	Two/week	Composite
October - March	10 (334)	15	25	35	Two/week	Composite
Total Suspended Solids	15 (500)	25	40	60	Two/week	Composite
Ammonia Nitrogen						
April - September	2 (67)	5	7	15	Two/week	Composite
October - March	3 (100)	5	7	15	Two/week	Composite
E. coli, CFU or MPN per 100 ml	126	N/A	399	N/A	One/week	Grab

* The combined annual average discharge flow limits and the combined effluent load limits for CBOD5, TSS and NH3-N for Outfalls 001, 002, and 003 are specified on Page 47, in No. 23 of the Other Requirements section. (The general locations of the outfalls are located in Attachment A.)

2. The effluent shall contain a chlorine residual of at least 1.0 mg/l after a detention time of at least 20 minutes (based on peak flow) and shall be monitored once per day by grab sample, when effluent is being discharged. When discharged to Kirby Lake, the effluent shall contain less than 0.1 mg/l chlorine residual. When effluent is being discharged, the chlorine residual shall be monitored daily by grab sample prior to the discharge to the Lake. An equivalent method of disinfection may be substituted only with prior approval of the Executive Director.
3. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per week by grab sample.
4. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
5. Effluent monitoring samples shall be taken at the following location(s): See No. 24, in the Other Requirements section.
6. The effluent shall contain a minimum dissolved oxygen of 6.0 mg/l during the period of April – September and 5.0 mg/l during the period of October – March and shall be monitored twice per week by grab sample.
7. The annual average flow shall be reported monthly.

INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS Outfall Number 003

1. During the period beginning upon the date of issuance and lasting through the completion of upgrading the facility to the 22.0 million gallons per day (MGD) facility, the permittee is authorized to discharge subject to the following effluent limitations: The annual average flow of effluent shall not exceed 7.0 million gallons per day (MGD).*

Effluent Characteristic	Discharge Limitations				Min. Self-Monitoring Requirements	
	Daily Avg	7-day Avg	Daily Max	Single Grab	Report Daily Avg. & Daily Max.	
	mg/l (lbs/day)	mg/l	mg/l	mg/l	Measurement Frequency	Sample Type
Flow, MGD	Report	N/A	Report	N/A	Continuous	Totalizing Meter
Carbonaceous Biochemical Oxygen Demand (5-day)						
April - September	7 (409)	11	17	25	Two/week	Composite
October - March	10 (584)	15	25	35	Two/week	Composite
Total Suspended Solids	15 (876)	25	40	60	Two/week	Composite
Ammonia Nitrogen						
April - September	2 (117)	5	7	15	Two/week	Composite
October - March	3 (175)	5	7	15	Two/week	Composite
Total Phosphorus	Report (Report)	N/A	Report	N/A	Two/week	Composite
E. coli, CFU or MPN per 100 ml	126	N/A	399	N/A	Three/week	Grab

* The combined annual average discharge flow limits and the combined effluent load limits for CBOD5, TSS and NH3-N for Outfalls 001, 002, and 003 are specified on Page 47, in No. 23 of the Other Requirements section. (The general locations of the outfalls are located in Attachment A.)

2. The effluent shall contain a chlorine residual of at least 1.0 mg/l after a detention time of at least 20 minutes (based on peak flow) and shall be monitored daily by grab sample, when effluent is being discharged. The permittee shall dechlorinate the chlorinated effluent to less than 0.1 mg/l chlorine residual. When effluent is being discharged, the chlorine residual shall be monitored daily by grab sample after the dechlorination process. An equivalent method of disinfection may be substituted only with prior approval of the Executive Director.
3. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per week by grab sample.
4. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
5. Effluent monitoring samples shall be taken at the following location(s): See No. 24 in the Other Requirements section.
6. The effluent shall contain a minimum dissolved oxygen of 6.0 mg/l during the period of April – September and 5.0 mg/l during the period of October – March and shall be monitored twice per week by grab sample.
7. The annual average flow shall be reported monthly.

FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS Outfall Number 003

1. During the period beginning upon the date completion of upgrading the facility to 22.0 million gallons per day (MGD) and lasting through the date of expiration, the permittee is authorized to discharge subject to the following effluent limitations: The annual average flow of effluent shall not exceed 7.0 MGD.*

Effluent Characteristic	Discharge Limitations				Min. Self-Monitoring Requirements	
	Daily Avg	7-day Avg	Daily Max	Single Grab	Report Daily Avg. & Daily Max.	
	mg/l (lbs/day)	mg/l	mg/l	mg/l	Measurement Frequency	Sample Type
Flow, MGD	Report	N/A	Report	N/A	Continuous	Totalizing Meter
Carbonaceous Biochemical Oxygen Demand (5-day)						
April - September	7 (409)	11	17	25	Two/week	Composite
October - March	10 (584)	15	25	35	Two/week	Composite
Total Suspended Solids	15 (876)	25	40	60	Two/week	Composite
Ammonia Nitrogen						
April - September	2 (117)	5	7	15	Two/week	Composite
October - March	3 (175)	5	7	15	Two/week	Composite
Total Phosphorus	Report (Report)	N/A	Report	N/A	Two/week	Composite
E. coli, CFU or MPN per 100 ml	126	N/A	399	N/A	Three/week	Grab

* The combined annual average discharge flow limits and the combined effluent load limits for CBOD5, TSS and NH3-N for Outfalls 001, 002, and 003 are specified on Page 47, in No. 23 of the Other Requirements section. (The general locations of the outfalls are located in Attachment A.)

2. The effluent shall contain a chlorine residual of at least 1.0 mg/l after a detention time of at least 20 minutes (based on peak flow) and shall be monitored daily by grab sample, when effluent is being discharged. The permittee shall dechlorinate the chlorinated effluent to less than 0.1 mg/l chlorine residual. When effluent is being discharged, the chlorine residual shall be monitored daily by grab sample after the dechlorination process. An equivalent method of disinfection may be substituted only with prior approval of the Executive Director.
3. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per week by grab sample.
4. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
5. Effluent monitoring samples shall be taken at the following location(s): See No. 24, in the Other Requirements section.
6. The effluent shall contain a minimum dissolved oxygen of 6.0 mg/l during the period of April – September and 5.0 mg/l during the period of October – March and shall be monitored twice per week by grab sample.
7. The annual average flow shall be reported monthly.

DEFINITIONS AND STANDARD PERMIT CONDITIONS

As required by Title 30 Texas Administrative Code (TAC) Chapter 305, certain regulations appear as standard conditions in waste discharge permits. 30 TAC § 305.121 - 305.129 (relating to Permit Characteristics and Conditions) as promulgated under the Texas Water Code (TWC) §§ 5.103 and 5.105, and the Texas Health and Safety Code (THSC) §§ 361.017 and 361.024(a), establish the characteristics and standards for waste discharge permits, including sewage sludge, and those sections of 40 Code of Federal Regulations (CFR) Part 122 adopted by reference by the Commission. The following text includes these conditions and incorporates them into this permit. All definitions in TWC § 26.001 and 30 TAC Chapter 305 shall apply to this permit and are incorporated by reference. Some specific definitions of words or phrases used in this permit are as follows:

1. Flow Measurements

   a. Annual average flow - the arithmetic average of all daily flow determinations taken within the preceding 12 consecutive calendar months. The annual average flow determination shall consist of daily flow volume determinations made by a totalizing meter, charted on a chart recorder and limited to major domestic wastewater discharge facilities with one million gallons per day or greater permitted flow.

   b. Daily average flow - the arithmetic average of all determinations of the daily flow within a period of one calendar month. The daily average flow determination shall consist of determinations made on at least four separate days. If instantaneous measurements are used to determine the daily flow, the determination shall be the arithmetic average of all instantaneous measurements taken during that month. Daily average flow determination for intermittent discharges shall consist of a minimum of three flow determinations on days of discharge.

   c. Daily maximum flow - the highest total flow for any 24-hour period in a calendar month.

   d. Instantaneous flow - the measured flow during the minimum time required to interpret the flow measuring device.

   e. 2-hour peak flow (domestic wastewater treatment plants) - the maximum flow sustained for a two-hour period during the period of daily discharge. The average of multiple measurements of instantaneous maximum flow within a two-hour period may be used to calculate the 2-hour peak flow.

   f. Maximum 2-hour peak flow (domestic wastewater treatment plants) - the highest 2-hour peak flow for any 24-hour period in a calendar month.

2. Concentration Measurements

   a. Daily average concentration - the arithmetic average of all effluent samples, composite or grab as required by this permit, within a period of one calendar month, consisting of at least four separate representative measurements.

      i. For domestic wastewater treatment plants - When four samples are not available in a calendar month, the arithmetic average (weighted by flow) of all values in the previous four consecutive month period consisting of at least four measurements shall be utilized as the daily average concentration.

ii. For all other wastewater treatment plants - When four samples are not available in a calendar month, the arithmetic average (weighted by flow) of all values taken during the month shall be utilized as the daily average concentration.

b. 7-day average concentration - the arithmetic average of all effluent samples, composite or grab as required by this permit, within a period of one calendar week, Sunday through Saturday.

c. Daily maximum concentration - the maximum concentration measured on a single day, by the sample type specified in the permit, within a period of one calendar month.

d. Daily discharge - the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in terms of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the sampling day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the sampling day.

The daily discharge determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the daily discharge determination of concentration shall be the arithmetic average (weighted by flow value) of all samples collected during that day.

e. Bacteria concentration (*E. coli* or Enterococci) - Colony Forming Units (CFU) or Most Probable Number (MPN) of bacteria per 100 milliliters effluent. The daily average bacteria concentration is a geometric mean of the values for the effluent samples collected in a calendar month. The geometric mean shall be determined by calculating the nth root of the product of all measurements made in a calendar month, where n equals the number of measurements made; or, computed as the antilogarithm of the arithmetic mean of the logarithms of all measurements made in a calendar month. For any measurement of bacteria equaling zero, a substituted value of one shall be made for input into either computation method. If specified, the 7-day average for bacteria is the geometric mean of the values for all effluent samples collected during a calendar week.

f. Daily average loading (lbs/day) - the arithmetic average of all daily discharge loading calculations during a period of one calendar month. These calculations must be made for each day of the month that a parameter is analyzed. The daily discharge, in terms of mass (lbs/day), is calculated as (Flow, MGD x Concentration, mg/l x 8.34).

g. Daily maximum loading (lbs/day) - the highest daily discharge, in terms of mass (lbs/day), within a period of one calendar month.

3. Sample Type

a. Composite sample - For domestic wastewater, a composite sample is a sample made up of a minimum of three effluent portions collected in a continuous 24-hour period or during the period of daily discharge if less than 24 hours, and combined in volumes proportional to flow, and collected at the intervals required by 30 TAC § 319.9 (a). For industrial wastewater, a composite sample is a sample made up of a minimum of three effluent portions collected in a continuous 24-hour period or during the period of daily discharge if less than 24 hours, and combined in volumes proportional to flow, and collected at the intervals required by 30 TAC § 319.9 (b).

b. Grab sample - an individual sample collected in less than 15 minutes.

4. Treatment Facility (facility) - wastewater facilities used in the conveyance, storage, treatment, recycling, reclamation and/or disposal of domestic sewage, industrial wastes, agricultural wastes, recreational wastes, or other wastes including sludge handling or disposal facilities under the jurisdiction of the Commission.

5. The term "sewage sludge" is defined as solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in 30 TAC Chapter 312. This includes the solids that have not been classified as hazardous waste separated from wastewater by unit processes.

6. Bypass - the intentional diversion of a waste stream from any portion of a treatment facility.

MONITORING AND REPORTING REQUIREMENTS

1. Self-Reporting

Monitoring results shall be provided at the intervals specified in the permit. Unless otherwise specified in this permit or otherwise ordered by the Commission, the permittee shall conduct effluent sampling and reporting in accordance with 30 TAC §§ 319.4 - 319.12. Unless otherwise specified, effluent monitoring data shall be submitted each month, to the Compliance Monitoring Team of the Enforcement Division (MC 224), by the 20th day of the following month for each discharge which is described by this permit whether or not a discharge is made for that month. Monitoring results must be submitted online using the NetDMR reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. Monitoring results must be signed and certified as required by Monitoring and Reporting Requirements No. 10.

As provided by state law, the permittee is subject to administrative, civil and criminal penalties, as applicable, for negligently or knowingly violating the Clean Water Act (CWA); TWC §§ 26, 27, and 28; and THSC § 361, including but not limited to knowingly making any false statement, representation, or certification on any report, record, or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, or falsifying, tampering with or knowingly rendering inaccurate any monitoring device or method required by this permit or violating any other requirement imposed by state or federal regulations.

2. Test Procedures

a. Unless otherwise specified in this permit, test procedures for the analysis of pollutants shall comply with procedures specified in 30 TAC §§ 319.11 - 319.12. Measurements, tests, and calculations shall be accurately accomplished in a representative manner.

b. All laboratory tests submitted to demonstrate compliance with this permit must meet the requirements of 30 TAC § 25, Environmental Testing Laboratory Accreditation and Certification.

3. Records of Results

a. Monitoring samples and measurements shall be taken at times and in a manner so as to be representative of the monitored activity.

b. Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period

of at least five years (or longer as required by 40 CFR Part 503), monitoring and reporting records, including strip charts and records of calibration and maintenance, copies of all records required by this permit, records of all data used to complete the application for this permit, and the certification required by 40 CFR § 264.73(b)(9) shall be retained at the facility site, or shall be readily available for review by a TCEQ representative for a period of three years from the date of the record or sample, measurement, report, application or certification. This period shall be extended at the request of the Executive Director.

c. Records of monitoring activities shall include the following:

i. date, time and place of sample or measurement;

ii. identity of individual who collected the sample or made the measurement.

iii. date and time of analysis;

iv. identity of the individual and laboratory who performed the analysis;

v. the technique or method of analysis; and

vi. the results of the analysis or measurement and quality assurance/quality control records.

The period during which records are required to be kept shall be automatically extended to the date of the final disposition of any administrative or judicial enforcement action that may be instituted against the permittee.

4. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit using approved analytical methods as specified above, all results of such monitoring shall be included in the calculation and reporting of the values submitted on the approved self-report form. Increased frequency of sampling shall be indicated on the self-report form.

5. Calibration of Instruments

All automatic flow measuring or recording devices and all totalizing meters for measuring flows shall be accurately calibrated by a trained person at plant start-up and as often thereafter as necessary to ensure accuracy, but not less often than annually unless authorized by the Executive Director for a longer period. Such person shall verify in writing that the device is operating properly and giving accurate results. Copies of the verification shall be retained at the facility site and/or shall be readily available for review by a TCEQ representative for a period of three years.

6. Compliance Schedule Reports

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date to the Regional Office and the Compliance Monitoring Team of the Enforcement Division (MC 224).

7. Noncompliance Notification

   a. In accordance with 30 TAC § 305.125(9) any noncompliance which may endanger human health or safety, or the environment shall be reported by the permittee to the TCEQ. Except as allowed by 30 TAC § 305.132, report of such information shall be provided orally or by facsimile transmission (FAX) to the Regional Office within 24 hours of becoming aware of the noncompliance. A written submission of such information shall also be provided by the permittee to the Regional Office and the Compliance Monitoring Team of the Enforcement Division (MC 224) within five working days of becoming aware of the noncompliance. For Publicly Owned Treatment Works (POTWs), effective September 1, 2020, the permittee must submit the written report for unauthorized discharges and unanticipated bypasses that exceed any effluent limit in the permit using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. The written submission shall contain a description of the noncompliance and its cause; the potential danger to human health or safety, or the environment; the period of noncompliance, including exact dates and times; if the noncompliance has not been corrected, the time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance, and to mitigate its adverse effects.

   b. The following violations shall be reported under Monitoring and Reporting Requirement 7.a.:

      i. Unauthorized discharges as defined in Permit Condition 2(g).

      ii. Any unanticipated bypass that exceeds any effluent limitation in the permit.

      iii. Violation of a permitted maximum daily discharge limitation for pollutants listed specifically in the Other Requirements section of an Industrial TPDES permit.

   c. In addition to the above, any effluent violation which deviates from the permitted effluent limitation by more than 40% shall be reported by the permittee in writing to the Regional Office and the Compliance Monitoring Team of the Enforcement Division (MC 224) within 5 working days of becoming aware of the noncompliance.

   d. Any noncompliance other than that specified in this section, or any required information not submitted or submitted incorrectly, shall be reported to the Compliance Monitoring Team of the Enforcement Division (MC 224) as promptly as possible. For effluent limitation violations, non-compliances shall be reported on the approved self-report form.

8. In accordance with the procedures described in 30 TAC §§ 35.301 - 35.303 (relating to Water Quality Emergency and Temporary Orders) if the permittee knows in advance of the need for a bypass, it shall submit prior notice by applying for such authorization.

9. Changes in Discharges of Toxic Substances

   All existing manufacturing, commercial, mining, and silvicultural permittees shall notify the Regional Office, orally or by facsimile transmission within 24 hours, and both the Regional Office and the Compliance Monitoring Team of the Enforcement Division (MC 224) in writing within five (5) working days, after becoming aware of or having reason to believe:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant listed at 40 CFR Part 122, Appendix D, Tables II and III (excluding Total Phenols) which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   i. One hundred micrograms per liter (100 µg/L);

   ii. Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

   iii. Five (5) times the maximum concentration value reported for that pollutant in the permit application; or

   iv. The level established by the TCEQ.

b. That any activity has occurred or will occur which would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   i. Five hundred micrograms per liter (500 µg/L);

   ii. One milligram per liter (1 mg/L) for antimony;

   iii. Ten (10) times the maximum concentration value reported for that pollutant in the permit application; or

   iv. The level established by the TCEQ.

10. Signatories to Reports

    All reports and other information requested by the Executive Director shall be signed by the person and in the manner required by 30 TAC § 305.128 (relating to Signatories to Reports).

11. All POTWs must provide adequate notice to the Executive Director of the following:

    a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to CWA § 301 or § 306 if it were directly discharging those pollutants;

    b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit; and

    c. For the purpose of this paragraph, adequate notice shall include information on:

       i. The quality and quantity of effluent introduced into the POTW; and

       ii. Any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

PERMIT CONDITIONS

1. General

   a. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in an application or in any report to the Executive Director, it shall promptly submit such facts or information.

   b. This permit is granted on the basis of the information supplied and representations made by the permittee during action on an application and relying upon the accuracy and completeness of that information and those representations. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked, in whole or in part, in accordance with 30 TAC Chapter 305, Subchapter D, during its term for good cause including, but not limited to, the following:

      i. Violation of any terms or conditions of this permit;

      ii. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

      iii. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

   c. The permittee shall furnish to the Executive Director, upon request and within a reasonable time, any information to determine whether cause exists for amending, revoking, suspending or terminating the permit. The permittee shall also furnish to the Executive Director, upon request, copies of records required to be kept by the permit.

2. Compliance

   a. Acceptance of the permit by the person to whom it is issued constitutes acknowledgment and agreement that such person will comply with all the terms and conditions embodied in the permit, and the rules and other orders of the Commission.

   b. The permittee has a duty to comply with all conditions of the permit. Failure to comply with any permit condition constitutes a violation of the permit and the Texas Water Code or the Texas Health and Safety Code, and is grounds for enforcement action, for permit amendment, revocation, or suspension, or for denial of a permit renewal application or an application for a permit for another facility.

   c. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit.

   d. The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal or other permit violation that has a reasonable likelihood of adversely affecting human health or the environment.

   e. Authorization from the Commission is required before beginning any change in the permitted facility or activity that may result in noncompliance with any permit requirements.

f. A permit may be amended, suspended and reissued, or revoked for cause in accordance with 30 TAC §§ 305.62 and 305.66 and TWC§ 7.302. The filing of a request by the permittee for a permit amendment, suspension and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

g. There shall be no unauthorized discharge of wastewater or any other waste. For the purpose of this permit, an unauthorized discharge is considered to be any discharge of wastewater into or adjacent to water in the state at any location not permitted as an outfall or otherwise defined in the Other Requirements section of this permit.

h. In accordance with 30 TAC § 305.535(a), the permittee may allow any bypass to occur from a TPDES permitted facility which does not cause permitted effluent limitations to be exceeded or an unauthorized discharge to occur, but only if the bypass is also for essential maintenance to assure efficient operation.

i. The permittee is subject to administrative, civil, and criminal penalties, as applicable, under TWC §§ 7.051 - 7.075 (relating to Administrative Penalties), 7.101 - 7.111 (relating to Civil Penalties), and 7.141 - 7.202 (relating to Criminal Offenses and Penalties) for violations including, but not limited to, negligently or knowingly violating the federal CWA §§ 301, 302, 306, 307, 308, 318, or 405, or any condition or limitation implementing any sections in a permit issued under the CWA § 402, or any requirement imposed in a pretreatment program approved under the CWA §§ 402 (a)(3) or 402 (b)(8).

3. Inspections and Entry

a. Inspection and entry shall be allowed as prescribed in the TWC Chapters 26, 27, and 28, and THSC § 361.

b. The members of the Commission and employees and agents of the Commission are entitled to enter any public or private property at any reasonable time for the purpose of inspecting and investigating conditions relating to the quality of water in the state or the compliance with any rule, regulation, permit or other order of the Commission. Members, employees, or agents of the Commission and Commission contractors are entitled to enter public or private property at any reasonable time to investigate or monitor or, if the responsible party is not responsive or there is an immediate danger to public health or the environment, to remove or remediate a condition related to the quality of water in the state. Members, employees, Commission contractors, or agents acting under this authority who enter private property shall observe the establishment's rules and regulations concerning safety, internal security, and fire protection, and if the property has management in residence, shall notify management or the person then in charge of his presence and shall exhibit proper credentials. If any member, employee, Commission contractor, or agent is refused the right to enter in or on public or private property under this authority, the Executive Director may invoke the remedies authorized in TWC § 7.002. The statement above, that Commission entry shall occur in accordance with an establishment's rules and regulations concerning safety, internal security, and fire protection, is not grounds for denial or restriction of entry to any part of the facility, but merely describes the Commission's duty to observe appropriate rules and regulations during an inspection.

4. Permit Amendment and/or Renewal

   a. The permittee shall give notice to the Executive Director as soon as possible of any planned physical alterations or additions to the permitted facility if such alterations or additions would require a permit amendment or result in a violation of permit requirements. Notice shall also be required under this paragraph when:

      i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in accordance with 30 TAC § 305.534 (relating to New Sources and New Dischargers); or

      ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in the permit, nor to notification requirements in Monitoring and Reporting Requirements No. 9; or

      iii. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

   b. Prior to any facility modifications, additions, or expansions that will increase the plant capacity beyond the permitted flow, the permittee must apply for and obtain proper authorization from the Commission before commencing construction.

   c. The permittee must apply for an amendment or renewal at least 180 days prior to expiration of the existing permit in order to continue a permitted activity after the expiration date of the permit. If an application is submitted prior to the expiration date of the permit, the existing permit shall remain in effect until the application is approved, denied, or returned. If the application is returned or denied, authorization to continue such activity shall terminate upon the effective date of the action. If an application is not submitted prior to the expiration date of the permit, the permit shall expire and authorization to continue such activity shall terminate.

   d. Prior to accepting or generating wastes which are not described in the permit application or which would result in a significant change in the quantity or quality of the existing discharge, the permittee must report the proposed changes to the Commission. The permittee must apply for a permit amendment reflecting any necessary changes in permit conditions, including effluent limitations for pollutants not identified and limited by this permit.

   e. In accordance with the TWC § 26.029(b), after a public hearing, notice of which shall be given to the permittee, the Commission may require the permittee, from time to time, for good cause, in accordance with applicable laws, to conform to new or additional conditions.

   f. If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under CWA § 307(a) for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or

prohibition. The permittee shall comply with effluent standards or prohibitions established under CWA § 307(a) for toxic pollutants within the time provided in the regulations that established those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

5. Permit Transfer

   a. Prior to any transfer of this permit, Commission approval must be obtained. The Commission shall be notified in writing of any change in control or ownership of facilities authorized by this permit. Such notification should be sent to the Applications Review and Processing Team (MC 148) of the Water Quality Division.

   b. A permit may be transferred only according to the provisions of 30 TAC § 305.64 (relating to Transfer of Permits) and 30 TAC § 50.133 (relating to Executive Director Action on Application or WQMP update).

6. Relationship to Hazardous Waste Activities

   This permit does not authorize any activity of hazardous waste storage, processing, or disposal that requires a permit or other authorization pursuant to the Texas Health and Safety Code.

7. Relationship to Water Rights

   Disposal of treated effluent by any means other than discharge directly to water in the state must be specifically authorized in this permit and may require a permit pursuant to TWC Chapter 11.

8. Property Rights

   A permit does not convey any property rights of any sort, or any exclusive privilege.

9. Permit Enforceability

   The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

10. Relationship to Permit Application

    The application pursuant to which the permit has been issued is incorporated herein; provided, however, that in the event of a conflict between the provisions of this permit and the application, the provisions of the permit shall control.

11. Notice of Bankruptcy

    a. Each permittee shall notify the Executive Director, in writing, immediately following the filing of a voluntary or involuntary petition for bankruptcy under any chapter of Title 11 (Bankruptcy) of the United States Code (11 USC) by or against:

       i. the permittee;

       ii. an entity (as that term is defined in 11 USC, § 101(14)) controlling the permittee or listing the permit or permittee as property of the estate; or

iii. an affiliate (as that term is defined in 11 USC, § 101(2)) of the permittee.

b. This notification must indicate:

i. the name of the permittee and the permit number(s);

ii. the bankruptcy court in which the petition for bankruptcy was filed; and

iv. the date of filing of the petition.

OPERATIONAL REQUIREMENTS

1. The permittee shall at all times ensure that the facility and all of its systems of collection, treatment, and disposal are properly operated and maintained. This includes, but is not limited to, the regular, periodic examination of wastewater solids within the treatment plant by the operator in order to maintain an appropriate quantity and quality of solids inventory as described in the various operator training manuals and according to accepted industry standards for process control. Process control, maintenance, and operations records shall be retained at the facility site, or shall be readily available for review by a TCEQ representative, for a period of three years.

2. Upon request by the Executive Director, the permittee shall take appropriate samples and provide proper analysis in order to demonstrate compliance with Commission rules. Unless otherwise specified in this permit or otherwise ordered by the Commission, the permittee shall comply with all applicable provisions of 30 TAC Chapter 312 concerning sewage sludge use and disposal and 30 TAC §§ 319.21 - 319.29 concerning the discharge of certain hazardous metals.

3. Domestic wastewater treatment facilities shall comply with the following provisions:

   a. The permittee shall notify the Municipal Permits Team, Wastewater Permitting Section (MC 148) of the Water Quality Division, in writing, of any facility expansion at least 90 days prior to conducting such activity.

   b. The permittee shall submit a closure plan for review and approval to the Municipal Permits Team, Wastewater Permitting Section (MC 148) of the Water Quality Division, for any closure activity at least 90 days prior to conducting such activity. Closure is the act of permanently taking a waste management unit or treatment facility out of service and includes the permanent removal from service of any pit, tank, pond, lagoon, surface impoundment and/or other treatment unit regulated by this permit.

4. The permittee is responsible for installing prior to plant start-up, and subsequently maintaining, adequate safeguards to prevent the discharge of untreated or inadequately treated wastes during electrical power failures by means of alternate power sources, standby generators, and/or retention of inadequately treated wastewater.

5. Unless otherwise specified, the permittee shall provide a readily accessible sampling point and, where applicable, an effluent flow measuring device or other acceptable means by which effluent flow may be determined.

6. The permittee shall remit an annual water quality fee to the Commission as required by 30 TAC Chapter 21. Failure to pay the fee may result in revocation of this permit under TWC § 7.302(b)(6).

7. Documentation

   For all written notifications to the Commission required of the permittee by this permit, the permittee shall keep and make available a copy of each such notification under the same conditions as self-monitoring data are required to be kept and made available. Except for information required for TPDES permit applications, effluent data, including effluent data in permits, draft permits and permit applications, and other information specified as not confidential in 30 TAC §§ 1.5(d), any information submitted pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted in the manner prescribed in the application form or by stamping the words confidential business information on each page containing such information. If no claim is made at the time of submission, information may be made available to the public without further notice. If the Commission or Executive Director agrees with the designation of confidentiality, the TCEQ will not provide the information for public inspection unless required by the Texas Attorney General or a court pursuant to an open records request. If the Executive Director does not agree with the designation of confidentiality, the person submitting the information will be notified.

8. Facilities that generate domestic wastewater shall comply with the following provisions; domestic wastewater treatment facilities at permitted industrial sites are excluded.

   a. Whenever flow measurements for any domestic sewage treatment facility reach 75% of the permitted daily average or annual average flow for three consecutive months, the permittee must initiate engineering and financial planning for expansion and/or upgrading of the domestic wastewater treatment and/or collection facilities. Whenever the flow reaches 90% of the permitted daily average or annual average flow for three consecutive months, the permittee shall obtain necessary authorization from the Commission to commence construction of the necessary additional treatment and/or collection facilities. In the case of a domestic wastewater treatment facility which reaches 75% of the permitted daily average or annual average flow for three consecutive months, and the planned population to be served or the quantity of waste produced is not expected to exceed the design limitations of the treatment facility, the permittee shall submit an engineering report supporting this claim to the Executive Director of the Commission.

      If in the judgment of the Executive Director the population to be served will not cause permit noncompliance, then the requirement of this section may be waived. To be effective, any waiver must be in writing and signed by the Director of the Enforcement Division (MC 219) of the Commission, and such waiver of these requirements will be reviewed upon expiration of the existing permit; however, any such waiver shall not be interpreted as condoning or excusing any violation of any permit parameter.

   b. The plans and specifications for domestic sewage collection and treatment works associated with any domestic permit must be approved by the Commission and failure to secure approval before commencing construction of such works or making a discharge is a violation of this permit and each day is an additional violation until approval has been secured.

c. Permits for domestic wastewater treatment plants are granted subject to the policy of the Commission to encourage the development of area-wide waste collection, treatment, and disposal systems. The Commission reserves the right to amend any domestic wastewater permit in accordance with applicable procedural requirements to require the system covered by this permit to be integrated into an area-wide system, should such be developed; to require the delivery of the wastes authorized to be collected in, treated by or discharged from said system, to such area-wide system; or to amend this permit in any other particular to effectuate the Commission's policy. Such amendments may be made when the changes required are advisable for water quality control purposes and are feasible on the basis of waste treatment technology, engineering, financial, and related considerations existing at the time the changes are required, exclusive of the loss of investment in or revenues from any then existing or proposed waste collection, treatment or disposal system.

9. Domestic wastewater treatment plants shall be operated and maintained by sewage plant operators holding a valid certificate of competency at the required level as defined in 30 TAC Chapter 30.

10. For Publicly Owned Treatment Works (POTWs), the 30-day average (or monthly average) percent removal for BOD and TSS shall not be less than 85%, unless otherwise authorized by this permit.

11. Facilities that generate industrial solid waste as defined in 30 TAC § 335.1 shall comply with these provisions:

    a. Any solid waste, as defined in 30 TAC § 335.1 (including but not limited to such wastes as garbage, refuse, sludge from a waste treatment, water supply treatment plant or air pollution control facility, discarded materials, discarded materials to be recycled, whether the waste is solid, liquid, or semisolid), generated by the permittee during the management and treatment of wastewater, must be managed in accordance with all applicable provisions of 30 TAC Chapter 335, relating to Industrial Solid Waste Management.

    b. Industrial wastewater that is being collected, accumulated, stored, or processed before discharge through any final discharge outfall, specified by this permit, is considered to be industrial solid waste until the wastewater passes through the actual point source discharge and must be managed in accordance with all applicable provisions of 30 TAC Chapter 335.

    c. The permittee shall provide written notification, pursuant to the requirements of 30 TAC § 335.8(b)(1), to the Corrective Action Section (MC 221) of the Remediation Division informing the Commission of any closure activity involving an Industrial Solid Waste Management Unit, at least 90 days prior to conducting such an activity.

    d. Construction of any industrial solid waste management unit requires the prior written notification of the proposed activity to the Registration and Reporting Section (MC 129) of the Permitting and Registration Support Division. No person shall dispose of industrial solid waste, including sludge or other solids from wastewater treatment processes, prior to fulfilling the deed recordation requirements of 30 TAC § 335.5.

    e. The term "industrial solid waste management unit" means a landfill, surface impoundment, waste-pile, industrial furnace, incinerator, cement kiln, injection well,

container, drum, salt dome waste containment cavern, or any other structure vessel, appurtenance, or other improvement on land used to manage industrial solid waste.

f. The permittee shall keep management records for all sludge (or other waste) removed from any wastewater treatment process. These records shall fulfill all applicable requirements of 30 TAC § 335 and must include the following, as it pertains to wastewater treatment and discharge:

i. Volume of waste and date(s) generated from treatment process;
ii. Volume of waste disposed of on-site or shipped off-site;
iii. Date(s) of disposal;
iv. Identity of hauler or transporter;
v. Location of disposal site; and
vi. Method of final disposal.

The above records shall be maintained on a monthly basis. The records shall be retained at the facility site, or shall be readily available for review by authorized representatives of the TCEQ for at least five years.

12. For industrial facilities to which the requirements of 30 TAC § 335 do not apply, sludge and solid wastes, including tank cleaning and contaminated solids for disposal, shall be disposed of in accordance with THSC § 361.

TCEQ Revision 08/2008

SLUDGE PROVISIONS

The permittee is authorized to dispose of sludge only at a Texas Commission on Environmental Quality (TCEQ) authorized land application site or co-disposal landfill. **The disposal of sludge by land application on property owned, leased or under the direct control of the permittee is a violation of the permit unless the site is authorized with the TCEQ. This provision does not authorize Distribution and Marketing of sludge. This provision does not authorize land application of Class A Sludge. This provision does not authorize the permittee to land apply sludge on property owned, leased or under the direct control of the permittee. This provision does authorize the permittee to dispose of sewage sludge on-site at the 64-acre sewage sludge surface disposal site (former sludge lagoons) (see Attachment B) as authorized in Section V of this provision.**

SECTION I. REQUIREMENTS APPLYING TO ALL SEWAGE SLUDGE LAND APPLICATION

A. General Requirements

1. The permittee shall handle and dispose of sewage sludge in accordance with 30 TAC § 312 and all other applicable state and federal regulations in a manner that protects public health and the environment from any reasonably anticipated adverse effects due to any toxic pollutants that may be present in the sludge.

2. In all cases, if the person (permit holder) who prepares the sewage sludge supplies the sewage sludge to another person for land application use or to the owner or lease holder of the land, the permit holder shall provide necessary information to the parties who receive the sludge to assure compliance with these regulations.

3. The permittee shall give 180 days prior notice to the Executive Director in care of the Wastewater Permitting Section (MC 148) of the Water Quality Division of any change planned in the sewage sludge disposal practice.

B. Testing Requirements

1. Sewage sludge shall be tested annually in accordance with the method specified in both 40 CFR Part 261, Appendix II and 40 CFR Part 268, Appendix I [Toxicity Characteristic Leaching Procedure (TCLP)] or other method that receives the prior approval of the TCEQ for the contaminants listed in 40 CFR Part 261.24, Table 1. Sewage sludge failing this test shall be managed according to RCRA standards for generators of hazardous waste, and the waste's disposition must be in accordance with all applicable requirements for hazardous waste processing, storage, or disposal. Following failure of any TCLP test, the management or disposal of sewage sludge at a facility other than an authorized hazardous waste processing, storage, or disposal facility shall be prohibited until such time as the permittee can demonstrate the sewage sludge no longer exhibits the hazardous waste toxicity characteristics (as demonstrated by the results of the TCLP tests). A written report shall be provided to both the TCEQ Registration and Reporting Section (MC 129) of the Permitting and Registration Support Division and the Regional Director (MC Region 3) within seven (7) days after failing the TCLP Test.

The report shall contain test results, certification that unauthorized waste management has stopped and a summary of alternative disposal plans that comply with RCRA standards for the management of hazardous waste. The report shall be addressed to: Director, Permitting and Registration Support Division (MC 129), Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087. In addition, the permittee shall prepare an annual report on the results of all sludge toxicity testing. This annual report shall be submitted to the TCEQ Regional Office (MC Region 3) and the Compliance Monitoring Team (MC 224) of the Enforcement Division by September 30th of each year. Effective September 1, 2020, the permittee must submit this annual report using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver.

2. Sewage sludge shall not be applied to the land if the concentration of the pollutants exceeds the pollutant concentration criteria in Table 1. The frequency of testing for pollutants in Table 1 is found in Section I.C. of this permit.

TABLE 1

Pollutant	Ceiling Concentration (Milligrams per kilogram)*
Arsenic	75
Cadmium	85
Chromium	3000
Copper	4300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
PCBs	49
Selenium	100
Zinc	7500

* Dry weight basis

3. Pathogen Control

All sewage sludge that is applied to agricultural land, forest, a public contact site, or a reclamation site must be treated by one of the following methods to ensure that the sludge meets either the Class A, Class AB or Class B pathogen requirements.

a. For sewage sludge to be classified as Class A with respect to pathogens, the density of fecal coliform in the sewage sludge must be less than 1,000 most probable number (MPN) per gram of total solids (dry weight basis), or the density of Salmonella sp. bacteria in the sewage sludge must be less than three MPN per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed. In addition, one of the alternatives listed below must be met:

Alternative 1 - The temperature of the sewage sludge that is used or disposed shall be maintained at or above a specific value for a period of time. See 30 TAC § 312.82(a)(2)(A) for specific information;

Alternative 5 (PFRP) - Sewage sludge that is used or disposed of must be treated in one of the Processes to Further Reduce Pathogens (PFRP) described in 40 CFR Part 503, Appendix B. PFRP include composting, heat drying, heat treatment, and thermophilic aerobic digestion; or

Alternative 6 (PFRP Equivalent) - Sewage sludge that is used or disposed of must be treated in a process that has been approved by the U. S. Environmental Protection Agency as being equivalent to those in Alternative 5.

b. For sewage sludge to be classified as Class AB with respect to pathogens, the density of fecal coliform in the sewage sludge must be less than 1,000 MPN per gram of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge be less than three MPN per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed. In addition, one of the alternatives listed below must be met:

Alternative 2 - The pH of the sewage sludge that is used or disposed shall be raised to above 12 std. units and shall remain above 12 std. units for 72 hours.

The temperature of the sewage sludge shall be above 52° Celsius for 12 hours or longer during the period that the pH of the sewage sludge is above 12 std. units.

At the end of the 72-hour period during which the pH of the sewage sludge is above 12 std. units, the sewage sludge shall be air dried to achieve a percent solids in the sewage sludge greater than 50%; or

Alternative 3 - The sewage sludge shall be analyzed for enteric viruses prior to pathogen treatment. The limit for enteric viruses is less than one Plaque-forming Unit per four grams of total solids (dry weight basis) either before or following pathogen treatment. See 30 TAC § 312.82(a)(2)(C)(i-iii) for specific information. The sewage sludge shall be analyzed for viable helminth ova prior to pathogen treatment. The limit for viable helminth ova is less than one per four grams of total solids (dry weight basis) either before or following pathogen treatment. See 30 TAC § 312.82(a)(2)(C)(iv-vi) for specific information; or

Alternative 4 - The density of enteric viruses in the sewage sludge shall be less than one Plaque-forming Unit per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed. The density of viable helminth ova in the sewage sludge shall be less than one per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed.

c. Sewage sludge that meets the requirements of Class AB sewage sludge may be classified a Class A sewage sludge if a variance request is submitted in writing that is supported by substantial documentation demonstrating equivalent methods for reducing odors and written approval is granted by the executive director. The executive director may deny the variance request or revoke that approved variance if it is determined that the variance may potentially endanger human health or the environment, or create nuisance odor conditions.

d. Three alternatives are available to demonstrate compliance with Class B criteria for sewage sludge.

Alternative 1

i. A minimum of seven random samples of the sewage sludge shall be collected within 48 hours of the time the sewage sludge is used or disposed of during each monitoring episode for the sewage sludge.

ii. The geometric mean of the density of fecal coliform in the samples collected shall be less than either 2,000,000 MPN per gram of total solids (dry weight basis) or 2,000,000 Colony Forming Units per gram of total solids (dry weight basis).

Alternative 2 - Sewage sludge that is used or disposed of shall be treated in one of the Processes to Significantly Reduce Pathogens (PSRP) described in 40 CFR Part 503, Appendix B, so long as all of the following requirements are met by the generator of the sewage sludge.

i. Prior to use or disposal, all the sewage sludge must have been generated from a single location, except as provided in paragraph v. below;

ii. An independent Texas Licensed Professional Engineer must make a certification to the generator of a sewage sludge that the wastewater treatment facility generating the sewage sludge is designed to achieve one of the PSRP at the permitted design loading of the facility. The certification need only be repeated if the design loading of the facility is increased. The certification shall include a statement indicating the design meets all the applicable standards specified in Appendix B of 40 CFR Part 503;

iii. Prior to any off-site transportation or on-site use or disposal of any sewage sludge generated at a wastewater treatment facility, the chief certified operator of the wastewater treatment facility or other responsible official who manages the processes to significantly reduce pathogens at the wastewater treatment facility for the permittee, shall certify that the sewage sludge underwent at least the minimum operational requirements necessary in order to meet one of the PSRP. The acceptable processes and the minimum operational and record keeping requirements shall be in accordance with established U.S. Environmental Protection Agency final guidance;

iv. All certification records and operational records describing how the requirements of this paragraph were met shall be kept by the generator for a minimum of three years and be available for inspection by commission staff for review; and

v. If the sewage sludge is generated from a mixture of sources, resulting from a person who prepares sewage sludge from more than one wastewater treatment facility, the resulting derived product shall meet one of the PSRP, and shall meet the certification, operation, and record keeping requirements of this paragraph.

Alternative 3 - Sewage sludge shall be treated in an equivalent process that has been approved by the U.S. Environmental Protection Agency, so long as all of the following requirements are met by the generator of the sewage sludge.

i. Prior to use or disposal, all the sewage sludge must have been generated from a single location, except as provided in paragraph v. below;

ii. Prior to any off-site transportation or on-site use or disposal of any sewage sludge generated at a wastewater treatment facility, the chief certified operator of the wastewater treatment facility or other responsible official who manages the processes to significantly reduce pathogens at the wastewater treatment facility for the permittee, shall certify that the sewage sludge underwent at least the minimum operational requirements necessary in order to meet one of the PSRP. The acceptable processes and the minimum operational and record keeping requirements shall be in accordance with established U.S. Environmental Protection Agency final guidance;

iii. All certification records and operational records describing how the requirements of this paragraph were met shall be kept by the generator for a minimum of three years and be available for inspection by commission staff for review;

iv. The Executive Director will accept from the U.S. Environmental Protection Agency a finding of equivalency to the defined PSRP; and

v. If the sewage sludge is generated from a mixture of sources resulting from a person who prepares sewage sludge from more than one wastewater treatment facility, the resulting derived product shall meet one of the Processes to Significantly Reduce Pathogens, and shall meet the certification, operation, and record keeping requirements of this paragraph.

In addition to the Alternatives 1 – 3, the following site restrictions must be met if Class B sludge is land applied:

i. Food crops with harvested parts that touch the sewage sludge/soil mixture and are totally above the land surface shall not be harvested for 14 months after application of sewage sludge.

ii. Food crops with harvested parts below the surface of the land shall not be harvested for 20 months after application of sewage sludge when the sewage sludge remains on the land surface for 4 months or longer prior to incorporation into the soil.

iii. Food crops with harvested parts below the surface of the land shall not be harvested for 38 months after application of sewage sludge when the sewage sludge remains on the land surface for less than 4 months prior to incorporation into the soil.

iv. Food crops, feed crops, and fiber crops shall not be harvested for 30 days after application of sewage sludge.

v. Animals shall not be allowed to graze on the land for 30 days after application of sewage sludge.

vi. Turf grown on land where sewage sludge is applied shall not be harvested for 1 year after application of the sewage sludge when the harvested turf is placed on either land with a high potential for public exposure or a lawn.

vii. Public access to land with a high potential for public exposure shall be restricted for 1 year after application of sewage sludge.

viii. Public access to land with a low potential for public exposure shall be restricted for 30 days after application of sewage sludge.

ix. Land application of sludge shall be in accordance with the buffer zone requirements found in 30 TAC § 312.44.

4. Vector Attraction Reduction Requirements

All bulk sewage sludge that is applied to agricultural land, forest, a public contact site, or a reclamation site shall be treated by one of the following Alternatives 1 through 10 for vector attraction reduction.

Alternative 1 - The mass of volatile solids in the sewage sludge shall be reduced by a minimum of 38%.

Alternative 2 - If Alternative 1 cannot be met for an anaerobically digested sludge, demonstration can be made by digesting a portion of the previously digested sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30° and 37° Celsius. Volatile solids must be reduced by less than 17% to demonstrate compliance.

Alternative 3 - If Alternative 1 cannot be met for an aerobically digested sludge, demonstration can be made by digesting a portion of the previously digested sludge with percent solids of two percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20° Celsius. Volatile solids must be reduced by less than 15% to demonstrate compliance.

Alternative 4 - The specific oxygen uptake rate (SOUR) for sewage sludge treated in an aerobic process shall be equal to or less than 1.5 milligrams of oxygen per hour per gram of total solids (dry weight basis) at a temperature of 20° Celsius.

Alternative 5 - Sewage sludge shall be treated in an aerobic process for 14 days or longer. During that time, the temperature of the sewage sludge shall be higher than 40° Celsius and the average temperature of the sewage sludge shall be higher than 45° Celsius.

Alternative 6 - The pH of sewage sludge shall be raised to 12 or higher by alkali addition and, without the addition of more alkali shall remain at 12 or higher for two hours and then remain at a pH of 11.5 or higher for an additional 22 hours at the time the sewage sludge is prepared for sale or given away in a bag or other container.

Alternative 7 - The percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 75% based on the moisture content and total solids prior to mixing with other materials. Unstabilized solids are defined as organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

Alternative 8 - The percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90% based on the moisture content and total solids prior to mixing with other materials at the time the sludge is used. Unstabilized solids are defined as organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

Alternative 9 -

i. Sewage sludge shall be injected below the surface of the land.

ii. No significant amount of the sewage sludge shall be present on the land surface within one hour after the sewage sludge is injected.

iii. When sewage sludge that is injected below the surface of the land is Class A or Class AB with respect to pathogens, the sewage sludge shall be injected below the land surface within eight hours after being discharged from the pathogen treatment process.

Alternative 10-

i. Sewage sludge applied to the land surface or placed on a surface disposal site shall be incorporated into the soil within six hours after application to or placement on the land.

ii. When sewage sludge that is incorporated into the soil is Class A or Class AB with respect to pathogens, the sewage sludge shall be applied to or placed on the land within eight hours after being discharged from the pathogen treatment process.

C. Monitoring Requirements

Toxicity Characteristic Leaching Procedure (TCLP) Test	- annually
PCBs	- annually

All metal constituents and fecal coliform or *Salmonella* sp. bacteria shall be monitored at the appropriate frequency shown below, pursuant to 30 TAC § 312.46(a)(1):

Amount of sewage sludge (*) metric tons per 365-day period	Monitoring Frequency
0 to less than 290	Once/Year
290 to less than 1,500	Once/Quarter
1,500 to less than 15,000	Once/Two Months
15,000 or greater	Once/Month

(*) *The amount of bulk sewage sludge applied to the land (dry wt. basis).*

Representative samples of sewage sludge shall be collected and analyzed in accordance with the methods referenced in 30 TAC § 312.7

Identify each of the analytic methods used by the facility to analyze enteric viruses, fecal coliforms, helminth ova, *Salmonella* sp., and other regulated parameters.

Identify in the following categories (as applicable) the sewage sludge treatment process or processes at the facility: preliminary operations (e.g., sludge grinding and de-gritting), thickening (concentration), stabilization, anaerobic digestion, aerobic digestion, composting, conditioning, disinfection (e.g., beta ray irradiation, gamma ray irradiation, pasteurization), dewatering (e.g., centrifugation, sludge drying beds, sludge lagoons), heat drying, thermal reduction, and methane or biogas capture and recovery.

Identify the nature of material generated by the facility (such as a biosolid for beneficial use or land-farming, or sewage sludge for disposal at a mono-fill) and whether the material is ultimately conveyed off-site in bulk or in bags.

SECTION II. REQUIREMENTS SPECIFIC TO BULK SEWAGE SLUDGE FOR APPLICATION TO THE LAND MEETING CLASS A, CLASS AB or CLASS B PATHOGEN REDUCTION AND THE CUMULATIVE LOADING RATES IN TABLE 2, OR CLASS B PATHOGEN REDUCTION AND THE POLLUTANT CONCENTRATIONS IN TABLE 3

For those permittees meeting Class A, Class AB or Class B pathogen reduction requirements and that meet the cumulative loading rates in Table 2 below, or the Class B pathogen reduction requirements and contain concentrations of pollutants below listed in Table 3, the following conditions apply:

A. Pollutant Limits

Table 2

Pollutant	Cumulative Pollutant Loading Rate (pounds per acre)*
Arsenic	36
Cadmium	35
Chromium	2677
Copper	1339
Lead	268
Mercury	15
Molybdenum	Report Only
Nickel	375
Selenium	89
Zinc	2500

Table 3

Pollutant	Monthly Average Concentration (milligrams per kilogram)*
Arsenic	41
Cadmium	39
Chromium	1200
Copper	1500
Lead	300
Mercury	17
Molybdenum	Report Only
Nickel	420
Selenium	36
Zinc	2800

*Dry weight basis

B. Pathogen Control

All bulk sewage sludge that is applied to agricultural land, forest, a public contact site, a reclamation site, shall be treated by either Class A, Class AB or Class B pathogen reduction requirements as defined above in Section I.B.3.

C. Management Practices

1. Bulk sewage sludge shall not be applied to agricultural land, forest, a public contact site, or a reclamation site that is flooded, frozen, or snow-covered so that the bulk sewage sludge enters a wetland or other waters in the State.

2. Bulk sewage sludge not meeting Class A requirements shall be land applied in a manner which complies with Applicability in accordance with 30 TAC §312.41 and the Management Requirements in accordance with 30 TAC § 312.44.

3. Bulk sewage sludge shall be applied at or below the agronomic rate of the cover crop.

4. An information sheet shall be provided to the person who receives bulk sewage sludge sold or given away. The information sheet shall contain the following information:

   a. The name and address of the person who prepared the sewage sludge that is sold or given away in a bag or other container for application to the land.

   b. A statement that application of the sewage sludge to the land is prohibited except in accordance with the instruction on the label or information sheet.

   c. The annual whole sludge application rate for the sewage sludge application rate for the sewage sludge that does not cause any of the cumulative pollutant loading rates in Table 2 above to be exceeded, unless the pollutant concentrations in Table 3 found in Section II above are met.

D. Notification Requirements

1. If bulk sewage sludge is applied to land in a State other than Texas, written notice shall be provided prior to the initial land application to the permitting authority for the State in which the bulk sewage sludge is proposed to be applied. The notice shall include:

   a. The location, by street address, and specific latitude and longitude, of each land application site.

   b. The approximate time period bulk sewage sludge will be applied to the site.

   c. The name, address, telephone number, and National Pollutant Discharge Elimination System permit number (if appropriate) for the person who will apply the bulk sewage sludge.

2. The permittee shall give 180 days prior notice to the Executive Director in care of the Wastewater Permitting Section (MC 148) of the Water Quality Division of any change planned in the sewage sludge disposal practice.

E. Record keeping Requirements

The sludge documents will be retained at the facility site and/or shall be readily available for review by a TCEQ representative. The person who prepares bulk sewage sludge or a sewage sludge material shall develop the following information and shall retain the information at

the facility site and/or shall be readily available for review by a TCEQ representative for a period of five years. If the permittee supplies the sludge to another person who land applies the sludge, the permittee shall notify the land applier of the requirements for record keeping found in 30 TAC § 312.47 for persons who land apply.

1. The concentration (mg/kg) in the sludge of each pollutant listed in Table 3 above and the applicable pollutant concentration criteria (mg/kg), or the applicable cumulative pollutant loading rate and the applicable cumulative pollutant loading rate limit (lbs/ac) listed in Table 2 above.

2. A description of how the pathogen reduction requirements are met (including site restrictions for Class AB and Class B sludge, if applicable).

3. A description of how the vector attraction reduction requirements are met.

4. A description of how the management practices listed above in Section II.C are being met.

5. The following certification statement:

   "I certify, under penalty of law, that the applicable pathogen requirements in 30 TAC § 312.82(a) or (b) and the vector attraction reduction requirements in 30 TAC § 312.83(b) have been met for each site on which bulk sewage sludge is applied. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the management practices have been met. I am aware that there are significant penalties for false certification including fine and imprisonment."

6. The recommended agronomic loading rate from the references listed in Section II.C.3. above, as well as the actual agronomic loading rate shall be retained. The person who applies bulk sewage sludge or a sewage sludge material shall develop the following information and shall retain the information at the facility site and/or shall be readily available for review by a TCEQ representative indefinitely. If the permittee supplies the sludge to another person who land applies the sludge, the permittee shall notify the land applier of the requirements for record keeping found in 30 TAC § 312.47 for persons who land apply:

   a. A certification statement that all applicable requirements (specifically listed) have been met, and that the permittee understands that there are significant penalties for false certification including fine and imprisonment. See 30 TAC § 312.47(a)(4)(A)(ii) or 30 TAC § 312.47(a)(5)(A)(ii), as applicable, and to the permittee's specific sludge treatment activities.

   b. The location, by street address, and specific latitude and longitude, of each site on which sludge is applied.

   c. The number of acres in each site on which bulk sludge is applied.

   d. The date and time sludge is applied to each site.

e. The cumulative amount of each pollutant in pounds/acre listed in Table 2 applied to each site.

f. The total amount of sludge applied to each site in dry tons.

The above records shall be maintained on-site on a monthly basis and shall be made available to the Texas Commission on Environmental Quality upon request.

F. Reporting Requirements

The permittee shall report annually to the TCEQ Regional Office (MC Region 3) and Compliance Monitoring Team (MC 224) of the Enforcement Division, by September 30th of each year the following information. Effective September 1, 2020, the permittee must submit this annual report using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver.

1. Identify in the following categories (as applicable) the sewage sludge treatment process or processes at the facility: preliminary operations (e.g., sludge grinding and de-gritting), thickening (concentration), stabilization, anaerobic digestion, aerobic digestion, composting, conditioning, disinfection (e.g., beta ray irradiation, gamma ray irradiation, pasteurization), dewatering (e.g., centrifugation, sludge drying beds, sludge lagoons), heat drying, thermal reduction, and methane or biogas capture and recovery.

2. Identify the nature of material generated by the facility (such as a biosolid for beneficial use or land-farming, or sewage sludge for disposal at a mono-fill) and whether the material is ultimately conveyed off-site in bulk or in bags.

3. Results of tests performed for pollutants found in either Table 2 or 3 as appropriate for the permittee's land application practices.

4. The frequency of monitoring listed in Section I.C. that applies to the permittee.

5. Toxicity Characteristic Leaching Procedure (TCLP) results.

6. PCB concentration in sludge in mg/kg.

7. Identity of hauler(s) and TCEQ transporter number.

8. Date(s) of transport.

9. Texas Commission on Environmental Quality registration number, if applicable.

10. Amount of sludge disposal dry weight (lbs/acre) at each disposal site.

11. The concentration (mg/kg) in the sludge of each pollutant listed in Table 1 (defined as a monthly average) as well as the applicable pollutant concentration criteria (mg/kg) listed in Table 3 above, or the applicable pollutant loading rate limit (lbs/acre) listed in Table 2 above if it exceeds 90% of the limit.

12. Level of pathogen reduction achieved (Class A, Class AB or Class B).

13. Alternative used as listed in Section I.B.3.(a. or b.). Alternatives describe how the pathogen reduction requirements are met. If Class B sludge, include information on how site restrictions were met.

14. Identify each of the analytic methods used by the facility to analyze enteric viruses, fecal coliforms, helminth ova, *Salmonella* sp., and other regulated parameters.

15. Vector attraction reduction alternative used as listed in Section I.B.4.

16. Amount of sludge transported in dry tons/year.

17. The certification statement listed in either 30 TAC § 312.47(a)(4)(A)(ii) or 30 TAC § 312.47(a)(5)(A)(ii) as applicable to the permittee's sludge treatment activities, shall be attached to the annual reporting form.

18. When the amount of any pollutant applied to the land exceeds 90% of the cumulative pollutant loading rate for that pollutant, as described in Table 2, the permittee shall report the following information as an attachment to the annual reporting form.

    a. The location, by street address, and specific latitude and longitude.

    b. The number of acres in each site on which bulk sewage sludge is applied.

    c. The date and time bulk sewage sludge is applied to each site.

    d. The cumulative amount of each pollutant (i.e., pounds/acre) listed in Table 2 in the bulk sewage sludge applied to each site.

    e. The amount of sewage sludge (i.e., dry tons) applied to each site.

    The above records shall be maintained on a monthly basis and shall be made available to the Texas Commission on Environmental Quality upon request.

SECTION III. REQUIREMENTS APPLYING TO ALL SEWAGE SLUDGE DISPOSED IN A MUNICIPAL SOLID WASTE LANDFILL

A. The permittee shall handle and dispose of sewage sludge in accordance with 30 TAC § 330 and all other applicable state and federal regulations to protect public health and the environment from any reasonably anticipated adverse effects due to any toxic pollutants that may be present. The permittee shall ensure that the sewage sludge meets the requirements in 30 TAC § 330 concerning the quality of the sludge disposed in a municipal solid waste landfill.

B. If the permittee generates sewage sludge and supplies that sewage sludge to the owner or operator of a municipal solid waste landfill (MSWLF) for disposal, the permittee shall provide to the owner or operator of the MSWLF appropriate information needed to be in compliance with the provisions of this permit.

C. The permittee shall give 180 days prior notice to the Executive Director in care of the Wastewater Permitting Section (MC 148) of the Water Quality Division of any change planned in the sewage sludge disposal practice.

D. Sewage sludge shall be tested annually in accordance with the method specified in both 40 CFR Part 261, Appendix II and 40 CFR Part 268, Appendix I (Toxicity Characteristic Leaching Procedure) or other method, which receives the prior approval of the TCEQ for contaminants listed in Table 1 of 40 CFR § 261.24. Sewage sludge failing this test shall be managed according to RCRA standards for generators of hazardous waste, and the waste's disposition must be in accordance with all applicable requirements for hazardous waste processing, storage, or disposal.

   Following failure of any TCLP test, the management or disposal of sewage sludge at a facility other than an authorized hazardous waste processing, storage, or disposal facility shall be prohibited until such time as the permittee can demonstrate the sewage sludge no longer exhibits the hazardous waste toxicity characteristics (as demonstrated by the results of the TCLP tests). A written report shall be provided to both the TCEQ Registration and Reporting Section (MC 129) of the Permitting and Registration Support Division and the Regional Director (MC Region 3) of the appropriate TCEQ field office within 7 days after failing the TCLP Test.

   The report shall contain test results, certification that unauthorized waste management has stopped and a summary of alternative disposal plans that comply with RCRA standards for the management of hazardous waste. The report shall be addressed to: Director, Permitting and Registration Support Division (MC 129), Texas Commission on Environmental Quality, P. O. Box 13087, Austin, Texas 78711-3087. In addition, the permittee shall prepare an annual report on the results of all sludge toxicity testing. This annual report shall be submitted to the TCEQ Regional Office (MC Region 3) and the Compliance Monitoring Team (MC 224) of the Enforcement Division by September 30 of each year.

E. Sewage sludge shall be tested as needed, in accordance with the requirements of 30 TAC Chapter 330.

F. Record keeping Requirements

   The permittee shall develop the following information and shall retain the information for five years.

1. The description (including procedures followed and the results) of all liquid Paint Filter Tests performed.

2. The description (including procedures followed and results) of all TCLP tests performed.

The above records shall be maintained on-site on a monthly basis and shall be made available to the Texas Commission on Environmental Quality upon request.

G. Reporting Requirements

The permittee shall report annually to the TCEQ Regional Office (MC Region 3) and Compliance Monitoring Team (MC 224) of the Enforcement Division by September 30th of each year the following information. Effective September 1, 2020, the permittee must submit this annual report using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver.

1. Identify in the following categories (as applicable) the sewage sludge treatment process or processes at the facility: preliminary operations (e.g., sludge grinding and de-gritting), thickening (concentration), stabilization, anaerobic digestion, aerobic digestion, composting, conditioning, disinfection (e.g., beta ray irradiation, gamma ray irradiation, pasteurization), dewatering (e.g., centrifugation, sludge drying beds, sludge lagoons), heat drying, thermal reduction, and methane or biogas capture and recovery.

2. Toxicity Characteristic Leaching Procedure (TCLP) results.

3. Annual sludge production in dry tons/year.

4. Amount of sludge disposed in a municipal solid waste landfill in dry tons/year.

5. Amount of sludge transported interstate in dry tons/year.

6. A certification that the sewage sludge meets the requirements of 30 TAC § 330 concerning the quality of the sludge disposed in a municipal solid waste landfill.

7. Identity of hauler(s) and transporter registration number.

8. Owner of disposal site(s).

9. Location of disposal site(s).

10. Date(s) of disposal.

The above records shall be maintained on-site on a monthly basis and shall be made available to the Texas Commission on Environmental Quality upon request.

SECTION IV. REQUIREMENTS APPLYING TO SLUDGE TRANSPORTED TO ANOTHER FACILITY FOR FURTHER PROCESSING

These provisions apply to sludge that is transported to another wastewater treatment facility or facility that further processes sludge. These provisions are intended to allow transport of sludge to facilities that have been authorized to accept sludge. These provisions do not limit the ability of the receiving facility to determine whether to accept the sludge, nor do they limit the ability of the receiving facility to request additional testing or documentation.

A. General Requirements

1. The permittee shall handle and dispose of sewage sludge in accordance with 30 TAC Chapter 312 and all other applicable state and federal regulations in a manner that protects public health and the environment from any reasonably anticipated adverse effects due to any toxic pollutants that may be present in the sludge.

2. Sludge may only be transported using a registered transporter or using an approved pipeline.

B. Record Keeping Requirements

1. For sludge transported by an approved pipeline, the permittee must maintain records of the following:

   a. the amount of sludge transported;

   b. the date of transport;

   c. the name and TCEQ permit number of the receiving facility or facilities;

   d. the location of the receiving facility or facilities;

   e. the name and TCEQ permit number of the facility that generated the waste; and

   f. copy of the written agreement between the permittee and the receiving facility to accept sludge.

2. For sludge transported by a registered transporter, the permittee must maintain records of the completed trip tickets in accordance with 30 TAC § 312.145(a)(1)-(7) and amount of sludge transported.

3. The above records shall be maintained on-site on a monthly basis and shall be made available to the TCEQ upon request. These records shall be retained for at least five years.

C. Reporting Requirements

The permittee shall report the following information annually to the TCEQ Regional Office (MC Region 3) and Compliance Monitoring Team (MC 224) of the Enforcement Division, by September 30th of each year. Effective September 1, 2020, the permittee must submit this annual report using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver.

1. Identify in the following categories (as applicable) the sewage sludge treatment process or processes at the facility: preliminary operations (e.g., sludge grinding and de-gritting), thickening (concentration), stabilization, anaerobic digestion, aerobic digestion, composting, conditioning, disinfection (e.g., beta ray irradiation, gamma ray irradiation, pasteurization), dewatering (e.g., centrifugation, sludge drying beds, sludge lagoons), heat drying, thermal reduction, and methane or biogas capture and recovery.

2. the annual sludge production;

3. the amount of sludge transported;

4. the owner of each receiving facility;

5. the location of each receiving facility; and

6. the date(s) of disposal at each receiving facility.

SECTION V. REQUIREMENTS SPECIFIC TO SEWAGE SLUDGE SURFACE DISPOSAL SITES WITHOUT A LINER AND LEACHATE COLLECTION SYSTEM

A. General Requirements

1. The permittee shall handle and dispose of sewage sludge in accordance with 30 TAC Chapter 312 and all other applicable state and federal regulations to protect public health and the environment from any reasonably anticipated adverse effects due to any toxic pollutants which may be present.

2. In all cases, if the person (permit holder) who prepares the sewage sludge supplies the sewage sludge to another person for land application use or to the owner or lease holder of the land, the permit holder shall provide necessary information to the parties who receive the sludge to assure compliance with these regulations.

3. The permittee shall give 180 days prior notice to the Executive Director of any change planned in the sewage sludge disposal practice.

4. The permittee shall submit a written "closure and post closure plan" to the Executive Director 180 days prior to the date that the active sludge unit closes. The plan shall describe how the sludge unit will be closed and at a minimum, shall include:

   a. A description of the system used to monitor continuously for methane gas in the air in any structures within the surface disposal site. The methane gas concentration shall not exceed 25% of the lower explosive limit for methane gas for three years after the sewage sludge unit closes; and,

   b. A discussion of how public access to the surface disposal site will be restricted for three years after the last sludge unit in the surface disposal site closes.

5. Deed Recordation Notification

   a. No person shall place sewage sludge on an active sludge unit prior to recording, in the deed records of the county or counties in which the disposal takes place, the following information:

      i. a metes and bounds description of the portion(s) of the tract of land on which disposal of sewage sludge will take place;

      ii. a detailed description of the sewage sludge which is to be disposed of;

      iii. all pertinent information related to the permit to dispose of sewage sludge, including at least the permit number and issuing agency; and

      iv. the name and permanent address of the person or persons operating the facility where more specific information on the waste can be secured.

   b. Proof of recordation shall be provided to the executive director before the commission issues a permit.

B. Management Practices

1. Sewage sludge shall not be placed on an active sludge unit if it is likely to adversely affect a threatened or endangered species listed under the Endangered Species Act, §4, or its designated critical habitat.

2. An active surface disposal sludge unit shall not restrict the flow of the 100-year flood nor be located within the 100-year floodway.

3. When a surface disposal site is located in a seismic impact zone, each sludge unit in that site shall be designed to withstand the maximum recorded horizontal ground-level acceleration.

4. An active sewage sludge unit located within 60 meters of a fault that has displacement in Holocene time is prohibited from receipt of sewage sludge and must be closed.

5. An active sewage sludge unit located in an unstable area is prohibited from receipt of sewage sludge and must be closed.

6. An active sewage sludge unit located in a wetland, except as provided in a permit issued pursuant to section 402 of the CWA is prohibited from receipt of sewage sludge and must be closed.

7. Run-off from an active sludge unit shall be collected and disposed in accordance with discharge permit requirements and any other applicable requirements. The runoff collection system for an active sludge unit shall have the capacity to handle runoff from the 25-year storm.

8. When an earthen cover is placed on an active surface disposal site, the concentration of methane gas in air in any structure within the surface disposal site shall not exceed 25 percent of the lower explosive limit for methane gas during the period that the sewage sludge unit is active; and the concentration of methane gas in air at the property line of the surface disposal site shall not exceed the lower explosive limit for methane gas during the period that the sewage sludge unit is active. Monitoring shall be continuous.

9. A food crop, feed crop, or a fiber crop shall not be grown on a surface disposal site.

10. Animals shall not be grazed on a surface disposal site.

11. Public access shall be restricted on the active surface disposal site and for three years after the site closes.

12. Placement of sewage sludge on an active sludge unit shall not contaminate an aquifer. This shall be demonstrated through one of the following:

    a. Results of a groundwater monitoring program developed by a qualified groundwater scientist.

b. A certification by a qualified groundwater scientist may be used to demonstrate that sewage sludge placed on an active sewage unit does not contaminate an aquifer.

C. Testing Requirements

1. Sewage sludge shall be tested at the frequency shown below in D(4) for PCBs. Any sludge exceeding a concentration of 49 mg/Kg shall not be surface disposed.
2. Methane Gas Control Within a Structure On Site.

When an earthen cover is placed on an active surface disposal site, the methane gas concentration in the air in any structure within the site shall not exceed 25% of the lower explosive limit (LEL) for methane gas during the period that the disposal site is active.

When a final cover is placed on a sludge unit at closure, the concentration of methane gas in air in any structure within the surface disposal site shall not exceed 25% of the lower explosive limit for methane gas for three years after the sludge unit closes.

3. Methane Gas Control at Property Line.

When an earthen cover is placed on an active surface disposal site, the concentration of methane gas in the air at the property line of the surface disposal site shall not exceed the LEL for methane gas during the period that the disposal site is active.

4. Sewage sludge shall be tested annually in accordance with the method specified in 40 CFR Part 261, Appendix II (Toxicity Characteristic Leaching Procedure) or other method, which receives the prior approval of the TCEQ. Sewage sludge failing this test shall be managed according to RCRA standards for the disposal of the hazardous waste. The permittee shall retest the sludge within 5 calendar days following notification of failure of the TCLP test. Sludge that fail initial TCLP test may be stored temporarily at the surface disposal site until the result of the retest is known (a maximum of 30 days). The sludge that is temporarily stored at the surface disposal site shall be segregated from the other sludges. Following failure of any TCLP test, the disposal of sewage sludge in other than a certified hazardous waste disposal facility shall be prohibited until such time as the permittee can demonstrate that the sewage sludge no longer exhibits the toxicity characteristic as demonstrated by the results of the TCLP test. A written report shall be provided to both the TCEQ Industrial and Hazardous Waste Permits Section (MC 130) of the Waste Permits Division and the TCEQ Region Director **(MC Region 3)** within 7 days after failing the Toxicity Characteristic Leaching Procedure Test (TCLP). The report shall contain test results, certification that unauthorized disposal has stopped and a summary of alternative disposal plans that comply with RCRA standards for the management of hazardous waste. The report shall be addressed to: Director, Waste Permits Division (MC 126), Texas Commission on Environmental Quality, P. O. Box 13087, Austin, Texas 78711-3087. In addition, the permittee shall prepare an annual report on the results of all sludge toxicity testing. This annual report shall be submitted to the Water Quality Compliance Monitoring Team (MC 224) of the Enforcement Division and the Region Office **(MC Region 3)** by September 30 of each year.

Representative samples of sewage sludge shall be collected and analyzed in accordance with the methods referenced in 30 TAC §312.7.

5. Metal Limits

a. Except as provided in 5.b., the concentration for each metal listed in sewage sludge placed on an active sludge unit that does not have a liner and leachate collection system shall be equal to or less than concentration for the metal in the following table:

TABLE - METAL CONCENTRATIONS

Metal	Concentration (milligrams per kilogram*)
Arsenic	73
Chromium	600
Nickel	420

* (Dry weight basis)

b. The concentration of each metal listed above in 5.a. in sewage sludge placed on an active sludge unit whose boundary is less than 150 meters from the property line of the surface disposal site shall not exceed the concentration determined using the following procedure.

i. The shortest actual distance from the active sludge unit boundary to the property line of the surface disposal site shall be determined.

ii. The concentration of each metal listed in the following table in the sewage sludge shall not exceed the concentration that corresponds to the actual distance as described above in paragraph 5.b.i:

TABLE - METAL CONCENTRATIONS

Unit boundary to property line distance (meters)	Metal concentration* Arsenic (mg/kg)	Chromium (mg/kg)	Nickel (mg/kg)
0 to less than 25	30	200	210
25 to less than 50	34	220	240
50 to less than 75	39	260	270
75 to less than 100	46	300	320
100 to less than 125	53	360	390
125 to less than 150	62	450	420

* (Dry weight basis)

6. Pathogen Control

The Class A pathogen reduction requirements in 30 TAC §312.82(a) or the Class B pathogen reduction requirements in 30 TAC §312.82(b)(1)(A) and (b)(2) shall be met when sewage sludge is placed on an active sludge unit, unless the vector

attraction reduction requirements in 30 TAC §312.83(b)(11) of this title (relating to Vector Attraction Reduction) is met.

7. Vector Attraction Control

One of the alternatives for vector attraction reduction in 30 TAC §312.83(b)(1)-(11) shall be met when sewage sludge is placed on an active sludge unit.

D. Monitoring Requirements

1. Methane Gas in covered structures on site (see C.2.) - Continuous
2. Methane Gas at property line (see C.3.) - Continuous
3. Toxicity Characteristic Leaching Procedure (TCLP) Test - Once/Year
4. PCBs - Once/Year
5. All metal constituents, pathogen density requirements and vector attraction reduction requirements shall be monitored at the appropriate frequency shown below, pursuant to 30 TAC §312.66(a):

Amount of sewage sludge (*) dry tons per 365-day period			Frequency
0	≤Sludge	< 290	Once/Year
290	≤ Sludge	< 1,500	Once/Quarter
1,500	≤ Sludge	< 15,000	Once/Two Months
15,000	≤ Sludge		Once/Month

(*) The amount of bulk sewage sludge applied to the land (dry weight basis).

6. Groundwater monitoring

A minimum of four groundwater monitoring wells shall be installed and maintained at the sludge disposal site. One groundwater monitoring well shall be located up-gradient and three shall be located down-gradient from the sludge disposal site. The groundwater monitoring wells shall be screened to monitor the first water bearing zone.

Prior to further sludge disposal the permittee shall initiate groundwater monitoring. Groundwater shall be analyzed according to the schedule below:

Parameter	Units	Sampling Frequency
Total Nitrogen	mg/l	quarterly
Nitrate Nitrogen	mg/l	quarterly

Parameter	Units	Sampling Frequency
Ammonia Nitrogen	mg/l	quarterly
Phosphorus	mg/l	quarterly
TDS	mg/l	quarterly
Electrical Conductivity	micromhos/cm	quarterly
E. coli	colonies or MPN/100ml	quarterly
water level	ft	quarterly
potassium	mg/l	2/Year
cadmium	mg/l	2/Year
lead	mg/l	2/Year
zinc	mg/l	2/Year
copper	mg/l	2/Year
nickel	mg/l	2/Year
pH	standard	2/Year
polychlorinated biphenyl	mg/l	2/Year

E. Recordkeeping Requirements

1. The person who prepares the sewage sludge shall develop the following information and shall retain the information for five years. The sludge documents will be retained at the same location as other TCEQ records and they shall be made readily available to the TCEQ upon request.

   a. The concentration of each metal listed above in C.5.

   b. The concentrations of the parameters in D.6.

   c. The following certification statement found in 30 TAC §312.67.

      "I certify, under penalty of law, that the management practices in 30 TAC §312.64; pathogen requirements in 30 TAC §312.82 and the vector attraction reduction requirements in 30 TAC §312.83(b) have been met. This determination has been made under my direction and supervision in accordance with the system designed to assure that qualified personnel properly gather and evaluate the information used to determine that the (specific requirements for pathogen and vector attraction reduction) have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

   d. A description of how pathogen reduction requirements in 30 TAC §312.82 are met, or whether sewage sludge placed on a surface disposal site is covered with soil or other material at the end of each operating day.

   e. A description of how the vector attraction reduction requirements in 30 TAC §312.83(a) are met.

   f. Results of a groundwater monitoring program developed by a qualified ground-water scientist, or a certification by a qualified groundwater scientist may be used to demonstrate that sewage sludge placed on an active sewage sludge unit does not contaminate an aquifer.

2. The owner/operator of the surface disposal site shall develop the following information and shall retain that information for five years.

   a. The concentration of each metal listed in C.5.a. in the sewage sludge when the metal concentrations in C.5.b. are met.

   b. The following certification statement: "I certify, under penalty of law, that the management practices in 30 TAC §312.64 and the vector attraction reduction requirements in (insert the citation to the specific requirements that are met from §312.83(b) of this title (relating to Vector Attraction Reduction)) have been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the management practices (and specific requirements for vector attraction reduction (when appropriate)) have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

   c. A description of how the management practices in §312.64 (relating to Management Practices) are met.

   d. A description of how one of the vector attraction reduction requirements in §312.83 (relating to Vector Attraction Reduction) are met when required.

F. Reporting Requirements

The permittee shall report to the Water Quality Compliance Monitoring Team (MC 224) of the Enforcement Division and the TCEQ Region Office **(MC Region 3)** by September 30 (report period September 1 of previous year through August 31 of current year) of each year the "Annual Sludge Summary Report Form" (Attachment C) and the following:

1. Amount of sludge disposal dry weight (tons) at the surface disposal site.
2. The total amount of sludge disposed during a 365-day period.
3. Owner of disposal site.
4. Dates of disposal.
5. Toxicity Characteristic Leaching Procedure Test: Pass/Fail
6. PCB concentration in sludge in mg/Kg.
7. The concentration (mg/Kg) in the sludge of each pollutant listed in C.5.a. as well as the applicable pollutant concentration criteria listed in C.5.B.
8. Distance between the property line and the surface disposal site.
9. Certification statement required in E.1.c. or E.2.b. above as appropriate to the permittee's sludge disposal activities.

10. Narrative description explaining how the management practices in 30 TAC Section 312.64 are met.

11. Identity of hauler(s) and TCEQ transporter number.

12. Level of pathogen reduction achieved (Class A or Class B).

13. List alternative for pathogen reduction.

14. List the vector attraction alternative used.

The above records shall be maintained on a monthly basis and shall be made available to the Texas Commission on Environmental Quality upon request.

TCEQ Revision 01/2016

OTHER REQUIREMENTS

1. The permittee shall notify the TCEQ Regional Office (MC Region 3) and the Applications Review and Processing Team (MC 148) of the Water Quality Division in writing at least forty-five (45) days prior to the completion of the new facilities for the Final phase on Notification of Completion Form 20007.

2. Prior to construction of the Final phase treatment facilities, the permittee shall submit to the TCEQ Wastewater Permitting Section (MC 148) a summary transmittal letter in accordance with the requirements in 30 TAC § 217.6(d). If requested by the Wastewater Permitting Section, the permittee shall submit plans, specifications, and a final engineering design report which comply with 30 TAC Chapter 217, Design Criteria for Domestic Wastewater Systems. The permittee shall clearly show how the treatment system will meet the effluent limitations required on Page 2c of this permit. A copy of the summary transmittal letter shall be available at the plant site for inspection by authorized representatives of the TCEQ.

3. Prior to introducing reverse osmosis reject water in the effluent stream to Outfall 001, the permittee shall submit a document to the Executive Director in care of the Wastewater Permitting Section (MC 148) of the Water Quality Division describing the water quality of and standard operating procedures for the disposal of reject water via Outfall 001.

   The document shall provide data regarding the quality of the reject water as determined by samples collected and analyzed for those parameters listed in Tables 1 and 2 (see Attachment E), for a minimum of four (4) separate sampling events that are a minimum of one (1) week apart. The document shall include data regarding the quantity and quality of the final effluent proposed for discharge via Outfall 001, consisting of the comingled conventionally treated wastewater and the reject water. The document shall also provide the procedures proposed for monitoring and controlling reject water included in the treated effluent discharge via Outfall 001 in a manner that ensures that water quality standards in the receiving stream will continue to be maintained.

   This permit may be reopened to require additional testing, and/or other appropriate actions to address pollutants if the information provided in the document by the permittee demonstrates that the permittee's procedures for the reject water disposal via Outfall 001 may impair the receiving water quality as described in the Texas Surface Water Quality Standards, 30 TAC §307.

4. The permittee shall employ or contract with one or more licensed wastewater treatment facility operators or wastewater system operations companies holding a valid license or registration according to the requirements of 30 TAC Chapter 30, Occupational Licenses and Registrations, and, in particular, 30 TAC Chapter 30, Subchapter J, Wastewater Operators and Operations Companies.

   This Category A facility must be operated by a chief operator or an operator holding a Category A license or higher. The facility must be operated a minimum of five days per week by the licensed chief operator or an operator holding the required level of license or higher. The licensed chief operator or operator holding the required level of license or higher must be available by telephone or pager seven days per week. Where shift operation of the wastewater treatment facility is necessary, each shift that does not have the on-site supervision of the licensed chief operator must be supervised by an operator in charge who is licensed not less than one level below the category for the facility.

5. The facility is not located in the Coastal Management Program boundary.

6. Outfall 001 - There is no mixing zone established for this discharge to an intermittent stream. Acute toxic criteria apply at the point of discharge.

   Outfalls 002 and 003 - The chronic aquatic life mixing zone is defined as a volume within a radius of 100 feet from the point of discharge. Chronic toxic criteria apply at the edge of the chronic aquatic life mixing zone.

7. The permittee shall comply with the requirements of 30 TAC § 309.13(a) through (d). In addition, by ownership of the required buffer zone area, the permittee shall comply with the requirements of 30 TAC § 309.13(e).

8. The permittee shall provide facilities for the protection of its wastewater treatment facility from a 100-year flood.

9. In accordance with 30 TAC § 319.9, a permittee that has at least twelve months of uninterrupted compliance with its bacteria limit may notify the commission in writing of its compliance and request a less frequent measurement schedule. To request a less frequent schedule, the permittee shall submit a written request to the TCEQ Wastewater Permitting Section (MC 148) for each phase that includes a different monitoring frequency. The request must contain all of the reported bacteria values (Daily Avg. and Daily Max/Single Grab) for the twelve consecutive months immediately prior to the request. If the Executive Director finds that a less frequent measurement schedule is protective of human health and the environment, the permittee may be given a less frequent measurement schedule. For this permit, 5/week may be reduced to 3/week for Outfall 001, 1/week may be reduced to 2/month for Outfall 002 and 3/week may be reduced to 1/week for Outfall 003. **A violation of any bacteria limit by a facility that has been granted a less frequent measurement schedule will require the permittee to return to the standard frequency schedule and submit written notice to the TCEQ Wastewater Permitting Section (MC 148).** The permittee may not apply for another reduction in measurement frequency for at least 24 months from the date of the last violation. The Executive Director may establish a more frequent measurement schedule if necessary to protect human health or the environment.

10. The permittee is authorized to use effluent to irrigate 1,960 acres off-site properties and 335 acres of on-site properties (See Attachment D). The wastewater used for irrigation will have received at a minimum treatment sufficient to meet the treatment level listed under A, located below. Direct discharge to the waters in the State from the holding ponds is not authorized.

    The following degree of treatment shall be required for all effluent applied on land:

    A. Effluent Concentrations (Not to Exceed)

Parameter	Single Grab
BOD_5, mg/l	100

    The pH shall not be less than 6.0 standard units (SU) nor greater than 9.0 SU.

    B. Monitoring Requirements:

Parameter	Monitoring Frequency	Sample Type
Flow, MGD	Monthly	Continuous/Totalizing meter*
BOD_5, mg/l	Five/week	Equal Volume Composite or Grab**
pH	Five/week	Equal Volume Composite or Grab**

    * Flow will be measured as it is delivered to each irrigation site. Monthly, the volumes delivered to all sites will be summed and recorded.

** Quality monitoring shall be done on water used for irrigation. Equal volume composite samples will be required when delivering water by pipeline. If delivery of water to irrigators ceases during collection of the effluent composite samples, the requirements for the minimum number of effluent portions are waived. A single grab sample will be sufficient when delivering water from ponds. Monitoring records shall be maintained on a monthly basis and be available at the plant site for inspection by authorized representatives of the Commission for at least three years.

11. Irrigation practices shall be designed and managed so as to prevent ponding of the effluent or contamination of ground and surface waters and to prevent the occurrence of nuisance conditions in the area. Tailwater control facilities shall be provided as necessary to prevent the discharge of any effluent from the irrigated land.

12. The permittee shall maintain adequate signs stating that the irrigation water is from a non-potable water supply for any area where treated effluent is stored or where there exist hose bibs or faucets. Signs shall consist of a red slash superimposed over the international symbol for drinking water accompanied by the message "DO NOT DRINK THE WATER" in both English and Spanish. All piping transporting the effluent shall be clearly marked with these same signs.

13. Application rates for the irrigated land shall not exceed 2.0 acre-feet per year per acre irrigated. The permittee is responsible for providing equipment to determine application rates and maintaining accurate records of the volume of effluent applied. These records shall be made available for review by the Texas Commission on Environmental Quality and shall be maintained for at least three years.

14. Effluent shall not be applied for irrigation during rainfall events or when the ground is frozen or saturated.

15. Holding or storage ponds shall conform to the design criteria for stabilization ponds with regard to construction and levee design and shall maintain a minimum freeboard of two feet according to 30 TAC Chapter 217, Design Criteria for Wastewater Treatment Systems.

16. Permanent transmission lines shall be installed from the holding pond to each tract of land to be irrigated utilizing effluent from that pond.

17. The City is encouraged to work with the Texas Parks and Wildlife Department (TPWD) to manage Kirby Lake for fishing if TPWD decides to restock the lake.

18. In addition to the discharges provided for this permit, the permittee is also authorized to deliver treated effluent for reuse in accordance with Authorization for Reclaimed Water No. R10334-004, and as such the authorization may be amended.

19. This permit authorizes operation of all wastewater facilities used in conveyance, storage, treatment, recycling, reclamation and/or disposal, including the Buck Creek Lift Station, associated with the Hamby Water Reclamation Facility.

20. The Permittee shall maintain a buffer zone of 150 feet minimum around all private water wells located both on and off-site in accordance with 30 TAC 309.13(c)(1). As an alternative, the permittee may request an exception from the requirement to maintain a buffer zone of 150 feet by submitting documentation certified by a Texas licensed professional geoscientist or Texas licensed professional engineer that additional wellhead protective measures will provide adequate protection to potable water sources and supplies in accordance with 30 TAC 309.13(c). The documentation shall be submitted to the TCEQ Water Quality Assessment Team (MC-150) for review and approval. If the exception is granted, the

permittee shall maintain documentation of the approved exception on-site for the life of the permit. The permittee shall have 180 days from the effective date of the permit to achieve compliance with this requirement.

21. The Permittee shall maintain a minimum buffer of 25 feet between its irrigation area and Deadman Creek, Freewater Creek, and any associated tributaries. As an alternative, the permittee may request an exception from the requirement to maintain a buffer of 25 feet by submitting documentation certified by a Texas licensed professional geoscientist or Texas licensed professional engineer that demonstrates that the creeks will not receive effluent overspray or effluent runoff. The documentation shall be submitted to the Water Quality Assessment Team (MC-150) for review and approval. If the exception is granted, the permittee shall maintain documentation of the approved exception on-site for the life of the permit. The permittee shall have 180 days from the effective date of the permit to achieve compliance with this requirement.

22. The permittee shall obtain representative soil samples from the root zones of the land application area receiving wastewater. Composite sampling techniques shall be used. Each composite sample shall represent no more than 80 acres with no less than 15 subsamples representing each composite sample. Subsamples shall be composited by like sampling depth, type of crop and soil type for analysis and reporting. Soil types are soils that have like topsoil or plow layer textures. These soils shall be sampled individually from 0 to 6 inches, 6 to 18 inches, and 18 to 30 inches below ground level. The permittee shall sample and analyze soils in December to February of each year. Soil samples shall be analyzed within 30 days of sample collection.

    The permittee shall provide annual soil analyses of the land application area according to the following table:

Parameter	**Method**	**Minimum Analytical Level (MAL)**	**Reporting units**
pH	2:1 (v/v) water to soil mixture		Reported to 0.1 pH units after calibration of pH meter
Electrical Conductivity	Obtained from the SAR water saturated paste extract	0.01	dS/m (same as mmho/cm)
Nitrate-nitrogen	From a 1 N KCl soil extract	1	mg/kg (dry weight basis)
Total Kjeldahl Nitrogen (TKN)	For determination of Organic plus Ammonium Nitrogen. Procedures that use Mercury (Hg) are not acceptable.	20	mg/kg (dry weight basis)
Total Nitrogen	= TKN plus Nitrate-nitrogen		mg/kg (dry weight basis)
Plant-available: Phosphorus	Mehlich III with inductively coupled plasma	1 (P)	mg/kg (dry weight basis)

Parameter	Method	Minimum Analytical Level (MAL)	Reporting units
Plant-available: Potassium (K) Calcium (Ca) Magnesium (Mg) Sodium (Na) Sulfur (S)	May be determined in the same Mehlich III extract with inductively coupled plasma	5 (K) 10 (Ca) 5 (Mg) 10 (Na) 1 (S)	mg/kg (dry weight basis)
Water-soluble: Sodium (Na) Calcium (Ca) Magnesium (Mg)	Obtained from the SAR water saturated paste extract	1 (Na) 1 (Ca) 1 (Mg)	Water soluble constituents are *reported* in mg/L
Sodium Adsorption Ratio (SAR)	$SAR = \frac{Na}{\sqrt{\frac{(Ca+Mg)}{2}}}$		Express *concentrations* of Na, Ca and Mg in the water saturated paste extract in milliequivalents/liter (meq/L) to calculate the SAR. The SAR value is unit less. If the SAR is greater than 10, amendments (e.g., gypsum) shall be added to the soil to adjust the SAR to less than 10.
Amendment addition, e.g., gypsum			Report in *short tons/acre* in the year effected

A copy of this soil testing plan shall be provided to the analytical laboratory prior to sample analysis. The permittee shall submit the results of the annual soil sample analyses with copies of the laboratory reports and a map depicting the areas that have received wastewater within the permanent land application fields to the TCEQ Regional Office (MC Region 3) and the Compliance Monitoring Team (MC 224) of the Enforcement Division, no later than the end of September of each sampling year. If wastewater is not applied in a particular year, the permittee shall notify the same TCEQ offices and indicate that soil analysis results are not required to be submitted because wastewater has not been applied on the approved land irrigation site(s) during that year.

23. The combined annual average discharge flow limits and the combined conventional effluent parameter loading limits during the Interim phase and Final phase shall not exceed as follows:

Combined Annual Average Flow

Interim	Final
Outfalls 001, 002, & 003	Outfalls 001, 002, & 003
19.3 MGD	22.0 MGD

Combined Load (lbs/day)

Parameter	Interim	Final
Carbonaceous Biochemical Oxygen Demand (5-day)		
April—September	1,127	1,284
October — March	1,610	1,835
Total Suspended Solids	2,414	2,752
Ammonia Nitrogen		
April—September	322	367
October — March	483	550

24. The sampling locations for Outfalls 001, 002, and 003 are as follows:

Interim and Final Phases

Parameter	Outfall 001	Outfall 002	Outfall 003
$CBOD_5$	Post MBR		
TSS			
NH_3-N			
Chlorine	Chlorine contact basin, prior to discharge to Outfalls 001 & 002		Chlorine contact basin, prior to discharge to Outfall 003
E. Coli	At diversion box after chlorination, prior to discharge to Outfalls 001 & 002		After final treatment unit, prior to discharge to Outfall 003
Chlorine [dechlorination]	After final treatment unit, prior to discharge to Outfall 001	Prior to discharge in Kirby Lake	After final treatment unit, prior to discharge to Outfall 003
pH	Diversion box after chlorination		After final treatment unit, prior to discharge to Outfall 003
DO	Following chlorination or following the post-aeration treatment unit	Following the chlorination treatment unit, prior to discharge to Outfall 002	Following the final treatment unit, prior to discharge to Outfall 003

CONTRIBUTING INDUSTRIES AND PRETREATMENT REQUIREMENTS

1. The permittee shall operate an industrial pretreatment program in accordance with Sections 402(b)(8) and (9) of the Clean Water Act, the General Pretreatment Regulations (40 CFR Part 403), and the approved publicly owned treatment works (POTW) pretreatment program submitted by the permittee. The pretreatment program was approved on **August 3, 1984** and modified on **July 16, 1993**.

   The legal authority and the POTW's pretreatment program are not in compliance with the current 40 CFR Part 403 regulations *[rev. Federal Register/ Vol. 70/ No. 198/ Friday, October 14, 2005/ Rules and Regulations, pages 60134-60798]* and 30 TAC Chapter 315, as amended. The permittee has submitted a modification to their pretreatment program containing some or all of the required [i.e. more stringent] Streamlining Rule provisions to the TCEQ on July 28, 2010, and subsequent information on June 6, 2011. The modification was declared administratively complete on June 10, 2011. The Executive Director is currently reviewing this modification. If after review of the modification submission, the Executive Director determines that the submission does not comply with applicable requirements, including 40 CFR §§403.8 and 403.9, the Executive Director will notify the permittee. According to 40 CFR §403.11(c), the notification will include suggested modifications to bring the modification submission into compliance with applicable requirements, including 40 CFR §§403.8(b) and (f), and 403.9(b). In such a case, revised information will be necessary for the Executive Director to make a determination on whether to approve or deny the permittee's modification submission.

   The POTW pretreatment program is hereby incorporated by reference and shall be implemented in a manner consistent with the following requirements:

   a. Industrial user (IU) information shall be kept current according to 40 CFR §§403.8(f)(2)(i) and (ii) and updated at a frequency set forth in the approved pretreatment program to reflect the accurate characterization of all IUs;

   b. The frequency and nature of IU compliance monitoring activities by the permittee shall be consistent with the approved POTW pretreatment program and commensurate with the character, consistency, and volume of waste. The permittee is required to inspect and sample the effluent from each significant industrial user (SIU) at least once per year, except as specified in 40 CFR §403.8(f)(2)(v). This is in addition to any industrial self-monitoring activities;

   c. The permittee shall enforce and obtain remedies for IU noncompliance with applicable pretreatment standards and requirements and the approved POTW pretreatment program;

   d. The permittee shall control through permit, order, or similar means, the contribution to the POTW by each IU to ensure compliance with applicable pretreatment standards and requirements and the approved POTW pretreatment program. In the case of SIUs (identified as significant under 40 CFR §403.3(v)), this control shall be achieved through individual permits or general control mechanisms, in accordance with 40 CFR §403.8(f)(1)(iii).

      Both individual and general control mechanisms must be enforceable and contain, at a minimum, the following conditions:

(1) Statement of duration (in no case more than five years);

(2) Statement of non-transferability without, at a minimum, prior notification to the POTW and provision of a copy of the existing control mechanism to the new owner or operator;

(3) Effluent limits, which may include enforceable best management practices (BMPs), based on applicable general pretreatment standards, categorical pretreatment standards, local limits, and State and local law;

(4) Self-monitoring, sampling, reporting, notification and record keeping requirements, identification of the pollutants to be monitored (including, if applicable, the process for seeking a waiver for a pollutant neither present nor expected to be present in the IU's discharge in accordance with 40 CFR §403.12(e)(2), or a specific waived pollutant in the case of an individual control mechanism), sampling location, sampling frequency, and sample type, based on the applicable general pretreatment standards in 40 CFR Part 403, categorical pretreatment standards, local limits, and State and local law;

(5) Statement of applicable civil and criminal penalties for violation of pretreatment standards and requirements, and any applicable compliance schedule. Such schedules may not extend the compliance date beyond federal deadlines; and

(6) Requirements to control slug discharges, if determined by the POTW to be necessary.

e. For those IUs who are covered by a general control mechanism, in order to implement 40 CFR §403.8(f)(1)(iii)(A)(2), a monitoring waiver for a pollutant neither present nor expected to be present in the IU's discharge is not effective in the general control mechanism until after the POTW has provided written notice to the SIU that such a waiver request has been granted in accordance with 40 CFR §403.12(e)(2);

f. The permittee shall evaluate whether each SIU needs a plan or other action to control slug discharges, in accordance with 40 CFR §403.8(f)(2)(vi). If the POTW decides that a slug control plan is needed, the plan shall contain at least the minimum elements required in 40 CFR §403.8(f)(2)(vi);

g. The permittee shall provide adequate staff, equipment, and support capabilities to carry out all elements of the pretreatment program; and

h. The approved program shall not be modified by the permittee without the prior approval of the Executive Director, according to 40 CFR §403.18.

2. The permittee is under a continuing duty to establish and enforce specific local limits to implement the provisions of 40 CFR §403.5, develop and enforce local limits as necessary, and modify the approved pretreatment program as necessary to comply with federal, state, and local law, as amended. The permittee may develop BMPs to implement 40 CFR §403.5(c)(1) and (2). Such BMPs shall be considered local limits and pretreatment standards. The permittee is required to effectively enforce such limits and to modify its pretreatment program, including the Legal Authority, Enforcement Response Plan, and

Standard Operating Procedures (including forms), if required by the Executive Director to reflect changing conditions at the POTW. Substantial modifications will be approved in accordance with 40 CFR §403.18, and modifications will become effective upon approval by the Executive Director in accordance with 40 CFR §403.18.

The permittee has submitted a substantial modifications package to the TCEQ on January 6, 2016, revising the existing technically based local limits (TBLLs). The modification was declared administratively complete on January 22, 2016. The Executive Director is currently reviewing this substantial modification package.

If after review of the substantial modification submission, the Executive Director determines that the submission does not comply with applicable requirements, including 40 CFR §§403.8 and 403.9, the Executive Director will notify the permittee. According to 40 CFR §403.11(c), the notification will include suggested modifications to bring the substantial modification submission into compliance with applicable requirements, including 40 CFR §§403.8(b) and (f) and 403.9(b). In such a case, revised information will be necessary for the Executive Director to make a determination on whether to approve or deny the permittee's substantial modification submission.

Upon approval by the Executive Director of the substantial modification to this approved POTW pretreatment program, the requirement to develop and enforce specific prohibitions and/or limits to implement the prohibitions and limits set forth in 40 CFR §§403.5(a)(1), (b), (c)(1) and (3), and (d) is a condition of this permit. The specific prohibitions set out in 40 CFR §403.5(b) shall be enforced by the permittee unless modified under this provision.

3. The permittee shall analyze the treatment facility influent and effluent for the presence of the toxic pollutants listed in the Texas Surface Water Quality Standards [30 TAC Chapter 307], and 40 CFR Part 122, Appendix D, Table II at least **once per six months** and the toxic pollutants listed in 40 CFR Part 122, Appendix D, Table III at least **once per three months**. If, based upon information available to the permittee, there is reason to suspect the presence of any toxic or hazardous pollutant listed in 40 CFR Part 122, Appendix D, Table V, or any other pollutant, known or suspected to adversely affect treatment plant operation, receiving water quality, or solids disposal procedures, analysis for those pollutants shall be performed at least **once per three months** on both the influent and the effluent. Effluent samples shall be collected following the final treatment unit at **Outfall 001**.

   The influent and effluent samples collected shall be composite samples consisting of at least 12 aliquots collected at approximately equal intervals over a representative 24-hour period and composited according to flow. Sampling and analytical procedures shall be in accordance with guidelines established in 40 CFR Part 136, as amended; as approved by the EPA through the application for alternate test procedures; or as suggested in Tables E-1 and E-2 of the *Procedures to Implement the Texas Surface Water Quality Standards* (RG-194), June 2010, as amended and adopted by the TCEQ. The effluent samples shall be analyzed to the minimum analytical level (MAL). Where composite samples are inappropriate due to sampling, holding time, or analytical constraints, at least four (4) grab samples shall be taken at equal intervals over a representative 24-hour period.

4. The permittee shall prepare annually a list of IUs which, during the preceding twelve (12) months, were in significant noncompliance (SNC) with applicable pretreatment requirements. For the purposes of this section of the permit, "CONTRIBUTING

INDUSTRIES AND PRETREATMENT REQUIREMENTS," SNC shall be determined based upon the more stringent of either criteria established at 40 CFR §403.8(f)(2)(viii) *[rev. 10/14/05]* or criteria established in the approved POTW pretreatment program. This list is to be published annually during the month of **August** in a newspaper of general circulation that provides meaningful public notice within the jurisdiction(s) served by the POTW.

In addition, each **August** the permittee shall submit an updated pretreatment program annual status report, in accordance with 40 CFR §§403.12(i) [*rev. 10/22/15*] and (m), to the TCEQ Pretreatment Team (MC148) of the Water Quality Division. The report summary shall be submitted on the Pretreatment Performance Summary (PPS) form [TCEQ-20218]. The report shall contain the following information as well as the information on the tables in this section:

a. An updated list of all regulated IUs as indicated in this section. For each listed IU, the following information shall be included:

(1) Standard Industrial Classification (SIC) or North American Industry Classification System (NAICS) code *and* categorical determination.

(2) If the pretreatment program has been modified and approved to incorporate reduced monitoring for any of the categorical IUs as provided by 40 CFR Part 403 [*rev. 10/14/05*], then the list must also identify:

- categorical IUs subject to the conditions for reduced monitoring and reporting requirements under 40 CFR § 403.12(e)(1) [*rev. 10/22/15*] and (3);
- those IUs that are non-significant categorical industrial users (NSCIUs) under 40 CFR §403.3(v)(2); and
- those IUs that are middle tier categorical industrial users (MTCIUs) under 40 CFR §403.12(e)(3).

(3) Control mechanism status.

- Indicate whether the IU has an effective individual or general control mechanism, and the date such control mechanism was last issued, reissued, or modified;
- Indicate which IUs were added to the system, or newly identified, during the pretreatment year reporting period;
- Include the type of general control mechanisms; and
- Report all NSCIU annual evaluations performed, as applicable.

(4) A summary of all compliance monitoring activities performed by the POTW during the pretreatment year reporting period. The following information shall be reported:

- Total number of inspections performed; and
- Total number of sampling events conducted.

(5) Status of IU compliance with effluent limitations, reporting, and narrative standard (which may include enforceable BMPs, narrative limits, and/or operational standards) requirements. Compliance status shall be defined as follows:

- Compliant (C) - no violations during the pretreatment year reporting period;
- Non-compliant (NC) - one or more violations during the pretreatment year reporting period but does not meet the criteria for SNC; and
- Significant Noncompliance (SNC) - in accordance with requirements described above in this section.

(6) For noncompliant IUs, indicate the nature of the violations, the type and number of actions taken (notice of violation, administrative order, criminal or civil suit, fines or penalties collected, etc.), and the current compliance status. If any IU was on a schedule to attain compliance with effluent limits or narrative standards, indicate the date the schedule was issued and the date compliance is to be attained.

b. A list of each IU whose authorization to discharge was terminated or revoked during the pretreatment year reporting period and the reason for termination.

c. A report on any interference, pass through, upset, or POTW permit violations known or suspected to be caused by IUs and response actions taken by the permittee.

d. The results of all influent and effluent analyses performed pursuant to Item 3 of this section.

e. An original newspaper public notice, or copy of the newspaper publication with official affidavit, of the list of IUs that meet the criteria of SNC, giving the name of the newspaper and date the list was published.

f. The daily average water quality based effluent concentrations (from the TCEQ's Texas Toxicity Modeling Program (TexTox)) necessary to attain the Texas Surface Water Quality Standards, 30 TAC Chapter 307, in water in the state.

g. The maximum allowable headworks loading (MAHL) in pounds per day (lb/day) of the approved TBLLs or for each pollutant of concern (POC) for which the permittee has calculated a MAHL. In addition, the influent loading as a percent of the MAHL, using the annual average flow of the wastewater treatment plant in million gallons per day (MGD) during the pretreatment year reporting period, for each pollutant that has an adopted TBLL or for each POC for which the permittee has calculated a MAHL. (*See Endnotes No. 2 at the end of this section for the influent loading as a percent of the MAHL equation.*)

h. The permittee may submit the updated pretreatment program annual status report information in tabular form using the example table format provided. Please attach, on a separate sheet, explanations to document the various pretreatment activities, including IU permits that have expired, BMP violations, and any sampling events that were not conducted by the permittee as required.

i. A summary of changes to the POTW's approved pretreatment program that have not been previously reported to the Approval Authority.

Effective September 1, 2020, the permittee must submit the updated pretreatment program annual status report required by this section electronically using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. *[rev. Federal Register/ Vol. 80/ No. 204/ Friday, October 22, 2015/ Rules and Regulations, pages 64064-64158].*

5. The permittee shall provide adequate written notification to the Executive Director, care of the Wastewater Permitting Section (MC 148) of the Water Quality Division, within 30 days of the permittee's knowledge of the following:

   a. Any new introduction of pollutants into the treatment works from an indirect discharger which would be subject to Sections 301 and 306 of the Clean Water Act if the indirect discharger was directly discharging those pollutants; and

   b. Any substantial change in the volume or character of pollutants being introduced into the treatment works by a source introducing pollutants into the treatment works at the time of issuance of the permit.

   Adequate notice shall include information on the quality and quantity of effluent to be introduced into the treatment works, and any anticipated impact of the change on the quality or quantity of effluent to be discharged from the POTW.

Revised February 8, 2018

TPDES Pretreatment Program Annual Report Form for Updated Industrial Users List

Reporting month/year: _____, _____ to _____, _____

TPDES Permit No.: _____ Permittee:_____ Treatment Plant: _____

PRETREATMENT PROGRAM STATUS REPORT UPDATED INDUSTRIAL USERS[1] LIST																	
Industrial User Name	SIC or NAICS Code	CIU[2]	CONTROL MECHANISM				New User[3] (Y or N)	Times Inspected by the CA	Times Sampled by the CA	COMPLIANCE STATUS During the Pretreatment Year Reporting Period[4] (C = Compliant, NC = Noncompliant, SNC= Significant Noncompliance)						
			Y/N or NR[5]	IND or GEN or NR	Last Action[6]	TBLLs or TBLLs only[7]				REPORTS				NSCIU Certifications	Effluent Limits	Narrative Standards
										BMR	90-Day	Semi-Annual	Self-Monitoring[8]			

1 Include all significant industrial users (SIUs), non-significant categorical industrial users (NSCIUs) as defined in 40 CFR §403.3(v)(2), and/or middle tier categorical industrial users (MTCIUs) as defined in 40 CFR §403.12(e)(3). Please do not include non-significant noncategorical IUs that are covered under best management practices (BMPs) or general control mechanisms.

2 Categorical determination (include 40 CFR citation and NSCIU or MTCIU status, if applicable).

3 Indicate whether the IU is a new user. If the answer is No or N, then indicate the expiration date of the last issued IU permit.

4 The term SNC applies to a broader range of violations, such as daily maximum, long-term average, instantaneous limits, and narrative standards (which may include enforceable BMPs, narrative limits and/or operational standards). Any other violation, or group of violations, which the POTW determines will adversely affect the operation or implementation of the local Pretreatment Program now includes BMP violations (40 CFR §403.8(f)(2)(viii)(H)).

5 Code NR= None required (NSCIUs only); IND = individual control mechanism; GEN = general control mechanism. Include as a footnote (or on a separate page) the name of the general control mechanism used for similar groups of IUs, identify the similar types of operations and types of wastes that are the same for each general control mechanism. Any BMPs through general control mechanisms that are applied to nonsignificant IUs need to be reported separately, *e.g.* the sector type and BMP description.

6 Permit or NSCIU evaluations as applicable.

7 According to 40 CFR §403.12(i)(1), indicate whether the IU is subject to technically based local limits (TBLLs) that are more stringent than categorical pretreatment standards, *e.g.* where there is one end-of-pipe sampling point at a CIU, and you have determined that the TBLLs are more stringent than the categorical pretreatment standards for any pollutant at the end-of-pipe sampling point; **OR** the IU is subject only to local limits (TBLLs only), *e.g.* the IU is a non-categorical SIU subject only to TBLLs at the end-of-pipe sampling point.

8 For those IUs where a monitoring waiver has been granted, please add the code "W" (after either C, NC, or SNC codes) and indicate the pollutant(s) for which the waiver has been granted.

TPDES Pretreatment Program Annual Report Form for Industrial User Inventory Modifications

Reporting month/year: _____, _____ to _____, _____

TPDES Permit No: _____ Permittee: _____ Treatment Plant: _____

INDUSTRIAL USER INVENTORY MODIFICATIONS					
FACILITY NAME, ADDRESS AND CONTACT PERSON	ADD, CHANGE, DELETE (Including categorical reclassification to NSCIU or MTCIU)	IF DELETION: Reason For Deletion	IF ADDITION OR SIGNIFICANT CHANGE:		
			PROCESS DESCRIPTION	POLLUTANTS (Including any sampling waiver given for each pollutant not present)	FLOW RATE [9] (In gpd) R = Regulated U = Unregulated T = Total

9 For NSCIUs, total flow must be given, if regulated flow is not determined.

TPDES Pretreatment Program Annual Report Form for Enforcement Actions Taken

Reporting month/year: _____, _____ to _____, _____

TPDES Permit No: _____Permittee:_____Treatment Plant: _____

Overall SNC ____% SNC [10] based on: Effluent Violations_____%
Reporting Violations_____% Narrative Standard Violations____%

Noncompliant Industrial Users - Enforcement Actions Taken															
Industrial User Name	Nature of Violation [11]				Number of Actions Taken					Penalties Collected (Do not Include Surcharge)	Compliance Schedule			Current Status Returned to Compliance: (Y or N)	Comments
	Effluent Limits	Reports	NSCIU Certifications	Narrative Standards	NOV	A.O.	Civil	Criminal	Other		Y or N	Date Issued	Date Due		

10 # %
__ __ Pretreatment Standards [WENDB-PSNC] (Local Limits/Categorical Standards)
__ __ Reporting Requirements [WENDB-PSNC]
__ __ Narrative Standards

11 Please specify a separate number for each type of violation, *e.g.* report, notification, and/or NSCIU certification.

TPDES Pretreatment Program Annual Report Form for Influent and Effluent Monitoring Results[1]

Reporting month/year: _____, _____ to _____, _____

TPDES Permit No.: _____ Permittee:_____Treatment Plant: _____

PRETREATMENT PROGRAM INFLUENT AND EFFLUENT MONITORING RESULTS											
POLLUTANT	MAHL, if Applicable in lb/day	Influent Measured in µg/L (Actual Concentration or < MAL)				Average Influent % of the MAHL[2]	Daily Average Effluent Limit (µg/L) [3]	Effluent Measured in µg/L (Actual Concentration or < MAL) [4]			
		Date	Date	Date	Date			Date	Date	Date	Date
METALS, CYANIDE AND PHENOLS											
Antimony, Total											
Arsenic, Total											
Beryllium, Total											
Cadmium, Total											
Chromium, Total											
Chromium (Hex)											
Chromium (Tri)[5]											
Copper, Total											
Lead, Total											
Mercury, Total											
Nickel, Total											
Selenium, Total											
Silver, Total											
Thallium, Total											
Zinc, Total											
Cyanide, Available [6]											
Cyanide, Total											

PRETREATMENT PROGRAM INFLUENT AND EFFLUENT MONITORING RESULTS											
POLLUTANT	MAHL, if Applicable in lb/day	Influent Measured in µg/L (Actual Concentration or < MAL)				Average Influent % of the MAHL[2]	Daily Average Effluent Limit (µg/L) [3]	Effluent Measured in µg/L (Actual Concentration or < MAL) [4]			
		Date	Date	Date	Date			Date	Date	Date	Date
Phenols, Total											
VOLATILE COMPOUNDS											
Acrolein											
Acrylonitrile											
Benzene											
Bromoform							See TTHM				
Carbon Tetrachloride											
Chlorobenzene											
Chlorodibromomethane							See TTHM				
Chloroethane											
2-Chloroethylvinyl Ether											
Chloroform							See TTHM				
Dichlorobromomethane							See TTHM				
1,1-Dichloroethane											
1,2-Dichloroethane											
1,1-Dichloroethylene											
1,2-Dichloropropane											
1,3-Dichloropropylene											
Ethyl benzene											
Methyl Bromide											

PRETREATMENT PROGRAM INFLUENT AND EFFLUENT MONITORING RESULTS											
POLLUTANT	MAHL, if Applicable in lb/day	Influent Measured in µg/L (Actual Concentration or < MAL)				Average Influent % of the MAHL[2]	Daily Average Effluent Limit (µg/L) [3]	Effluent Measured in µg/L (Actual Concentration or < MAL) [4]			
		Date	Date	Date	Date			Date	Date	Date	Date
Methyl Chloride											
Methylene Chloride											
1,1,2,2-Tetra-chloroethane											
Tetrachloroethylene											
Toluene											
1,2-Trans-Dichloroethylene											
1,1,1-Trichloroethane											
1,1,2-Trichloroethane											
Trichloroethylene											
Vinyl Chloride											
ACID COMPOUNDS											
2-Chlorophenol											
2,4-Dichlorophenol											
2,4-Dimethylphenol											
4,6-Dinitro-o-Cresol											
2,4-Dinitrophenol											
2-Nitrophenol											
4-Nitrophenol											
P-Chloro-m-Cresol											
Pentachlorophenol											
Phenol											

PRETREATMENT PROGRAM INFLUENT AND EFFLUENT MONITORING RESULTS											
POLLUTANT	MAHL, if Applicable in lb/day	Influent Measured in µg/L (Actual Concentration or < MAL)				Average Influent % of the MAHL[2]	Daily Average Effluent Limit (µg/L) [3]	Effluent Measured in µg/L (Actual Concentration or < MAL) [4]			
		Date	Date	Date	Date			Date	Date	Date	Date
2,4,6-Trichlorophenol											
BASE/NEUTRAL COMPOUNDS											
Acenaphthene											
Acenaphthylene											
Anthracene											
Benzidine											
Benzo(a)Anthracene											
Benzo(a)Pyrene											
3,4-Benzofluoranthene											
Benzo(ghi)Perylene											
Benzo(k)Fluoranthene											
Bis(2-Chloroethoxy)Methane											
Bis(2-Chloroethyl)Ether											
Bis(2-Chloroisopropyl)Ether											
Bis(2-Ethylhexyl)Phthalate											
4-Bromophenyl Phenyl Ether											
Butylbenzyl Phthalate											
2-Chloronaphthalene											
4-Chlorophenyl Phenyl Ether											

PRETREATMENT PROGRAM INFLUENT AND EFFLUENT MONITORING RESULTS												
POLLUTANT	MAHL, if Applicable in lb/day	Influent Measured in µg/L (Actual Concentration or < MAL)				Average Influent % of the MAHL[2]	Daily Average Effluent Limit (µg/L) [3]	Effluent Measured in µg/L (Actual Concentration or < MAL) [4]			
		Date	Date	Date	Date			Date	Date	Date	Date
Chrysene											
Dibenzo(a,h)Anthracene											
1,2-Dichlorobenzene											
1,3-Dichlorobenzene											
1,4-Dichlorobenzene											
3,3-Dichlorobenzidine											
Diethyl Phthalate											
Dimethyl Phthalate											
Di-n-Butyl Phthalate											
2,4-Dinitrotoluene											
2,6-Dinitrotoluene											
Di-n-Octyl Phthalate											
1,2-Diphenyl Hydrazine											
Fluoranthene											
Fluorene											
Hexachlorobenzene											
Hexachlorobutadiene											
Hexachloro-cyclopentadiene											
Hexachloroethane											
Indeno(1,2,3-cd)pyrene											
Isophorone											

PRETREATMENT PROGRAM INFLUENT AND EFFLUENT MONITORING RESULTS											
POLLUTANT	MAHL, if Applicable in lb/day	Influent Measured in µg/L (Actual Concentration or < MAL)				Average Influent % of the MAHL[2]	Daily Average Effluent Limit (µg/L) [3]	Effluent Measured in µg/L (Actual Concentration or < MAL) [4]			
		Date	Date	Date	Date			Date	Date	Date	Date
Naphthalene											
Nitrobenzene											
N-Nitrosodimethylamine											
N-Nitrosodi-n-Propylamine											
N-Nitrosodiphenylamine											
Phenanthrene											
Pyrene											
1,2,4-Trichlorobenzene											
PESTICIDES											
Aldrin											
Alpha-hexachlorocyclohexane (BHC)											
beta-BHC											
gamma-BHC (Lindane)											
delta-BHC											
Chlordane											
4,4-DDT											
4,4-DDE											
4,4-DDD											
Dieldrin											

PRETREATMENT PROGRAM INFLUENT AND EFFLUENT MONITORING RESULTS												
POLLUTANT	MAHL, if Applicable in lb/day	Influent Measured in µg/L (Actual Concentration or < MAL)				Average Influent % of the MAHL[2]	Daily Average Effluent Limit (µg/L) [3]	Effluent Measured in µg/L (Actual Concentration or < MAL) [4]			
		Date	Date	Date	Date			Date	Date	Date	Date
alpha-Endosulfan											
beta-Endosulfan											
Endosulfan Sulfate											
Endrin											
Endrin Aldehyde											
Heptachlor											
Heptachlor Epoxide											
Polychlorinated biphenols (PCBs) *The sum of PCB concentrations not to exceed daily average value.*											
PCB-1242							See PCBs				
PCB-1254							See PCBs				
PCB-1221							See PCBs				
PCB-1232							See PCBs				
PCB-1248							See PCBs				
PCB-1260							See PCBs				
PCB-1016							See PCBs				
Toxaphene											
ADDITIONAL TOXIC POLLUTANTS REGULATED UNDER 30 TAC CHAPTER 307											
Aluminum											
Barium											

PRETREATMENT PROGRAM INFLUENT AND EFFLUENT MONITORING RESULTS											
POLLUTANT	MAHL, if Applicable in lb/day	Influent Measured in µg/L (Actual Concentration or < MAL)				Average Influent % of the MAHL[2]	Daily Average Effluent Limit (µg/L) [3]	Effluent Measured in µg/L (Actual Concentration or < MAL) [4]			
		Date	Date	Date	Date			Date	Date	Date	Date
Bis(chloromethyl) ether [7]											
Carbaryl											
Chloropyrifos											
Cresols											
2,4-D											
Danitol [8]											
Demeton											
Diazinon											
Dicofol											
Dioxin/Furans [9]											
Diuron											
Fluoride											
Guthion											
Hexachlorophene											
Malathion											
Methoxychlor											
Methyl Ethyl Ketone											
Mirex											
Nitrate-Nitrogen											
N-Nitrosodiethylamine											

PRETREATMENT PROGRAM INFLUENT AND EFFLUENT MONITORING RESULTS											
POLLUTANT	MAHL, if Applicable in lb/day	Influent Measured in µg/L (Actual Concentration or < MAL)				Average Influent % of the MAHL[2]	Daily Average Effluent Limit (µg/L) [3]	Effluent Measured in µg/L (Actual Concentration or < MAL) [4]			
		Date	Date	Date	Date			Date	Date	Date	Date
N-Nitroso-di-n-Butylamine											
Nonylphenol											
Parathion											
Pentachlorobenzene											
Pyridine											
1,2-Dibromoethane											
1,2,4,5-Tetrachlorobenzene											
2,4,5-TP (Silvex)											
Tributyltin [9]											
2,4,5-Trichlorophenol											
TTHM (Total Trihalomethanes)											

Endnotes:

1. It is advised that the permittee collect the influent and effluent samples considering flow detention time through each wastewater treatment plant (WWTP).

2. The MAHL of the approved TBLLs or for each pollutant of concern (POC) for which the permittee has calculated a MAHL. Only complete the column labeled "Average Influent % of the MAHL," as a percentage, for pollutants that have approved TBLLs or for each POC for which the permittee has calculated a MAHL (U.S. Environmental Protection Agency *Local Limits Development Guidance*, July 2004, EPA933-R-04-002A).

   The % of the MAHL is to be calculated using the following formulas:

   Equation A: $L_{INF} = (C_{POLL} \times Q_{WWTP} \times 8.34) / 1000$

   Equation B: $L_{\%} = (L_{INF} / MAHL) \times 100$

   Where:

L_{INF} =	Current Average (Avg) influent loading in lb/day
C_{POLL} =	Avg concentration in µg/L of all influent samples collected during the pretreatment year.
Q_{WWTP} =	Annual average flow of the WWTP in MGD, defined as the arithmetic average of all daily flow determinations taken within the preceding 12 consecutive calendar months (or during the pretreatment year), and as described in the Definitions and Standard Permit Conditions section.
$L_{\%}$ =	% of the MAHL
MAHL =	Calculated MAHL in lb/day
8.34 =	Unit conversion factor

3. Daily average effluent limit (metal values are for total metals) as derived by the Texas Toxicity Modeling Program (TexTox). Effluent limits as calculated are designed to be protective of the Texas Surface Water Quality Standards. The permittee shall determine and indicate which effluent limit is the most stringent between the 30 TAC Chapter 319, Subchapter B (Hazardous Metals) limit, TexTox values, or any applicable limit in the Effluent Limitations and Monitoring Requirements Section of this TPDES permit. Shaded blocks need not be filled in unless the permittee has received a permit requirement/limit for the particular parameter.

4. Minimum analytical levels (MALs) and analytical methods as suggested in Tables E-1 and E-2 of the *Procedures to Implement the Texas Surface Water Quality Standards* (June 2010), as amended and adopted by the TCEQ. Pollutants that are not detectable above the MAL need to be reported as less than (<) the MAL numeric value.

5. Report result by subtracting Hexavalent Chromium from Total Chromium.

6. Either the method for Amenable to Chlorination or Weak-Acid Dissociable is authorized.

7. Hydrolyzes in water. Will not require permittee to analyze at this time.

8. EPA procedure not approved. Will not require permittee to analyze at this time.

9. Analyses are not required at this time for these pollutants unless there is reason to believe that these pollutants may be present.

BIOMONITORING REQUIREMENTS

CHRONIC BIOMONITORING REQUIREMENTS: FRESHWATER

The provisions of this section apply to Outfalls 001, 002, and 003 for whole effluent toxicity (WET) testing.

1. Scope, Frequency, and Methodology

   a. The permittee shall test the effluent for toxicity in accordance with the provisions below. Such testing will determine if an appropriately dilute effluent sample adversely affects the survival, reproduction, or growth of the test organisms.

   b. The permittee shall conduct the following toxicity tests using the test organisms, procedures and quality assurance requirements specified in this part of this permit and in accordance with "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms," fourth edition (EPA-821-R-02-013) or its most recent update:

      1) Chronic static renewal survival and reproduction test using the water flea (*Ceriodaphnia dubia*) (Method 1002.0). This test should be terminated when 60% of the surviving adults in the control produce three broods or at the end of eight days, whichever occurs first. This test shall be conducted once per quarter.

      2) Chronic static renewal 7-day larval survival and growth test using the fathead minnow (*Pimephales promelas*) (Method 1000.0). A minimum of five replicates with eight organisms per replicate shall be used in the control and in each dilution. This test shall be conducted once per quarter.

   The permittee must perform and report a valid test for each test species during the prescribed reporting period. An invalid test must be repeated during the same reporting period. An invalid test is defined as any test failing to satisfy the test acceptability criteria, procedures, and quality assurance requirements specified in the test methods and permit.

   c. The permittee shall use five effluent dilution concentrations and a control in each toxicity test. These effluent dilution concentrations are 32%, 42%, 56%, 75%, and 100% effluent. The critical dilution, defined as 100% effluent, is the effluent concentration representative of the proportion of effluent in the receiving water during critical low flow or critical mixing conditions.

   d. This permit may be amended to require a WET limit, a chemical-specific effluent limit, a best management practice, or other appropriate actions to address toxicity. The permittee may be required to conduct a toxicity reduction evaluation (TRE) after multiple toxic events.

e. Testing Frequency Reduction

1) If none of the first four consecutive quarterly tests demonstrates significant toxicity, the permittee may submit this information in writing and, upon approval, reduce the testing frequency to once per six months for the invertebrate test species and once per year for the vertebrate test species.

2) If one or more of the first four consecutive quarterly tests demonstrates significant toxicity, the permittee shall continue quarterly testing for that species until this permit is reissued. If a testing frequency reduction had been previously granted and a subsequent test demonstrates significant toxicity, the permittee shall resume a quarterly testing frequency for that species until this permit is reissued.

2. Required Toxicity Testing Conditions

a. Test Acceptance - The permittee shall repeat any toxicity test, including the control and all effluent dilutions, which fail to meet the following criteria:

1) a control mean survival of 80% or greater;

2) a control mean number of water flea neonates per surviving adult of 15 or greater;

3) a control mean dry weight of surviving fathead minnow larvae of 0.25 mg or greater;

4) a control coefficient of variation percent (CV%) of 40 or less in between replicates for the young of surviving females in the water flea test; and the growth and survival endpoints in the fathead minnow test;

5) a critical dilution CV% of 40 or less for young of surviving females in the water flea test; and the growth and survival endpoints for the fathead minnow test, unless statistically significant toxicity is demonstrated at the critical dilution, in which case the test shall be considered valid;

6) a percent minimum significant difference of 47 or less for water flea reproduction; and

7) a PMSD of 30 or less for fathead minnow growth.

b. Statistical Interpretation

1) For the water flea survival and reproduction test, the statistical analyses used to determine the inhibition concentration of effluent that would cause a 25% reduction (IC25) in survival or mean young per female shall be as described in the methods manual referenced in Part 1.b.

2) For the fathead minnow larval survival and growth tests, the statistical analyses used to determine the IC25 in survival or growth shall be as described in the methods manual referenced in Part 1.b.

3) The permittee is responsible for reviewing test concentration-response relationships to ensure that calculated test-results are interpreted and reported correctly. The document entitled "Method Guidance and Recommendation for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)" (EPA 821-B-00-004) provides guidance on determining the validity of test results.

4) Most point estimates are derived from a mathematical model that assumes a continuous dose-response relationship. For any test result that demonstrates a non-continuous (threshold) response, or a non-monotonic dose-response relationship, the IC25 should be determined based on the method guidance manual referenced in Item 3.

5) Pursuant to the responsibility assigned to the permittee in Part 2.b.3), test results that demonstrate a non-monotonic dose-response relationship may be submitted, prior to the due date, for technical review of test validity and acceptability. The method guidance manual referenced in Item 3 will be used as the basis, along with best professional judgement, for making a determination of test validity and acceptability.

c. Dilution Water

1) Dilution water used in the toxicity tests shall be the receiving water collected at a point upstream of the discharge as close as possible to the discharge point but unaffected by the discharge. Where the toxicity tests are conducted on effluent discharges to receiving waters that are classified as intermittent streams, or where the toxicity tests are conducted on effluent discharges where no receiving water is available due to zero flow conditions, the permittee shall:

a) substitute a synthetic dilution water that has a pH, hardness, and alkalinity similar to that of the closest downstream perennial water unaffected by the discharge; or

b) use the closest downstream perennial water unaffected by the discharge.

2) Where the receiving water proves unsatisfactory as a result of pre-existing instream toxicity (i.e. fails to fulfill the test acceptance criteria of Part 2.a.), the permittee may substitute synthetic dilution water for the receiving water in all subsequent tests provided the unacceptable receiving water test met the following stipulations:

a) a synthetic lab water control was performed (in addition to the receiving water control) which fulfilled the test acceptance requirements of Part 2.a;

b) the test indicating receiving water toxicity was carried out to completion (i.e., 7 days);

c) the permittee submitted all test results indicating receiving water toxicity with the reports and information required in Part 3.

3) The synthetic dilution water shall consist of standard, moderately hard, reconstituted water. Upon approval, the permittee may substitute other appropriate dilution water with chemical and physical characteristics similar to that of the receiving water.

d. Samples and Composites

1) The permittee shall collect a minimum of three composite samples from the outfall being sampled. The second and third composite samples will be used for the renewal of the dilution concentrations for each toxicity test.

2) The permittee shall collect the composite samples such that the samples are representative of any periodic episode of chlorination, biocide usage, or other potentially toxic substance being discharged on an intermittent basis.

3) The permittee shall initiate the toxicity tests within 36 hours after collection of the last portion of the first composite sample. The holding time for any subsequent composite sample shall not exceed 72 hours. Samples shall be maintained at a temperature of 0-6 degrees Centigrade during collection, shipping, and storage.

4) If Outfall 001 ceases discharging during the collection of effluent samples, the requirements for the minimum number of effluent samples, the minimum number of effluent portions, and the sample holding time are waived during that sampling period. However, the permittee must have collected an effluent composite sample volume sufficient to complete the required toxicity tests with renewal of the effluent. When possible, the effluent samples used for the toxicity tests shall be collected on separate days if the discharge occurs over multiple days. The sample collection duration and the static renewal protocol associated with the abbreviated sample collection must be documented in the full report.

5) The effluent samples shall not be dechlorinated after sample collection.

3. Reporting

All reports, tables, plans, summaries, and related correspondence required in this section shall be submitted to the attention of the Standards Implementation Team (MC 150) of the Water Quality Division.

a. The permittee shall prepare a full report of the results of all tests conducted in accordance with the manual referenced in Part 1.b. for every valid and invalid toxicity test initiated whether carried to completion or not.

b. The permittee shall routinely report the results of each biomonitoring test on the Table 1 forms provided with this permit.

1) Annual biomonitoring test results are due on or before January 20th for biomonitoring conducted during the previous 12-month period.

2) Semiannual biomonitoring test results are due on or before July 20th and January 20th for biomonitoring conducted during the previous 6-month period.

3) Quarterly biomonitoring test results are due on or before April 20th, July 20th, October 20th, and January 20th for biomonitoring conducted during the previous calendar quarter.

4) Monthly biomonitoring test results are due on or before the 20th day of the month following sampling.

c. Enter the following codes for the appropriate parameters for valid tests only:

1) For the water flea, Parameter T4P3B, enter a "1" if the IC25 for survival is less than the critical dilution; otherwise, enter a "0."

2) For the water flea, Parameter T6P3B, report the IC25 for survival.

3) For the water flea, Parameter T5P3B, enter a "1" if the IC25 for reproduction is less than the critical dilution; otherwise, enter a "0."

4) For the water flea, Parameter T7P3B, report the IC25 for reproduction.

5) For the fathead minnow, Parameter T4P6C, enter a "1" if the IC25 for survival is less than the critical dilution; otherwise, enter a "0."

6) For the fathead minnow, Parameter T6P6C, report the IC25 for survival.

7) For the fathead minnow, Parameter T5P6C, enter a "1" if the IC25 for growth is less than the critical dilution; otherwise, enter a "0."

8) For the fathead minnow, Parameter T7P6C, report the IC25 for growth.

d. Enter the following codes for retests only:

1) For retest number 1, Parameter 22415, enter a "1" if the IC25 for survival is less than the critical dilution; otherwise, enter a "0."

2) For retest number 2, Parameter 22416, enter a "1" if the IC25 for survival is less than the critical dilution; otherwise, enter a "0."

analyses to determine actions necessary to eliminate or reduce effluent toxicity to a level not effecting significant lethality at the critical dilution. The TRE action plan shall describe an approach for the reduction or elimination of lethality for both test species defined in Part 1.b. At a minimum, the TRE action plan shall include the following:

1) Specific Activities - The TRE action plan shall specify the approach the permittee intends to utilize in conducting the TRE, including toxicity characterizations, identifications, confirmations, source evaluations, treatability studies, and alternative approaches. When conducting characterization analyses, the permittee shall perform multiple characterizations and follow the procedures specified in the document entitled "Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I" (EPA/600/6-91/005F) or alternate procedures. The permittee shall perform multiple identifications and follow the methods specified in the documents entitled "Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/080) and "Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/081). All characterization, identification, and confirmation tests shall be conducted in an orderly and logical progression;

2) Sampling Plan - The TRE action plan should describe sampling locations, methods, holding times, chain of custody, and preservation techniques. The effluent sample volume collected for all tests shall be adequate to perform the toxicity characterization/identification/confirmation procedures and chemical-specific analyses when the toxicity tests show significant lethality. Where the permittee has identified or suspects a specific pollutant and source of effluent toxicity, the permittee shall conduct, concurrent with toxicity testing, chemical-specific analyses for the identified and suspected pollutant and source of effluent toxicity;

3) Quality Assurance Plan - The TRE action plan should address record keeping and data evaluation, calibration and standardization, baseline tests, system blanks, controls, duplicates, spikes, toxicity persistence in the samples, randomization, reference toxicant control charts, and mechanisms to detect artifactual toxicity; and

4) Project Organization - The TRE action plan should describe the project staff, project manager, consulting engineering services (where applicable), consulting analytical and toxicological services, etc.

c. Within 30 days of submittal of the TRE action plan and schedule, the permittee shall implement the TRE.

d. The permittee shall submit quarterly TRE activities reports concerning the progress of the TRE. The quarterly reports are due on or before April 20th, July 20th, October 20th, and January 20th. The report shall detail information regarding the TRE activities including:

1) results and interpretation of any chemical-specific analyses for the identified and suspected pollutant performed during the quarter;

2) results and interpretation of any characterization, identification, and confirmation tests performed during the quarter;

3) any data and substantiating documentation which identifies the pollutant(s) and source of effluent toxicity;

4) results of any studies/evaluations concerning the treatability of the facility's effluent toxicity;

5) any data that identifies effluent toxicity control mechanisms that will reduce effluent toxicity to the level necessary to meet no significant lethality at the critical dilution; and

6) any changes to the initial TRE plan and schedule that are believed necessary as a result of the TRE findings.

e. During the TRE, the permittee shall perform, at a minimum, quarterly testing using the more sensitive species. Testing for the less sensitive species shall continue at the frequency specified in Part 1.b.

f. If the effluent ceases to effect significant lethality, i.e., there is a cessation of lethality, the permittee may end the TRE. A cessation of lethality is defined as no significant lethality for a period of 12 consecutive months with at least monthly testing. At the end of the 12 months, the permittee shall submit a statement of intent to cease the TRE and may then resume the testing frequency specified in Part 1.b.

This provision accommodates situations where operational errors and upsets, spills, or sampling errors triggered the TRE, in contrast to a situation where a single toxicant or group of toxicants cause lethality. This provision does not apply as a result of corrective actions taken by the permittee. Corrective actions are defined as proactive efforts that eliminate or reduce effluent toxicity. These include, but are not limited to, source reduction or elimination, improved housekeeping, changes in chemical usage, and modifications of influent streams and effluent treatment.

The permittee may only apply this cessation of lethality provision once. If the effluent again demonstrates significant lethality to the same species, the permit will be amended to add a WET limit with a compliance period, if appropriate. However, prior to the effective date of the WET limit, the permittee may apply for a permit amendment removing and replacing the WET limit with an alternate toxicity control measure by identifying and confirming the toxicant and an appropriate control measure.

g. The permittee shall complete the TRE and submit a final report on the TRE activities no later than 28 months from the last test day of the retest that confirmed significant lethal effects at the critical dilution. The permittee may

petition the Executive Director (in writing) for an extension of the 28-month limit. However, to warrant an extension the permittee must have demonstrated due diligence in its pursuit of the toxicity identification evaluation/TRE and must prove that circumstances beyond its control stalled the toxicity identification evaluation/TRE. The report shall provide information pertaining to the specific control mechanism selected that will, when implemented, result in the reduction of effluent toxicity to no significant lethality at the critical dilution. The report shall also provide a specific corrective action schedule for implementing the selected control mechanism.

h. Based on the results of the TRE and proposed corrective actions, this permit may be amended to modify the biomonitoring requirements, where necessary, require a compliance schedule for implementation of corrective actions, specify a WET limit, specify a best management practice, and specify a chemical-specific limit.

i. Copies of any and all required TRE plans and reports shall also be submitted to the U.S. EPA Region 6 office, 6WQ-PO.

TABLE 1 (SHEET 1 OF 4)
BIOMONITORING REPORTING
CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION

		Date Time		Date Time
Dates and Times Composites Collected	No. 1 FROM:	_____	TO:	_____
	No. 2 FROM:	_____	TO:	_____
	No. 3 FROM:	_____	TO:	_____

Test initiated: _____ am/pm _____ date

Dilution water used: _____ Receiving water _____ Synthetic Dilution water

NUMBER OF YOUNG PRODUCED PER ADULT AT END OF TEST

REP	Percent effluent					
	0%	32%	42%	56%	75%	100%
A						
B						
C						
D						
E						
F						
G						
H						
I						
J						
Survival Mean						
Total Mean						
CV%*						

*Coefficient of Variation = standard deviation x 100/mean (calculation based on young of the surviving adults)

Designate males (M), and dead females (D), along with number of neonates (x) released prior to death.

TABLE 1 (SHEET 2 OF 4)

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

PERCENT SURVIVAL

	Percent effluent					
Time of Reading	0%	32%	42%	56%	75%	100%
24h						
48h						
End of Test						

1. Is the IC25 for reproduction less than the critical dilution (100%)? _____ YES _____ NO

2. Is the IC25 for survival less than the critical dilution (100%)? _____ YES _____ NO

3. Enter percent effluent corresponding to each IC25 below:

IC25 survival = _____%

IC25 reproduction = _____%

TABLE 1 (SHEET 3 OF 4)

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL

		Date Time		Date Time
Dates and Times Composites Collected	No. 1 FROM:	_____	TO:	_____
	No. 2 FROM:	_____	TO:	_____
	No. 3 FROM:	_____	TO:	_____

Test initiated: _____am/pm _____date

Dilution water used: _____ Receiving water _____ Synthetic dilution water

FATHEAD MINNOW GROWTH DATA

Effluent Concentration	Average Dry Weight in replicate chambers					Mean Dry Weight	CV%*
	A	B	C	D	E		
0%							
32%							
42%							
56%							
75%							
100%							

* Coefficient of Variation = standard deviation x 100/mean

TABLE 1 (SHEET 4 OF 4)

BIOMONITORING REPORTING

FATHEAD MINNOW GROWTH AND SURVIVAL TEST

FATHEAD MINNOW SURVIVAL DATA

Effluent Concentration	Percent Survival in replicate chambers					Mean percent survival			CV%*
	A	B	C	D	E	24h	48h	7 day	
0%									
32%									
42%									
56%									
75%									
100%									

* Coefficient of Variation = standard deviation x 100/mean

1. Is the IC25 for growth less than the critical dilution (100%)? _____ YES _____ NO

2. Is the IC25 for survival less than the critical dilution (100%)? _____ YES _____ NO

3. Enter percent effluent corresponding to each IC25 below:

IC25 survival = _____%

IC25 growth = _____%

24-HOUR ACUTE BIOMONITORING REQUIREMENTS: FRESHWATER

The provisions of this section apply to Outfalls 001, 002, and 003 for whole effluent toxicity (WET) testing.

1. Scope, Frequency, and Methodology

a. The permittee shall test the effluent for lethality in accordance with the provisions in this section. Such testing will determine compliance with Texas Surface Water Quality Standard 30 TAC § 307.6(e)(2)(B), which requires greater than 50% survival of the appropriate test organisms in 100% effluent for a 24-hour period.

b. The toxicity tests specified shall be conducted once per six months. The permittee shall conduct the following toxicity tests using the test organisms, procedures, and quality assurance requirements specified in this section of the permit and in accordance with "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms," fifth edition (EPA-821-R-02-012) or its most recent update:

1) Acute 24-hour static toxicity test using the water flea (*Daphnia pulex* or *Ceriodaphnia dubia*). A minimum of five replicates with eight organisms per replicate shall be used in the control and each dilution.

2) Acute 24-hour static toxicity test using the fathead minnow (*Pimephales promelas*). A minimum of five replicates with eight organisms per replicate shall be used in the control and each dilution.

The permittee must perform and report a valid test for each test species during the prescribed reporting period. An invalid test must be repeated during the same reporting period. An invalid test is defined as any test failing to satisfy the test acceptability criteria, procedures, and quality assurance requirements specified in the test methods and permit.

c. In addition to an appropriate control, a 100% effluent concentration shall be used in the toxicity tests. Except as discussed in item 2.b., the control and dilution water shall consist of standard, synthetic, moderately hard, reconstituted water.

d. This permit may be amended to require a WET limit, a Best Management Practice (BMP), Chemical-Specific (CS) limits, or other appropriate actions to address toxicity. The permittee may be required to conduct a Toxicity Reduction Evaluation after multiple toxic events.

e. As the dilution series specified in the Chronic Biomonitoring Requirements includes a 100% effluent concentration, the results from those tests may fulfill the requirements of this Section; any tests performed in the proper time interval may be substituted. Compliance will be evaluated as specified in item a. The 50% survival in 100% effluent for a 24-hour period standard applies to all tests utilizing a 100% effluent dilution, regardless of whether the results are submitted to comply with the minimum testing frequency defined in item b.

2. Required Toxicity Testing Conditions

a. Test Acceptance - The permittee shall repeat any toxicity test, including the control, if the control fails to meet a mean survival equal to or greater than 90%.

b. Dilution Water - In accordance with item 1.c., the control and dilution water shall normally consist of standard, synthetic, moderately hard, reconstituted water. If the permittee utilizes the results of a chronic test to satisfy the requirements in item 1.e., the permittee may use the receiving water or dilution water that meets the requirements of item 2.a as the control and dilution water.

c. Samples and Composites

1) The permittee shall collect one composite sample from the outfall being sampled.

2) The permittee shall collect the composite samples such that the sample is representative of any periodic episode of chlorination, biocide usage, or other potentially toxic substance being discharged.

3) The permittee shall initiate the toxicity tests within 36 hours after collection of the last portion of the composite sample. The samples shall be maintained at a temperature of 0-6 degrees Centigrade during collection, shipping, and storage.

4) If Outfall 001 ceases discharging during the collection of the effluent composite sample, the requirements for the minimum number of effluent portions are waived. However, the permittee must have collected a composite sample volume sufficient for completion of the required test. The abbreviated sample collection, duration, and methodology must be documented in the full report.

5) The effluent sample shall not be dechlorinated after sample collection.

3. Reporting

All reports, tables, plans, summaries, and related correspondence required in this section shall be submitted to the attention of the Standards Implementation Team (MC 150) of the Water Quality Division.

a. The permittee shall prepare a full report of the results of all tests conducted pursuant to this permit in accordance with the manual referenced in Part 1.b. for every valid and invalid toxicity test initiated.

b. The permittee shall routinely report the results of each biomonitoring test on the Table 2 forms provided with this permit.

1) Semiannual biomonitoring test results are due on or before July 20th and January 20th for biomonitoring conducted during the previous 6-month period.

2) Quarterly biomonitoring test results are due on or before April 20th, July 20th, October 20th, and January 20th for biomonitoring conducted during the previous calendar quarter.

c. Enter the following codes for the appropriate parameters for valid tests only:

1) For the water flea, Parameter TIE3D, enter a "0" if the mean survival at 24 hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter "1."

2) For the fathead minnow, Parameter TIE6C, enter a "0" if the mean survival at 24 hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter "1."

d. Enter the following codes for retests only:

1) For retest number 1, Parameter 22415, enter a "0" if the mean survival at 24 hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter "1."

2) For retest number 2, Parameter 22416, enter a "0" if the mean survival at 24 hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter "1."

4. Persistent Mortality

The requirements of this part apply when a toxicity test demonstrates significant lethality, which is defined as a mean mortality of 50% or greater of organisms exposed to the 100% effluent concentration for 24 hours.

a. The permittee shall conduct 2 additional tests (retests) for each species that demonstrates significant lethality. The two retests shall be conducted once per week for 2 weeks. Five effluent dilution concentrations in addition to an appropriate control shall be used in the retests. These effluent concentrations are 6%, 13%, 25%, 50% and 100% effluent. The first retest shall be conducted within 15 days of the laboratory determination of significant lethality. All test results shall be submitted within 20 days of test completion of the second retest. Test completion is defined as the 24th hour.

b. If one or both of the two retests specified in Part 4.a. demonstrates significant lethality, the permittee shall initiate the TRE requirements as specified in Part 5.

5. Toxicity Reduction Evaluation

a. Within 45 days of the retest that demonstrates significant lethality, the permittee shall submit a general outline for initiating a TRE. The outline shall include, but not be limited to, a description of project personnel, a schedule for obtaining consultants (if needed), a discussion of influent and effluent data available for review, a sampling and analytical schedule, and a proposed TRE initiation date.

b. Within 90 days of the retest that demonstrates significant lethality, the permittee shall submit a TRE action plan and schedule for conducting a TRE. The plan shall specify the approach and methodology to be used in performing the TRE. A TRE is a step-wise investigation combining toxicity testing with physical and chemical analysis to determine actions necessary to eliminate or reduce effluent toxicity to a level not effecting significant lethality at the critical dilution. The TRE action plan shall lead to the successful elimination of significant lethality for both test species defined in Part 1.b. At a minimum, the TRE action plan shall include the following:

1) Specific Activities - The TRE action plan shall specify the approach the permittee intends to utilize in conducting the TRE, including toxicity characterizations, identifications, confirmations, source evaluations, treatability studies, and alternative approaches. When conducting characterization analyses, the permittee shall perform multiple characterizations and follow the procedures specified in the document entitled "Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures" (EPA/600/6-91/003) or alternate procedures. The permittee shall perform multiple identifications and follow the methods specified in the documents entitled "Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/080) and "Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/081). All characterization, identification, and confirmation tests shall be conducted in an orderly and logical progression;

2) Sampling Plan - The TRE action plan should describe sampling locations, methods, holding times, chain of custody, and preservation techniques. The effluent sample volume collected for all tests shall be adequate to perform the toxicity characterization/identification/confirmation procedures, and chemical-specific analyses when the toxicity tests show significant lethality. Where the permittee has identified or suspects a specific pollutant and source of effluent toxicity, the permittee shall conduct, concurrent with toxicity testing, chemical-specific analyses for the identified and suspected pollutant and source of effluent toxicity;

3) Quality Assurance Plan - The TRE action plan should address record keeping and data evaluation, calibration and standardization, baseline tests, system blanks, controls, duplicates, spikes, toxicity persistence in the samples, randomization, reference toxicant control charts, and mechanisms to detect artifactual toxicity; and

4) Project Organization - The TRE action plan should describe the project staff, manager, consulting engineering services (where applicable), consulting analytical and toxicological services, etc.

c. Within 30 days of submittal of the TRE action plan and schedule, the permittee shall implement the TRE.

d. The permittee shall submit quarterly TRE activities reports concerning the progress of the TRE. The quarterly TRE activities reports are due on or before April 20th, July 20th, October 20th, and January 20th. The report shall detail information regarding the TRE activities including:

1) results and interpretation of any chemical-specific analyses for the identified and suspected pollutant performed during the quarter;

2) results and interpretation of any characterization, identification, and confirmation tests performed during the quarter;

3) any data and substantiating documentation that identifies the pollutant and source of effluent toxicity;

4) results of any studies/evaluations concerning the treatability of the facility's effluent toxicity;

5) any data that identifies effluent toxicity control mechanisms that will reduce effluent toxicity to the level necessary to eliminate significant lethality; and

6) any changes to the initial TRE plan and schedule that are believed necessary as a result of the TRE findings.

e. During the TRE, the permittee shall perform, at a minimum, quarterly testing using the more sensitive species. Testing for the less sensitive species shall continue at the frequency specified in Part 1.b.

f. If the effluent ceases to effect significant lethality, i.e., there is a cessation of lethality, the permittee may end the TRE. A cessation of lethality is defined as no significant lethality for a period of 12 consecutive weeks with at least weekly testing. At the end of the 12 weeks, the permittee shall submit a statement of intent to cease the TRE and may then resume the testing frequency specified in Part 1.b.

This provision accommodates situations where operational errors and upsets, spills, or sampling errors triggered the TRE, in contrast to a situation where a single toxicant or group of toxicants cause lethality. This provision does not apply as a result of corrective actions taken by the permittee. Corrective actions are defined as proactive efforts that eliminate or reduce effluent toxicity. These include, but are not limited to, source reduction or elimination, improved housekeeping, changes in chemical usage, and modifications of influent streams and effluent treatment.

The permittee may only apply this cessation of lethality provision once. If the effluent again demonstrates significant lethality to the same species, the permit will be amended to add a WET limit with a compliance period, if appropriate. However, prior to the effective date of the WET limit, the permittee may apply for a permit amendment removing and replacing the WET limit with an alternate toxicity control measure by identifying and confirming the toxicant and an appropriate control measure.

g. The permittee shall complete the TRE and submit a final report on the TRE activities no later than 18 months from the last test day of the retest that demonstrates significant lethality. The permittee may petition the Executive Director (in writing) for an extension of the 18-month limit. However, to warrant an extension the permittee must have demonstrated due diligence in its pursuit of the toxicity identification evaluation/TRE and must prove that circumstances beyond its control stalled the toxicity identification evaluation/TRE. The report shall specify the control mechanism that will, when implemented, reduce effluent toxicity as specified in item 5.h. The report will also specify a corrective action schedule for implementing the selected control mechanism.

h. Within 3 years of the last day of the test confirming toxicity, the permittee shall comply with 30 TAC § 307.6(e)(2)(B), which requires greater than 50% survival of the test organism in 100% effluent at the end of 24-hours. The permittee may petition the Executive Director (in writing) for an extension of the 3-year limit. However, to warrant an extension the permittee must have demonstrated due diligence in its pursuit of the toxicity identification evaluation/TRE and must prove that circumstances beyond its control stalled the toxicity identification evaluation/TRE.

The permittee may be exempted from complying with 30 TAC § 307.6(e)(2)(B) upon proving that toxicity is caused by an excess, imbalance, or deficiency of dissolved salts. This exemption excludes instances where individually toxic components (e.g., metals) form a salt compound. Following the exemption, this permit may be amended to include an ion-adjustment protocol, alternate species testing, or single species testing.

i. Based upon the results of the TRE and proposed corrective actions, this permit may be amended to modify the biomonitoring requirements where necessary, require a compliance schedule for implementation of corrective actions, specify a WET limit, specify a best management practice, and specify a chemical-specific limit.

j. Copies of any and all required TRE plans and reports shall also be submitted to the U.S. EPA Region 6 office, 6WQ-PO.

TABLE 2 (SHEET 1 OF 2)

WATER FLEA SURVIVAL

GENERAL INFORMATION

	Time	Date
Composite Sample Collected		
Test Initiated		

PERCENT SURVIVAL

Time	Rep	Percent effluent					
		0%	6%	13%	25%	50%	100%
24h	A						
	B						
	C						
	D						
	E						
	MEAN						

Enter percent effluent corresponding to the LC50 below:

24 hour LC50 = _____% effluent

TABLE 2 (SHEET 2 OF 2)

FATHEAD MINNOW SURVIVAL

GENERAL INFORMATION

	Time	Date
Composite Sample Collected		
Test Initiated		

PERCENT SURVIVAL

Time	Rep	Percent effluent					
		0%	6%	13%	25%	50%	100%
24h	A						
	B						
	C						
	D						
	E						
	MEAN						

Enter percent effluent corresponding to the LC50 below:

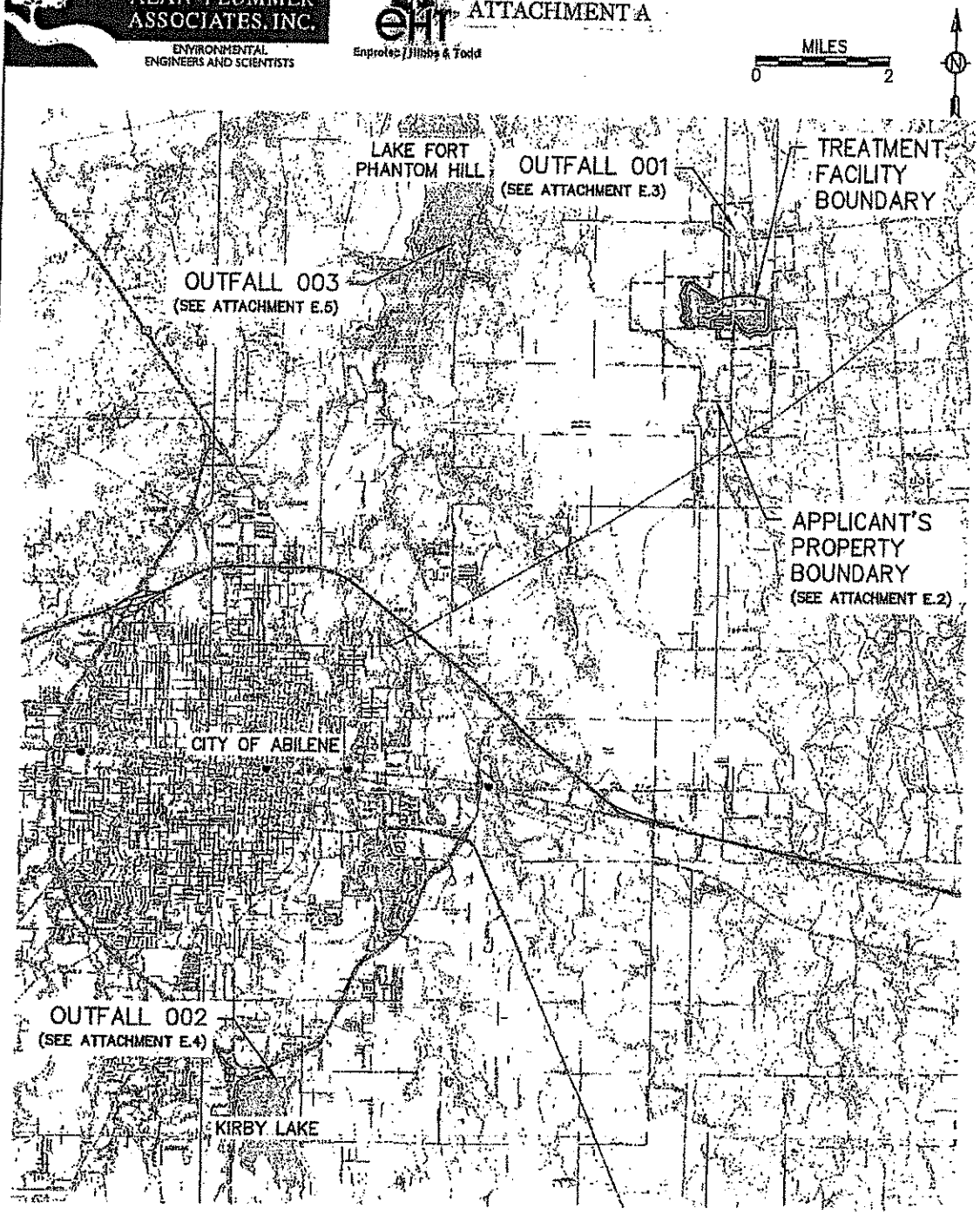
24 hour LC50 = _____% effluent

City of Abilene
WQ0010334004

ALAN PLUMMER ASSOCIATES, INC.
ENVIRONMENTAL ENGINEERS AND SCIENTISTS

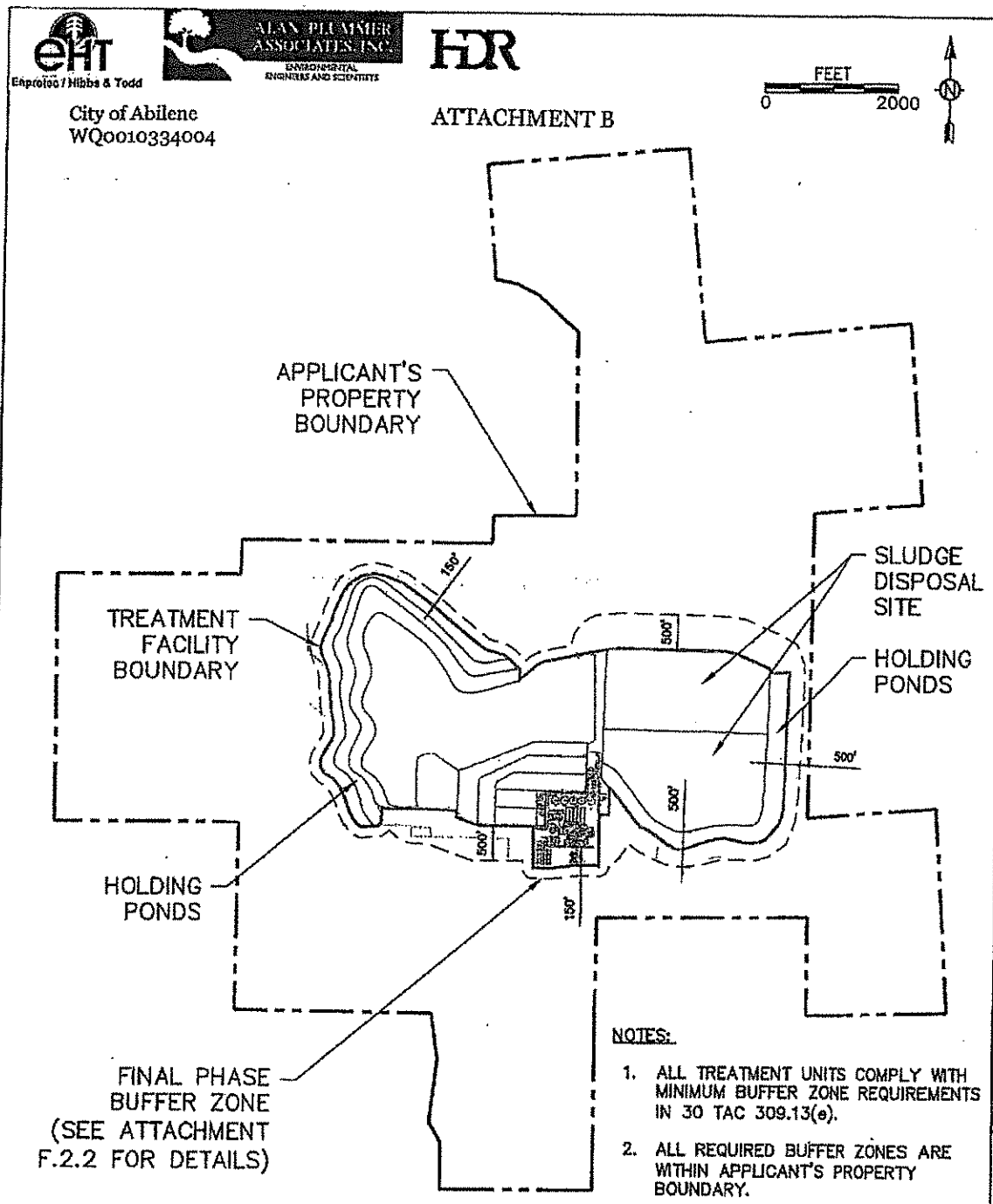
eHT Enprotec / Hibbs & Todd

ATTACHMENT A



ATTACHMENT E.1
CITY OF ABILENE
TPDES PERMIT APPLICATION
HAMBY WASTEWATER TREATMENT FACILITY
AFFECTED LANDOWNERS LEGEND MAP

TEXAS REGISTERED ENGINEERING FIRM F-13
8/14/2013 2:45 PM M:\Projects\0466\026-01\Acad\FIGURES\ATT-E-1.dwg Briand



ATTACHMENT F.2.1
CITY OF ABILENE
TPDES PERMIT APPLICATION
HAMBY WASTEWATER TREATMENT FACILITY
BUFFER ZONE MAP – FINAL PHASE

TEXAS REGISTERED ENGINEERING FIRM F-13
8/16/2013 11:39 AM M:\Projects\0456\026-01\Acad\FIGURES\ATT-F-2-1.dwg Brland

City of Abilene TPDES Permit No. WQ0010334004

TCEQ ATTACHMENT C

Annual Sludge Summary Report Form (Monofill)

Note 1: In addition to this summary form, you need submit the information required per 30 TAC 312.48.
Note 2: Please place this form at the top of your Annual Sludge Report.
Note 3. If you operate other registered/permitted site, then fill-out this form for each one of those sites.
Note 4: Also send one complete copy of your report and this form to local TCEQ regional office.

For TCEQ Fiscal year _____ : Reporting period from August 1, _____, July 31, _____.

PERMIT NO.: _____ DATE: _____

NAME OF PERMITTEE : _____

MAILING ADDRESS: _____

_____

CONTACT PERSON: Name: _____ Telephone No: _____

Waste Disposed Via Monofill :

a. Class B Sewage Sludge: _____ dry tons / year

b. Class A Sewage Sludge: _____ dry tons/ year

b. Water Treatment Plant Sludge: _____ dry tons/year

c. Domestic Septage: _____ gal/year

e. Acreage used for Sludge disposal at this site:- _____ acres

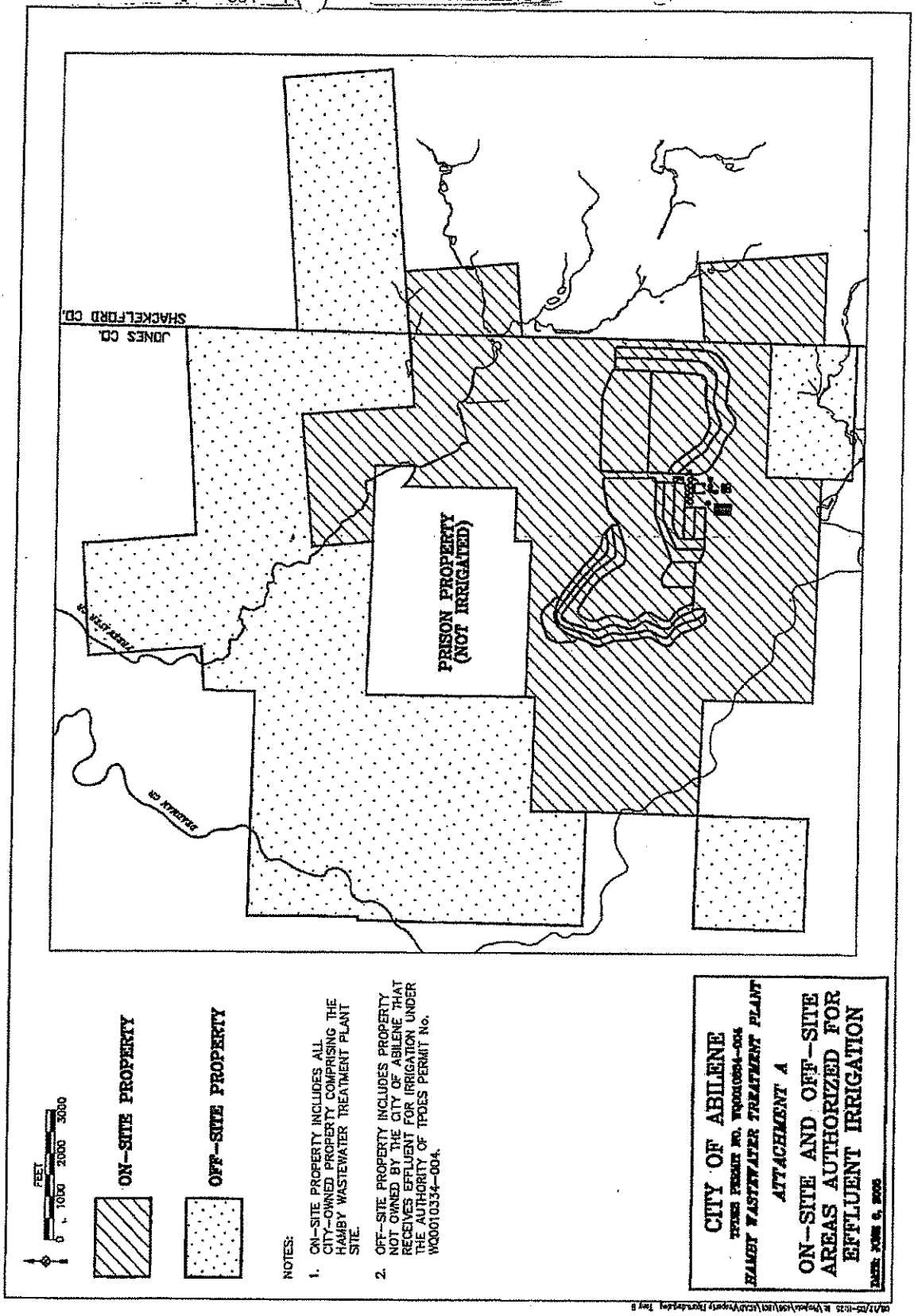
f. Site Vegetation (such as grass type etc):- _____

Please submit the information listed below with this form:

1. The frequency of monitoring which applies to the permittee.
2. Sludge metals analysis data.
3. Level of pathogen reduction achieved (for sewage sludge only).
4. Alternative used as listed in 30 TAC §312.82 (a) or (b). Describe how the pathogen reduction requirements are met (for sewage sludge only).
5. Vector attraction reduction alternative used as listed in 30 TAC §312.83 (for sewage sludge only).
6. The certification statement listed in 30 TAC §312.67(a)(2)(B) shall be attached to the annual reporting form.

PLEASE MAIL THE COMPLETED ANNUAL REPORT TO :

Texas Commission on Environmental Quality
Municipal Permits Team (MC 148)
Wastewater Permitting Section
P.O. Box 13087
Austin, TX 78711-3087


JONES CO.
SHACKELFORD CO.
PRISON PROPERTY
(NOT IRRIGATED)
FEET
0 1000 2000 3000
ON-SITE PROPERTY
OFF-SITE PROPERTY
NOTES:
1. ON-SITE PROPERTY INCLUDES ALL CITY-OWNED PROPERTY COMPRISING THE HAMBY WASTEWATER TREATMENT PLANT SITE.
2. OFF-SITE PROPERTY INCLUDES PROPERTY NOT OWNED BY THE CITY OF ABILENE THAT RECEIVES EFFLUENT FOR IRRIGATION UNDER THE AUTHORITY OF TPDES PERMIT No. WQ0010334-004.
CITY OF ABILENE
TPDES PERMIT NO. WQ0010334-004
HAMBY WASTEWATER TREATMENT PLANT
ATTACHMENT A
ON-SITE AND OFF-SITE AREAS AUTHORIZED FOR EFFLUENT IRRIGATION

Attachment E

Table 1 – Conventional and Non-conventional

Outfall No.: ☐C ☐G	Effluent Concentration (mg/L)					
Pollutant	**Samp.**	**Samp.**	**Samp.**	**Samp.**	**Average**	
Flow (MGD)						
BOD (5-day)						
CBOD (5-day)						
Chemical Oxygen Demand						
Total Organic Carbon						
Dissolved Oxygen						
Ammonia Nitrogen						
Total Suspended Solids						
Nitrate Nitrogen						
Total Organic Nitrogen						
Total Phosphorus						
Oil and Grease						
Total Residual Chlorine						
Total Dissolved Solids						
Sulfate						
Chloride						
Fluoride						
Total Alkalinity (mg/L as $CaCO_3$)						
Temperature (°F)						
pH (Standard Units; min/max)						

Table 2 – Metals

Pollutant	Effluent Concentration (µg/L)[1]					MAL[2] (µg/L)
	Samp.	**Samp.**	**Samp.**	**Samp.**	**Average**	
Aluminum, Total						2.5
Antimony, Total						5
Arsenic, Total						0.5
Barium, Total						3
Beryllium, Total						0.5
Cadmium, Total						1
Chromium, Total						3
Chromium, Hexavalent						3
Chromium, Trivalent						N/A
Copper, Total						2
Cyanide, Free						10
Lead, Total						0.5
Mercury, Total						0.005
Nickel, Total						2
Selenium, Total						5

1 Indicate units if different than µg/L.
2 Minimum Analytical Level

Pollutant	Effluent Concentration (µg/L)1					MAL2 (µg/L)
	Samp.	Samp.	Samp.	Samp.	Average	
Silver, Total						0.5
Thallium, Total						0.5
Zinc, Total						5.0

Table 3 – Toxic Pollutants with Water Quality Criteria

Outfall No.: ☐C ☐G Pollutant	Samp. 1 (µg/L)3	Samp. 2 (µg/L)3	Samp. 3 (µg/L)3	Samp. 4 (µg/L)3	Avg. (µg/L)3	MAL (µg/L)
Acrolein						0.7
Acrylonitrile						50
Anthracene						10
Benzene						10
Benzidine						50
Benzo(*a*)anthracene						5
Benzo(*a*)pyrene						5
Bis(2-chloroethyl)ether						10
Bis(2-ethylhexyl) phthalate						10
Bromodichloromethane						10
Bromoform						10
Carbon Tetrachloride						2
Chlorobenzene						10
Chlorodibromomethane						10
Chloroform						10
Chrysene						5
Cresols						10
1,2-Dibromoethane						10
m-Dichlorobenzene						10
o-Dichlorobenzene						10
p-Dichlorobenzene						10
3,3'-Dichlorobenzidine						5
1,2-Dichloroethane						10
1,1-Dichloroethylene						10
Dichloromethane						20
1,2-Dichloropropane						10
1,3-Dichloropropylene						10
2,4-Dimethylphenol						10
Di-*n*-Butyl Phthalate						10
Epichlorohydrin						1,000
Ethylbenzene						10
Ethylene Glycol						—
Fluoride						500
Hexachlorobenzene						5
Hexachlorobutadiene						10
Hexachlorocyclopentadiene						10

3 Indicate units if different than µg/L.

Outfall No.: ☐C ☐G Pollutant	Samp. 1 (µg/L)3	Samp. 2 (µg/L)3	Samp. 3 (µg/L) 3	Samp. 4 (µg/L) 3	Avg. (µg/L) 3	MAL (µg/L)
Hexachloroethane						20
4,4′-Isopropylidenediphenol [bisphenol A]						—
Methyl Ethyl Ketone						50
Methyl *tert*-butyl ether [MTBE]						—
Nitrobenzene						10
N-Nitrosodiethylamine						20
N-Nitroso-di-*n*-Butylamine						20
Nonylphenol						333
Pentachlorobenzene						20
Pentachlorophenol						5
Phenanthrene						10
Polychlorinated Biphenyls (PCBs) 4						0.2
Pyridine						20
1,2,4,5-Tetrachlorobenzene						20
1,1,2,2-Tetrachloroethane						10
Tetrachloroethylene						10
Toluene						10
1,1,1-Trichloroethane						10
1,1,2-Trichloroethane						10
Trichloroethylene						10
2,4,5-Trichlorophenol						50
TTHM (Total Trihalomethanes)						10
Vinyl Chloride						10

3 Indicate units if different than µg/L.

4 Total of detects for PCB-1242, PCB-1254, PCB-1221, PCB-1232, PCB-1248, PCB-1260, PCB-1016. If all values are non-detects, enter the highest non-detect preceded by a "<" symbol.

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

For draft Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0010334004, EPA I.D. No. TX023973, to discharge to water in the state.

Issuing Office: Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Applicant: City of Abilene
P.O. Box 60
Abilene, Texas 79604

Prepared By: Sonia Bhuiya
Municipal Permits Team
Wastewater Permitting Section (MC 148)
Water Quality Division
(512) 239-1205

Date: June 18, 2025

Permit Action: Renewal

1. EXECUTIVE DIRECTOR RECOMMENDATION

The Executive Director has made a preliminary decision that this permit, if issued, meets all statutory and regulatory requirements. The draft permit includes an expiration date of **five years from the date of issuance**.

2. APPLICANT ACTIVITY

The applicant has applied to the Texas Commission on Environmental Quality (TCEQ) for a renewal of the existing permit that authorizes the discharge of treated domestic wastewater at an annual average flow not to exceed 19.3 million gallons per day (MGD) in the Interim phase, and an annual average flow not to exceed 22.0 MGD in the Final phase. The existing wastewater treatment facility serves the City of Abilene, the City of Tye, the City of Tuscola, the City of Buffalo Gap, Hawley Independent School District, and two Texas Department of Criminal Justice prison units.

3. FACILITY AND DISCHARGE LOCATION

The plant site is located at 19000 County Road 309, in Jones County, Texas 79601. The sludge treatment works are located within the wastewater treatment facility and the sludge disposal site is located adjacent to and northeast of the wastewater treatment facility.

Outfall Locations:

Outfall Number	Latitude	Longitude
001	32.561626 N	99.62263 W

Outfall Number	Latitude	Longitude
002	32.385403 N	99.731881 W
003	32.557217 N	99.692226 W

The treated effluent is discharged via Outfall 001 to Freewater Creek, thence to Deadman Creek, thence to Clear Fork Brazos River in Segment No. 1232 of the Brazos River Basin; via Outfall 002 to Kirby Lake, thence to Cedar Creek, thence to Fort Phantom Hill Reservoir in Segment No. 1236 of the Brazos River Basin; and via Outfall 003 directly to Fort Phantom Hill Reservoir in Segment No. 1236 of the Brazos River Basin. The unclassified receiving water uses are minimal use for Freewater Creek, intermediate aquatic life use for Deadman Creek, high aquatic life use for Kirby Lake, and limited aquatic life use for Cedar Creek. The designated uses for Segment No. 1232 are primary contact recreation and high aquatic life use. The designated uses for Segment No. 1236 are primary contact recreation, public water supply, and high aquatic life use.

4. TREATMENT PROCESS DESCRIPTION AND SEWAGE SLUDGE DISPOSAL

The City of Abilene owns and operates the Hamby Water Reclamation Facility (WRF). The Hamby WRF includes biological nutrient removal (BNR) and a membrane bioreactor (MBR) system. Influent from the Buck Creek Pump Station and the two state prison facilities is combined at the head of a multi-tray vortex grit removal unit. Flows in excess of the WRF capacity are diverted temporarily to an on-site, lined earthen flow equalization basin prior to entering the grit removal unit. Return flow from the flow equalization basin is combined with Buck Creek pump station and Prison pump station influent at the head of the vortex grit removal unit. Screening follows grit removal using three fine screening units (2 mm). Collectively the flow equalization basin, vortex grit unit and fine screens provide preliminary treatment for WRF influent flows.

Secondary treatment is provided using a BNR process with an MBR system for solids separation. Biological treatment is based on the University of Capetown (UCT) process with the following process units:

Influent Flow Splitting Structure receives fine screened effluent flow from the preliminary treatment units and the anoxic recycle flow, combines the flow streams, and splits the flows to the two anaerobic selector zone process units.

BNR control structure receives flow from the anaerobic selector zone process units and mixed liquor from the aerobic selector zone process units, combines the flow streams, and splits the flows to the two anoxic selector zone process units.

Flows from the anoxic selector zone process units and returned activated sludge flow from the MBR system is combined in a flow splitting structure before splitting into the four aeration basins.

Mixed liquor from the aeration basins is pumped to the eight MBR basins for solids separation and membrane filtering.

Waste sludge is disposed in the sludge surface disposal unit, or lime stabilized and

disposed in the stabilized sludge surface disposal unit.

Effluent from the MBR system is routed via pipeline to a covered MBR effluent storage tank (advanced treatment storage basin), and discharged via Outfall 001, 002 and/or 003 as described below.

Outfalls 001 and 002

From the covered MBR effluent storage tank, MBR effluent flows by gravity to the dual chlorine contact basin used for disinfection. Dechlorination occurs after the chlorine contact basins, with reaeration provided prior to discharge via Outfall 001. Effluent is discharged to Outfall 001 through a 36-inch gravity line. Effluent is discharged to Outfall 002 through a combination of gravity and pumped flow in pipelines, with a line size of 20-inches at Outfall 002.

Outfall 003

From the covered MBR effluent storage tank, MBR effluent is pumped to the advanced treatment facilities before discharge via Outfall 003. The advanced treatment processes include two treatment trains. One advanced treatment train doses the MBR effluent with ozone prior to a 4-cell biologically active contactor filter system. Backwash from the contactors is sent to the on- site equalization basin and returned to the head of the WRF for treatment. The second advanced treatment train includes three reverse osmosis units. Concentrate from the reverse osmosis units is sent to an on-site evaporation basin or to the sludge surface disposal unit for cover water. Concentrate can be discharged as a part of the effluent stream via Outfall 001 according to Other Requirement No. 26. Effluent flows from the biologically active contactors and the reverse osmosis treatment units are recombined prior to disinfection within a chlorine contact basin dedicated to Outfall 003. Dechlorination occurs after the chlorine contact basin, with reaeration provided prior to discharge via Outfall 003. Effluent is discharged to Outfall 003 through a 24-inch gravity line.

The draft permit also includes authorization for on-site surface disposal of sludge. The draft permit also authorizes the disposal of sludge at a TCEQ-authorized land application site, co-disposal landfill, wastewater treatment facility, or facility that further processes sludge.

5. INDUSTRIAL WASTE CONTRIBUTION

The draft permit includes pretreatment requirements that are appropriate for a facility of this size and complexity. The Hamby Water Reclamation Facility receives significant industrial wastewater contributions.

6. SUMMARY OF SELF-REPORTED EFFLUENT ANALYSES

The following is a summary of the applicant's effluent monitoring data for the period April 2019 through April 2024. The average of Daily Average value is computed by the averaging of all 30-day average values for the reporting period for each parameter: five-day carbonaceous biochemical oxygen demand ($CBOD_5$), total suspended solids (TSS), and ammonia nitrogen (NH_3-N). The Daily Average value for flow is calculated as the Annual Average. The average of Daily Average value for *Escherichia coli (E. coli)* in

colony-forming units (CFU) or most probable number (MPN) per 100 ml is calculated via geometric mean. The average of Daily Average value for total phosphorous is also computed by the averaging of all 30-day average values for the reporting period and is required to be monitored only at Outfall 003.

Outfall 001

Parameter	Average of Daily Avg
Flow, MGD	7.87
$CBOD_5$, mg/l	
April - September	1.8
October-March	1.1
TSS, mg/l	2.98
NH_3-N, mg/l	
April - September	1.03
October-March	1.01
E. coli, CFU or MPN per 100 ml	1

Outfall 002

Parameter	Average of Daily Avg
Flow, MGD	4.6
$CBOD_5$, mg/l	
April - September	1.2
October-March	1.3
TSS, mg/l	2.98
NH_3-N, mg/l	
April - September	1.0
October-March	1.0
E. coli, CFU or MPN per 100 ml	1

Outfall 003

Parameter	Average of Daily Avg
Flow, MGD	1.56
$CBOD_5$, mg/l	
April - September	1.0
October-March	1.0
TSS, mg/l	3.0
NH_3-N, mg/l	
April - September	1.0
October-March	1.0
Total Phosphorous, mg/l	6.8
E. coli, CFU or MPN per 100 ml	1

7. DRAFT PERMIT CONDITIONS AND MONITORING REQUIREMENTS

The effluent limitations and monitoring requirements for those parameters that are limited in the draft permit are as follows:

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Outfall 001

The Final phase annual average flow of effluent shall not exceed 18.0 MGD, nor shall the average discharge during any two-hour period (2-hour peak) exceed 16,667 gpm. The combined discharge from Outfalls 001, 002, and 003 shall not exceed an average annual flow of 22.0 MGD.

Parameter	30-Day Average		7-Day Average	Daily Maximum
	mg/l	lbs/day	mg/l	mg/l
$CBOD_5$				
April - September	7	1,051	11	17
October-March	10	1,501	15	25
TSS	15	2,252	25	40
NH_3-N				
April - September	2	300	5	7
October-March	3	450	5	7
DO (minimum)				
April - September	6.0	N/A	N/A	N/A
October-March	5.0	N/A	N/A	N/A
E. coli, CFU or MPN per 100 ml	126	N/A	N/A	399

The pH shall not be less than 6.0 SU nor greater than 9.0 SU and shall be monitored once per day by grab sample. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

The effluent shall contain a total chlorine residual of at least 1.0 mg/l after a detention time of at least 20 minutes (based on peak flow) and shall be monitored daily by grab sample, when effluent is being discharged. The permittee shall dechlorinate the chlorinated effluent to less than 0.1 mg/l chlorine residual. When effluent is being discharged, the chlorine residual shall be monitored daily by grab sample after the dechlorination process. An equivalent method of disinfection may be substituted only with prior approval of the Executive Director.

Parameter	Monitoring Requirement
Flow, MGD	Continuous
$CBOD_5$	One/day
TSS	One/day
NH_3-N	One/day
DO	One/day
E. coli	Five/week

Outfall 002

The Final phase annual average flow of effluent shall not exceed 4.0 MGD. The combined discharge from Outfalls 001, 002, and 003 shall not exceed an average annual flow of 22.0 MGD.

Parameter	30-Day Average		7-Day Average	Daily Maximum
	mg/l	lbs/day	mg/l	mg/l
$CBOD_5$				
April - September	7	234	11	17
October-March	10	333	15	25
TSS	15	500	25	40
NH_3-N				
April - September	2	67	5	7
October-March	3	100	5	7
DO (minimum)				
April - September	6.0	N/A	N/A	N/A
October-March	5.0	N/A	N/A	N/A
E. coli, CFU or MPN per 100 ml	126	N/A	N/A	399

The pH shall not be less than 6.0 SU nor greater than 9.0 SU and shall be monitored once per week by grab sample. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

The effluent shall contain a total chlorine residual of at least 1.0 mg/l after a detention time of at least 20 minutes (based on peak flow) and shall be monitored daily by grab sample. When discharged to Kirby Lake, the effluent shall contain less than 0.1 mg/l chlorine residual. When effluent is being discharged, the chlorine residual shall be monitored daily by grab sample prior to the discharge to the Lake. An equivalent method of disinfection may be substituted only with prior approval of the Executive Director.

Parameter	Monitoring Requirement
Flow, MGD	Continuous
$CBOD_5$	Two/Week
TSS	Two/Week
NH_3-N	Two/Week
DO	Two/Week
E. coli	One/Week

Outfall 003

The Final phase annual average flow of effluent shall not exceed 7.0 MGD. The combined discharge from Outfalls 001, 002, and 003 shall not exceed an average annual flow of 22.0 MGD.

Parameter	30-Day Average		7-Day Average	Daily Maximum
	mg/l	lbs/day	mg/l	mg/l
$CBOD_5$				
April - September	7	409	11	17
October-March	10	584	15	25
TSS	15	876	25	40
NH_3-N				
April - September	2	117	5	7
October-March	3	175	5	7
Total Phosphorous	Report	Report	N/A	Report

DO (minimum)				
April – September	6.0	N/A	N/A	N/A
October – March	5.0	N/A	N/A	N/A
E. coli, CFU or MPN per 100 ml	126	N/A	N/A	399

The pH shall not be less than 6.0 SU nor greater than 9.0 SU and shall be monitored once per week by grab sample. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

The effluent shall contain a total chlorine residual of at least 1.0 mg/l after a detention time of at least 20 minutes (based on peak flow) and shall be monitored daily by grab sample, when effluent is being discharged. The permittee shall dechlorinate the chlorinated effluent to less than 0.1 mg/l chlorine residual. When effluent is being discharged, the chlorine residual shall be monitored daily by grab sample after the dechlorination process. An equivalent method of disinfection may be substituted only with prior approval of the Executive Director.

Parameter	Monitoring Requirement
Flow, MGD	Continuous
$CBOD_5$	Two/Week
TSS	Two/Week
NH_3-N	Two/Week
Total P	Two/Week
DO	Two/Week
E. coli	Three/Week

The combined loading limits for conventional effluent parameters during the Final phase for Outfalls 001, 002, and 003 are as follows:

Parameter	lbs/day
Carbonaceous Biochemical Oxygen Demand (5-day)	
April—September	1,284
October — March	1,835
Total Suspended Solids	2,752
Ammonia Nitrogen	
April—September	367
October — March	550

B. SEWAGE SLUDGE REQUIREMENTS

The draft permit includes Sludge Provisions according to the requirements of 30 TAC Chapter 312, Sludge Use, Disposal, and Transportation. The draft permit also includes authorization for on-site surface disposal of sludge. The draft permit also authorizes the disposal of sludge at a TCEQ-authorized land application site, co-disposal landfill, wastewater treatment facility, or facility that further processes sludge.

C. PRETREATMENT REQUIREMENTS

Permit requirements for pretreatment are based on TPDES regulations contained in 30 TAC Chapter 305 which references 40 CFR Part 403, General Pretreatment Regulations for Existing and New Sources of Pollution *[rev. Federal Register/ Vol. 70/ No. 198/ Friday, October 14, 2005/ Rules and Regulations, pages 60134-60798].* The permit includes specific requirements that establish responsibilities of local government, industry, and the public to implement the standards to control pollutants which pass through or interfere with treatment processes in publicly owned treatment works or which may contaminate the sewage sludge. This permit has appropriate pretreatment language for a facility of this size and complexity.

The permittee has a pretreatment program which was approved by the U.S. Environmental Protection Agency (EPA) on August 3, 1984, and modified on July 16, 1993, June 3, 2020 (nonsubstantial Streamlining Rule), and December 22, 2022 (TBLLs). The permittee is required, under the conditions of the approved pretreatment program, to prepare annually a list of industrial users which during the preceding twelve months were in significant noncompliance with applicable pretreatment requirements for those facilities covered under the program. This list is to be published annually during the month of **August** in a newspaper of general circulation that provides meaningful public notice within the jurisdiction(s) served by the POTW.

Effective December 21, 2025, the permittee must submit the pretreatment program annual status report electronically using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. [rev. Federal Register/ Vol. 80/ No. 204/ Friday, October 22, 2015/ Rules and Regulations, pages 64064-64158].

The permittee is under a continuing duty to: establish and enforce specific local limits to implement the provisions of 40 CFR §403.5, to develop and enforce local limits as necessary, and to modify the approved POTW pretreatment program as necessary to comply with federal, state, and local law, as amended. The permittee is required to effectively enforce such limits and to modify their pretreatment program, including the Legal Authority, Enforcement Response Plan, and/or Standard Operating Procedures, if required by the Executive Director to reflect changing conditions at the POTW.

The permittee shall submit to the TCEQ Pretreatment Team (MC 148) of the Water Quality Division, within **sixty (60) days** of the issued date of this permit, either: (1) a **WRITTEN CERTIFICATION** that a technical reassessment has been performed and that the evaluation demonstrates that the existing technically based local limits (TBLLs) attain the Texas Surface Water Quality Standards [30 TAC Chapter 307] in water in the state, and are adequate to prevent pass through of pollutants, inhibition of or interference with the treatment facility, worker health and safety problems, and sludge contamination [submit the TBLLs Reassessment Form No. TCEQ-20221], **OR** (2) a **WRITTEN NOTIFICATION** that a technical redevelopment of the current TBLLs, a draft legal authority, which incorporates such revisions, and any additional modifications to the approved Pretreatment Program, as required by 40 CFR Part

403 *[rev. 10/14/05]* and applicable state and local law, including an Enforcement Response Plan and Standard Operating Procedures (including forms), will be submitted within **twelve (12) months** of the issued date of the permit.

Substantial modifications will be approved in accordance with 40 CFR § 403.18, and the modification will become effective upon approval by the Executive Director in accordance with 40 CFR § 403.18.

D. WHOLE EFFLUENT TOXICITY (BIOMONITORING) REQUIREMENTS

(1) The draft permit includes chronic freshwater biomonitoring requirements as follows. The permit requires five dilutions in addition to the control (0% effluent) to be used in the toxicity tests. These additional effluent concentrations shall be 32%, 42%, 56%, 75%, and 100%. The low-flow effluent concentration (critical dilution) is defined as 100% effluent. The critical dilution is in accordance with the "Aquatic Life Criteria" section of the "Water Quality Based Effluent Limitations/Conditions" section.

(a) Chronic static renewal survival and reproduction test using the water flea (*Ceriodaphnia dubia*). The frequency of the testing is once per quarter for at least the first year of testing, after which the permittee may apply for a testing frequency reduction.

(b) Chronic static renewal 7-day larval survival and growth test using the fathead minnow (*Pimephales promelas*). The frequency of the testing is once per quarter for at least the first year of testing, after which the permittee may apply for a testing frequency reduction.

(2) The draft permit includes the following minimum 24-hour acute freshwater biomonitoring requirements at a frequency of once per six months:

(a) Acute 24-hour static toxicity test using the water flea (*Daphnia pulex* or *Ceriodaphnia dubia*).

(b) Acute 24-hour static toxicity test using the fathead minnow (*Pimephales promelas*).

E. IRRIGATION REQUIREMENTS

The draft permit also includes authorization to dispose of a portion of the treated effluent via irrigation of 2,295 acres at a maximum application rate of 2.0 acre-feet per year per acre irrigated.

F. SUMMARY OF CHANGES FROM APPLICATION

None.

G. SUMMARY OF CHANGES FROM EXISTING PERMIT

The Standard Permit Conditions, Sludge Provisions, Other Requirements, and

Biomonitoring sections of the draft permit have been updated.

Existing Interim Phase is deleted, because they are no longer applicable. Facility operates in Final phase.

For Publicly Owned Treatment Works (POTWs), effective December 21, 2025, the permittee must submit the written report for unauthorized discharges and unanticipated bypasses that exceed any effluent limit in the permit using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver.

Certain accidental discharges or spills of treated or untreated wastewater from wastewater treatment facilities or collection systems owned or operated by a local government may be reported on a monthly basis in accordance with 30 TAC § 305.132.

The draft permit includes all updates based on the 30 TAC § 312 rule change effective April 23, 2020.

8. DRAFT PERMIT RATIONALE

A. TECHNOLOGY-BASED EFFLUENT LIMITATIONS/CONDITIONS

Regulations promulgated in Title 40 of the CFR require that technology-based limitations be placed in wastewater discharge permits based on effluent limitations guidelines, where applicable, or on best professional judgment (BPJ) in the absence of guidelines.

Effluent limitations for maximum and minimum pH are in accordance with 40 CFR § 133.102(c) and 30 TAC § 309.1(b).

B. WATER QUALITY SUMMARY AND COASTAL MANAGEMENT PLAN

(1) WATER QUALITY SUMMARY

The treated effluent is discharged to via Outfall 001 to Freewater Creek, thence to Deadman Creek, thence to Clear Fork Brazos River in Segment 1232 of the Brazos River Basin; and via Outfall 002 to Kirby Lake, thence to Cedar Creek, thence to Fort Phantom Hill Reservoir in Segment 1236 of the Brazos River Basin; and via Outfall 003 is directly to Fort Phantom Hill Reservoir in Segment 1236 of the Brazos River Basin. The unclassified receiving water uses are minimal aquatic life use for Freewater Creek, intermediate aquatic life use for Deadman Creek, high aquatic life use for Kirby Lake, and limited aquatic life use for Cedar Creek. The designated uses for 1236 are primary contact recreation, public water supply, and high aquatic life use. The effluent limitations in the draft permit will maintain and protect the existing instream uses. All determinations are preliminary and subject to additional review and/or revisions.

The discharge from this permit action is not expected to have an effect on

any federal endangered or threatened aquatic or aquatic-dependent species or proposed species or their critical habitat. This determination is based on the United States Fish and Wildlife Service's (USFWS's) biological opinion on the State of Texas authorization of the TPDES (September 14, 1998; October 21, 1998, update). To make this determination for TPDES permits, TCEQ and EPA only considered aquatic or aquatic-dependent species occurring in watersheds of critical concern or high priority as listed in Appendix A of the USFWS biological opinion. The determination is subject to reevaluation due to subsequent updates or amendments to the biological opinion. The permit does not require EPA review with respect to the presence of endangered or threatened species.

Segment No. 1232 is currently listed on the State's inventory of impaired and threatened waters (the 2022 CWA § 303(d) list). The listing is for bacteria in water from confluence with Bitter Creek upstream to end of segment (Assessment Unit 1232_04). Segment No. 1236 is not currently listed on the 2022 CWA § 303(d) list. This facility is designed to provide adequate disinfection and, when operated properly, should not add to the bacterial impairment of the segment.

Outfall 001

The pollutant analysis of treated effluent provided by the permittee in the application indicated 834 mg/l total dissolved solids (TDS),240 mg/l chloride, and 158 mg/l sulfate present in the effluent. The segment criteria for Segment No. 1236 are 4,900 mg/l for TDS, 2,200 mg/l for sulfate, and 1,250 mg/l for chlorides. Based on dissolved solids screening, no additional limits or monitoring requirements are needed for total dissolved solids, chloride, or sulfate. See Attachment A of this Fact Sheet.

Outfall 002

The pollutant analysis of treated effluent provided by the permittee in the application indicated 834 mg/l total dissolved solids (TDS),240 mg/l chloride, and 158 mg/l sulfate present in the effluent. The segment criteria for Segment No. 1236 are 550 mg/l for TDS, 150 mg/l for sulfate, and 130 mg/l for chlorides. Based on dissolved solids screening, no additional limits or monitoring requirements are needed for total dissolved solids, chloride, or sulfate See Attachment A1 of this Fact Sheet.

Outfall 003

The segment criteria for Segment No. 1236 are 550 mg/l for TDS, 150 mg/l for sulfate, and 130 mg/l for chlorides. Based on dissolved solids screening, no additional limits or monitoring requirements are needed for total dissolved solids, chloride, or sulfate See Attachment A of this Fact Sheet. The pollutant analysis of treated effluent provided by the permittee in the application indicatedare 834 mg/l for TDS, 158 mg/l for sulfate, and 240 mg/l for chlorides. Based on dissolved solids screening, no additional limits or monitoring requirements are needed for total

dissolved solids, chloride, or sulfate See Attachment A2 of this Fact Sheet.

The effluent limitations and conditions in the draft permit comply with EPA-approved portions of the 2018 Texas Surface Water Quality Standards (TSWQS), 30 TAC §§ 307.1 - 307.10, effective March 1, 2018; 2014 TSWQS, effective March 6, 2014; 2010 TSWQS, effective July 22, 2010; and 2000 TSWQS, effective July 26, 2000.

(2) CONVENTIONAL PARAMETERS

Effluent limitations for the conventional effluent parameters (i.e., Five-Day Biochemical Oxygen Demand or Five-Day Carbonaceous Biochemical Oxygen Demand, Ammonia Nitrogen, etc.) are based on stream standards and waste load allocations for water quality-limited streams as established in the TSWQS and the State of Texas Water Quality Management Plan (WQMP).

The existing effluent limits have been reviewed for consistency with the State of Texas Water Quality Management Plan (WQMP). The existing limits are consistent with the approved WQMP.

The effluent limitations in the draft permit meet the requirements for secondary treatment and the requirements for disinfection according to 30 TAC Chapter 309, Subchapter A: Effluent Limitations.

(3) COASTAL MANAGEMENT PLAN

The facility is not located in the Coastal Management Program boundary.

C. WATER QUALITY-BASED EFFLUENT LIMITATIONS/CONDITIONS

(1) GENERAL COMMENTS

The Texas Surface Water Quality Standards (30 TAC Chapter 307) state that surface waters will not be toxic to man, or to terrestrial or aquatic life. The methodology outlined in the *Procedures to Implement the Texas Surface Water Quality Standards* (IP) (June 2010) is designed to ensure compliance with 30 TAC Chapter 307. Specifically, the methodology is designed to ensure that no source will be allowed to discharge any wastewater that: (1) results in instream aquatic toxicity; (2) causes a violation of an applicable narrative or numerical state water quality standard; (3) results in the endangerment of a drinking water supply; or (4) results in aquatic bioaccumulation that threatens human health.

(2) AQUATIC LIFE CRITERIA

(a) SCREENING

Water quality-based effluent limitations are calculated from freshwater aquatic life criteria found in Table 1 of the Texas Surface Water Quality Standards (30 TAC Chapter 307).

Outfall 001

There is no mixing zone for this discharge directly to an intermittent stream with perennial pools; acute and chronic freshwater criteria apply at the end of pipe. The following critical effluent percentages are being used:

Acute Effluent %	100%	Chronic Effluent %	100%

Waste load allocations (WLAs) are calculated using the above estimated effluent percentages, criteria outlined in the Texas Surface Water Quality Standards, and partitioning coefficients for metals (when appropriate and designated in the implementation procedures). The WLA is the end-of-pipe effluent concentration that can be discharged when, after mixing in the receiving stream, instream numerical criteria will not be exceeded. From the WLA, a long-term average (LTA) is calculated using a log normal probability distribution, a given coefficient of variation (0.6), and a 90th percentile confidence level. The LTA is the long-term average effluent concentration for which the WLA will never be exceeded using a selected percentile confidence level. The LTA is used to calculate a daily average and daily maximum effluent limitation for the protection of aquatic life using the same statistical considerations with the 99th percentile confidence level and a standard number of monthly effluent samples collected (12). Assumptions used in deriving the effluent limitations include segment values for hardness, chlorides, pH, and TSS according to the segment-specific values contained in the TCEQ guidance document *Procedures to Implement the Texas Surface Water Quality Standards*. The segment values are 584 mg/l for hardness (as calcium carbonate), 520 mg/l for chlorides, 7.6 standard units for pH, and 16 mg/l for TSS. For additional details on the calculation of water quality-based effluent limitations, refer to the TCEQ guidance document.

TCEQ practice for determining significant potential is to compare the reported analytical data against percentages of the calculated daily average water quality-based effluent limitation. Permit limitations are required when analytical data reported in the application exceeds 85% of the calculated daily average water quality-based effluent limitation. Monitoring and reporting is required when analytical data reported in the application exceeds 70% of the calculated daily average water quality-based effluent limitation. See Attachment B of this Fact Sheet.

Outfall 002

Acute freshwater criteria are applied at the edge of the zone of initial dilution (ZID), and chronic freshwater criteria are applied at the edge of the aquatic life mixing zone. The ZID for this discharge is defined as radius of 25 feet from the point where the discharge enters Kirby Lake. The aquatic life mixing zone for this discharge is defined as a radius of 200 feet from the point where the discharge enters Kirby Lake.

TCEQ practice is to establish minimum estimated effluent percentages at the edges of the ZID and aquatic life mixing zone for discharges that are 10 MGD or less into sections of lakes or reservoirs that are at least 200 feet wide. These critical effluent percentages are as follows:

Acute Effluent %:	60%	Chronic Effluent %:	15%

WLAs are calculated using the above estimated effluent percentages, criteria outlined in the Texas Surface Water Quality Standards, and partitioning coefficients for metals (when appropriate and designated in the implementation procedures). The WLA is the end-of-pipe effluent concentration that can be discharged when, after mixing in the receiving stream, instream numerical criteria will not be exceeded. From the WLA, a LTA is calculated using a log normal probability distribution, a given coefficient of variation (0.6), and a 99th percentile confidence level. The lower of the two LTAs (acute and chronic) is used to calculate a daily average and daily maximum effluent limitation for the protection of aquatic life using the same statistical considerations with the 99th percentile confidence level and a standard number of monthly effluent samples collected (12). Assumptions used in deriving the effluent limitations include segment values for hardness, chlorides, pH, and TSS according to the segment-specific values contained in the TCEQ guidance document *Procedures to Implement the Texas Surface Water Quality Standards*. The segment values are 203 mg/l for hardness (as calcium carbonate), 94 mg/l for chlorides, 8 standard units for pH, and 5 mg/l for TSS. For additional details on the calculation of water quality-based effluent limitations, refer to the TCEQ guidance document.

TCEQ practice for determining significant potential is to compare the reported analytical data against percentages of the calculated daily average water quality-based effluent limitation. Permit limitations are required when analytical data reported in the application exceeds 85% of the calculated daily average water quality-based effluent limitation. Monitoring and reporting is required when analytical data reported in the application exceeds 70% of the calculated daily average water quality-based effluent limitation. See Attachment B1 of this Fact Sheet.

Outfall 003

Water quality-based effluent limitations are calculated from freshwater marine aquatic life criteria found in Table 1 of the Texas Surface Water Quality Standards (30 TAC Chapter 307).

Acute freshwater criteria are applied at the edge of the ZID, and chronic freshwater criteria are applied at the edge of the aquatic life mixing zone. The ZID for this discharge is defined as radius of 25 feet from the point where the discharge enters Fort Phantom Hill Reservoir. The aquatic life mixing zone for this discharge is defined as a radius of 200 feet from the point where the discharge enters Fort Phantom Hill Reservoir.

TCEQ practice is to establish minimum estimated effluent percentages at

the edges of the ZID and aquatic life mixing zone for discharges that are 10 MGD or less into sections of lakes or reservoirs that are at least 200 feet wide. These critical effluent percentages are as follows:

Acute Effluent %:	60%	Chronic Effluent %:	15%

WLAs are calculated using the above estimated effluent percentages, criteria outlined in the Texas Surface Water Quality Standards, and partitioning coefficients for metals (when appropriate and designated in the implementation procedures). The WLA is the end-of-pipe effluent concentration that can be discharged when, after mixing in the receiving stream, instream numerical criteria will not be exceeded. From the WLA, a LTA is calculated using a log normal probability distribution, a given coefficient of variation (0.6), and a 99th percentile confidence level. The lower of the two LTAs (acute and chronic) is used to calculate a daily average and daily maximum effluent limitation for the protection of aquatic life using the same statistical considerations with the 99th percentile confidence level and a standard number of monthly effluent samples collected (12). Assumptions used in deriving the effluent limitations include segment values for hardness, chlorides, pH, and TSS according to the segment-specific values contained in the TCEQ guidance document *Procedures to Implement the Texas Surface Water Quality Standards*. The segment values are 203 mg/l for hardness (as calcium carbonate), 94 mg/l chlorides, 8.0 standard units for pH, and 5 mg/l for TSS. For additional details on the calculation of water quality-based effluent limitations, refer to the TCEQ guidance document.

TCEQ practice for determining significant potential is to compare the reported analytical data against percentages of the calculated daily average water quality-based effluent limitation. Permit limitations are required when analytical data reported in the application exceeds 85% of the calculated daily average water quality-based effluent limitation. Monitoring and reporting is required when analytical data reported in the application exceeds 70% of the calculated daily average water quality-based effluent limitation. See Attachment B2 of this Fact Sheet.

(b) PERMIT ACTION

Outfall 001

Analytical data reported in the application was screened against calculated water quality-based effluent limitations for the protection of aquatic life. Reported analytical data does not exceed 70% of the calculated daily average water quality-based effluent limitations for aquatic life protection.

Outfall 002

Analytical data reported in the application was screened against calculated water quality-based effluent limitations for the protection of aquatic life. Reported analytical data does not exceed 70% of the

calculated daily average water quality-based effluent limitations for aquatic life protection.

Outfall 003

Analytical data reported in the application was screened against calculated water quality-based effluent limitations for the protection of aquatic life. Reported analytical data does not exceed 70% of the calculated daily average water quality-based effluent limitations for aquatic life protection.

(3) AQUATIC ORGANISM BIOACCUMULATION CRITERIA

(a) SCREENING

Outfall 001

Water quality-based effluent limitations for the protection of human health are calculated using criteria for the consumption of freshwater fish tissue found in Table 2 of the Texas Surface Water Quality Standards (30 TAC Chapter 307). The discharge point is to an intermittent stream with perennial pools or to an intermittent stream within 3 miles upstream of an intermittent stream with perennial pools. Human health screening using incidental freshwater fish tissue criteria (= 10 X freshwater fish tissue criteria) is applicable due to the perennial pools that support incidental freshwater fisheries. TCEQ uses the mass balance equation to estimate dilution in the intermittent stream with perennial pools during average flow conditions. The estimated dilution for human health protection is calculated using the permitted flow of 18 MGD and the harmonic mean flow of 6.64 cfs for Freewater Creek, thence to Deadman Creek. The following effluent percentage is being used:

Human Health Effluent % 80.748%

Water quality-based effluent limitations for human health protection against the consumption of fish tissue are calculated using the same procedure as outlined for calculation of water quality-based effluent limitations for aquatic life protection. A 99th percentile confidence level in the long-term average calculation is used with only one long-term average value being calculated. See Attachment B of this Fact Sheet.

Outfall 002

Water quality-based effluent limitations for the protection of human health are calculated using criteria for the consumption of freshwater fish tissue found in Table 2 of the Texas Surface Water Quality Standards (30 TAC Chapter 307). Freshwater fish tissue bioaccumulation criteria are applied at the edge of the human health mixing zone for discharges into lakes and reservoirs. The human health mixing zone for this discharge is defined as a 200-foot radius from the point where the discharge enters

Kirby Lake. TCEQ practice is to establish a minimum estimated effluent percentage at the edge of the human health mixing zone for discharges that are 10 MGD or less into sections of lakes or reservoirs that are at least 200 feet wide. This critical effluent percentage is:

Human Health Effluent %: 8%

Water quality-based effluent limitations for human health protection against the consumption of fish tissue are calculated using the same procedure as outlined for calculation of water quality-based effluent limitations for aquatic life protection. A 99th percentile confidence level in the long-term average calculation is used with only one long-term average value being calculated.

Significant potential is again determined by comparing reported analytical data against 70% and 85% of the calculated daily average water quality-based effluent limitation. See Attachment B1 of this Fact Sheet.

Outfall 003

Water quality-based effluent limitations for the protection of human health are calculated using criteria for the consumption of freshwater fish tissue and drinking water found in Table 2 of the Texas Surface Water Quality Standards (30 TAC Chapter 307). Freshwater fish tissue bioaccumulation and drinking water criteria are applied at the edge of the human health mixing zone for discharges into lakes and reservoirs. The human health mixing zone for this discharge is defined as a 200-foot radius from the point where the discharge enters Fort Phantom Hill Reservoir. TCEQ practice is to establish a minimum estimated effluent percentage at the edge of the human health mixing zone for discharges that are 10 MGD or less into sections of lakes or reservoirs that are at least 200 feet wide. This critical effluent percentage is:

Human Health Effluent %: 8%

Water quality-based effluent limitations for human health protection against the consumption of fish tissue are calculated using the same procedure as outlined for calculation of water quality-based effluent limitations for aquatic life protection. A 99th percentile confidence level in the long-term average calculation is used with only one long-term average value being calculated.

Significant potential is again determined by comparing reported analytical data against 70% and 85% of the calculated daily average water quality-based effluent limitation. See Attachment B2 of this Fact Sheet**.**

(b) PERMIT ACTION

Outfall 001

Reported analytical data does not exceed 70% of the calculated daily

average water quality-based effluent limitation for human health protection.

Outfall 002

Reported analytical data does not exceed 70% of the calculated daily average water quality-based effluent limitation for human health protection.

Outfall 003

Reported analytical data does not exceed 70% of the calculated daily average water quality-based effluent limitation for human health protection.

(4) DRINKING WATER SUPPLY PROTECTION

(a) SCREENING

Outfall 001

Water Quality Segment No. 1232, which receives the discharge from this facility via Outfall 001, is not designated as a public water supply. Screening reported analytical data of the effluent against water quality-based effluent limitations calculated for the protection of a drinking water supply is not applicable.

Outfall 002

Water Quality Segment No. 1236, which receives the discharge from this facility via Outfall 002, is designated as a public water supply. The discharge point is located at a distance greater than three miles from the classified segment. Screening reported analytical data of the effluent against water quality-based effluent limitations calculated for the protection of a drinking water supply is not applicable due to the distance between the discharge point and the classified segment.

Outfall 003

Water Quality Segment No. 1236, which receives the discharge from this facility via Outfall 003, is designated as a public water supply. The screening procedure used to calculate water quality-based effluent limitations and determine the need for effluent limitations or monitoring requirements is identical to the procedure outlined in the aquatic organism bioaccumulation section of this fact Sheet. Criteria used in the calculation of water quality-based effluent limitations for the protection of a drinking water supply are outlined in Table 2 (Water and Fish) of the Texas Surface Water Quality Standards (30 TAC Chapter 307). These criteria are developed from either drinking water maximum contaminant level criteria outlined in 30 TAC Chapter 290 or from the combined human health effects of exposure to consumption of fish tissue and

ingestion of drinking water.

(b) PERMIT ACTION

Outfall 001

None.

Outfall 002

None.

Outfall 003

Criteria in the "Water and Fish" section of Table 2 do not distinguish if the criteria is based on a drinking water standard or the combined effects of ingestion of drinking water and fish tissue. Effluent limitations or monitoring requirements to protect the drinking water supply (and other human health effects) were previously calculated and outlined in the aquatic organism bioaccumulation criteria section of this fact sheet.

(5) WHOLE EFFLUENT TOXICITY (BIOMONITORING) CRITERIA

(a) SCREENING

TCEQ has determined that there may be pollutants present in the effluent that may have the potential to cause toxic conditions in the receiving stream. Whole effluent biomonitoring is the most direct measure of potential toxicity that incorporates the effects of synergism of effluent components and receiving stream water quality characteristics. Biomonitoring of the effluent is, therefore, required as a condition of this permit to assess potential toxicity.

The existing permit includes chronic freshwater biomonitoring requirements. A summary of the biomonitoring testing for the facility indicates that in the past three years, the permittee has performed eight chronic tests, with zero demonstrations of significant toxicity (i.e., no failures).

A reasonable potential (RP) determination was performed in accordance with 40 CFR § 122.44(d)(1)(ii) to determine whether the discharge will reasonably be expected to cause or contribute to an exceedance of a state water quality standard or criterion within that standard. Each test species is evaluated separately. The RP determination is based on representative data from the previous three years of WET testing. This determination was performed in accordance with the methodology outlined in the TCEQ letter to the EPA dated December 28, 2015, and approved by the EPA in a letter dated December 28, 2015.

With zero failures, a determination of no RP was made. WET limits are not required and the permittee may be eligible for the testing frequency

reduction after one year of quarterly testing.

(b) PERMIT ACTION

The test species are appropriate to measure the toxicity of the effluent consistent with the requirements of the State water quality standards. The biomonitoring frequency has been established to reflect the likelihood of ambient toxicity and to provide data representative of the toxic potential of the facility's discharge. This permit may be reopened to require effluent limits, additional testing, and/or other appropriate actions to address toxicity if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream or water body.

(6) WHOLE EFFLUENT TOXICITY CRITERIA (24-HOUR ACUTE)

(a) SCREENING

The existing permit includes 24-hour acute freshwater biomonitoring language. A summary of the biomonitoring testing for the facility indicates that in the past three years, the permittee has performed ten 24-hour acute tests, with zero demonstrations of significant mortality (i.e., zero failures).

(b) PERMIT ACTION

The draft permit includes 24-hour 100% acute biomonitoring tests for the life of the permit.

9. WATER QUALITY VARIANCE REQUESTS

No variance requests have been received.

10. PROCEDURES FOR FINAL DECISION

When an application is declared administratively complete, the Chief Clerk sends a letter to the applicant advising the applicant to publish the Notice of Receipt of Application and Intent to Obtain Permit in the newspaper. In addition, the Chief Clerk instructs the applicant to place a copy of the application in a public place for review and copying in the county where the facility is or will be located. This application will be in a public place throughout the comment period. The Chief Clerk also mails this notice to any interested persons and, if required, to landowners identified in the permit application. This notice informs the public about the application and provides that an interested person may file comments on the application or request a contested case hearing or a public meeting.

Once a draft permit is completed, it is sent, along with the Executive Director's preliminary decision, as contained in the technical summary or fact sheet, to the Chief Clerk. At that time, the Notice of Application and Preliminary Decision will be mailed to the same people and published in the same newspaper as the prior notice. This notice sets a deadline for making public comments. The applicant must place a copy of the Executive Director's preliminary decision and draft permit in the public place with the

application.

Any interested person may request a public meeting on the application until the deadline for filing public comments. A public meeting is intended for the taking of public comment and is not a contested case proceeding.

After the public comment deadline, the Executive Director prepares a response to all significant public comments on the application or the draft permit raised during the public comment period. The Chief Clerk then mails the Executive Director's response to comments and final decision to people who have filed comments, requested a contested case hearing, or requested to be on the mailing list. This notice provides that if a person is not satisfied with the Executive Director's response and decision, they can request a contested case hearing or file a request to reconsider the Executive Director's decision within 30 days after the notice is mailed.

The Executive Director will issue the permit unless a written hearing request or request for reconsideration is filed within 30 days after the Executive Director's response to comments and final decision is mailed. If a hearing request or request for reconsideration is filed, the Executive Director will not issue the permit and will forward the application and request to the TCEQ Commissioners for their consideration at a scheduled Commission meeting. If a contested case hearing is held, it will be a legal proceeding similar to a civil trial in state district court.

If the Executive Director calls a public meeting or the Commission grants a contested case hearing as described above, the Commission will give notice of the date, time, and place of the meeting or hearing. If a hearing request or request for reconsideration is made, the Commission will consider all public comments in making its decision and shall either adopt the Executive Director's response to public comments or prepare its own response.

For additional information about this application, contact Sonia Bhuiya at (512) 239-1205.

11. ADMINISTRATIVE RECORD

The following items were considered in developing the draft permit:

A. PERMIT(S)

TPDES Permit No. WQ0010334004 issued on December 22, 2022

B. APPLICATION

Application received on May 28, 2024, and additional information received on July 2, 2024.

C. MEMORANDA

Interoffice Memoranda from the Water Quality Assessment Section of the TCEQ Water Quality Division. Interoffice Memorandum from the Pretreatment Team of the TCEQ Water Quality Division.

D. MISCELLANEOUS

Federal Clean Water Act § 402; Texas Water Code § 26.027; 30 TAC Chapters 30, 305, 309, 312, and 319; Commission policies; and U.S. Environmental Protection Agency guidelines.

Texas Surface Water Quality Standards, 30 TAC §§ 307.1 - 307.10.

Procedures to Implement the Texas Surface Water Quality Standards (IP), Texas Commission on Environmental Quality, June 2010, as approved by the U.S. Environmental Protection Agency, and the IP, January 2003, for portions of the 2010 IP not approved by the U.S. Environmental Protection Agency.

Texas 2022 Clean Water Act Section 303(d) List, Texas Commission on Environmental Quality, June 1, 2022; approved by the U.S. Environmental Protection Agency on July 7, 2022.

Texas Natural Resource Conservation Commission, Guidance Document for Establishing Monitoring Frequencies for Domestic and Industrial Wastewater Discharge Permits, Document No. 98-001.000-OWR-WQ, May 1998.

Attachment A: Screening Calculations for Total Dissolved Solids, Chloride, and Sulfate

Screening Calculations for Total Dissolved Solids, Chloride, and Sulfate

Menu 7 - Discharge to an Intermittent Stream with Perennial Pools

Screen the Perennial Pool Characteristics of the Stream

Applicant Name:	**City of Abilene**
Permit Number, Outfall:	**10334-004**
Segment Number:	**1232- outfall 001**

Enter values needed for screening:			**Data Source (edit if different)**
QE - Average effluent flow	**18**	MGD	
QS - Stream harmonic mean flow	**6.64**	cfs	Critical conditions memo
QE - Average effluent flow	**27.8501**	cfs	Calculated
CA - TDS - ambient segment concentration	**1800**	mg/L	2010 IP, Appendix D
CA - chloride - ambient segment concentration	**520**	mg/L	2010 IP, Appendix D
CA - sulfate - ambient segment concentration	**778**	mg/L	2010 IP, Appendix D
CC - TDS - segment criterion	**4900**	mg/L	2022 TSWQS, Appendix A
CC - chloride - segment criterion	**1250**	mg/L	2022 TSWQS, Appendix A
CC - sulfate - segment criterion	**2200**	mg/L	2022 TSWQS, Appendix A
CE - TDS - average effluent concentration	**834**	mg/L	Permit application
CE - chloride - average effluent concentration	**240**	mg/L	Permit application
CE - sulfate - average effluent concentration	**158**	mg/L	Permit application

Permit Limit Calculations

TDS

Calculate the WLA	WLA= [CC(QE+QS) - (QS)(CA)]/QE	**5639.10**
Calculate the LTA	LTA = WLA * 0.93	**5244.36**
Calculate the daily average	Daily Avg. = LTA * 1.47	**7709.21**
Calculate the daily maximum	Daily Max. = LTA * 3.11	**16309.96**
Calculate 70% of the daily average	70% of Daily Avg. =	**5396.45**
Calculate 85% of the daily average	85% of Daily Avg. =	**6552.83**

No permit limitations needed if:	**834**	**≤**	**5396.45**		
Reporting needed if:	**834**	**>**	**5396.45**	**but ≤**	**6552.83**
Permit limits may be needed if:	**834**	**>**	**6552.83**		

No permit limitations needed for TDS

Chloride

Calculate the WLA	WLA= [CC(QE+QS) - (QS)(CA)]/QE	**1424.05**
Calculate the LTA	LTA = WLA * 0.93	**1324.36**
Calculate the daily average	Daily Avg. = LTA * 1.47	**1946.81**
Calculate the daily maximum	Daily Max. = LTA * 3.11	**4118.77**
Calculate 70% of the daily average	70% of Daily Avg. =	**1362.77**
Calculate 85% of the daily average	85% of Daily Avg. =	**1654.79**

No permit limitations needed if:	**240**	**≤**	**1362.77**		
Reporting needed if:	**240**	**>**	**1362.77**	**but ≤**	**1654.79**
Permit limits may be needed if:	**240**	**>**	**1654.79**		

No permit limitations needed for chloride

Sulfate

Calculate the WLA	WLA= [CC(QE+QS) - (QS)(CA)]/QE	**2539.03**
Calculate the LTA	LTA = WLA * 0.93	**2361.30**
Calculate the daily average	Daily Avg. = LTA * 1.47	**3471.11**
Calculate the daily maximum	Daily Max. = LTA * 3.11	**7343.64**
Calculate 70% of the daily average	70% of Daily Avg. =	**2429.78**
Calculate 85% of the daily average	85% of Daily Avg. =	**2950.44**

No permit limitations needed if:	**158**	**≤**	**2429.78**		
Reporting needed if:	**158**	**>**	**2429.78**	**but ≤**	**2950.44**
Permit limits may be needed if:	**158**	**>**	**2950.44**		

No permit limitations needed for sulfate

Attachment A1: Screening Calculations for Total Dissolved Solids, Chloride, and Sulfate

Screening Calculations for Total Dissolved Solids, Chloride, and Sulfate

Menu 4 - Discharge to a Lake

Applicant Name:	**City of Abilene**
Permit Number, Outfall:	**Outfall 002**
Segment Number:	**1236 (immediate receiving water = Kirby Lake)**

Enter values needed for screening:			**Data Source (edit if different)**
EF - Effluent fraction at edge of human health MZ	**0.08**	decimal fraction	Critical conditions memo
CA - TDS - ambient segment concentration	**458**	mg/L	2010 IP, Appendix D
CA - chloride - ambient segment concentration	**94**	mg/L	2010 IP, Appendix D
CA - sulfate - ambient segment concentration	**78**	mg/L	2010 IP, Appendix D
CC - TDS - segment criterion	**550**	mg/L	2022 TSWQS, Appendix A
CC - chloride - segment criterion	**130**	mg/L	2022 TSWQS, Appendix A
CC - sulfate - segment criterion	**150**	mg/L	2022 TSWQS, Appendix A
CE - TDS - average effluent concentration	**834**	mg/L	Permit application
CE - chloride - average effluent concentration	**240**	mg/L	Permit application
CE - sulfate - average effluent concentration	**158**	mg/L	Permit application

Permit Limit Calculations

TDS

Calculate the WLA	WLA= [CC - (1-EF)(CA)]/EF	1608.00
Calculate the LTA	LTA = WLA * 0.93	1495.44
Calculate the daily average	Daily Avg. = LTA * 1.47	**2198.30**
Calculate the daily maximum	Daily Max. = LTA * 3.11	**4650.82**
Calculate 70% of the daily average	70% of Daily Avg. =	1538.81
Calculate 85% of the daily average	85% of Daily Avg. =	1868.55

No permit limitations needed if:	**834**	**≤**	**1538.81**		
Reporting needed if:	**834**	**>**	**1538.81**	**but ≤**	**1868.55**
Permit limits may be needed if:	**834**	**>**	**1868.55**		

No permit limitations needed for TDS

Chloride

Calculate the WLA	WLA= [CC - (1-EF)(CA)]/EF		544.00		
Calculate the LTA	LTA = WLA * 0.93		505.92		
Calculate the daily average	Daily Avg. = LTA * 1.47		**743.70**		
Calculate the daily maximum	Daily Max. = LTA * 3.11		**1573.41**		
Calculate 70% of the daily average	70% of Daily Avg. =		520.59		
Calculate 85% of the daily average	85% of Daily Avg. =		632.15		
No permit limitations needed if:	**240**	**≤**	**520.59**		
Reporting needed if:	**240**	**>**	**520.59**	**but ≤**	**632.15**
Permit limits may be needed if:	**240**	**>**	**632.15**		

No permit limitations needed for chloride

Sulfate

Calculate the WLA	WLA= [CC - (1-EF)(CA)]/EF		978.00		
Calculate the LTA	LTA = WLA * 0.93		909.54		
Calculate the daily average	Daily Avg. = LTA * 1.47		**1337.02**		
Calculate the daily maximum	Daily Max. = LTA * 3.11		**2828.67**		
Calculate 70% of the daily average	70% of Daily Avg. =		935.92		
Calculate 85% of the daily average	85% of Daily Avg. =		1136.47		
No permit limitations needed if:	**158**	**≤**	**935.92**		
Reporting needed if:	**158**	**>**	**935.92**	**but ≤**	**1136.47**
Permit limits may be needed if:	**158**	**>**	**1136.47**		

No permit limitations needed for sulfate

Attachment A2: Screening Calculations for Total Dissolved Solids, Chloride, and Sulfate

Screening Calculations for Total Dissolved Solids, Chloride, and Sulfate

Menu 4 - Discharge to a Lake

Applicant Name:	**City of Abilene**
Permit Number, Outfall:	**Outfall 003**
Segment Number:	**1236**

Enter values needed for screening:			**Data Source (edit if different)**
EF - Effluent fraction at edge of human health MZ	**0.08**	decimal fraction	Critical conditions memo
CA - TDS - ambient segment concentration	**458**	mg/L	2010 IP, Appendix D
CA - chloride - ambient segment concentration	**94**	mg/L	2010 IP, Appendix D
CA - sulfate - ambient segment concentration	**78**	mg/L	2010 IP, Appendix D
CC - TDS - segment criterion	**550**	mg/L	2022 TSWQS, Appendix A
CC - chloride - segment criterion	**130**	mg/L	2022 TSWQS, Appendix A
CC - sulfate - segment criterion	**150**	mg/L	2022 TSWQS, Appendix A
CE - TDS - average effluent concentration	**834**	mg/L	Permit application
CE - chloride - average effluent concentration	**240**	mg/L	Permit application
CE - sulfate - average effluent concentration	**158**	mg/L	Permit application

TDS

Calculate the WLA	WLA= [CC - (1-EF)(CA)]/EF	1608.00
Calculate the LTA	LTA = WLA * 0.93	1495.44
Calculate the daily average	Daily Avg. = LTA * 1.47	**2198.30**
Calculate the daily maximum	Daily Max. = LTA * 3.11	**4650.82**
Calculate 70% of the daily average	70% of Daily Avg. =	1538.81
Calculate 85% of the daily average	85% of Daily Avg. =	1868.55

No permit limitations needed if:	**834**	**≤**	**1538.81**		
Reporting needed if:	**834**	**>**	**1538.81**	**but ≤**	**1868.55**
Permit limits may be needed if:	**834**	**>**	**1868.55**		

No permit limitations needed for TDS

Chloride

Calculate the WLA	WLA= [CC - (1-EF)(CA)]/EF		544.00		
Calculate the LTA	LTA = WLA * 0.93		505.92		
Calculate the daily average	Daily Avg. = LTA * 1.47		**743.70**		
Calculate the daily maximum	Daily Max. = LTA * 3.11		**1573.41**		
Calculate 70% of the daily average	70% of Daily Avg. =		520.59		
Calculate 85% of the daily average	85% of Daily Avg. =		632.15		
No permit limitations needed if:	**240**	**≤**	**520.59**		
Reporting needed if:	**240**	**>**	**520.59**	**but ≤**	**632.15**
Permit limits may be needed if:	**240**	**>**	**632.15**		

No permit limitations needed for chloride

Sulfate

Calculate the WLA	WLA= [CC - (1-EF)(CA)]/EF		978.00		
Calculate the LTA	LTA = WLA * 0.93		909.54		
Calculate the daily average	Daily Avg. = LTA * 1.47		**1337.02**		
Calculate the daily maximum	Daily Max. = LTA * 3.11		**2828.67**		
Calculate 70% of the daily average	70% of Daily Avg. =		935.92		
Calculate 85% of the daily average	85% of Daily Avg. =		1136.47		
No permit limitations needed if:	**158**	**≤**	**935.92**		
Reporting needed if:	**158**	**>**	**935.92**	**but ≤**	**1136.47**
Permit limits may be needed if:	**158**	**>**	**1136.47**		

No permit limitations needed for sulfate

Attachment B: Calculated Water Quality Based Effluent Limitations

TEXTOX MENU #7 - INTERMITTENT STREAM WITH PERENNIAL POOLS

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Freshwater Aquatic Life
Table 2, 2018 Texas Surface Water Quality Standards for Human Health, Incidental Fishery
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	City of Abilene
TPDES Permit No.:	WQ0010334004
Outfall No.:	001
Prepared by:	Sonia Bhuiya
Date:	June 23, 2025

DISCHARGE INFORMATION

Intermittent Receiving Waterbody:	Freewater Creek, thence to Deadman Creek
Segment No.:	1236
TSS (mg/L):	16
pH (Standard Units):	7.6
Hardness (mg/L as $CaCO_3$):	584
Chloride (mg/L):	520
Effluent Flow for Aquatic Life (MGD):	18
Critical Low Flow [7Q2] (cfs):	0
% Effluent for Chronic Aquatic Life:	100
% Effluent for Acute Aquatic Life:	100
Effluent Flow for Human Health (MGD):	18
Harmonic Mean Flow (cfs):	6.64
% Effluent for Human Health:	80.748

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Stream/River Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	*Source*
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	5.68	-0.73	63240.08	0.497		1.00	Assumed
Cadmium	6.60	-1.13	########	0.265		1.00	Assumed
Chromium (total)	6.52	-0.93	########	0.199		1.00	Assumed
Chromium (trivalent)	6.52	-0.93	########	0.199		1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	6.02	-0.74	########	0.317		1.00	Assumed
Lead	6.45	-0.80	########	0.169		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	5.69	-0.57	########	0.383		1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed

Silver	6.38	-1.03	########	0.312		1.00	Assumed
Zinc	6.10	-0.70	########	0.257		1.00	Assumed

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*FW Acute Criterion (µg/L)*	*FW Chronic Criterion (µg/L)*	*WLAa (µg/L)*	*WLAc (µg/L)*	*LTAa (µg/L)*	*LTAc (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Aldrin	3.0	N/A	3.00	N/A	1.72	N/A	2.52	5.34
Aluminum	991	N/A	991	N/A	568	N/A	834	1765
Arsenic	340	150	684	302	392	232	341	722
Cadmium	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Carbaryl	2.0	N/A	2.00	N/A	1.15	N/A	1.68	3.56
Chlordane	2.4	0.004	2.40	0.00400	1.38	0.00308	0.00452	0.00957
Chlorpyrifos	0.083	0.041	0.0830	0.0410	0.0476	0.0316	0.0464	0.0981
Chromium (+3)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Chromium (+6)	15.7	10.6	15.7	10.6	9.00	8.16	11.9	25.3
Copper	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Cyanide (free)	45.8	10.7	45.8	10.7	26.2	8.24	12.1	25.6
4,4'-DDT	1.1	0.001	1.10	0.00100	0.630	0.000770	0.00113	0.00239
Demeton	N/A	0.1	N/A	0.100	N/A	0.0770	0.113	0.239
Diazinon	0.17	0.17	0.170	0.170	0.0974	0.131	0.143	0.302
Dicofol	59.3	19.8	59.3	19.8	34.0	15.2	22.4	47.4
Dieldrin	0.24	0.002	0.240	0.00200	0.138	0.00154	0.00226	0.00478
Diuron	210	70	210	70.0	120	53.9	79.2	167
Endosulfan I (alpha)	0.22	0.056	0.220	0.0560	0.126	0.0431	0.0633	0.134
Endosulfan II (beta)	0.22	0.056	0.220	0.0560	0.126	0.0431	0.0633	0.134
Endosulfan sulfate	0.22	0.056	0.220	0.0560	0.126	0.0431	0.0633	0.134
Endrin	0.086	0.002	0.0860	0.00200	0.0493	0.00154	0.00226	0.00478
Guthion	N/A	0.01	N/A	0.0100	N/A	0.00770	0.0113	0.0239
Heptachlor	0.52	0.004	0.520	0.00400	0.298	0.00308	0.00452	0.00957
Hexachlorocyclohexane (Lindane)	1.126	0.08	1.13	0.0800	0.645	0.0616	0.0905	0.191
Lead	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Malathion	N/A	0.01	N/A	0.0100	N/A	0.00770	0.0113	0.0239
Mercury	2.4	1.3	2.40	1.30	1.38	1.00	1.47	3.11
Methoxychlor	N/A	0.03	N/A	0.0300	N/A	0.0231	0.0339	0.0718
Mirex	N/A	0.001	N/A	0.00100	N/A	0.000770	0.00113	0.00239
Nickel	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Nonylphenol	28	6.6	28.0	6.60	16.0	5.08	7.47	15.8
Parathion (ethyl)	0.065	0.013	0.0650	0.0130	0.0372	0.0100	0.0147	0.0311
Pentachlorophenol	15.9	12.2	15.9	12.2	9.14	9.42	13.4	28.4
Phenanthrene	30	30	30.0	30.0	17.2	23.1	25.2	53.4
Polychlorinated Biphenyls (PCBs)	2.0	0.014	2.00	0.0140	1.15	0.0108	0.0158	0.0335
Selenium	20	5	20.0	5.00	11.5	3.85	5.65	11.9

Silver	0.8	N/A	28.6	N/A	16.4	N/A	24.0	50.9
Toxaphene	0.78	0.0002	0.780	0.00020 0	0.447	0.0001 54	0.0002 26	0.0004 78
Tributyltin (TBT)	0.13	0.024	0.130	0.0240	0.0745	0.0185	0.0271	0.0574
2,4,5 Trichlorophenol	136	64	136	64.0	77.9	49.3	72.4	153
Zinc	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALU E!	#VALU E!	#VALU E!

HUMAN HEALTH (APPLIES FOR INCIDENTAL FRESHWATER FISH TISSUE)

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	***Incidental Fish Criterion (µg/L)***	***WLAh (µg/L)***	***LTAh (µg/L)***	***Daily Avg. (µg/L)***	***Daily Max. (µg/L)***
Acrylonitrile	1150	1424	1324	1947	4119
Aldrin	1.147E-04	0.00014 2	0.000132	0.00019 4	0.00041 0
Anthracene	13170	16310	15168	22297	47173
Antimony	10710	13263	12335	18132	38361
Arsenic	N/A	N/A	N/A	N/A	N/A
Barium	N/A	N/A	N/A	N/A	N/A
Benzene	5810	7195	6692	9836	20810
Benzidine	1.07	1.33	1.23	1.81	3.83
Benzo(*a*)anthracene	0.25	0.310	0.288	0.423	0.895
Benzo(*a*)pyrene	0.025	0.0310	0.0288	0.0423	0.0895
Bis(chloromethyl)ether	2.745	3.40	3.16	4.64	9.83
Bis(2-chloroethyl)ether	428.3	530	493	725	1534
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	75.5	93.5	87.0	127	270
Bromodichloromethane [Dichlorobromomethane]	2750	3406	3167	4655	9850
Bromoform [Tribromomethane]	10600	13127	12208	17946	37967
Cadmium	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	460	570	530	778	1647
Chlordane	0.025	0.0310	0.0288	0.0423	0.0895
Chlorobenzene	27370	33896	31523	46338	98036
Chlorodibromomethane [Dibromochloromethane]	1830	2266	2108	3098	6554
Chloroform [Trichloromethane]	76970	95321	88649	130313	275697
Chromium (hexavalent)	5020	6217	5782	8499	17981
Chrysene	25.2	31.2	29.0	42.6	90.2
Cresols [Methylphenols]	93010	115185	107122	157470	333150
Cyanide (free)	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.02	0.0248	0.0230	0.0338	0.0716
4,4'-DDE	0.0013	0.00161	0.00150	0.00220	0.00465
4,4'-DDT	0.004	0.00495	0.00461	0.00677	0.0143
2,4'-D	N/A	N/A	N/A	N/A	N/A
Danitol [Fenpropathrin]	4730	5858	5448	8008	16942
1,2-Dibromoethane [Ethylene Dibromide]	42.4	52.5	48.8	71.7	151
m-Dichlorobenzene [1,3-Dichlorobenzene]	5950	7369	6853	10073	21312
o-Dichlorobenzene [1,2-Dichlorobenzene]	32990	40855	37996	55853	118166
p-Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	22.4	27.7	25.8	37.9	80.2
1,2-Dichloroethane	3640	4508	4192	6162	13038

1,1-Dichloroethylene [1,1-Dichloroethene]	551140	682543	634765	933104	1974118
Dichloromethane [Methylene Chloride]	133330	165119	153560	225733	477572
1,2-Dichloropropane	2590	3208	2983	4384	9277
1,3-Dichloropropene [1,3-Dichloropropylene]	1190	1474	1371	2014	4262
Dicofol [Kelthane]	3	3.72	3.46	5.07	10.7
Dieldrin	2.0E-04	0.000248	0.000230	0.000338	0.000716
2,4-Dimethylphenol	84360	104473	97160	142825	302167
Di-*n*-Butyl Phthalate	924	1144	1064	1564	3309
Dioxins/Furans [TCDD Equivalents]	7.97E-07	9.87E-07	9.18E-07	0.0000013	0.0000029
Endrin	0.2	0.248	0.230	0.338	0.716
Epichlorohydrin	20130	24929	23184	34080	72103
Ethylbenzene	18670	23121	21503	31609	66873
Ethylene Glycol	1.68E+08	208054605	193490782	284431450	601756333
Fluoride	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.001	0.00124	0.00115	0.00169	0.00358
Heptachlor Epoxide	0.0029	0.00359	0.00334	0.00490	0.0103
Hexachlorobenzene	0.0068	0.00842	0.00783	0.0115	0.0243
Hexachlorobutadiene	2.2	2.72	2.53	3.72	7.88
Hexachlorocyclohexane (*alpha*)	0.084	0.104	0.0967	0.142	0.300
Hexachlorocyclohexane (*beta*)	2.6	3.22	2.99	4.40	9.31
Hexachlorocyclohexane (*gamma*) [Lindane]	3.41	4.22	3.93	5.77	12.2
Hexachlorocyclopentadiene	116	144	134	196	415
Hexachloroethane	23.3	28.9	26.8	39.4	83.4
Hexachlorophene	29	35.9	33.4	49.0	103
4,4'-Isopropylidenediphenol [Bisphenol A]	159820	197924	184070	270582	572456
Lead	38.3	280	261	383	810
Mercury	0.122	0.151	0.141	0.206	0.436
Methoxychlor	30	37.2	34.6	50.7	107
Methyl Ethyl Ketone	9.92E+06	12285129	11425170	16794999	35532278
Methyl *tert*-butyl ether [MTBE]	104820	129811	120724	177464	375452
Nickel	11400	36898	34315	50442	106718
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	18730	23196	21572	31710	67088
N-Nitrosodiethylamine	21	26.0	24.2	35.5	75.2
N-Nitroso-di-*n*-Butylamine	42	52.0	48.4	71.1	150
Pentachlorobenzene	3.55	4.40	4.09	6.01	12.7
Pentachlorophenol	2.9	3.59	3.34	4.90	10.3
Polychlorinated Biphenyls [PCBs]	6.40E-03	0.00793	0.00737	0.0108	0.0229
Pyridine	9470	11728	10907	16033	33920
Selenium	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	2.4	2.97	2.76	4.06	8.59
1,1,2,2-Tetrachloroethane	263.5	326	303	446	943
Tetrachloroethylene [Tetrachloroethylene]	2800	3468	3225	4740	10029
Thallium	2.3	2.85	2.65	3.89	8.23
Toluene	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.11	0.136	0.127	0.186	0.394
2,4,5-TP [Silvex]	3690	4570	4250	6247	13217

1,1,1-Trichloroethane	7843540	9713599	9033647	1327946 1	2809464 2
1,1,2-Trichloroethane	1660	2056	1912	2810	5945
Trichloroethylene [Trichloroethene]	719	890	828	1217	2575
2,4,5-Trichlorophenol	18670	23121	21503	31609	66873
TTHM [Sum of Total Trihalomethanes]	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	165	204	190	279	591

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life ***Parameter***	***70% of Daily Avg. (µg/L)***	***85% of Daily Avg. (µg/L)***
Aldrin	1.76	2.14
Aluminum	584	709
Arsenic	239	290
Cadmium	#VALUE!	#VALUE!
Carbaryl	1.17	1.43
Chlordane	0.00316	0.00384
Chlorpyrifos	0.0324	0.0394
Chromium (+3)	#VALUE!	#VALUE!
Chromium (+6)	8.39	10.1
Copper	#VALUE!	#VALUE!
Cyanide (free)	8.47	10.2
4,4'-DDT	0.00079 2	0.00096 2
Demeton	0.0792	0.0962
Diazinon	0.100	0.121
Dicofol	15.6	19.0
Dieldrin	0.00158	0.00192
Diuron	55.4	67.3
Endosulfan (alpha)	0.0443	0.0538
Endosulfan (beta)	0.0443	0.0538
Endosulfan sulfate	0.0443	0.0538
Endrin	0.00158	0.00192
Guthion	0.00792	0.00962
Heptachlor	0.00316	0.00384
Hexachlorocyclohexane (Lindane)	0.0633	0.0769
Lead	#VALUE!	#VALUE!
Malathion	0.00792	0.00962
Mercury	1.03	1.25
Methoxychlor	0.0237	0.0288
Mirex	0.00079 2	0.00096 2
Nickel	#VALUE!	#VALUE!
Nonylphenol	5.22	6.34
Parathion (ethyl)	0.0103	0.0125
Pentachlorophenol	9.40	11.4
Phenanthrene	17.6	21.4
Polychlorinated Biphenyls (PCBs)	0.0110	0.0134
Selenium	3.96	4.81
Silver	16.8	20.4
Toxaphene	0.00015 8	0.00019 2

Tributyltin (TBT)	0.0190	0.0230
2,4,5 Trichlorophenol	50.7	61.5
Zinc	#VALUE!	#VALUE!

Human Health *Parameter*	***70% of Daily Avg.*** ***(µg/L)***	***85% of Daily Avg.*** ***(µg/L)***
Acrylonitrile	1362	1654
Aldrin	0.000135	0.000165
Anthracene	15608	18952
Antimony	12692	15412
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	6885	8361
Benzidine	1.26	1.53
Benzo(*a*)anthracene	0.296	0.359
Benzo(*a*)pyrene	0.0296	0.0359
Bis(chloromethyl)ether	3.25	3.95
Bis(2-chloroethyl)ether	507	616
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	89.4	108
Bromodichloromethane [Dichlorobromomethane]	3259	3957
Bromoform [Tribromomethane]	12562	15254
Cadmium	N/A	N/A
Carbon Tetrachloride	545	661
Chlordane	0.0296	0.0359
Chlorobenzene	32437	39387
Chlorodibromomethane [Dibromochloromethane]	2168	2633
Chloroform [Trichloromethane]	91219	110766
Chromium (hexavalent)	5949	7224
Chrysene	29.8	36.2
Cresols [Methylphenols]	110229	133849
Cyanide (free)	N/A	N/A
4,4'-DDD	0.0237	0.0287
4,4'-DDE	0.00154	0.00187
4,4'-DDT	0.00474	0.00575
2,4'-D	N/A	N/A
Danitol [Fenpropathrin]	5605	6806
1,2-Dibromoethane [Ethylene Dibromide]	50.2	61.0
m-Dichlorobenzene [1,3-Dichlorobenzene]	7051	8562
o-Dichlorobenzene [1,2-Dichlorobenzene]	39097	47475
p-Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A
3,3'-Dichlorobenzidine	26.5	32.2
1,2-Dichloroethane	4313	5238
1,1-Dichloroethylene [1,1-Dichloroethene]	653173	793138
Dichloromethane [Methylene Chloride]	158013	191873
1,2-Dichloropropane	3069	3727
1,3-Dichloropropene [1,3-Dichloropropylene]	1410	1712

Dicofol [Kelthane]	3.55	4.31
Dieldrin	0.000237	0.000287
2,4-Dimethylphenol	99977	121401
Di-*n*-Butyl Phthalate	1095	1329
Dioxins/Furans [TCDD Equivalents]	9.44E-07	0.0000011
Endrin	0.237	0.287
Epichlorohydrin	23856	28968
Ethylbenzene	22126	26867
Ethylene Glycol	199102015	241766732
Fluoride	N/A	N/A
Heptachlor	0.00118	0.00143
Heptachlor Epoxide	0.00343	0.00417
Hexachlorobenzene	0.00805	0.00978
Hexachlorobutadiene	2.60	3.16
Hexachlorocyclohexane (*alpha*)	0.0995	0.120
Hexachlorocyclohexane (*beta*)	3.08	3.74
Hexachlorocyclohexane (*gamma*) [Lindane]	4.04	4.90
Hexachlorocyclopentadiene	137	166
Hexachloroethane	27.6	33.5
Hexachlorophene	34.3	41.7
4,4'-Isopropylidenediphenol [Bisphenol A]	189407	229994
Lead	268	325
Mercury	0.144	0.175
Methoxychlor	35.5	43.1
Methyl Ethyl Ketone	117564959	142757459
Methyl *tert*-butyl ether [MTBE]	124225	150845
Nickel	35309	42876
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	22197	26954
N-Nitrosodiethylamine	24.8	30.2
N-Nitroso-di-*n*-Butylamine	49.7	60.4
Pentachlorobenzene	4.20	5.10
Pentachlorophenol	3.43	4.17
Polychlorinated Biphenyls [PCBs]	0.00758	0.00921
Pyridine	11223	13628
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	2.84	3.45
1,1,2,2-Tetrachloroethane	312	379
Tetrachloroethylene [Tetrachloroethylene]	3318	4029
Thallium	2.72	3.30
Toluene	N/A	N/A
Toxaphene	0.130	0.158
2,4,5-TP [Silvex]	4373	5310
1,1,1-Trichloroethane	9295622	11287541
1,1,2-Trichloroethane	1967	2388
Trichloroethylene [Trichloroethene]	852	1034
2,4,5-Trichlorophenol	22126	26867
TTHM [Sum of Total Trihalomethanes]	N/A	N/A
Vinyl Chloride	195	237

Attachment B1: Calculated Water Quality Based Effluent Limitations

TEXTOX MENU #4 - LAKE OR RESERVOIR

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Freshwater Aquatic Life
Table 2, 2018 Texas Surface Water Quality Standards for Human Health
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	City of Abilene
TPDES Permit No:	WQ001334004
Outfall No:	002
Prepared by:	Sonia Bhuiya
Date:	June 23, 2025

DISCHARGE INFORMATION

Receiving Waterbody:	Kirby Lake
Segment No.:	1236
TSS (mg/L):	5
pH (Standard Units):	8
Hardness (mg/L as $CaCO_3$):	203
Chloride (mg/L):	94
Effluent Flow for Aquatic Life (MGD):	4
% Effluent for Chronic Aquatic Life (Mixing Zone):	15
% Effluent for Acute Aquatic Life (ZID):	60
Effluent Flow for Human Health (MGD):	4
% Effluent for Human Health:	8
Human Health Criterion (select: PWS, FISH, or INC)	**FISH**

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Lake/Reservoir Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	*Source*
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	5.68	-0.73	63240.08	0.497		1.00	Assumed
Cadmium	6.55	-0.92	276827.75	0.184		1.00	Assumed
Chromium (total)	6.34	-0.27	########	0.057		1.00	Assumed
Chromium (trivalent)	6.34	-0.27	########	0.057		1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	6.45	-0.90	232429.91	0.212		1.00	Assumed
Lead	6.31	-0.53	469695.51	0.117		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	6.34	-0.76	265992.15	0.190		1.00	Assumed

Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	6.38	-1.03	137961.03	0.312		1.00	Assumed
Zinc	6.52	-0.68	502572.14	0.111		1.00	Assumed

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*FW Acute Criterion (µg/L)*	*FW Chronic Criterion (µg/L)*	*WLAa (µg/L)*	*WLAc (µg/L)*	*LTAa (µg/L)*	*LTAc (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Aldrin	3.0	N/A	20.0	N/A	6.40	N/A	9.40	19.9
Aluminum	991	N/A	6607	N/A	2114	N/A	3107	6574
Arsenic	340	150	4560	7544	1459	4602	2145	4538
Cadmium	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Carbaryl	2.0	N/A	13.3	N/A	4.27	N/A	6.27	13.2
Chlordane	2.4	0.004	16.0	0.100	5.12	0.0610	0.0896	0.189
Chlorpyrifos	0.083	0.041	0.553	1.03	0.177	0.625	0.260	0.550
Chromium (trivalent)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Chromium (hexavalent)	15.7	10.6	105	265	33.5	162	49.2	104
Copper	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Cyanide (free)	45.8	10.7	305	268	97.7	163	143	303
4,4'-DDT	1.1	0.001	7.33	0.0250	2.35	0.0153	0.0224	0.0474
Demeton	N/A	0.1	N/A	2.50	N/A	1.53	2.24	4.74
Diazinon	0.17	0.17	1.13	4.25	0.363	2.59	0.533	1.12
Dicofol [Kelthane]	59.3	19.8	395	495	127	302	185	393
Dieldrin	0.24	0.002	1.60	0.0500	0.512	0.0305	0.0448	0.0948
Diuron	210	70	1400	1750	448	1068	658	1393
Endosulfan I (*alpha*)	0.22	0.056	1.47	1.40	0.469	0.854	0.689	1.45
Endosulfan II (*beta*)	0.22	0.056	1.47	1.40	0.469	0.854	0.689	1.45
Endosulfan sulfate	0.22	0.056	1.47	1.40	0.469	0.854	0.689	1.45
Endrin	0.086	0.002	0.573	0.0500	0.183	0.0305	0.0448	0.0948
Guthion [Azinphos Methyl]	N/A	0.01	N/A	0.250	N/A	0.153	0.224	0.474
Heptachlor	0.52	0.004	3.47	0.100	1.11	0.0610	0.0896	0.189
Hexachlorocyclohexane (*gamma*) [Lindane]	1.126	0.08	7.51	2.00	2.40	1.22	1.79	3.79
Lead	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Malathion	N/A	0.01	N/A	0.250	N/A	0.153	0.224	0.474
Mercury	2.4	1.3	16.0	32.5	5.12	19.8	7.52	15.9
Methoxychlor	N/A	0.03	N/A	0.750	N/A	0.458	0.672	1.42
Mirex	N/A	0.001	N/A	0.0250	N/A	0.0153	0.0224	0.0474
Nickel	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Nonylphenol	28	6.6	187	165	59.7	101	87.8	185
Parathion (ethyl)	0.065	0.013	0.433	0.325	0.139	0.198	0.203	0.431
Pentachlorophenol	15.9	12.23	106	306	34.0	187	49.9	105
Phenanthrene	30	30	200	750	64.0	458	94.0	199
Polychlorinated Biphenyls [PCBs]	2.0	0.014	13.3	0.350	4.27	0.214	0.313	0.663
Selenium	20	5	133	125	42.7	76.3	62.7	132
Silver	0.8	N/A	190	N/A	61.0	N/A	89.5	189
Toxaphene	0.78	0.0002	5.20	0.00500	1.66	0.00305	0.00448	0.00948

Tributyltin [TBT]	0.13	0.024	0.867	0.600	0.277	0.366	0.407	0.862
2,4,5 Trichlorophenol	136	64	907	1600	290	976	426	902
Zinc	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!

HUMAN HEALTH

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*Water and Fish Criterion (µg/L)*	*Fish Only Criterion (µg/L)*	*Incidental Fish Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Acrylonitrile	1.0	115	1150	2875	2674	3930	8315
Aldrin	1.146E-05	########	1.147E-04	0.00028	0.00026	0.00039	0.000829
Anthracene	1109	1317	13170	32925	30620	45011	95228
Antimony	6	1071	10710	26775	24901	36604	77441
Arsenic	10	N/A	N/A	N/A	N/A	N/A	N/A
Barium	2000	N/A	N/A	N/A	N/A	N/A	N/A
Benzene	5	581	5810	14525	13508	19857	42010
Benzidine	0.0015	0.107	1.07	2.68	2.49	3.65	7.73
Benzo(*a*)anthracene	0.024	0.025	0.25	0.625	0.581	0.854	1.80
Benzo(*a*)pyrene	0.0025	0.0025	0.025	0.0625	0.0581	0.0854	0.180
Bis(chloromethyl)ether	0.0024	0.2745	2.745	6.86	6.38	9.38	19.8
Bis(2-chloroethyl)ether	0.60	42.83	428.3	1071	996	1463	3096
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	6	7.55	75.5	189	176	258	545
Bromodichloromethane [Dichlorobromomethane]	10.2	275	2750	6875	6394	9398	19884
Bromoform [Tribromomethane]	66.9	1060	10600	26500	24645	36228	76645
Cadmium	5	N/A	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	4.5	46	460	1150	1070	1572	3326
Chlordane	0.0025	0.0025	0.025	0.0625	0.0581	0.0854	0.180
Chlorobenzene	100	2737	27370	68425	63635	93543	197905
Chlorodibromomethane [Dibromochloromethane]	7.5	183	1830	4575	4255	6254	13232
Chloroform [Trichloromethane]	70	7697	76970	192425	178955	263064	556550
Chromium (hexavalent)	62	502	5020	12550	11672	17157	36298
Chrysene	2.45	2.52	25.2	63.0	58.6	86.1	182
Cresols [Methylphenols]	1041	9301	93010	232525	216248	317884	672532
Cyanide (free)	200	N/A	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.002	0.002	0.02	0.0500	0.0465	0.0683	0.144
4,4'-DDE	0.00013	0.00013	0.0013	0.00325	0.00302	0.00444	0.00939
4,4'-DDT	0.0004	0.0004	0.004	0.0100	0.00930	0.0136	0.0289
2,4'-D	70	N/A	N/A	N/A	N/A	N/A	N/A
Danitol [Fenpropathrin]	262	473	4730	11825	10997	16165	34201
1,2-Dibromoethane [Ethylene Dibromide]	0.17	4.24	42.4	106	98.6	144	306
m-Dichlorobenzene [1,3-Dichlorobenzene]	322	595	5950	14875	13834	20335	43022
o-Dichlorobenzene [1,2-Dichlorobenzene]	600	3299	32990	82475	76702	112751	238542
p-Dichlorobenzene [1,4-Dichlorobenzene]	75	N/A	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	0.79	2.24	22.4	56.0	52.1	76.5	161
1,2-Dichloroethane	5	364	3640	9100	8463	12440	26319
1,1-Dichloroethylene [1,1-Dichloroethene]	7	55114	551140	1377850	1281401	1883658	3985155

Dichloromethane [Methylene Chloride]	5	13333	133330	333325	309992	455688	964075
1,2-Dichloropropane	5	259	2590	6475	6022	8851	18727
1,3-Dichloropropene [1,3-Dichloropropylene]	2.8	119	1190	2975	2767	4067	8604
Dicofol [Kelthane]	0.30	0.30	3	7.50	6.98	10.2	21.6
Dieldrin	2.0E-05	2.0E-05	2.0E-04	0.000500	0.00046 5	0.00068 3	0.00144
2,4-Dimethylphenol	444	8436	84360	210900	196137	288321	609986
Di-*n*-Butyl Phthalate	88.9	92.4	924	2310	2148	3158	6681
Dioxins/Furans [TCDD Equivalents]	7.80E-08	7.97E-08	7.97E-07	0.0000020	0.0000019	0.0000027	0.0000058
Endrin	0.02	0.02	0.2	0.500	0.465	0.683	1.44
Epichlorohydrin	53.5	2013	20130	50325	46802	68799	145554
Ethylbenzene	700	1867	18670	46675	43408	63809	134998
Ethylene Glycol	46744	1.68E+07	1.68E+08	420000000	390600000	574182000	121476600 0
Fluoride	4000	N/A	N/A	N/A	N/A	N/A	N/A
Heptachlor	8.0E-05	0.0001	0.001	0.00250	0.00233	0.00341	0.00723
Heptachlor Epoxide	0.00029	0.00029	0.0029	0.00725	0.00674	0.00991	0.0209
Hexachlorobenzene	0.00068	0.00068	0.0068	0.0170	0.0158	0.0232	0.0491
Hexachlorobutadiene	0.21	0.22	2.2	5.50	5.12	7.51	15.9
Hexachlorocyclohexane (*alpha*)	0.0078	0.0084	0.084	0.210	0.195	0.287	0.607
Hexachlorocyclohexane (*beta*)	0.15	0.26	2.6	6.50	6.05	8.88	18.7
Hexachlorocyclohexane (*gamma*) [Lindane]	0.2	0.341	3.41	8.53	7.93	11.6	24.6
Hexachlorocyclopentadiene	10.7	11.6	116	290	270	396	838
Hexachloroethane	1.84	2.33	23.3	58.3	54.2	79.6	168
Hexachlorophene	2.05	2.90	29	72.5	67.4	99.1	209
4,4'-Isopropylidenediphenol [Bisphenol A]	1092	15982	159820	399550	371582	546224	1155618
Lead	1.15	3.83	38.3	815	758	1114	2358
Mercury	0.0122	0.0122	0.122	0.305	0.284	0.416	0.882
Methoxychlor	2.92	3.0	30	75.0	69.8	102	216
Methyl Ethyl Ketone	13865	9.92E+05	9.92E+06	248000 00	230640 000	339040 80	717290 40
Methyl *tert*-butyl ether [MTBE]	15	10482	104820	262050	243707	358248	757927
Nickel	332	1140	11400	149792	139307	204781	433244
Nitrate-Nitrogen (as Total Nitrogen)	10000	N/A	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	45.7	1873	18730	46825	43547	64014	135431
N-Nitrosodiethylamine	0.0037	2.1	21	52.5	48.8	71.7	151
N-Nitroso-di-*n*-Butylamine	0.119	4.2	42	105	97.7	143	303
Pentachlorobenzene	0.348	0.355	3.55	8.88	8.25	12.1	25.6
Pentachlorophenol	0.22	0.29	2.9	7.25	6.74	9.91	20.9
Polychlorinated Biphenyls [PCBs]	6.4E-04	6.4E-04	6.40E-03	0.0160	0.0149	0.0218	0.0462
Pyridine	23	947	9470	23675	22018	32366	68475
Selenium	50	N/A	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.23	0.24	2.4	6.00	5.58	8.20	17.3
1,1,2,2-Tetrachloroethane	1.64	26.35	263.5	659	613	900	1905
Tetrachloroethylene [Tetrachloroethylene]	5	280	2800	7000	6510	9569	20246
Thallium	0.12	0.23	2.3	5.75	5.35	7.86	16.6
Toluene	1000	N/A	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.011	0.011	0.11	0.275	0.256	0.375	0.795
2,4,5-TP [Silvex]	50	369	3690	9225	8579	12611	26681
1,1,1-Trichloroethane	200	784354	7843540	196088 50	182362 31	268072 58	567146 76

1,1,2-Trichloroethane	5	166	1660	4150	3860	5673	12003
Trichloroethylene [Trichloroethene]	5	71.9	719	1798	1672	2457	5198
2,4,5-Trichlorophenol	1039	1867	18670	46675	43408	63809	134998
TTHM [Sum of Total Trihalomethanes]	80	N/A	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	0.23	16.5	165	413	384	563	1193

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
Aldrin	6.58	7.99
Aluminum	2175	2641
Arsenic	1501	1823
Cadmium	#VALUE!	#VALUE!
Carbaryl	4.39	5.33
Chlordane	0.0627	0.0762
Chlorpyrifos	0.182	0.221
Chromium (trivalent)	#VALUE!	#VALUE!
Chromium (hexavalent)	34.4	41.8
Copper	#VALUE!	#VALUE!
Cyanide (free)	100	122
4,4'-DDT	0.0156	0.0190
Demeton	1.56	1.90
Diazinon	0.373	0.453
Dicofol [Kelthane]	130	158
Dieldrin	0.0313	0.0381
Diuron	460	559
Endosulfan I (*alpha*)	0.482	0.586
Endosulfan II (*beta*)	0.482	0.586
Endosulfan sulfate	0.482	0.586
Endrin	0.0313	0.0381
Guthion [Azinphos Methyl]	0.156	0.190
Heptachlor	0.0627	0.0762
Hexachlorocyclohexane (*gamma*) [Lindane]	1.25	1.52
Lead	#VALUE!	#VALUE!
Malathion	0.156	0.190
Mercury	5.26	6.39
Methoxychlor	0.470	0.571
Mirex	0.0156	0.0190
Nickel	#VALUE!	#VALUE!
Nonylphenol	61.4	74.6
Parathion (ethyl)	0.142	0.173
Pentachlorophenol	34.9	42.4
Phenanthrene	65.8	79.9
Polychlorinated Biphenyls [PCBs]	0.219	0.266
Selenium	43.9	53.3
Silver	62.7	76.1
Toxaphene	0.00313	0.00381
Tributyltin [TBT]	0.285	0.346
2,4,5 Trichlorophenol	298	362
Zinc	#VALUE!	#VALUE!

Human Health *Parameter*	*70% of Daily Avg.* *(µg/L)*	*85% of Daily Avg.* *(µg/L)*
Acrylonitrile	2751	3340
Aldrin	0.000274	0.000333
Anthracene	31508	38260
Antimony	25622	31113
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	13899	16878
Benzidine	2.55	3.10
Benzo(*a*)anthracene	0.598	0.726
Benzo(*a*)pyrene	0.0598	0.0726
Bis(chloromethyl)ether	6.56	7.97
Bis(2-chloroethyl)ether	1024	1244
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	180	219
Bromodichloromethane [Dichlorobromomethane]	6579	7988
Bromoform [Tribromomethane]	25359	30793
Cadmium	N/A	N/A
Carbon Tetrachloride	1100	1336
Chlordane	0.0598	0.0726
Chlorobenzene	65480	79512
Chlorodibromomethane [Dibromochloromethane]	4378	5316
Chloroform [Trichloromethane]	184144	223604
Chromium (hexavalent)	12009	14583
Chrysene	60.2	73.2
Cresols [Methylphenols]	222519	270202
Cyanide (free)	N/A	N/A
4,4'-DDD	0.0478	0.0581
4,4'-DDE	0.00311	0.00377
4,4'-DDT	0.00956	0.0116
2,4'-D	N/A	N/A
Danitol [Fenpropathrin]	11316	13741
1,2-Dibromoethane [Ethylene Dibromide]	101	123
m-Dichlorobenzene [1,3-Dichlorobenzene]	14234	17285
o-Dichlorobenzene [1,2-Dichlorobenzene]	78926	95838
p-Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A
3,3'-Dichlorobenzidine	53.5	65.0
1,2-Dichloroethane	8708	10574
1,1-Dichloroethylene [1,1-Dichloroethene]	1318561	1601109
Dichloromethane [Methylene Chloride]	318982	387335
1,2-Dichloropropane	6196	7524
1,3-Dichloropropene [1,3-Dichloropropylene]	2846	3457
Dicofol [Kelthane]	7.17	8.71

Dieldrin	0.00047 8	0.00058 1
2,4-Dimethylphenol	201824	245073
Di-*n*-Butyl Phthalate	2210	2684
Dioxins/Furans [TCDD Equivalents]	0.00000 19	0.00000 23
Endrin	0.478	0.581
Epichlorohydrin	48159	58479
Ethylbenzene	44666	54237
Ethylene Glycol	4019274 00	4880547 00
Fluoride	N/A	N/A
Heptachlor	0.00239	0.00290
Heptachlor Epoxide	0.00693	0.00842
Hexachlorobenzene	0.0162	0.0197
Hexachlorobutadiene	5.26	6.39
Hexachlorocyclohexane (*alpha*)	0.200	0.244
Hexachlorocyclohexane (*beta*)	6.22	7.55
Hexachlorocyclohexane (*gamma*) [Lindane]	8.15	9.90
Hexachlorocyclopentadiene	277	336
Hexachloroethane	55.7	67.6
Hexachlorophene	69.3	84.2
4,4'-Isopropylidenediphenol [Bisphenol A]	382357	464291
Lead	780	947
Mercury	0.291	0.354
Methoxychlor	71.7	87.1
Methyl Ethyl Ketone	2373285 6	2881846 8
Methyl *tert*-butyl ether [MTBE]	250773	304511
Nickel	143346	174064
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	44810	54412
N-Nitrosodiethylamine	50.2	61.0
N-Nitroso-di-*n*-Butylamine	100	122
Pentachlorobenzene	8.49	10.3
Pentachlorophenol	6.93	8.42
Polychlorinated Biphenyls [PCBs]	0.0153	0.0185
Pyridine	22656	27511
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	5.74	6.97
1,1,2,2-Tetrachloroethane	630	765
Tetrachloroethylene [Tetrachloroethylene]	6698	8134
Thallium	5.50	6.68
Toluene	N/A	N/A
Toxaphene	0.263	0.319
2,4,5-TP [Silvex]	8828	10719
1,1,1-Trichloroethane	1876508 1	2278617 0
1,1,2-Trichloroethane	3971	4822
Trichloroethylene [Trichloroethene]	1720	2088
2,4,5-Trichlorophenol	44666	54237
TTHM [Sum of Total Trihalomethanes]	N/A	N/A
Vinyl Chloride	394	479

Attachment B2: Calculated Water Quality Based Effluent Limitations

TEXTOX MENU #4 - LAKE OR RESERVOIR

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Freshwater Aquatic Life
Table 2, 2018 Texas Surface Water Quality Standards for Human Health
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	City of Abilene
TPDES Permit No:	WQ0010334004
Outfall No:	003
Prepared by:	Sonia Bhuiya
Date:	June 23, 2024

DISCHARGE INFORMATION

Receiving Waterbody:	Fort Phantom Hill Reservoir
Segment No.:	1236
TSS (mg/L):	5
pH (Standard Units):	8
Hardness (mg/L as $CaCO_3$):	203
Chloride (mg/L):	94
Effluent Flow for Aquatic Life (MGD):	7
% Effluent for Chronic Aquatic Life (Mixing Zone):	15
% Effluent for Acute Aquatic Life (ZID):	60
Effluent Flow for Human Health (MGD):	7
% Effluent for Human Health:	8
Human Health Criterion (select: PWS, FISH, or INC)	**PWS**

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Lake/Reservoir Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	*Source*
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	5.68	-0.73	########	0.544		1.00	Assumed
Cadmium	6.55	-0.92	########	0.193		1.00	Assumed
Chromium (total)	6.34	-0.27	########	0.091		1.00	Assumed
Chromium (trivalent)	6.34	-0.27	########	0.091		1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	6.45	-0.90	########	0.224		1.00	Assumed
Lead	6.31	-0.53	########	0.156		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	6.34	-0.76	########	0.217		1.00	Assumed

Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	6.38	-1.03	########	0.307		1.00	Assumed
Zinc	6.52	-0.68	########	0.134		1.00	Assumed

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*FW Acute Criterion (µg/L)*	*FW Chronic Criterion (µg/L)*	*WLAa (µg/L)*	*WLAc (µg/L)*	*LTAa (µg/L)*	*LTAc (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Aldrin	3.0	N/A	5.00	N/A	1.60	N/A	2.35	4.97
Aluminum	991	N/A	1652	N/A	529	N/A	776	1643
Arsenic	340	150	1042	1839	333	1122	490	1037
Cadmium	17.07	0.402	148	13.9	47.3	8.49	12.4	26.3
Carbaryl	2.0	N/A	3.33	N/A	1.07	N/A	1.56	3.31
Chlordane	2.4	0.004	4.00	0.0267	1.28	0.0163	0.0239	0.0505
Chlorpyrifos	0.083	0.041	0.138	0.273	0.0443	0.167	0.0650	0.137
Chromium (trivalent)	1017	132.4	18625	9691	5960	5911	8689	18384
Chromium (hexavalent)	15.7	10.6	26.2	70.7	8.37	43.1	12.3	26.0
Copper	27.67	17.34	206	517	66.0	315	96.9	205
Cyanide (free)	45.8	10.7	76.3	71.3	24.4	43.5	35.9	75.9
4,4'-DDT	1.1	0.001	1.83	0.00667	0.587	0.00407	0.00597	0.0126
Demeton	N/A	0.1	N/A	0.667	N/A	0.407	0.597	1.26
Diazinon	0.17	0.17	0.283	1.13	0.0907	0.691	0.133	0.281
Dicofol [Kelthane]	59.3	19.8	98.8	132	31.6	80.5	46.4	98.3
Dieldrin	0.24	0.002	0.400	0.0133	0.128	0.00813	0.0119	0.0252
Diuron	210	70	350	467	112	285	164	348
Endosulfan I (*alpha*)	0.22	0.056	0.367	0.373	0.117	0.228	0.172	0.364
Endosulfan II (*beta*)	0.22	0.056	0.367	0.373	0.117	0.228	0.172	0.364
Endosulfan sulfate	0.22	0.056	0.367	0.373	0.117	0.228	0.172	0.364
Endrin	0.086	0.002	0.143	0.0133	0.0459	0.00813	0.0119	0.0252
Guthion [Azinphos Methyl]	N/A	0.01	N/A	0.0667	N/A	0.0407	0.0597	0.126
Heptachlor	0.52	0.004	0.867	0.0267	0.277	0.0163	0.0239	0.0505
Hexachlorocyclohexane (*gamma*) [Lindane]	1.126	0.08	1.88	0.533	0.601	0.325	0.478	1.01
Lead	138.3	5.39	1481	231	474	141	207	438
Malathion	N/A	0.01	N/A	0.0667	N/A	0.0407	0.0597	0.126
Mercury	2.4	1.3	4.00	8.67	1.28	5.29	1.88	3.98
Methoxychlor	N/A	0.03	N/A	0.200	N/A	0.122	0.179	0.379
Mirex	N/A	0.001	N/A	0.00667	N/A	0.00407	0.00597	0.0126
Nickel	852	94.7	6540	2905	2093	1772	2605	5511
Nonylphenol	28	6.6	46.7	44.0	14.9	26.8	21.9	46.4
Parathion (ethyl)	0.065	0.013	0.108	0.0867	0.0347	0.0529	0.0509	0.107
Pentachlorophenol	23.8	18.28	39.7	122	12.7	74.4	18.6	39.5
Phenanthrene	30	30	50.0	200	16.0	122	23.5	49.7
Polychlorinated Biphenyls [PCBs]	2.0	0.014	3.33	0.0933	1.07	0.0569	0.0836	0.177
Selenium	20	5	33.3	33.3	10.7	20.3	15.6	33.1
Silver	0.8	N/A	34.0	N/A	10.9	N/A	15.9	33.8

Toxaphene	0.78	0.0002	1.30	0.00133	0.416	0.00081 3	0.00119	0.002 52
Tributyltin [TBT]	0.13	0.024	0.217	0.160	0.0693	0.0976	0.101	0.215
2,4,5 Trichlorophenol	136	64	227	427	72.5	260	106	225
Zinc	213.5	215.2	2648	10678	847	6514	1245	2635

HUMAN HEALTH

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*Water and Fish Criterion (µg/L)*	*Fish Only Criterion (µg/L)*	*Incidental Fish Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Acrylonitrile	1.0	115	1150	12.5	11.6	17.0	36.1
Aldrin	1.146E-05	########	########	0.00014 3	0.00013 3	0.00019 5	0.00041 4
Anthracene	1109	1317	13170	13863	12892	18951	40094
Antimony	6	1071	10710	75.0	69.8	102	216
Arsenic	10	N/A	N/A	230	214	314	664
Barium	2000	N/A	N/A	25000	23250	34177	72307
Benzene	5	581	5810	62.5	58.1	85.4	180
Benzidine	0.0015	0.107	1.07	0.0188	0.0174	0.0256	0.0542
Benzo(*a*)anthracene	0.024	0.025	0.25	0.300	0.279	0.410	0.867
Benzo(*a*)pyrene	0.0025	0.0025	0.025	0.0313	0.0291	0.0427	0.0903
Bis(chloromethyl)ether	0.0024	0.2745	2.745	0.0300	0.0279	0.0410	0.0867
Bis(2-chloroethyl)ether	0.60	42.83	428.3	7.50	6.98	10.2	21.6
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	6	7.55	75.5	75.0	69.8	102	216
Bromodichloromethane [Dichlorobromomethane]	10.2	275	2750	128	119	174	368
Bromoform [Tribromomethane]	66.9	1060	10600	836	778	1143	2418
Cadmium	5	N/A	N/A	324	302	443	938
Carbon Tetrachloride	4.5	46	460	56.3	52.3	76.8	162
Chlordane	0.0025	0.0025	0.025	0.0313	0.0291	0.0427	0.0903
Chlorobenzene	100	2737	27370	1250	1163	1708	3615
Chlorodibromomethane [Dibromochloromethane]	7.5	183	1830	93.8	87.2	128	271
Chloroform [Trichloromethane]	70	7697	76970	875	814	1196	2530
Chromium (hexavalent)	62	502	5020	775	721	1059	2241
Chrysene	2.45	2.52	25.2	30.6	28.5	41.8	88.5
Cresols [Methylphenols]	1041	9301	93010	13013	12102	17789	37636
Cyanide (free)	200	N/A	N/A	2500	2325	3417	7230
4,4'-DDD	0.002	0.002	0.02	0.0250	0.0233	0.0341	0.0723
4,4'-DDE	0.0001 3	0.00013	0.0013	0.00163	0.00151	0.00222	0.00469
4,4'-DDT	0.0004	0.0004	0.004	0.00500	0.00465	0.00683	0.0144
2,4'-D	70	N/A	N/A	875	814	1196	2530
Danitol [Fenpropathrin]	262	473	4730	3275	3046	4477	9472
1,2-Dibromoethane [Ethylene Dibromide]	0.17	4.24	42.4	2.13	1.98	2.90	6.14
m-Dichlorobenzene [1,3-Dichlorobenzene]	322	595	5950	4025	3743	5502	11641
o-Dichlorobenzene [1,2-Dichlorobenzene]	600	3299	32990	7500	6975	10253	21692
p-Dichlorobenzene [1,4-Dichlorobenzene]	75	N/A	N/A	938	872	1281	2711
3,3'-Dichlorobenzidine	0.79	2.24	22.4	9.88	9.18	13.5	28.5

1,2-Dichloroethane	5	364	3640	62.5	58.1	85.4	180
1,1-Dichloroethylene [1,1-Dichloroethene]	7	55114	551140	87.5	81.4	119	253
Dichloromethane [Methylene Chloride]	5	13333	133330	62.5	58.1	85.4	180
1,2-Dichloropropane	5	259	2590	62.5	58.1	85.4	180
1,3-Dichloropropene [1,3-Dichloropropylene]	2.8	119	1190	35.0	32.6	47.8	101
Dicofol [Kelthane]	0.30	0.30	3	3.75	3.49	5.12	10.8
Dieldrin	2.0E-05	2.0E-05	2.0E-04	0.000250	0.000233	0.00034 1	0.00072 3
2,4-Dimethylphenol	444	8436	84360	5550	5162	7587	16052
Di-*n*-Butyl Phthalate	88.9	92.4	924	1111	1033	1519	3214
Dioxins/Furans [TCDD Equivalents]	7.80E-08	7.97E-08	7.97E-07	9.75E-07	9.07E-07	0.00000 13	0.00000 28
Endrin	0.02	0.02	0.2	0.250	0.233	0.341	0.723
Epichlorohydrin	53.5	2013	20130	669	622	914	1934
Ethylbenzene	700	1867	18670	8750	8138	11962	25307
Ethylene Glycol	46744	1.68E+07	1.68E+08	584300	543399	798796	1689970
Fluoride	4000	N/A	N/A	50000	46500	68355	144615
Heptachlor	8.0E-05	0.0001	0.001	0.00100	0.000930	0.00136	0.00289
Heptachlor Epoxide	0.0002 9	0.00029	0.0029	0.00363	0.00337	0.00495	0.0104
Hexachlorobenzene	0.0006 8	0.00068	0.0068	0.00850	0.00791	0.0116	0.0245
Hexachlorobutadiene	0.21	0.22	2.2	2.63	2.44	3.58	7.59
Hexachlorocyclohexane (*alpha*)	0.0078	0.0084	0.084	0.0975	0.0907	0.133	0.281
Hexachlorocyclohexane (*beta*)	0.15	0.26	2.6	1.88	1.74	2.56	5.42
Hexachlorocyclohexane (*gamma*) [Lindane]	0.2	0.341	3.41	2.50	2.33	3.41	7.23
Hexachlorocyclopentadiene	10.7	11.6	116	134	124	182	386
Hexachloroethane	1.84	2.33	23.3	23.0	21.4	31.4	66.5
Hexachlorophene	2.05	2.90	29	25.6	23.8	35.0	74.1
4,4'-Isopropylidenediphenol [Bisphenol A]	1092	15982	159820	13650	12695	18660	39479
Lead	1.15	3.83	38.3	92.4	85.9	126	267
Mercury	0.0122	0.0122	0.122	0.153	0.142	0.208	0.441
Methoxychlor	2.92	3.0	30	36.5	33.9	49.8	105
Methyl Ethyl Ketone	13865	9.92E+05	9.92E+06	173313	161181	236935	501271
Methyl *tert*-butyl ether [MTBE]	15	10482	104820	188	174	256	542
Nickel	332	1140	11400	19105	17768	26118	55257
Nitrate-Nitrogen (as Total Nitrogen)	10000	N/A	N/A	125000	116250	170887	361537
Nitrobenzene	45.7	1873	18730	571	531	780	1652
N-Nitrosodiethylamine	0.0037	2.1	21	0.0463	0.0430	0.0632	0.133
N-Nitroso-di-*n*-Butylamine	0.119	4.2	42	1.49	1.38	2.03	4.30
Pentachlorobenzene	0.348	0.355	3.55	4.35	4.05	5.94	12.5
Pentachlorophenol	0.22	0.29	2.9	2.75	2.56	3.75	7.95
Polychlorinated Biphenyls [PCBs]	6.4E-04	6.4E-04	6.40E-03	0.00800	0.00744	0.0109	0.0231
Pyridine	23	947	9470	288	267	393	831
Selenium	50	N/A	N/A	625	581	854	1807
1,2,4,5-Tetrachlorobenzene	0.23	0.24	2.4	2.88	2.67	3.93	8.31
1,1,2,2-Tetrachloroethane	1.64	26.35	263.5	20.5	19.1	28.0	59.2
Tetrachloroethylene [Tetrachloroethylene]	5	280	2800	62.5	58.1	85.4	180
Thallium	0.12	0.23	2.3	1.50	1.40	2.05	4.33
Toluene	1000	N/A	N/A	12500	11625	17088	36153
Toxaphene	0.011	0.011	0.11	0.138	0.128	0.187	0.397

2,4,5-TP [Silvex]	50	369	3690	625	581	854	1807
1,1,1-Trichloroethane	200	784354	7843540	2500	2325	3417	7230
1,1,2-Trichloroethane	5	166	1660	62.5	58.1	85.4	180
Trichloroethylene [Trichloroethene]	5	71.9	719	62.5	58.1	85.4	180
2,4,5-Trichlorophenol	1039	1867	18670	12988	12078	17755	37563
TTHM [Sum of Total Trihalomethanes]	80	N/A	N/A	1000	930	1367	2892
Vinyl Chloride	0.23	16.5	165	2.88	2.67	3.93	8.31

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
Aldrin	1.64	1.99
Aluminum	543	660
Arsenic	343	416
Cadmium	8.73	10.6
Carbaryl	1.09	1.33
Chlordane	0.0167	0.0203
Chlorpyrifos	0.0455	0.0553
Chromium (trivalent)	6082	7386
Chromium (hexavalent)	8.61	10.4
Copper	67.8	82.4
Cyanide (free)	25.1	30.5
4,4'-DDT	0.00418	0.00508
Demeton	0.418	0.508
Diazinon	0.0932	0.113
Dicofol [Kelthane]	32.5	39.5
Dieldrin	0.00836	0.0101
Diuron	115	139
Endosulfan I (*alpha*)	0.120	0.146
Endosulfan II (*beta*)	0.120	0.146
Endosulfan sulfate	0.120	0.146
Endrin	0.00836	0.0101
Guthion [Azinphos Methyl]	0.0418	0.0508
Heptachlor	0.0167	0.0203
Hexachlorocyclohexane (*gamma*) [Lindane]	0.334	0.406
Lead	144	175
Malathion	0.0418	0.0508
Mercury	1.31	1.59
Methoxychlor	0.125	0.152
Mirex	0.00418	0.00508
Nickel	1823	2214
Nonylphenol	15.3	18.6
Parathion (ethyl)	0.0356	0.0433
Pentachlorophenol	13.0	15.8
Phenanthrene	16.4	19.9
Polychlorinated Biphenyls [PCBs]	0.0585	0.0711
Selenium	10.9	13.3
Silver	11.1	13.5

Toxaphene	0.000836	0.00101
Tributyltin [TBT]	0.0713	0.0866
2,4,5 Trichlorophenol	74.6	90.6
Zinc	871	1058

Human Health ***Parameter***	***70% of Daily Avg. (µg/L)***	***85% of Daily Avg. (µg/L)***
Acrylonitrile	11.9	14.5
Aldrin	0.000137	0.000166
Anthracene	13265	16108
Antimony	71.7	87.1
Arsenic	220	267
Barium	23924	29050
Benzene	59.8	72.6
Benzidine	0.0179	0.0217
Benzo(*a*)anthracene	0.287	0.348
Benzo(*a*)pyrene	0.0299	0.0363
Bis(chloromethyl)ether	0.0287	0.0348
Bis(2-chloroethyl)ether	7.17	8.71
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	71.7	87.1
Bromodichloromethane [Dichlorobromomethane]	122	148
Bromoform [Tribromomethane]	800	971
Cadmium	310	376
Carbon Tetrachloride	53.8	65.3
Chlordane	0.0299	0.0363
Chlorobenzene	1196	1452
Chlorodibromomethane [Dibromochloromethane]	89.7	108
Chloroform [Trichloromethane]	837	1016
Chromium (hexavalent)	741	900
Chrysene	29.3	35.5
Cresols [Methylphenols]	12452	15120
Cyanide (free)	2392	2905
4,4'-DDD	0.0239	0.0290
4,4'-DDE	0.00155	0.00188
4,4'-DDT	0.00478	0.00581
2,4'-D	837	1016
Danitol [Fenpropathrin]	3134	3805
1,2-Dibromoethane [Ethylene Dibromide]	2.03	2.46
m-Dichlorobenzene [1,3-Dichlorobenzene]	3851	4677
o-Dichlorobenzene [1,2-Dichlorobenzene]	7177	8715
p-Dichlorobenzene [1,4-Dichlorobenzene]	897	1089
3,3'-Dichlorobenzidine	9.45	11.4
1,2-Dichloroethane	59.8	72.6
1,1-Dichloroethylene [1,1-Dichloroethene]	83.7	101

Dichloromethane [Methylene Chloride]	59.8	72.6
1,2-Dichloropropane	59.8	72.6
1,3-Dichloropropene [1,3-Dichloropropylene]	33.4	40.6
Dicofol [Kelthane]	3.58	4.35
Dieldrin	0.000239	0.000290
2,4-Dimethylphenol	5311	6449
Di-*n*-Butyl Phthalate	1063	1291
Dioxins/Furans [TCDD Equivalents]	9.33E-07	0.0000011
Endrin	0.239	0.290
Epichlorohydrin	639	777
Ethylbenzene	8373	10167
Ethylene Glycol	559157	678977
Fluoride	47848	58101
Heptachlor	0.000956	0.00116
Heptachlor Epoxide	0.00346	0.00421
Hexachlorobenzene	0.00813	0.00987
Hexachlorobutadiene	2.51	3.05
Hexachlorocyclohexane (*alpha*)	0.0933	0.113
Hexachlorocyclohexane (*beta*)	1.79	2.17
Hexachlorocyclohexane (*gamma*) [Lindane]	2.39	2.90
Hexachlorocyclopentadiene	127	155
Hexachloroethane	22.0	26.7
Hexachlorophene	24.5	29.7
4,4'-Isopropylidenediphenol [Bisphenol A]	13062	15861
Lead	88.3	107
Mercury	0.145	0.177
Methoxychlor	34.9	42.4
Methyl Ethyl Ketone	165854	201395
Methyl *tert*-butyl ether [MTBE]	179	217
Nickel	18283	22200
Nitrate-Nitrogen (as Total Nitrogen)	119621	145254
Nitrobenzene	546	663
N-Nitrosodiethylamine	0.0442	0.0537
N-Nitroso-di-*n*-Butylamine	1.42	1.72
Pentachlorobenzene	4.16	5.05
Pentachlorophenol	2.63	3.19
Polychlorinated Biphenyls [PCBs]	0.00765	0.00929
Pyridine	275	334
Selenium	598	726
1,2,4,5-Tetrachlorobenzene	2.75	3.34
1,1,2,2-Tetrachloroethane	19.6	23.8
Tetrachloroethylene [Tetrachloroethylene]	59.8	72.6
Thallium	1.43	1.74
Toluene	11962	14525
Toxaphene	0.131	0.159
2,4,5-TP [Silvex]	598	726
1,1,1-Trichloroethane	2392	2905

1,1,2-Trichloroethane	59.8	72.6
Trichloroethylene [Trichloroethene]	59.8	72.6
2,4,5-Trichlorophenol	12428	15091
TTHM [Sum of Total Trihalomethanes]	956	1162
Vinyl Chloride	2.75	3.34