VEI Consulting Engineers
Main Office & Print Services:
507 E. Highway Street, Suite D • Fredericksburg, TX 78624
Tel (830) 997-4744 • https://vei-tx.com
Texas • Oklahoma • Louisiana • New Mexico • Colorado • Arkansas

T R A N S M I T T A L

Sent Via:	UPS	FedEx	US Mail	Picked Up	Hand Del'd	Email	FTP

To: TCEQ - San Antonio Regional Office
Job No.: 22023

Attn: Mr. Joshua Vacek
Date: 9/20/2023

14250 Judson Road
Email: josh.vacek@tceq.texas.gov

San Antonio, TX 78233-4480
Tel: 210-403-4028

N O T E S

WATER POLLUTION ABATEMENT PLAN for

360 COMAL STORAGE

276 Purgatory Road
New Braunfels, Comal County, Texas

Details of Transmittal (no. of pages, size, etc.)

An electronic file uploaded to TCEQ's FTP site on 09/20/2023:

22023_360COMALSTRG_WPAP SBMTL_09-11-2023.pdf

This Transmittal is...
(ck all that apply)

- ☐ Reimbursable by VEI client
- ☑ Not Reimbursable
- ☐ Info Only (no reply expected)
- ☑ For Review & Reply

Sent by Kevin Spraggins /gw

Received By _____

VEI Consulting Engineers
Main Office & Print Services:
507 E. Highway Street, Suite D • Fredericksburg, TX 78624
Tel (830) 997-4744 • https://vei-tx.com
Texas • Oklahoma • Louisiana • New Mexico • Colorado • Arkansas

T R A N S M I T T A L

Sent Via:	UPS	FedEx	US Mail	Picked Up	Hand Del'd	Email	FTP

To: 360 Comal Storage LLC
Job No.: 22023

Attn: Neil Francois
Date: 9/20/2023

12600 Hill Coiuntry Blvd., Ste. R-275
Email: neil@360captx.com

Bee Cave, TX 78738
Tel: 512-947-7966

N O T E S

WATER POLLUTION ABATEMENT PLAN for

360 COMAL STORAGE

276 Purgatory Road
New Braunfels, Comal County, Texas

Included are:
1 - Paper copy of the WPAP
1 - thumbdrive containing an electronic version of the WPAP

Details of Transmittal (no. of pages, size, etc.)

ONE (1), 3-ring binders, each containing:
- 288 - 8.5x11 pages
- 18 - 11x17 pages
- 1 - 24x29 page
- 14 - 24x36 pages

ONE (1) Thumbdrive with electronic copy of submittal

This Transmittal is...
(ck all that apply)

- [x] Reimbursable by VEI client
- [ ] Not Reimbursable
- [x] Info Only (no reply expected)
- [ ] For Review & Reply

Sent by Kevin Spraggins /gw

Received By _____

Water Pollution Abatement Plan

360 COMAL COMMERCIAL

276 PURGATORY ROAD • NEW BRAUNFELS
COMAL COUNTY, TEXAS

September 11, 2023

VEI Consulting Engineers
Graylaur Corporation Inc. d/b/a

507 E. Highway Street, Suite D ♦ Fredericksburg, TX 78624
T (830) 997-4744 ♦ F (830) 997-6967 ♦ http://vei-tx.com

Texas ♦ Arkansas ♦ Oklahoma ♦ Colorado ♦ Louisiana ♦ New Mexico

VEI Consulting Engineers
Graylaur Corporation Inc. d/b/a
507 E. Highway Street, Suite D ♦ Fredericksburg, TX 78624
Tel 830 997-4744 ♦ http://vei-tx.com
Texas (Firm F-165) ♦ Arkansas ♦ Oklahoma ♦ Colorado ♦ Louisiana ♦ New Mexico

September 11, 2023

TCEQ – San Antonio Regional Office
14250 Judson Road
San Antonio, TX 78233-4480

Re: Water Pollution Abatement Plan for 360 Comal Storage at 276 Purgatory Road, New Braunfels, Comal County, Texas (Engineer's No. 22023)

Dear Reviewer,

Our client, 360 Comal Storage LLC, is building 360 Comal Storage on a ±45.0-acre tract located in the east-southeast corner of F.M. 306 and Purgatory Road, New Braunfels, Comal County, Texas. This facility will contain R.V. and boat storage buildings with a rental office. This tract is fully within the Edwards Aquifer Recharge Zone.

VEI is requesting TCEQ's review of the enclosed Water Pollution Abatement Plan (WPAP) supporting this development. VEI's review of the client's requirements, applicable state and county rules and guidelines, and the site's stormwater control design can be found in the following exhibits.

PART 1: **TCEQ FORMS & INFORMATION**	• Cover Page • General information • Geologic Assessment Form • WPAP Application • Temporary Stormwater Section • Permanent Stormwater Section • Agent Authorization Form • Application Fee Form • Core Data Form
PART 2: **THIRD PARTY MAPS & REPORTS**	• Geotechnical Report • SWPPP Report • Third-party maps to help describe the site.
PART 3: **CONSTRUCTION DRAWINGS**	Construction drawings of the site's civil design improvements.

Should you have any questions or comments, please do not hesitate to contact me at the information at the top of this letter or at kspraggins@vei-tx.com.

Sincerely,

Kevin W. Spraggins, P.E.
President, VEI
Texas Registered Engineering Firm No. F-165

Water Pollution Abatement Plan

for

360 Comal Storage

276 Purgatory Rd., New Braunfels, Comal County, Texas

Prepared September 11, 2023, for

Texas Commission on Environmental Quality
San Antonio Regional Office

14250 Judson Road
San Antonio, TX 78233-4480
Tel (210) 480-3096 • eaadmin@tceq.texas.gov

"THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRAGGINS, P.E. 84823 ON 09/11/2023"

Texas Firm No. F-165

Prepared by:

VEI CONSULTING ENGINEERS

Texas · Oklahoma · Colorado · Arkansas · Louisiana · New Mexico

507 E. Highway Street, Suite D • Fredericksburg, TX 78624
Tel (830) 997-4744 • www.vei-tx.com

VEI No. 22023

CONTENTS

*Table of Contents is "clickable" in the *.pdf version.*

PART 1. TCEQ WPAP FORMS & INFORMATION

1.1. EDWARD'S AQUIFER APPLICATION COVER PAGE (TCEQ-20705)

1.2. GENERAL INFORMATION (TCEQ-0587)

1.3. GEOLOGIC ASSESSMENT FORM (TCEQ-0585)

1.4. WATER POLLUTION ABATEMENT PLAN APPLICATION FORM & CHECKLIST (TCEQ-0584)

1.5. TEMPORARY STORMWATER SECTION (TCEQ-0602)

1.6. PERMANENT STORMWATER SECTION (TCEQ-0600)

1.7. AGENT AUTHORIZATION FORM (TCEQ-0599)

1.8. APPLICATION FEE FORM (TCEQ-0574)

1.9. CORE DATA FORM (TCEQ-10400)

1.1. COVER PAGE

- TCEQ EDWARD'S AQUIFER APPLICATION COVER PAGE (FORM-20705, Rev. 02/17/2017)

Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

The Edwards Aquifer Program staff conducts an administrative and technical review of all applications. The turnaround time for administrative review can be up to 30 days as outlined in 30 TAC 213.4(e). Generally administrative completeness is determined during the intake meeting or within a few days of receipt. The turnaround time for technical review of an administratively complete Edwards Aquifer application is 90 days as outlined in 30 TAC 213.4(e). Please know that the review and approval time is directly impacted by the quality and completeness of the initial application that is received. In order to conduct a timely review, it is imperative that the information provided in an Edwards Aquifer application include final plans, be accurate, complete, and in compliance with 30 TAC 213.

Administrative Review

1. Edwards Aquifer applications must be deemed administratively complete before a technical review can begin. To be considered administratively complete, the application must contain completed forms and attachments, provide the requested information, and meet all the site plan requirements. The submitted application and plan sheets should be final plans. Please submit one full-size set of plan sheets with the original application, and half-size sets with the additional copies.

   To ensure that all applicable documents are included in the application, the program has developed tools to guide you and web pages to provide all forms, checklists, and guidance. Please visit the below website for assistance: http://www.tceq.texas.gov/field/eapp.

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.

3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.

4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

   An appointment should be made to resubmit the application. The application is re-examined to ensure all deficiencies are resolved. The application will only be deemed administratively complete when all administrative deficiencies are addressed.

5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be conducted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is found to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.

6. If the geologic assessment was completed before October 1, 2004 and the site contains “possibly sensitive” features, the assessment must be updated in accordance with the *Instructions to Geologists* (TCEQ-0585 Instructions).

Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.

2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be clearly marked, features identified in the geologic assessment should be flagged, roadways marked and the

alignment of the Sewage Collection System and manholes should be staked at the time the application is submitted. If the site is not marked the application may be returned.

3. We evaluate the application for technical completeness and contact the applicant and agent via Notice of Deficiency (NOD) to request additional information and identify technical deficiencies. There are two deficiency response periods available to the applicant. There are 14 days to resolve deficiencies noted in the first NOD. If a second NOD is issued, there is an additional 14 days to resolve deficiencies. If the response to the second notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, the application must be withdrawn or will be denied. Please note that because the technical review is underway, whether the application is withdrawn or denied **the application fee will be forfeited**.
4. The program has 90 calendar days to complete the technical review of the application. If the application is technically adequate, such that it complies with the Edwards Aquifer rules, and is protective of the Edwards Aquifer during and after construction, an approval letter will be issued. Construction or other regulated activity may not begin until an approval is issued.

Mid-Review Modifications

It is important to have final site plans prior to beginning the permitting process with TCEQ to avoid delays.

Occasionally, circumstances arise where you may have significant design and/or site plan changes after your Edwards Aquifer application has been deemed administratively complete by TCEQ. This is considered a "Mid-Review Modification". Mid-Review Modifications may require redistribution of an application that includes the proposed modifications for public comment.

If you are proposing a Mid-Review Modification, two options are available:

- If the technical review has begun your application can be denied/withdrawn, your fees will be forfeited, and the plan will have to be resubmitted.
- TCEQ can continue the technical review of the application as it was submitted, and a modification application can be submitted at a later time.

If the application is denied/withdrawn, the resubmitted application will be subject to the administrative and technical review processes and will be treated as a new application. The application will be redistributed to the affected jurisdictions.

Please contact the regional office if you have questions. If your project is located in Williamson, Travis, or Hays County, contact TCEQ's Austin Regional Office at 512-339-2929. If your project is in Comal, Bexar, Medina, Uvalde, or Kinney County, contact TCEQ's San Antonio Regional Office at 210-490-3096

Please fill out all required fields below and submit with your application.

1. Regulated Entity Name: 360 COMAL STORAGE						**2. Regulated Entity No.:** 111774238			
3. Customer Name: 360 COMAL STORAGE LLC						**4. Customer No.:** 606161586			
5. Project Type: **(Please circle/check one)**	New ✓		Modification			Extension		Exception	
6. Plan Type: **(Please circle/check one)**	WPAP ✓	CZP	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: **(Please circle/check one)**	Residential		Non-residential ✓			**8. Site (acres):**		45.0	
9. Application Fee:	$8,711.50		**10. Permanent BMP(s):**			DETENTION/SEDIMENTATION BASIN, DRAINAGE CHANNEL			
11. SCS (Linear Ft.):	1,423		**12. AST/UST (No. Tanks):**			ZERO (0)			
13. County:	COMAL		**14. Watershed:**			COMAL RIVER-GUADALUPE RIVER			

Application Distribution

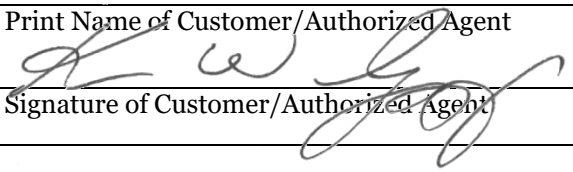
Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which cross into multiple jurisdictions, can require additional copies. Refer to the "Texas Groundwater Conservation Districts within the EAPP Boundaries" map found at:

http://www.tceq.texas.gov/assets/public/compliance/field_ops/eapp/EAPP%20GWCD%20map.pdf

For more detailed boundaries, please contact the conservation district directly.

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	___	___	___
Region (1 req.)	___	___	___
County(ies)	___	___	___
Groundwater Conservation District(s)	___Edwards Aquifer Authority ___Barton Springs/ Edwards Aquifer ___Hays Trinity ___Plum Creek	___Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	___Austin ___Buda ___Dripping Springs ___Kyle ___Mountain City ___San Marcos ___Wimberley ___Woodcreek	___Austin ___Bee Cave ___Pflugerville ___Rollingwood ___Round Rock ___Sunset Valley ___West Lake Hills	___Austin ___Cedar Park ___Florence ___Georgetown ___Jerrell ___Leander ___Liberty Hill ___Pflugerville ___Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	___	✓	___	___	___
Region (1 req.)	___	✓	___	___	___
County(ies)	___	✓	___	___	___
Groundwater Conservation District(s)	___ Edwards Aquifer Authority ___Trinity-Glen Rose	✓Edwards Aquifer Authority	___Kinney	___EAA ___Medina	___EAA ___Uvalde
City(ies) Jurisdiction	___Castle Hills ___Fair Oaks Ranch ___Helotes ___Hill Country Village ___Hollywood Park ___San Antonio (SAWS) ___Shavano Park	___Bulverde ___Fair Oaks Ranch ___Garden Ridge ___New Braunfels ___Schertz	NA	___San Antonio ETJ (SAWS)	NA

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review. Kevin W. Spraggins, P.E.
Print Name of Customer/Authorized Agent  09/11/2023
Signature of Customer/Authorized Agent Date

FOR TCEQ INTERNAL USE ONLY				
Date(s)Reviewed:		Date Administratively Complete:		
Received From:		Correct Number of Copies:		
Received By:		Distribution Date:		
EAPP File Number:		Complex:		
Admin. Review(s) (No.):		No. AR Rounds:		
Delinquent Fees (Y/N):		Review Time Spent:		
Lat./Long. Verified:		SOS Customer Verification:		
Agent Authorization Complete/Notarized (Y/N):		Fee Check:	Payable to TCEQ (Y/N):	
Core Data Form Complete (Y/N):			Signed (Y/N):	
Core Data Form Incomplete Nos.:			Less than 90 days old (Y/N):	

1.2. GENERAL INFORMATION

- TCEQ's GENERAL INFORMATION FORM (FORM-0587, Rev. 02/11/2015)
- Attachment A Road Map
- Attachment B USGS / Edwards Recharge Zone Map
- Attachment C Project Description

General Information Form

Texas Commission on Environmental Quality

For Regulated Activities on the Edwards Aquifer Recharge and Transition Zones and Relating to 30 TAC §213.4(b) & §213.5(b)(2)(A), (B) Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

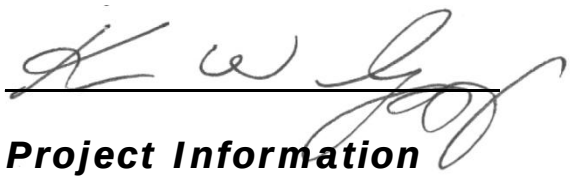
Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **General Information Form** is hereby submitted for TCEQ review. The application was prepared by:

Print Name of Customer/Agent: Kevin W. Spraggins

Date: 09/11/2023

Signature of Customer/Agent:



Project Information

1. Regulated Entity Name: 360 Comal Storage
2. County: Comal
3. Stream Basin: Jacobs Creek Subwatershed, Comal River - Guadalupe River Watershed
4. Groundwater Conservation District (If applicable): Comal Trinity GCD
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☐ Transition Zone

6. Plan Type:

   ☒ WPAP
   ☐ SCS
   ☐ Modification
   ☐ AST
   ☐ UST
   ☐ Exception Request

7. Customer (Applicant):
Contact Person: Neil Francois
Entity: 360 Comal Storage LLC
Mailing Address: 12600 Hill Country Blvd, Ste R-275
City, State: Bee Cave, TX Zip: 78738
Telephone: 512-947-7966 FAX: _____
Email Address: neil@360captx.com

8. Agent/Representative (If any):
Contact Person: Kevin W. Spraggins, P.E.
Entity: VEI Consulting Engineers
Mailing Address: 507 E. Highway Street, Suite D
City, State: Fredericksburg, TX. Zip: 78624
Telephone: (830) 997-4744 FAX: _____
Email Address: kspraggins@vei-tx.com

9. Project Location:

☐ The project site is located inside the city limits of _____.
☐ The project site is located outside the city limits but inside the ETJ (extra-territorial jurisdiction) of _____.
☒ The project site is not located within any city's limits or ETJ.

10. ☒ The location of the project site is described below. The description provides sufficient detail and clarity so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

In the southeast corner of the intersection of Purgatory Road and FM 306, 276 Purgatory Road, New Braunfels, Comal County, TX 78132.

11. ☒ **Attachment A – Road Map**. A road map showing directions to and the location of the project site is attached. The project location and site boundaries are clearly shown on the map.

12. ☒ **Attachment B - USGS / Edwards Recharge Zone Map**. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is attached. The map(s) clearly show:

☒ Project site boundaries.
☒ USGS Quadrangle Name(s).
☒ Boundaries of the Recharge Zone (and Transition Zone, if applicable).
☒ Drainage path from the project site to the boundary of the Recharge Zone.

13. ☒ **The TCEQ must be able to inspect the project site or the application will be returned**. Sufficient survey staking is provided on the project to allow TCEQ regional staff to locate the boundaries and alignment of the regulated activities and the geologic or manmade features noted in the Geologic Assessment.

☒ Survey staking will be completed by this date: _____

14. ☒ **Attachment C – Project Description**. Attached at the end of this form is a detailed narrative description of the proposed project. The project description is consistent throughout the application and contains, at a minimum, the following details:

    ☒ Area of the site
    ☒ Offsite areas
    ☒ Impervious cover
    ☒ Permanent BMP(s)
    ☒ Proposed site use
    ☒ Site history
    ☒ Previous development
    ☒ Area(s) to be demolished

15. Existing project site conditions are noted below:

    ☐ Existing commercial site
    ☐ Existing industrial site
    ☐ Existing residential site
    ☐ Existing paved and/or unpaved roads
    ☒ Undeveloped (Cleared)
    ☐ Undeveloped (Undisturbed/Uncleared)
    ☐ Other: _____

Prohibited Activities

16. ☒ I am aware that the following activities are prohibited on the Recharge Zone and are not proposed for this project:

    (1) Waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);

    (2) New feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;

    (3) Land disposal of Class I wastes, as defined in 30 TAC §335.1;

    (4) The use of sewage holding tanks as parts of organized collection systems; and

    (5) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).

    (6) New municipal and industrial wastewater discharges into or adjacent to water in the state that would create additional pollutant loading.

17. ☐ I am aware that the following activities are prohibited on the Transition Zone and are not proposed for this project:

    (1) Waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground Injection Control);

(2) Land disposal of Class I wastes, as defined in 30 TAC §335.1; and

(3) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41 (b), (c), and (d) of this title.

Administrative Information

18. The fee for the plan(s) is based on:

☒ For a Water Pollution Abatement Plan or Modification, the total acreage of the site where regulated activities will occur.
☐ For an Organized Sewage Collection System Plan or Modification, the total linear footage of all collection system lines.
☐ For a UST Facility Plan or Modification or an AST Facility Plan or Modification, the total number of tanks or piping systems.
☐ A request for an exception to any substantive portion of the regulations related to the protection of water quality.
☐ A request for an extension to a previously approved plan.

19. ☒ Application fees are due and payable at the time the application is filed. If the correct fee is not submitted, the TCEQ is not required to consider the application until the correct fee is submitted. Both the fee and the Edwards Aquifer Fee Form have been sent to the Commission's:

☒ TCEQ cashier
☐ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)
☒ San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

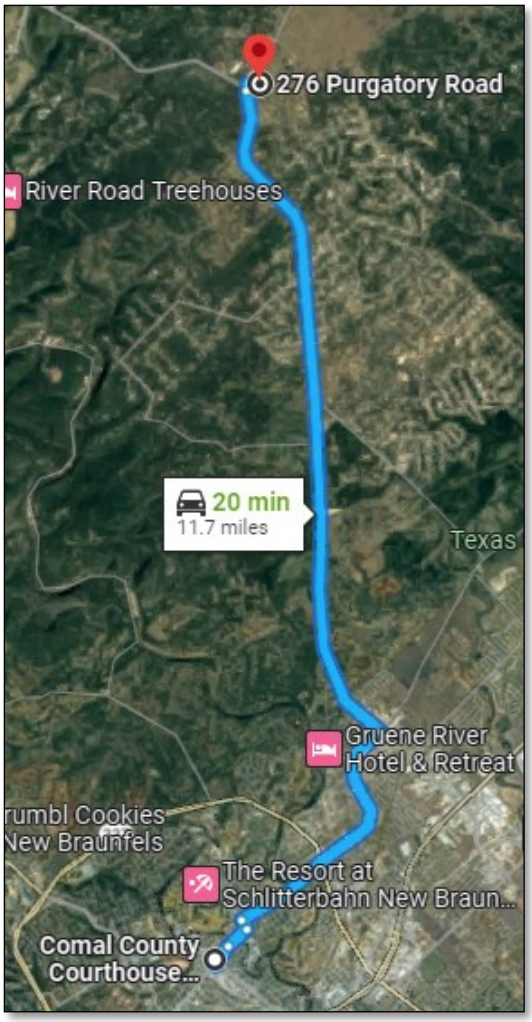
20. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

21. ☒ No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the Executive Director.

TCEQ GENERAL INFORMATION FORM (FORM-0587, Rev. 02/11/2015)

Attachment A ROAD MAP

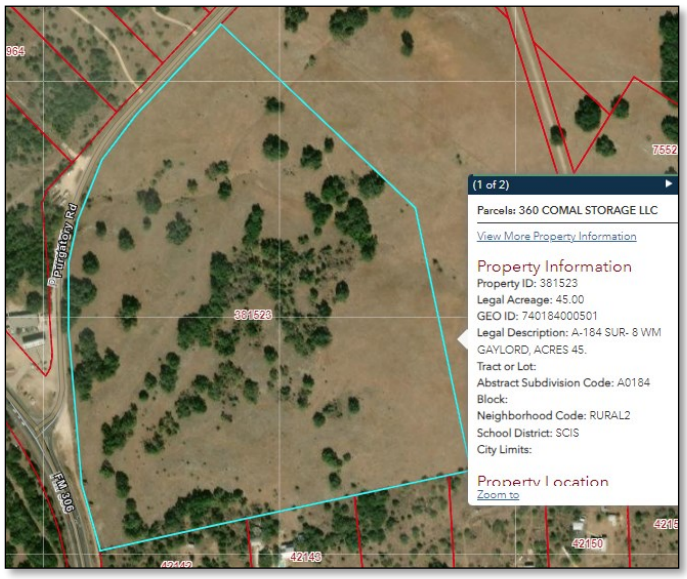
A road map showing directions to and the location of the project site is attached. The project location and site boundaries are clearly shown on the map.



DIRECTIONS:

To 276 Purgatory Road from the Comal County Courthouse (Gerichtsgebäude), 100 N Seguin Ave, New Braunfels, TX 78130

- Head southeast on N Seguin Ave toward State Spur 453 (167 ft)
- At Main Plaza, exit onto E San Antonio St
- Pass by NAPA Auto Parts - Leissner Auto Parts (on the right in 0.2 mi) (0.3 mi)
- Continue straight to stay on E San Antonio St (0.3 mi)
- Turn left onto S Union Ave (0.1 mi)
- Turn right onto Common St (3.1 mi)
- Turn left onto FM306 (7.8 mi)
- Turn right onto Purgatory Rd (440 ft), 276 Purgatory Rd,



«END OF ATTACHMENT A»

TCEQ GENERAL INFORMATION FORM (FORM-0587, Rev. 02/11/2015)

Attachment B USGS/ EDWARDS RECHARGE ZONE MAP

A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is attached. The map(s) clearly show:

- Project site boundaries.
- USGS Quadrangle Name(s).
- Boundaries of the Recharge Zone (and Transition Zone, if applicable).
- Drainage path from the project site to the boundary of the Recharge Zone.

Below in *Figure 1, USGS Topo Map with Property* Boundaries, you will find a depiction of the property on a USGS topographic map (Hunter Quadrangle and the far eastern edge of the Sattler Quadrangle). After that is *Figure 2, Edwards Aquifer Viewer with* , showing the closest Recharge Zone boundary and arrows showing the drainage path along the ephemeral creek-bed of Jacobs Creek. A full-size copy of the USGS 7.5 Minute Map for the Hunter Quadrangle, is attached in PART 3, CONSTRUCTION DRAWINGS.

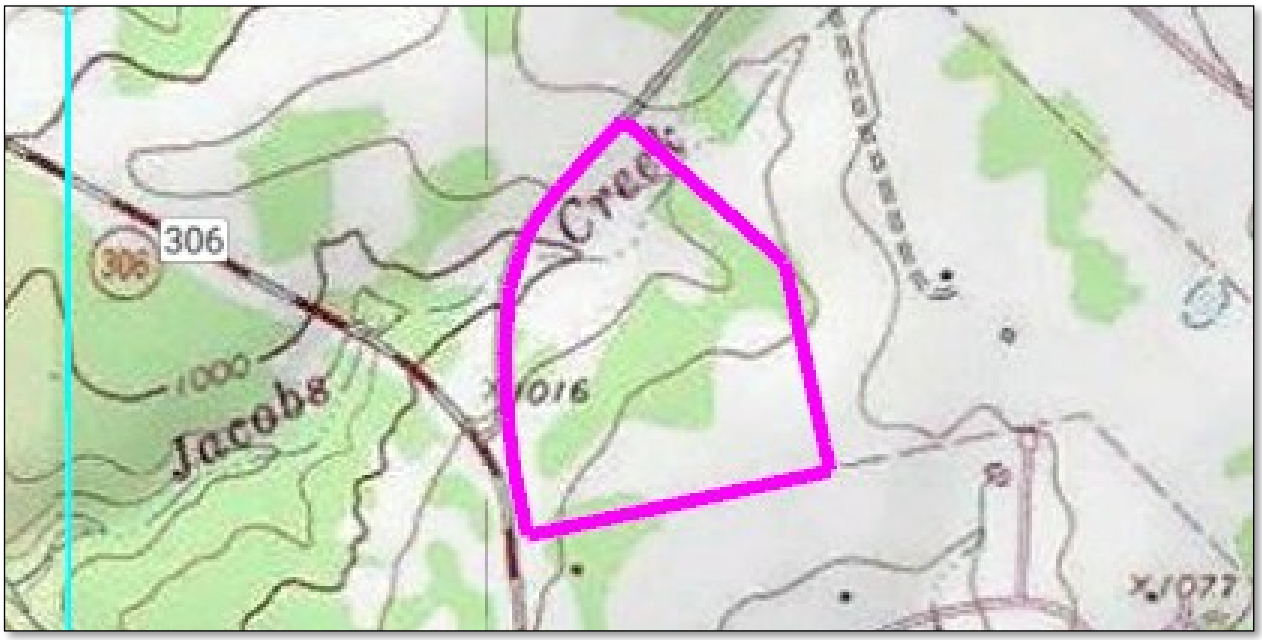


Figure 1, USGS Topo Map with Property Boundaries

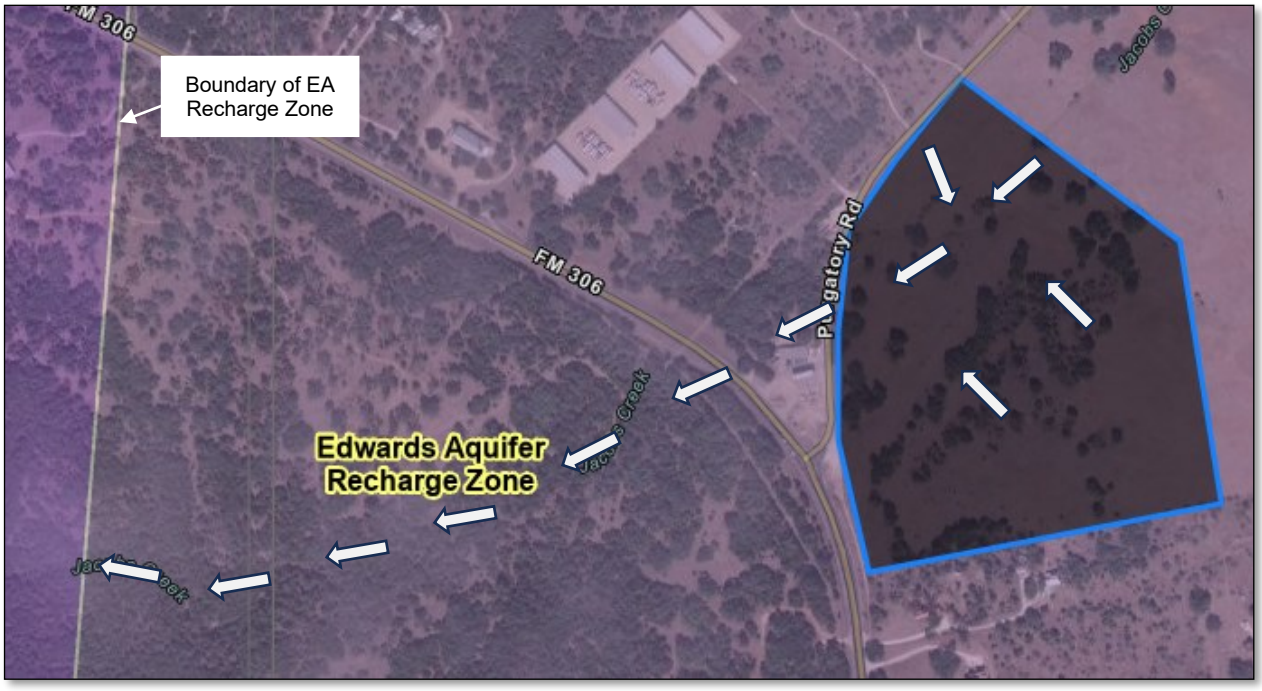


Figure 2, Edwards Aquifer Viewer with Boundaries & Drainage Path

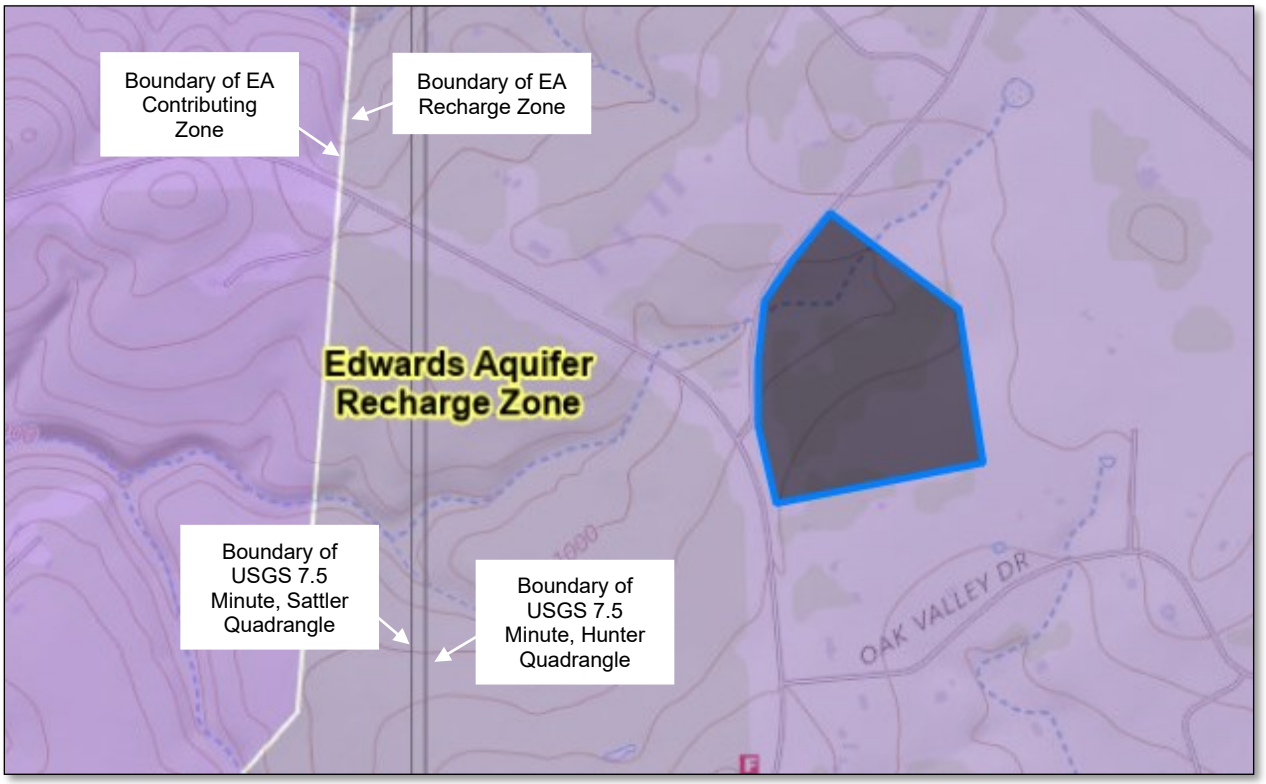


Figure 3, Edwards Aquifer Viewer with U.S.G.S. Topo & Boundaries

«END OF ATTACHMENT B»

TCEQ GENERAL INFORMATION FORM (FORM-0587, Rev. 02/11/2015)

Attachment C PROJECT DESCRIPTION

Attached at the end of this form is a detailed narrative description of the proposed project. The project description is consistent throughout the application and contains, at a minimum, the following details:

- Area of the site
- Offsite areas
- Impervious cover
- Permanent BMP(s)
- Proposed site use
- Site history
- Previous development
- Area(s) to be demolished

Area of the site	45.0 acres / 1,960,073 sq.ft.
Offsite areas	None.
Impervious cover	9.07 acres / 395,110 sq.ft. (20%)
Permanent BMP(s)	• Area Inlets • Extended Detention Basin • Drainage Channel
Proposed site use	R.V. & Boat Storage with rental office.
Site history	Never developed. Agriculture or range use only.
Previous development	None.
Area(s) to be demolished	No building or service demolishment required. Topsoil is minimal (less than 1-ft) and some stone milling required to install services (water, sanitary sewer, electric, etc.).

Table 1, Project Description

Site & Vicinity Description

Our client, 360 Comal Storage LLC, purchased Comal County Central Appraisal District Property ID 381523 in October 2021. The site is in a rural setting in the southeast corner of the intersection of Purgatory Road and F.M. 306, approximately 12-miles north of the Comal County Courthouse and 4.6-miles east of Sattler, Texas. The tract has never been developed and is covered in native grasses, trees, and brush. There are no structures on the property to be demolished. There is an ephemeral creek (Jacobs Creek) running through the northern part of the property from east to west.

The vicinity is lightly developed with small single-family home subdivisions, ranches and small businesses. Surroundings include:

- NORTH: Purgatory Road, undeveloped land, some single-family homes, small businesses, and outbuildings.
- SOUTH: Small subdivision of single-family homes, the Canyon Lake Fire/EMS Station 54.
- WEST: F.M. 306, Purgatory Road (partial), Jacobs Creek (continuing the ephemeral creek-bed from the subject property), a filling station and convenience store, and undeveloped land. Farther west is the Guadalupe River and Canyon Lake.
- EAST: Undeveloped land, a small single-family subdivision, small businesses.

Development Description

COMAL RV & BOAT STORAGE. ±45.0-acre commercial development. Construction expected to begin 2-3Q2023, pending permitting. Development will include:

- County-approved driveway entrance on Purgatory Road;
- Eight (8) R.V. and boat storage buildings (open storage bays in metal roofed buildings on concrete foundations). An additional four (4) buildings to be constructed in 2Q2024 for a total of twelve (12) storage buildings. PLEASE NOTE: an amendment to this WPAP will be submitted to TCEQ before the future phases are developed;
- One (1) two-person rental office with parking;
- One (1) extended detention basin and a drainage channel sized for both phases of the storage business;
- One (1) OSSF sized for both phases of the storage business, including the rental office and dump-stations; and
- Potable water by the Public Water System described below.

Soil & Geotechnical Analysis

The subject tract is composed primarily of fractured rock with a zero- to ten-inch layer of loamy topsoil. According to the USDA NRCS Web Soil Survey, the site is 100% "RUD - Rumple-Comfort, rubbly association, 1-8% slopes". See *Figure 4, USDA NRCS Web Soil Survey of Site*.

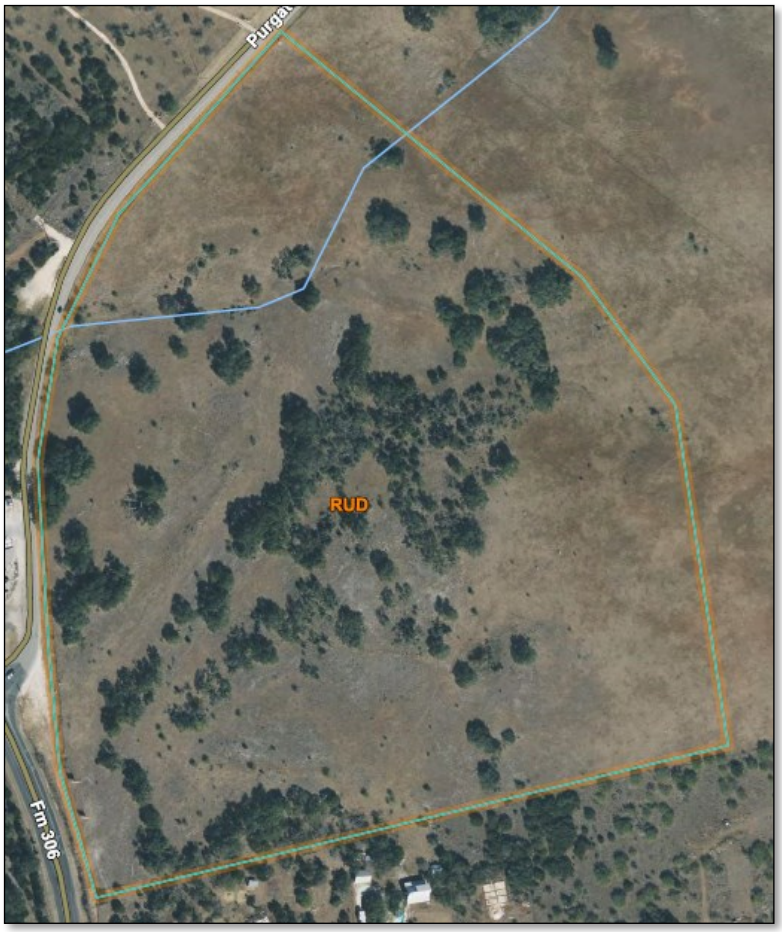


Figure 4, USDA NRCS Web Soil Survey of Site

First person observations of typical site conditions are in the below photographs, taken at the site on June 22, 2023.

Figure 5, Three Photographs of Typical Site Conditions

A Geotechnical Study & Report for the site was developed in February 2022 by Rock Engineering & Testing Laboratory (RETL). Their report can be found in **PART 2, THIRD PARTY REPORTS**. Please note that the Site Plan that RETL used was an earlier design and does not depict the current site.

A Geological Assessment was performed by Raba-Kistner in August 2023. This report can be found in **Section 1.3, GEOLOGIC ASSESSMENT**, of this report.

Floodplain

The 360 Comal Storage is in the Comal River-Guadalupe River Watershed and the Guadalupe River Basin. The tract is in FEMA FIRM Zone X, defined as "Area determined to be outside of the 500-year flood hazard risk."

Figure 6, Snapshot of FEMA FIRMette, dated 08/11/2023

Topography & Drainage

The development's drainage flows via sheet flow and natural drainage swales into an ephemeral creek (Jacobs Creek). No development is expected in this portion of the property. The existing contours on the balance of the construction area will be improved to direct runoff via natural swales into an extended detention basin and a drainage channel.

Special Features

According to the geologist's report, there are no special features on the property.

Water Source

A new public well will be drilled for a new PWS serving the businesses that will/may occupy the full 45-acre tract. A public well and PWS design was submitted to TCEQ on June 22, 2023, using the rules and requirements for a NON-TRANSIENT, NON-COMMUNITY WATER SYSTEM. At this time, 360 Comal Storage, LLC, plans three (3) distribution connections to accommodate the development (Storage Office, Retail (future), and Restaurant (future)).

Neighboring wells have a wide range of productivity levels and are all believed to be in the Trinity Aquifer, Glen Rose Limestone Aquifer (218GLRS), and the Glen Rose Limestone Upper Member (218GLRSU). Based on our analysis of the vicinity wells, to reach sufficient water to meet demand we recommended that 360 Comal's well be drilled to a depth of ±400.0-600.0-ft to reach a productive zone for this part of the county.

«END OF ATTACHMENT C»

1.3. GEOLOGIC ASSESSMENT

Raba Kistner Inc. have prepared this section.

- TCEQ Geologic Assessment Form (FORM-0585)
- Attachment A TCEQ Geologic Assessment Table (FORM-0585 TABLE)
- Attachment B Stratigraphic Column
- Attachment C Site Geology
- Attachment D Site Geologic Map(s)

Geologic Assessment

Texas Commission on Environmental Quality

For Regulated Activities on The Edwards Aquifer Recharge/transition Zones and Relating to 30 TAC §213.5(b)(3), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

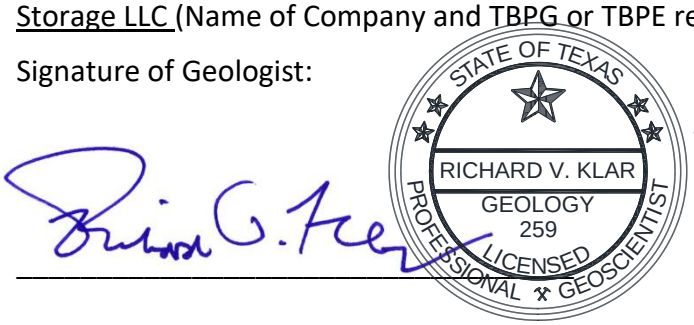
To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Print Name of Geologist: Richard V. Klar, P.G. Telephone: 210-699-9090

Date: September 8, 2023 Fax: 210-699-6426

Representing: Raba Kistner, Inc. (TBPG Firm #50220 / TBPE Firm #3257) for 360 Comal Storage LLC (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:



9/8/2023

Regulated Entity Name: 360 Comal Storage & Commercial

Project Information

1. Date(s) of Geologic Assessment was performed: August 5 and September 5, 2023
2. Type of Project:

☒ WPAP ☐ AST

☒ SCS ☐ UST

3. Location of Project:

☒ Recharge Zone
☐ Transition Zone
☐ Contributing Zone within the Transition Zone

4. ☒ **Attachment A – Geologic Assessment Table**. Completed Geologic Assessment Table (Form TCEQ-0585-Table) is attached.

5. ☒ Soil cover on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups* (Urban Hydrology for Small Watersheds, Technical Release No. 55, Appendix A, Soil Conservation Service, 1986). If there is more than one soil type on the project site, show each soil type on the Site Geologic Map or a separate soils map.

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness (feet)
Fill soils	B[NOTE]	0 to 9 feet
Rumple-Comfort association, undulating (RUD)	C	Veneer to 3.5 feet
NOTE: Fill soils comprised predominantly of site-derived clay soils intermixed with limestone millings and classified as group 'B' based on granular nature of observed materials.		

**Soil Group Definitions (Abbreviated)*

A. Soils having a high infiltration rate when thoroughly wetted.
B. Soils having a moderate infiltration rate when thoroughly wetted.
C. Soils having a slow infiltration rate when thoroughly wetted.
D. Soils having a very slow infiltration rate when thoroughly wetted

6. ☒ **Attachment B – Stratigraphic Column**. A stratigraphic column showing formations, members, and thickness is attached. The outcropping unit, if present, should be at the top of the stratigraphic column. Otherwise, the uppermost unit should be at the top of the stratigraphic column.

7. ☒ **Attachment C – Site Geology**. A narrative description of the site specific geology including any features identified in the Geologic Assessment Table, a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure(s), and karst characteristics is attached.

8. ☒ **Attachment D – Site Geologic Map(s).** The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1":400'.

Applicant's Site Plan Scale: 1" = 100'
Site Geologic Map Scale: 1" = 100'
Site Soils Map Scale (if more than 1 soil type): 200'

9. Method of collecting positional data:

☒ Global Positioning System (GPS) technology.
☐ Other method(s). Please describe method of data collection: ___

10. ☒ The project site boundaries are clearly shown and labeled on the Site Geologic Map.

11. ☒ Surface geologic units are shown and labeled on the Site Geologic Map.

12. ☒ Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.

☐ Geologic or manmade features were not discovered on the project site during the field investigation.

13. ☒ The Recharge Zone boundary is shown and labeled, if appropriate.

14. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If applicable, the information must agree with Item No. 20 of the WPAP Application Section.

☒ There are 9 (#) test holes present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
- ☒ The test holes are not in use and have been properly abandoned.
- ☐ The wells are not in use and will be properly abandoned.
- ☐ The well is in use and complies with 16 TAC Chapter 76.

☐ There are no wells or test holes of any kind known to exist on the project site.

Administrative Information

☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

ATTACHMENTS

ATTACHMENT A

GEOLOGIC ASSESSMENT TABLE
(TCEQ-0585-TABLE)

COMMENTS TO GEOLOGIC ASSESSMENT TABLE

SOIL PROFILE

SITE SOILS MAP

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: ***360 Comal Storage & Commercial - New Braunfels, Comal County, Texas***
*(**RKI** Project No. ASF23-067-00)*

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	>40	<1.6	>1.6	
S-1	29°50'48.51"N	98° 6'59.67"W	MB (SS)	30	Kek	616	3.0	~4.0					X	8	38	✓			✓	Hilltop/Drainage
S-2	29°50'49.34"N	98° 7'3.24"W	MB (PTH, B-1)	30	Kek	0.5	0.5	20					Z	5	35	✓		✓		Hilltop
S-3	29°50'44.15"N	98° 7'4.81"W	MB (PTH, B-2)	30	Kek	0.5	0.5	20					Z	5	35	✓		✓		Hilltop
S-4	29°50'46.76"N	98° 6'58.42"W	MB (PTH, B-3)	30	Kek	0.5	0.5	20					Z	5	35	✓		✓		Hilltop
S-5	29°50'46.83"N	98° 6'50.76"W	MB (PTH, B-4)	30	Kek	0.5	0.5	20					Z	5	35	✓		✓		Hilltop
S-6	29°50'49.44"N	98° 6'52.79"W	MB (PTH, B-5)	30	Kek	0.5	0.5	20					Z	5	35	✓		✓		Hilltop
S-7	29°50'50.58"N	98° 6'56.96"W	MB (PTH, B-6)	30	Kek	0.5	0.5	20					Z	5	35	✓		✓		Hilltop
S-8	29°50'52.67"N	98° 7'1.39"W	MB (PTH, B-7)	30	Kek	0.5	0.5	20					Z	5	35	✓		✓		Hilltop
S-9	29°50'52.54"N	98° 6'53.24"W	MB (PTH, B-8)	30	Kek	0.5	0.5	20					Z	5	35	✓		✓		Hilltop
S-10	29°50'51.71"N	98° 7'6.21"W	MB (PTH, B-9)	30	Kek	0.5	0.5	6.0					Z	5	35	✓		✓		Hilltop

*** DATUM:** ***NAD 83***

Features: SS = sanitary sewer utility; PTH = plugged geotechnical test hole.
Formation: Kek = Kainer Formation (Dolomitic member)

2A TYPE	TYPE	2B POINTS
C	Cave	30
SC	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
O	Other natural bedrock features	5
MB	Manmade feature in bedrock	30
SW	Swallow hole	30
SH	Sinkhole	20
CD	Non-karst closed depression	5
Z	Zone, clustered or aligned features	30

	8A INFILLING
N	None, exposed bedrock
C	Coarse - cobbles, breakdown, sand, gravel
O	Loose or soft mud or soil, organics, leaves, sticks, dark colors
F	Fines, compacted clay-rich sediment, soil profile, gray or red colors
V	Vegetation. Give details in narrative description
FS	Flowstone, cements, cave deposits
X	Other materials: ***Granular bedding material for the sewer utility trench (Feature S-1) and***
Z	***Soil cuttings for geotechnical test holes (Features S-2 through S-10).***

12 TOPOGRAPHY
Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

I have read, I understood, and I have followed the Texas Natural Resource Conservation Commission's Instructions to Geologists.
The information presented here complies with that document and is a true representation of the conditions observed in the field.
My signature certifies that I am qualified as a geologist as defined by 30 TAC 213.

STATE OF TEXAS
RICHARD V. KLAR
GEOLOGY
259
LICENSED
PROFESSIONAL GEOSCIENTIST

Date: *9/8/2023*

Sheet 1 of 1

TCEQ-0585-Table (Rev. 10-01-04)

COMMENTS TO GEOLOGIC ASSESSMENT TABLE
360 Comal Storage & Commercial
New Braunfels, Comal County, Texas

The locations of the following features are indicated on the ***Site Geologic Map*** provided as ***Attachment D*** of this report.

Manmade Features in Bedrock (MB)

Feature S-1 (Sanitary Sewer Line-Trench)

Feature S-1 consists of a trench for an existing sanitary sewer utility segment that extends from the south-central portion of the subject property to the northwest. Based on project plans provided by VEI Consulting Engineers, Inc. (2023), **RKI** understands that this segment will connect to a proposed septic field located near the northwest corner of the SITE. The existing utility location was mapped based on utility information provided, in addition to field observations of protruding cleanout piping within the subject property. Based on plans, the trench hosting the sanitary sewer utility is approximately 3 feet wide and installed to depths of approximately 4 feet. The length of the trench within the assessment area is estimated to be approximately 616 feet.

Features S-2 through S-10 (Plugged Geotechnical Test Holes):

Features S-2 through S-10 consist of plugged geotechnical test holes installed by Rock Engineering and Testing Laboratory, LLC on January 13, 2022 to evaluate soil conditions within the building footprints and pavement area for the commercial storage facility. A total of nine test holes were drilled within the project site to depths ranging from 6 feet to approximately 20 feet below the existing ground surface using air-rotary methods. According to the geotechnical logging data, a dark brown to reddish-brown clay, with weathered limestone stratum ranging from 1 foot to approximately 3 feet was encountered underlain by very hard tan limestone comprising the Kainer Formation of the Edwards Group. Shallow groundwater was not observed during drilling operations. Based on the referenced geotechnical report and observations in conjunction with field reconnaissance activities, the test holes were backfilled with soil cuttings following completion of drilling activities. No evidence of the test holes were observed during the field mapping effort.

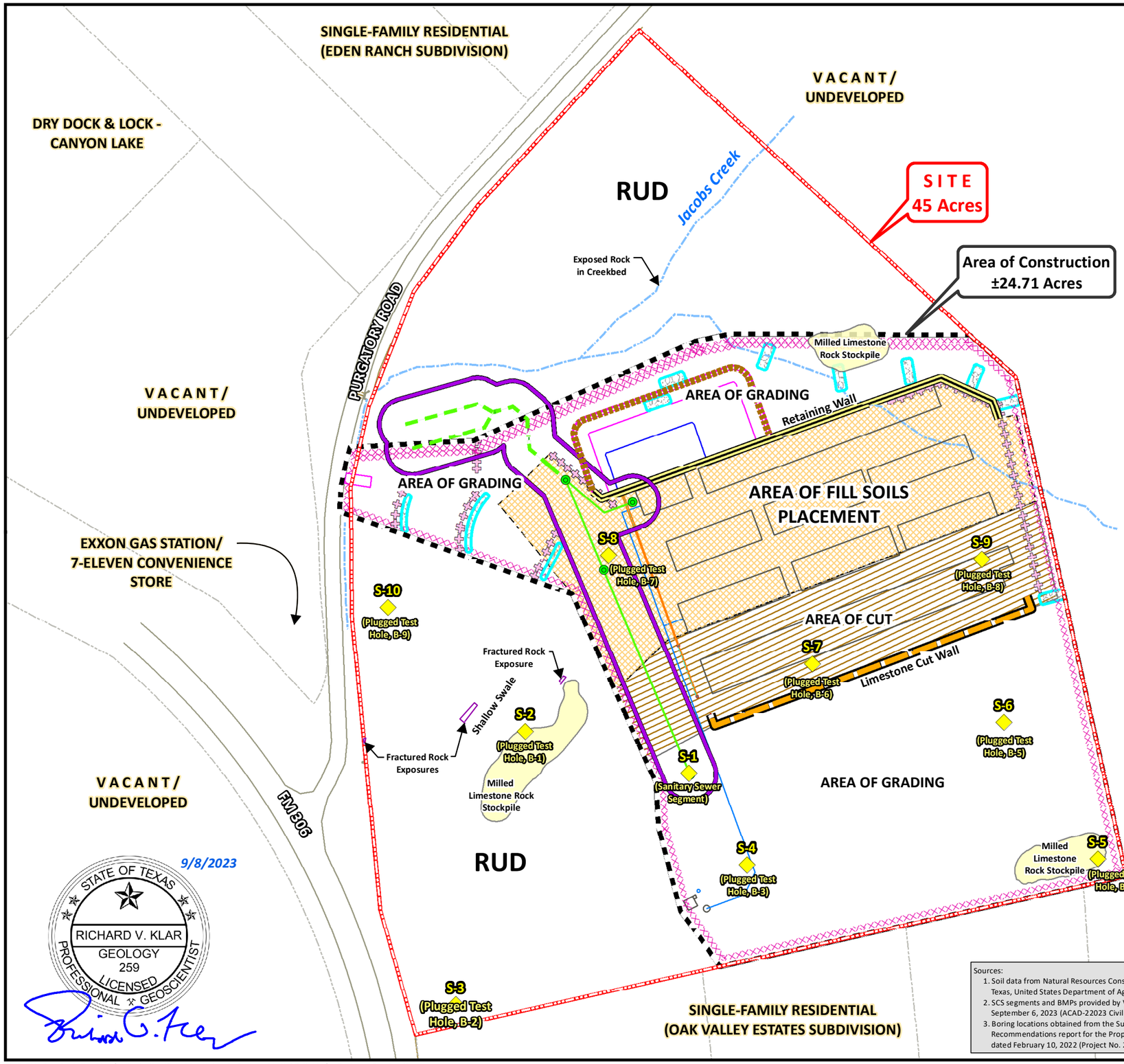
SOIL PROFILE
360 Comal Storage & Commercial
New Braunfels, Comal County, Texas

SOIL SERIES	THICKNESS ON SITE	DESCRIPTION
Fill	**0 to 9 feet**	***Fill soils:*** On the basis of field observations, fill soils covering the central portion of the construction area are comprised predominantly of site-derived clay soils with intermixed limestone millings.
Rumple Comfort	**Veneer to 3.5 feet**	***Rumple-Comfort association, undulating (RUD):*** Rumple soils make up about 60% of this association and are on broad ridge tops and side slopes. The surface layer is a dark reddish brown very cherty clay loam about 10 inches thick with rounded chert, limestone cobbles and gravel covering about 20% of the surface. The subsoil is dark reddish brown very cherty clay to an approximate depth of 14 inches and dark reddish brown extremely stony clay to a depth of about 28 inches. The surface layer of the Comfort soil is dark brown, neutral, extremely stony clay about 7 inches thick. The subsoil is dark reddish brown, mildly alkaline, extremely stony clay to a depth of 12 inches. The underlying material for both Rumple and Comfort soils is indurated fractured limestone fragments

The preceding table was prepared based on information provided in the *Soil Survey of Comal and Hays Counties, Texas (1984)* in addition to field observations and reported geotechnical test hole data. As presented on the attached ***Site Soils Map***, native soils mapped for the full extent of the subject property are classified as Rumple-Comfort association, undulating (RUD). RUD soils are weakly-developed and relatively thin, occurring over weathered limestone units of the Kainer Formation. RUD soils are noted to have medium runoff and moderate hazard for erosion. The RUD soils are characterized as having a very low water capacity and a moderately slow permeability of approximately 0.06 to 0.6 inches per hour, considering both included soil types. RUD soils have a very slow infiltration when the soils are thoroughly wet and rapid infiltration when the soils are dry.

Reported test hole data (Rock, 2022) indicates the surface soils encountered during the installation of test holes vary in thickness, ranging from approximately 1 foot to 3 feet and consists of dark brown to reddish-brown clay soils overlying limestone rock units. The geotechnical drilling data is generally consistent with the published soil information presented above.

As indicated on the ***Site Soils Map***, the subject property has hosted earthwork activities. In association with site grading, limestone milling activities were conducted through the south-central portion of the property and millings generated were replaced to the north to level the SITE. As a result, the maximum fill thickness on the order of 9 feet was observed along the west-central portion of the property (i.e., near the existing sanitary sewer line segment), which tapers to less than one foot near the east property boundary. Considering the granular nature of fill soils, these are considered to have a moderate infiltration capacity and permeability.



Legend

- SITE Boundary (45 Acres)
- Area of Construction (±24.71 Acres)
- SCS GA Feature
- 50 Ft SCS Assessment Extent
- Existing Sanitary Sewer Line Segment (Observed 8/5/23)
- Proposed Sanitary Sewer Line (VEI, 2023)
- Cleanout (Observed 8/5/23)
- Retaining Wall (Observed 8/5/23)
- Limestone Cut Wall (Observed 8/5/23)
- Milled Limestone Rock Stockpile (Observed 8/5/23)
- Approximate Area of Fill Soils Placement (Observed 8/5/23)
- Approximate Area of Cut (Observed 8/5/23)
- BMP_Soil Berm (Observed 9/5/23)
- BMP: Silt Fence (Observed 8/5/23)
- BMP: Silt Fence (Observed 9/5/23)
- BMP: Rock Berm (Observed 9/5/23)

Soil Type (NRCS, 2020)

RUD Rumple-Comfort association, undulating

Sources:
1. Soil data from Natural Resources Conservation Service (NRCS), June 2020. Data is Based from Soil Survey of Comal and Hays Counties, Texas, United States Department of Agriculture, June 1984.
2. SCS segments and BMPs provided by VEI Consulting Engineers, Inc., on July 31, 2023 (22023_360COMAL_OSP_06-21-2023.pdf) and September 6, 2023 (ACAD-22023 Civil Master WPAP-Model.dwg), respectively.
3. Boring locations obtained from the Subsurface Exploration, Laboratory Testing Program, and Foundation and Pavement Recommendations report for the Proposed All Stor project prepared by Rock Engineering & Testing Laboratory, Inc., report dated February 10, 2022 (Project No. 221383).

9/8/2023

STATE OF TEXAS
RICHARD V. KLAR
GEOLOGY
259
LICENSED
PROFESSIONAL GEOSCIENTIST

NOTE: This Drawing is Provided for Illustration Only, May Not be to Scale and is Not Suitable for Design or Construction Purposes

RABA KISTNER
12821 West Golden Lane
San Antonio, Texas 78249

P 210.699.9090
F 210.699.6426

www.rkci.com

TBPE Firm F-3257/TBPG #50220

SITE SOILS MAP

360 COMAL STORAGE & COMMERCIAL
FM 306 AND PURGATORY ROAD
NEW BRAUNFELS, COMAL COUNTY, TEXAS

REVISIONS:

No.	DATE	DESCRIPTION

PROJECT No.:	ASF23-067-00
ISSUE DATE:	09/08/2023
DRAWN BY:	LAW
CHECKED BY:	RAS
REVIEWED BY:	RVK

N W E S

0 50 100 200 FEET

1 INCH = 200 FEET

ATTACHMENT B

STRATIGRAPHIC COLUMN

STRATIGRAPHIC COLUMN
360 Comal Storage & Commercial
New Braunfels, Comal County, Texas

STRATIGRAPHIC FORMATION	THICKNESS	DESCRIPTION
Edwards Limestone Kainer Formation (Kek)	260-310 feet	(See descriptions below)
Grainstone member (Kkg)	50–60 feet	Unit consists of massive mudstone to packstone; *miliolid* grainstone; and chert. Identified in the field by cycles of massive beds to relatively thin beds. ***Not present at the SITE.***
Kirschberg evaporate member (Kkke)	50–60 feet	Unit includes highly altered crystalline limestone; chalky mudstone; and chert. Leaching of evaporite layers resulted in a boxwork porosity with neospar and travertine frames. ***Not present at the SITE.***
Dolomite member (Kkd)	110–130 feet	Unit consists of mudstone to grainstone; crystalline limestone; and chert. Identified in the field by massively bedded, light gray outcrops, with abundant *Toucasia*. ***Patchy exposures were identified along Jacobs Creek and along a shallow swale near the west property boundary, in addition to the side of a limestone cut wall in an area that hosted milling activities.***
Basal nodular member (Kkbn)	50–60 feet	Unit consists of shaly, nodular limestone, mudstone and *miliolid* grainstone. Identified in the field by massively bedded, nodular, and mottled outcrops, with abundant *Exogyra texana*. ***Not exposed within the SITE.***

Note: Stratigraphic Column adapted from Small and Hanson (1994) and Collins (2000).

ATTACHMENT C

NARRATIVE OF SITE SPECIFIC GEOLOGY

SITE GEOLOGY NARRATIVE
360 Comal Storage & Commercial
New Braunfels, Comal County, Texas

Introduction

The following discussion is a site-specific assessment of existing geological conditions and potential recharge features within the referenced project site (hereinafter referred to as SITE). This assessment was performed by **Raba Kistner, Inc. (RKI)** for 360 Comal Storage LLC, pursuant to applicable Edwards Aquifer Protection Program Rules as specified in *Title 30 of the Texas Administrative Code, Section 213 (30 TAC §213, effective April 24, 2008).* This assessment report is in the format required by the Texas Commission on Environmental Quality (TCEQ) for the Geologic Assessment portion of a Water Pollution Abatement Plan (WPAP) and/or Sewage Collection System (SCS) Plan, and was prepared in accordance with the revised *Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones (TCEQ-0585)*, which are applicable to submittals received by the TCEQ after October 1, 2004.

This geologic assessment report documents conditions observed by **RKI** within the project boundaries on August 5, 2023 as well as additional field observations recorded on September 5, 2023 pertaining to the installation of additional Best Management Practices (BMPs) within the area of construction.

Site Description

Site Location. The subject property comprises approximately 45 acres located at the southeast intersection of Farm- to-Market (FM) Highway 306 and Purgatory Road in New Braunfels, Texas (i.e., hereinafter referred to as SITE). The SITE will host a commercial storage facility that is currently under construction. Based on review of official maps published by the TCEQ, the SITE is fully located within the Edwards Aquifer Recharge Zone (EARZ). As such, the performance of a geologic assessment is required to facilitate planned construction activities in accordance with applicable provisions set forth in the Edwards Aquifer Protection Program (EAPP) rules.

RKI understands that planned improvements will also include installation of a SCS system, which comprises approximately 1,423 linear feet of 6-inch diameter polyvinyl chloride (PVC) sanitary sewer line. In accordance with TCEQ requirements, the full extent of the proposed SCS alignment and surrounding 50-foot buffer zone were fully assessed in conjunction with Geologic Assessment activities. The locations of the existing and proposed SCS segments and BMPs observed in conjunction with field reconnaissance efforts were provided by VEI Consulting Engineers, Inc. (VEI) on July 31, 2023 and September 6, 2023, respectively. On August 5, 2023, **RKI** observed the SITE under development with silt fencing surrounding the area of construction. During the September 5, 2023 site visit, **RKI** noted the presence of additional erosional control measures consisting of eleven rock berms adjacent to the construction area and a soil berm surrounding the proposed sediment basin. During this site visit, **RKI** also observed additional silt fencing near the SITE entrance and that construction of foundation elements for the storage facility had been completed. The SCS alignments and associated buffer zone, in addition to the BMPs and building locations associated with the observed foundation elements are depicted on the attached ***Site Soils Map***.

As presented on the attached ***Site Geologic Map,*** adjacent properties include: Purgatory Road with single-family residential development (Eden Ranch subdivision) and Dry Dock & Lock – Canyon Lake storage facility

to the north/northwest, Purgatory Road with an Exxon Gas Station/7-Eleven convenience store to the west and single-family residential properties (Oak Valley Estates subdivision), to the south, and vacant land to the east.

Topography and Drainage. Topographic contours on the U.S. Geological Survey (USGS, 2022) 7.5-minute topographic map (i.e. New Braunfels West Quadrangle) were reviewed to evaluate the pre-existing general surface conditions and drainage patterns along with more detailed 5-foot topographic contours contours obtained from the Comal County Geographic Information System (GIS) interactive web map (CCEO, 2022) are depicted on the ***Site Geologic Map***. The SITE consists of a gently sloping hilltop topography. The north portion of the property is transected from north to the southwest by Jacobs Creek. Maximum elevations occur near the southeast property boundary and are on the order 1,055 feet relative to mean sea level (msl). A minimum elevation of 997 feet msl occurs along Jacobs Creek near the northwest property boundary.

The surface drainage patterns for the majority of the SITE are locally to the northwest and southwest toward Jacobs Creek. The drainage across the SITE occurs as sheet flow directed toward Jacobs Creek with ultimate connection to the Guadalupe River, which is located approximately 3 miles to the west. A review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel No. 48091C0280F (effective September 2, 2009) indicates that despite the presence of Jacobs Creek, no portion of the SITE is within the 100-year floodplain. The SITE is fully within Zone X as designated on official maps (i.e., an area determined to be outside of the defined 0.2% annual probability floodplain area).

Historical Property Use. Although research pertaining to past SITE operations and historical land use activities was beyond the scope of this assessment, historical aerial imagery was reviewed to evaluate past land use and the presence of lineations that could indicate the presence of normal faulting. The following aerial photographs Google Earth™ were reviewed: 1995, 2002, 2004, 2008, 2010 through 2023. The SITE remained undeveloped as indicated from the 1995 through 2022 aerial photographs. The most recent 2023 aerial photograph indicates development (i.e., tree clearing activities) across the SITE, which is consistent with field reconnaissance observations (i.e., construction of the storage facility).

Classification of Recharge Features: As further described herein, 10 recharge features were identified within SITE boundaries consisting of manmade features in bedrock (i.e., test holes and an existing sanitary sewer utility line. The significance of these features was assessed using definitions and guidance provided in *Instructions to Geologists (TCEQ-0585-Instructions, revised October 1, 2004)*. All features within the SITE that met the criteria presented in this reference were mapped. The characteristics of all mapped features and the assessments of these features, as defined by the TCEQ, are presented in the attached ***Geologic Assessment Table (TCEQ-0585-Table)***.

Stratigraphy

As presented in the attached ***Stratigraphic Column***, information pertaining to the lithologies and thickness of geologic units underlying the SITE was adapted from Collins (2000) and Small and Hanson (1994). Collective published data referenced indicate that the Kainer Formation (Kek), which comprises the lower portion of the Edwards Limestone, underlies the SITE as depicted on the ***Site Geologic Map.*** The Kek is subdivided into four members as follows: (i) Grainstone member (Kkg) – grainstone, mudstone to wackestone, and chert; (ii) Kirschberg Evaporite member (Kkke) – highly altered crystalline limestone with chalky mudstone and chert; (iii)

Dolomite member (Kkd) – crystalline limestone consisting of mudstone to grainstone; and (iv) Basal nodular member (Kkbn) – shaly nodular limestone, mudstone, and grainstone.

Based on field observations and interpretation of published geologic information, the Dolomitic member represents the surface geologic unit at the SITE. Patchy exposures of the Kkd were identified within the drainage feature (i.e., Jacobs Creek) in the north portion of the SITE and along a shallow swale near the west property boundary. In addition, Kkd exposures were also observed within the limestone cut wall that defines the south limit of the area that hosted limestone milling activities in the central portion of the subject property.

Structure

This SITE is located along the southern edge of the Balcones Fault Zone and, as such, is expected to exhibit a similar structural trend. The Balcones Fault Zone generally consists of a northeast-southwest trending, *en echelon* normal fault system, which juxtaposes Upper Cretaceous lithologies in the southeast with Lower Cretaceous lithologies in the northwest. As a result of this large-scale regional faulting, minor internal fault sequences and fractures exist within this zone, which generally follow the same structural trend and accommodate localized displacement.

Based on review of historical aerial photographs, published maps, and in conjunction with field mapping efforts, no indications of lineations that could be associated with normal faulting were identified within the boundaries of the SITE. However, Small and Hanson (1994) mapped one northeast trending fault to the north/northwest of the SITE as depicted on the ***Site Geologic Map***. This normal fault reportedly facilitates internal displacement within the Dolomitic member of the Kainer Formation.

Manmade Features

As presented on the ***Site Geologic Map***, ten manmade features in bedrock were identified that may potentially serve to enhance the transmission of surface runoff to the subsurface. The features consist of an existing sanitary sewer line segment in addition to plugged geotechnical test holes. Information regarding the location of the existing utility trench was gleaned from the Overall Site Plan prepared by VEI Consulting Engineers, Inc. (VEI), the project civil engineer (provided to **RKI** on July 31, 2023), in addition to field observations of recently-installed cleanouts. The following is a brief description of the feature that was identified excluding the geotechnical test holes:

> ***Feature S-1*** is an existing sanitary sewer utility trench (VEI, 2023). The utility trench is 3 feet wide and installed to depths of approximately 4 feet into the underlying bedrock of the Kainer Formation. Although not directly observable, it is inferred that this subgrade trench is backfilled in accordance with standard construction practices that include the use of structural fill soils (e.g., limestone gravel, compacted clay soils, etc.) overlain by native or fill soils. This trench was not observed in conjunction with any naturally occurring recharge features. Although the backfilled trench may exhibit a somewhat greater relative infiltration rate than the surrounding soil/rock strata underlying the project boundaries, this manmade feature is classified as not sensitive, having a low potential of preferentially transmitting fluids into the Edwards Aquifer. This classification is based upon the point assignment criteria presented in the ***Geologic Assessment Table (TCEQ-0585)*** and professional judgment.

Information regarding the locations of the geotechnical test holes was obtained from the Subsurface Exploration, Laboratory Testing Program, and Foundation and Pavement Recommendations report prepared by Rock Engineering and Testing Laboratory, LLC, dated February 10, 2022 (provided to **RKI** by VEI on July 27, 2023). There were no remaining field indications of these plugged test holes. The following is a discussion of the features that were reported:

> ***Features S-2 through S-10*** consist of geotechnical borings installed by Rock Engineering and Testing Laboratory, LLC as part of the referenced geotechnical engineering study (Rock, 2022). These were reportedly installed with air rotary methods to maximum total depths of approximately 20 feet. Borings generally encountered very stiff to very hard dark brown to reddish-brown gravelly clay soils to depths of approximately 1 foot to 3 feet. Below these depths, a hard, tan limestone consisting of the lower part (i.e. Kainer Formation) of the Edwards Limestone was reported. These logging observations are consistent with mapped soil and rock types. No shallow groundwater was observed during drilling operations.

These features are collectively classified as not sensitive as they have been plugged and no longer exist. The former locations of these features are included on the ***Site Geologic Map.***

Potential for Fluid Migration to the Edwards Aquifer

The SITE is overlain with by native clay and fill soils having slow to moderate infiltration rates. Based on our review of SITE geology, topography and drainage conditions, in addition to the results of our detailed mapping efforts, the overall potential for fluid movement (i.e. surface-derived flow) to the Edwards Aquifer via infiltration is therefore considered to be low to moderate. The following assessment findings support this conclusion.

- The undisturbed areas of the SITE are underlain by surface soils ranging in thickness from approximately veneer to 3 feet based on geotechnical drilling data and field observations. The Rumple-Comfort clays are classified as Hydrologic Soil Group C and have low infiltration rate with medium runoff potential when thoroughly wet, and a slow rate of water transmission. The remaining areas of the SITE are directly underlain by milled limestone of the Kek or granular fill soils comprised predominantly of milled limestone, which have an inferred moderate infiltration rate.

- No features were identified throughout the SITE that can be attributed to karstification of limestone terrain. There were no natural karst features observed within the vicinity of any the observed manmade features that would increase the potential for rapid infiltration.

- The manmade features present at the SITE, are collectively classified as not sensitive based on consideration of construction/plugging details and application of point assignment criteria and professional judgment.

References

Barnes, V. L., 1983, Geologic Atlas of Texas San Antonio Sheet; Bureau of Economic Geology, The University of Texas at Austin, Austin, Texas.

Collins, Edward W., 2000, Geologic Map of the New Braunfels, Texas, 30 x 60 Minute Quadrangle: Geologic Framework of an Urban-Growth Corridor along the Edwards Aquifer, South-Central Texas: Bureau of Economic Geology, The University of Texas at Austin, Austin, Texas.

Comal County Engineer's Office (CCEO), 2022, Comal County Geographic Information System (GIS) Hub, https://data-comalcounty.opendata.arcgis.com/datasets/comalcounty::contour-5ft-open-data, accessed August 14, 2023.

Google Earth™, February 1995, December 2002, August 2004, May 2008, January 2010, October 2011, April 2012, February 2013, January and November 2014, December 2015, February and October 2016, January 2017, January 2018, November 2019, December 2020, October 2021, November 2022, and April 2023.

National Flood Insurance Program, 2009, Flood Insurance Rate Map, Comal County, Texas and Incorporated Areas; Federal Emergency Management Agency, Map 48091C0280F.

VEI Consulting Engineers, Inc., 2023, Overall Site Plan (22023_360COMAL_OSP_06-21-2023.pdf), received via email July 31, 2023

VEI Consulting Engineers, Inc., 2023, Erosional Control Plan (ACAD-22023_Civil Master WPAP-Model.dwg and 22023_360COMAL_WPAP_SH02-C1.0-ERO_09-05-2023), received via email September 6, 2023

Rock Engineering & Testing Laboratory, LLC (Rock), 2022, Subsurface Exploration, Laboratory Testing Program, and Foundation and Pavement Recommendations Report for The Proposed All Stor, dated February 10, 2022, Project No. 221383.

Small, T. A., and J. A. Hanson, 1994, Geologic framework and hydrogeologic characteristics of the Edwards Aquifer Outcrop, Comal County, Texas: USGS Water-Resources Investigations Report 94-4117.

TCEQ Edwards Aquifer Protection Program, 1998, Edwards Aquifer Recharge Zone Map, Hunter Quadrangle; TNRCC, September 1998.

United States Geological Survey (USGS), 2022, Hunter Quadrangle; USGS, Denver, Colorado.

United States Department of Agriculture (USDA), 1984, Soil Survey of Comal and Hays Counties, Texas; USDA / Soil Conservation Service / Texas Agricultural Experiment Station, Issued June 1984.

United States Department of Agriculture (USDA), 1986, Urban Hydrology for Small Watersheds; USDA / Natural Resource Conservation Service, Technical Release (TR-) 55, June 1986.

ATTACHMENT D

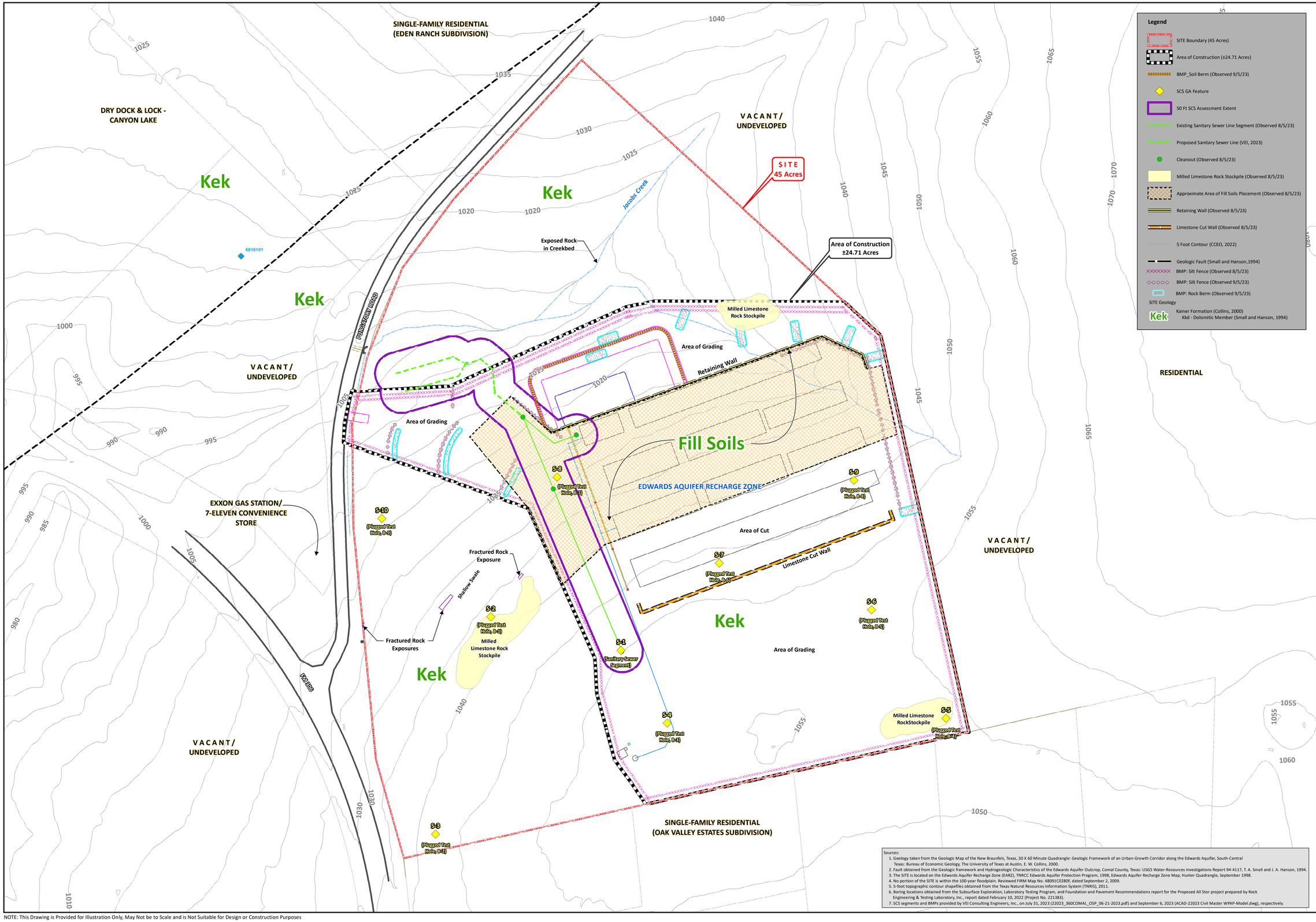
FEATURE POSITION TABLE
(GPS COORDINATES)

SITE GEOLOGIC MAP

FEATURE POSITION TABLE
360 Comal Storage & Commercial
New Braunfels, Comal County, Texas
RKI Project No. ASF23-067-00

Feature Designation	Feature Type	Date Collected	North Latitude	West Longitude	UTM Northing (meters)	UTM Easting (meters)
S-1	Manmade feature in bedrock (Sanitary Sewer Utility Trench)	8/5/2023	29°50'48.51"N	98° 6'59.67"W	3302138	585337
S-2	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-1)	8/5/2023	29°50'49.34"N	98° 7'3.24"W	3302163	585241
S-3	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-2)	8/6/2023	29°50'44.15"N	98° 7'4.81"W	3302003	585200
S-4	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-3)	8/7/2023	29°50'46.76"N	98° 6'58.42"W	3302085	585371
S-5	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-4)	8/8/2023	29°50'46.83"N	98° 6'50.76"W	3302088	585576
S-6	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-5)	8/9/2023	29°50'49.44"N	98° 6'52.79"W	3302168	585521
S-7	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-6)	8/10/2023	29°50'50.58"N	98° 6'56.96"W	3302202	585409
S-8	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-7)	8/11/2023	29°50'52.67"N	98° 7'1.39"W	3302266	585289
S-9	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-8)	8/12/2023	29°50'52.54"N	98° 6'53.24"W	3302264	585508
S-10	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-9)	8/5/2023	29°50'51.71"N	98° 7'6.21"W	3302235	585160

Notes:
1. Geographic coordinates are presented Degrees, Minutes, Decimal Seconds
2. Reference Datum is NAD 83.
3. Data were collected utilizing a ***Garmin GPS 60cx Global Positioning System*** .
4. Horizontal Accuracy: RMS Value < 3 meter ground resolution.
5. GPS data were collected by Rick Sample (**RKI** Project Professional).
6. GPS coordinates correlate to the points on the map for each feature.



Legend

- SITE Boundary (45 Acres)
- Area of Construction (±24.71 Acres)
- BMP_Soil Berm (Observed 9/5/23)
- SCS GA Feature
- 50 Ft SCS Assessment Extent
- Existing Sanitary Sewer Line Segment (Observed 8/5/23)
- Proposed Sanitary Sewer Line (VEI, 2023)
- Cleanout (Observed 8/5/23)
- Milled Limestone Rock Stockpile (Observed 8/5/23)
- Approximate Area of Fill Soils Placement (Observed 8/5/23)
- Retaining Wall (Observed 8/5/23)
- Limestone Cut Wall (Observed 8/5/23)
- 5 Foot Contour (CCEO, 2022)
- Geologic Fault (Small and Hanson,1994)
- BMP: Silt Fence (Observed 8/5/23)
- BMP: Silt Fence (Observed 9/5/23)
- BMP: Rock Berm (Observed 9/5/23)

SITE Geology

Kek — Kainer Formation (Collins, 2000)
Kkd - Dolomitic Member (Small and Hanson, 1994)

Sources:
1. Geology taken from the Geologic Map of the New Braunfels, Texas, 30 X 60 Minute Quadrangle: Geologic Framework of an Urban-Growth Corridor along the Edwards Aquifer, South-Central Texas: Bureau of Economic Geology, The University of Texas at Austin, E. W. Collins, 2000.
2. Fault obtained from the Geologic framework and Hydrogeologic Characteristics of the Edwards Aquifer Outcrop, Comal County, Texas: USGS Water-Resources Investigations Report 94-4117, T. A. Small and J. A. Hanson, 1994.
3. The SITE is located on the Edwards Aquifer Recharge Zone (EARZ), TNRCC Edwards Aquifer Protection Program, 1998, Edwards Aquifer Recharge Zone Map, Hunter Quadrangle, September 1998.
4. No portion of the SITE is within the 100-year floodplain. Reviewed FIRM Map No. 48091C0280F, dated September 2, 2009.
5. 5-foot topographic contour shapefiles obtained from the Texas Natural Resources Information System (TNRIS), 2011.
6. Boring locations obtained from the Subsurface Exploration, Laboratory Testing Program, and Foundation and Pavement Recommendations report for the Proposed All Stor project prepared by Rock Engineering & Testing Laboratory, Inc., report dated February 10, 2022 (Project No. 221383).
7. SCS segments and BMPs provided by VEI Consulting Engineers, Inc., on July 31, 2023 (22023_360COMAL_OSP_06-21-2023.pdf) and September 6, 2023 (ACAD-22023 Civil Master WPAP-Model.dwg), respectively.

NOTE: This Drawing is Provided for Illustration Only, May Not be to Scale and is Not Suitable for Design or Construction Purposes

RABA KISTNER
12821 West Golden Lane
San Antonio, Texas 78249
www.rkci.com
P 210 :: 699 :: 9090
F 210 :: 699 :: 6426
TBPE Firm F-3257/TBPG #50220

STATE OF TEXAS
RICHARD V. KLAR
GEOLOGY
259
LICENSED
PROFESSIONAL GEOSCIENTIST
9/8/2023

SITE GEOLOGIC MAP

360 COMAL STORAGE & COMMERCIAL
FM 306 AND PURGATORY ROAD
NEW BRAUNFELS, COMAL COUNTY, TEXAS

No.	DATE	DESCRIPTION

PROJECT No.:
ASF23-067-00

ISSUE DATE:	09/08/2023
DRAWN BY:	LAW
CHECKED BY:	RAS
REVIEWED BY:	RVK

N W E S

0 25 50 100
FEET
1 INCH = 100 FEET

1.4. WATER POLLUTION ABATEMENT PLAN

- TCEQ WATER POLLUTION ABATEMENT PLAN APPLICATION FORM & CHECKLIST (FORM-0584)
- Attachment A Factors Affecting Surface Water Quality
- Attachment B Volume & Character of Stormwater
- Attachment C Suitability Letter From Authorized Agent (if OSSF is proposed)

Water Pollution Abatement Plan Application

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

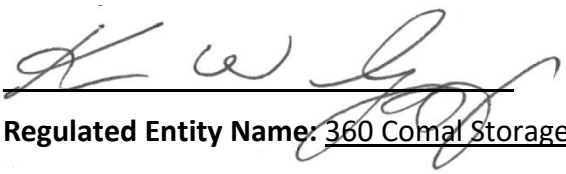
Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Water Pollution Abatement Plan Application Form** is hereby submitted for TCEQ review and Executive Director approval. The form was prepared by:

Print Name of Customer/Agent: Kevin W. Spraggins

Date: 09/11/2023

Signature of Customer/Agent:



Regulated Entity Name: 360 Comal Storage & Commercial

Regulated Entity Information

1. The type of project is:

   ☐ Residential: Number of Lots:_____
   ☐ Residential: Number of Living Unit Equivalents:_____
   ☒ Commercial
   ☐ Industrial
   ☐ Other:_____

2. Total site acreage (size of property):45.0 ac

3. Estimated projected population:12 persons

4. The amount and type of impervious cover expected after construction are shown below:

Table 1 - Impervious Cover Table

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	141,630	÷ 43,560 =	3.25
Parking	see below	÷ 43,560 =	see below
Other paved surfaces	253,480	÷ 43,560 =	5.82
Total Impervious Cover	395,110	÷ 43,560 =	9.07

Total Impervious Cover 9.07 **÷ Total Acreage** 45.0 **X 100 =** 20**% Impervious Cover**

5. ☒ **Attachment A - Factors Affecting Surface Water Quality**. A detailed description of all factors that could affect surface water and groundwater quality that addresses ultimate land use is attached.

6. ☒ Only inert materials as defined by 30 TAC §330.2 will be used as fill material.

For Road Projects Only

Complete questions 7 - 12 if this application is exclusively for a road project.

7. Type of project:

   ☐ TXDOT road project.
   ☐ County road or roads built to county specifications.
   ☐ City thoroughfare or roads to be dedicated to a municipality.
   ☐ Street or road providing access to private driveways.

8. Type of pavement or road surface to be used:

   ☐ Concrete
   ☐ Asphaltic concrete pavement
   ☐ Other: _____

9. Length of Right of Way (R.O.W.): _____ feet.

   Width of R.O.W.: _____ feet.
   L x W = _____ Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.

10. Length of pavement area: _____ feet.

    Width of pavement area: _____ feet.
    L x W = _____ Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.
    Pavement area _____ acres ÷ R.O.W. area _____ acres x 100 = _____% impervious cover.

11. ☐ A rest stop will be included in this project.

    ☐ A rest stop will not be included in this project.

12. ☐ Maintenance and repair of existing roadways that do not require approval from the TCEQ Executive Director. Modifications to existing roadways such as widening roads/adding shoulders totaling more than one-half (1/2) the width of one (1) existing lane require prior approval from the TCEQ.

Stormwater to be generated by the Proposed Project

13. ☒ **Attachment B - Volume and Character of Stormwater**. A detailed description of the volume (quantity) and character (quality) of the stormwater runoff which is expected to occur from the proposed project is attached. The estimates of stormwater runoff quality and quantity are based on the area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

Wastewater to be generated by the Proposed Project

14. The character and volume of wastewater is shown below:

100% Domestic	720Gallons/day
0% Industrial	0.0Gallons/day
0% Commingled	0.0Gallons/day

TOTAL gallons/day 720

15. Wastewater will be disposed of by:

☒ On-Site Sewage Facility (OSSF/Septic Tank):

☒ **Attachment C - Suitability Letter from Authorized Agent**. An on-site sewage facility will be used to treat and dispose of the wastewater from this site. The appropriate licensing authority's (authorized agent) written approval is attached. It states that the land is suitable for the use of private sewage facilities and will meet or exceed the requirements for on-site sewage facilities as specified under 30 TAC Chapter 285 relating to On-site Sewage Facilities.

☒ Each lot in this project/development is at least one (1) acre (43,560 square feet) in size. The system will be designed by a licensed professional engineer or registered sanitarian and installed by a licensed installer in compliance with 30 TAC Chapter 285.

☒ Sewage Collection System (Sewer Lines):

☐ Private service laterals from the wastewater generating facilities will be connected to an existing SCS.

☒ Private service laterals from the wastewater generating facilities will be connected to a proposed SCS.

☐ The SCS was previously submitted on_____.

☐ The SCS was submitted with this application.

☐ The SCS will be submitted at a later date. The owner is aware that the SCS may not be installed prior to Executive Director approval.

☒ The sewage collection system will convey the wastewater to the 360 Comal Storage (name) Treatment Plant. The treatment facility is:

☐ Existing.
☒ Proposed.

16. ☒ All private service laterals will be inspected as required in 30 TAC §213.5.

Site Plan Requirements

Items 17 – 28 must be included on the Site Plan.

17. ☒ The Site Plan must have a minimum scale of 1" = 400'.

Site Plan Scale: 1" = 100'.

18. 100-year floodplain boundaries:

☐ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
☒ No part of the project site is located within the 100-year floodplain.
The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA FIRM, 48091C0280F, effective 09/02/2009.

19. ☒ The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Lots, recreation centers, buildings, roads, open space, etc. are shown on the plan.

☒ The layout of the development is shown with existing contours at appropriate, but not greater than ten-foot intervals. Finished topographic contours will not differ from the existing topographic configuration and are not shown. Lots, recreation centers, buildings, roads, open space, etc. are shown on the site plan.

20. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):

☐ There are zero (0) (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)

☐ The wells are not in use and have been properly abandoned.
☐ The wells are not in use and will be properly abandoned.
☐ The wells are in use and comply with 16 TAC §76.

☒ There are no wells or test holes of any kind known to exist on the project site.

21. Geologic or manmade features which are on the site:

☐ All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.
☒ No sensitive geologic or manmade features were identified in the Geologic Assessment.
☒ **Attachment D - Exception to the Required Geologic Assessment**. A request and justification for an exception to a portion of the Geologic Assessment is attached.

22. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.

23. ☒ Areas of soil disturbance and areas which will not be disturbed.

24. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.

25. ☒ Locations where soil stabilization practices are expected to occur.

26. ☒ Surface waters (including wetlands).

    ☒ N/A

27. ☒ Locations where stormwater discharges to surface water or sensitive features are to occur.

    ☐ There will be no discharges to surface water or sensitive features.

28. ☒ Legal boundaries of the site are shown.

Administrative Information

29. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

30. ☒ Any modification of this WPAP will require Executive Director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

Water Pollution Abatement Plan Checklist

- **Edwards Aquifer Application Cover Page (TCEQ-20705)**
- **General Information Form (TCEQ-0587)**

  Attachment A - Road Map
  Attachment B - USGS / Edwards Recharge Zone Map
  Attachment C - Project Description

- **Geologic Assessment Form (TCEQ-0585)**

  Attachment A - Geologic Assessment Table (TCEQ-0585-Table)
  Attachment B - Stratigraphic Column
  Attachment C - Site Geology
  Attachment D - Site Geologic Map(s)

- **Water Pollution Abatement Plan Application Form (TCEQ-0584)**

  Attachment A - Factors Affecting Surface Water Quality
  Attachment B - Volume and Character of Stormwater
  Attachment C - Suitability Letter from Authorized Agent (if OSSF is proposed)
  Attachment D - Exception to the Required Geologic Assessment (if requested)
  Site Plan

- **Temporary Stormwater Section (TCEQ-0602)**

  Attachment A - Spill Response Actions
  Attachment B - Potential Sources of Contamination
  Attachment C - Sequence of Major Activities
  Attachment D - Temporary Best Management Practices and Measures
  Attachment E - Request to Temporarily Seal a Feature (if requested)
  Attachment F - Structural Practices
  Attachment G - Drainage Area Map
  Attachment H - Temporary Sediment Pond(s) Plans and Calculations
  Attachment I - Inspection and Maintenance for BMPs
  Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices

- **Permanent Stormwater Section (TCEQ-0600)**

  Attachment A - 20% or Less Impervious Cover Waiver (if requested for multi-family, school, or small business site)
  Attachment B - BMPs for Upgradient Stormwater
  Attachment C - BMPs for On-site Stormwater
  Attachment D - BMPs for Surface Streams
  Attachment E - Request to Seal Features (if sealing a feature)
  Attachment F - Construction Plans
  Attachment G - Inspection, Maintenance, Repair and Retrofit Plan
  Attachment H - Pilot-Scale Field Testing Plan (if proposed)
  Attachment I -Measures for Minimizing Surface Stream Contamination

- **Agent Authorization Form (TCEQ-0599), if application submitted by agent**
- **Application Fee Form (TCEQ-0574)**
- **Check Payable to the "Texas Commission on Environmental Quality"**
- **Core Data Form (TCEQ-10400)**

WATER POLLUTION ABATEMENT PLAN APPLICATION FORM (TCEQ-0584)

Attachment A FACTORS AFFECTING SURFACE WATER QUALITY

A detailed description of all factors that could affect surface water and groundwater quality that addresses ultimate land use is attached.

Development Plan Overview

360 Comal Storage includes the construction of a ±9.07-acre R.V. and boat storage facility on a ±45.0-acre site. This construction includes:

- Small rental office with parking;
- Metal-roofed storage buildings with concrete piers and asphalt paving;
- Paved drive aisles and a gated, commercial driveway entrance;
- Two (2) R.V. dump stations;
- An OSSF for the dump stations and the rental office;
- A Public Water Well and Public Water System; and
- Stormwater detention/sedimentation basin sized for the storage facility.

Construction-phase Factors

The major soil disturbing activities may include, but are not limited to:

- **Perimeter Controls Installation**. Installing perimeter controls (silt fence and mulch socks), construction entrance and concrete wash out area can generate sediment. Care will be taken during this installation to disturb as little dirt and vegetation as possible.
- **Clearing and grubbing of the site**. The perimeter controls and construction entrance will mitigate possible water quality issues.
- **Site excavation, temporary sedimentation basin, and embankment operations**. The perimeter controls, construction entrance, and erosion control blankets will mitigate possible water quality issues during this phase.
- **Utility installation**. The perimeter controls, construction entrance, erosion control blankets, and inlet controls will mitigate possible water quality issues during this phase.
- **Construction of retaining wall(s), parking, buildings**. The perimeter controls, construction entrance, erosion control blankets, rock berms, and inlet controls will mitigate possible water quality issues during this phase.
- Landscape operations. The perimeter controls, construction entrance, erosion control blankets, rock berms, and inlet controls will mitigate possible water quality issues during this phase until re-vegetation has occurred.

To mitigate these issues during construction of the site, the construction drawings include temporary BMP measures to ensure water quality is not affected during construction. In addition, a Construction Phase Spill Prevention Control & Countermeasure (SPCC) Plan is outlined in **Attachment A SPILL RESPONSE ACTIONS.**

Permanent Factors

After construction is complete, the following factors affecting surface water quality include, but are not limited to:

- **Herbicides, pesticides, and fertilizers**. Herbicides, pesticides, and fertilizers will be deed restricted from use within this business.

- **Waste disposal service**. Sanitary sewer wastewater is to be disposed of by an On-site Sewage Facility (OSSF), that will be permitted by Comal County.
- **Stormwater runoff conveyance erosion**. Drainage area inlets and a drainage channel will be constructed to convey stormwater to the extended detention basin located near the northwest corner of the site. Energy dissipating devices will be constructed at the detention basin inlets and downstream of the basin's spillway structure to release storm runoff uniformly to the Jacobs Creek watershed.
- **Possible R.V. or boat fluid runoff from vehicles that leak during storage**. To mitigate petroleum spills by customers or employees of the facility, a Spill Prevention Control & Countermeasure (SPCC) Plan will be developed prior to opening for business. This SPCC is outlined in **Attachment I MEASURES FOR MINIMIZING SURFACE STREAM CONTAMINATION.**

«END OF ATTACHMENT A»

WATER POLLUTION ABATEMENT PLAN APPLICATION FORM (TCEQ-0584)

Attachment B VOLUME & CHARACTER OF STORMWATER

A detailed description of the volume (quantity) and character (quality) of the stormwater runoff which is expected to occur from the proposed project is attached. The estimates of stormwater runoff quality and quantity are based on the area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

Runoff Quality/Character

360 Comal Storage site covers 45.0-acres. Drainage Area Maps can be found in the construction drawings in SHEET 9, C5.0, PRE-DEVELOPMENT DRAINAGE AREA MAP, and SHEET 10, C5.1, POST-DEVELOPMENT DRAINAGE AREA MAP.

There is no permanent surface water on the site. There is an ephemeral streambed (Jacobs Creek) crossing the northern part of the site from east to west. This part of the streambed is classified by the US Fish & Wildlife National Wetlands Inventory as "R4SBC" or "Riverine Intermittent Streambed Seasonally Flooded", meaning it may contain water during rainy periods but is dry otherwise. In the below *Figure 7, Wetlands Inventory Map of Tract*, an image taken from the National Wetlands Inventory, you can see the path of the Jacobs Creek streambed across the subject property.

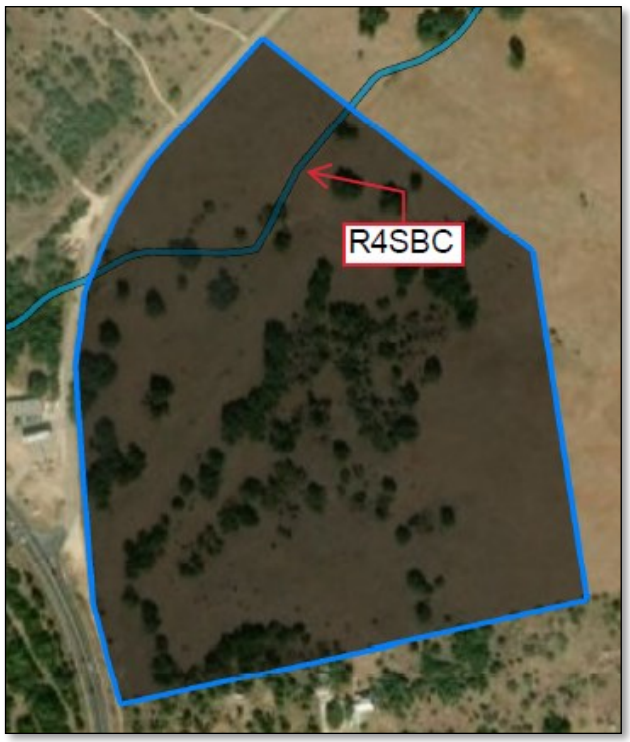


Figure 7, Wetlands Inventory Map of Tract

The civil drainage design for 360 Comal Storage follows natural drainage swales, directing stormwater runoff via sheet flow and inlets into a detention/sedimentation basin north of the developed area, just south of the Jacobs Creek streambed. Additionally, there is an earthen drainage channel on the far east side of the tract, directing offsite and onsite drainage along a natural drainage swale to the northern part of the tract and Jacobs Creek.

There is no development immediately east of the tract and a small single-family subdivision to the south. There is an elevation "high spot" in the southeast corner of the subject tract, directing offsite drainage away from that the site and minimizing sheetflow from the eastern and southern property boundaries.

There is no existing impervious cover on the 45.0-acre site. The proposed construction consists of ±9.07-acre R.V. and boat storage business that will have eight (8) buildings (metal roofed, open bay structures) on asphalt paving with concrete

piers and asphalt paved drive aisles. There will be a small rental office, parking, and commercial driveway entrance on Purgatory Road.

Next year, the client may expand the business with another four storage buildings of the same construction just south of the current phase. When the client expands the business, an amendment to this WPAP will be submitted, accounting for the new development and revised calculations.

Rainfall intensities and depths for the current developed area were calculated using the time of concentration and the Atlas 14 rainfall quantities. The runoff conditions were based on site conditions and the TCEQ Total Suspended Solids (TSS) Calculation Spreadsheet (dated 04/20/2009). A weighted runoff coefficient was determined based on calculations within the defined drainage areas.

Drainage Areas

The Total Disturbed Area for the construction project will be 24.96-ac. (55% of the overall tract), including DA2 and 3.6-ac. of the below defined DA1 and DA3. Once construction is complete, the Total Impervious Cover will be 9.07-ac. (20% of the overall tract).

For defining drainage data on the site, the subject 45.0-ac. has been divided into three (3) Drainage Areas, described in the below table.

Name	Acreage	Description
DA1	14.0 ac.	• Includes undeveloped acreage west of the proposed storage business and south of Jacobs Creek. This acreage may be developed at a later date. • Has onsite sheet flow drainage from southeast and south and offsite sheet flow from the south. • A total of 3.6 -ac. of DA1 & DA3 is routed through the Extended Detention facility.
DA2	21.36 ac.	• Includes both phases of the storage business (current and future), , and most of the property south of Jacobs Creek. • Has onsite sheet flow that contributes to the sedimentation/detention basin and feeds drainage to Jacobs Creek. Includes a small portion of the offsite drainage contributions from the east.
DA3	9.66 ac.	• Includes the north portion of the property with Jacobs Creek and the drainage channel on the east side of the proposed business. • Has onsite drainage from the north, and east that flows directly into the creekbed. Includes some offsite drainage from the north and east. • A total of 3.6 -ac. of DA1 & DA3 is routed through the Extended Detention facility.

Table 2, Drainage Area Descriptions

Drainage Data

Below are drainage area data for the different rain events (2-year to 100-year). As you can see, runoff from the tract for all intensities has been reduced from pre-development figures. These calculations can be found in the construction drawing on SHEET 10, C5.1, POST-DEVELOPMENT DRAINAGE AREA MAP.

Note that the Time of Concentration is 10.0-minutes for all rain events and all drainage areas in the below table.

		Pre-Development				Post-Development					
		DA1	DA2	DA3	Total flows leaving site	DA1	DA2	DA2, with 3.6-ac. of DA1 & DA3		DA3 *	Total flows leaving site
								Total	Routed thru Pond		
Rainfall Event	C **	0.5	0.5	0.5	--	0.51	0.68	0.68	--	0.5	--
	Area (ac)	14.00	21.36	9.66	**45.02**	14.00	21.36	24.96	24.96	9.66	**45.02**
2 yr	I (in/hr)	5.06	5.06	5.06	--	5.06	5.06	5.06	--	5.06	--
	Q (cfs)	35.47	63.23	24.47	**123.17**	35.47	68.97	85.99	0.03	24.47	**59.97**
5 yr	I (in/hr)	6.33	6.33	6.33	--	6.33	6.33	6.33	--	6.33	--
	Q (cfs)	44.34	79.05	30.59	**153.98**	44.34	86.23	107.51	0.033	30.59	**74.96**
10 yr	I (in/hr)	7.43	7.43	7.43	--	7.43	7.43	7.43	--	7.43	--
	Q (cfs)	51.98	92.67	35.87	**180.52**	51.98	101.09	126.03	0.034	35.87	**87.88**
25 yr	I (in/hr)	8.92	8.92	8.92	--	8.92	8.92	8.92	--	8.92	--
	Q (cfs)	62.43	111.31	43.08	**216.82**	62.43	121.42	151.38	93.19	43.08	**198.70**
50 yr	I (in/hr)	10.10	10.10	10.10	--	10.10	10.10	10.10	--	10.10	--
	Q (cfs)	70.73	126.10	48.80	**245.63**	70.73	137.55	171.49	111.68	48.80	**231.21**
100 yr	I (in/hr)	11.37	11.37	11.37	--	11.37	11.37	11.37	--	11.37	--
	Q (cfs)	79.57	141.87	54.90	**276.34**	79.57	154.75	192.94	132.88	54.90	**267.35**

* No change in impervious coverage from pre-development conditions to post-development conditions.

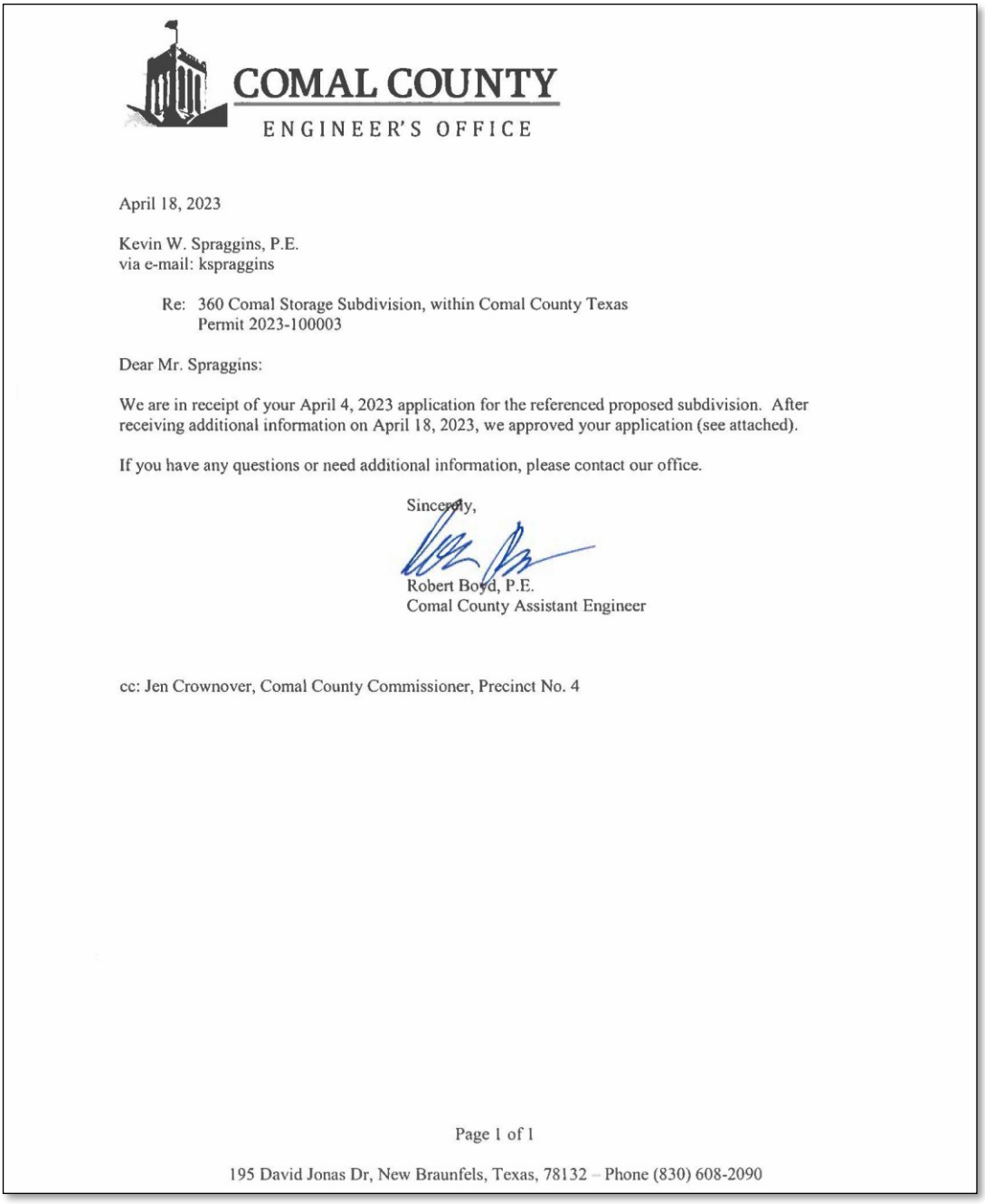
Table 3, Stormwater Runoff Quantity by Storm Event & Drainage Area

«END OF ATTACHMENT B»

WATER POLLUTION ABATEMENT PLAN APPLICATION FORM (TCEQ-0584)

Attachment C SUITABILITY LETTER FROM AUTHORIZED AGENT (if OSSF is proposed)

An on-site sewage facility will be used to treat and dispose of the wastewater from this site. The appropriate licensing authority's (authorized agent) written approval is attached. It states that the land is suitable for the use of private sewage facilities and will meet or exceed the requirements for on-site sewage facilities as specified under 30 TAC Chapter 285 relating to On-site Sewage Facilities.



COMAL COUNTY
ENGINEER'S OFFICE

April 18, 2023

Kevin W. Spraggins, P.E.
via e-mail: kspraggins

Re: 360 Comal Storage Subdivision, within Comal County Texas
Permit 2023-100003

Dear Mr. Spraggins:

We are in receipt of your April 4, 2023 application for the referenced proposed subdivision. After receiving additional information on April 18, 2023, we approved your application (see attached).

If you have any questions or need additional information, please contact our office.

Sincerely,

Robert Boyd, P.E.
Comal County Assistant Engineer

cc: Jen Crownover, Comal County Commissioner, Precinct No. 4

Page 1 of 1

195 David Jonas Dr, New Braunfels, Texas, 78132 – Phone (830) 608-2090

Figure 8, CCEO OSSF Licensing Authority Approval Letter

RECEIVED
By Kathy Griffin at 1:02 pm, Apr 04, 2023

Application for Licensing Authority Recommendation for Private Sewerage Facilities for a Proposed Subdivision

2023-100003

Date: March 23, 2023

Subdivision Name: 360 Comal Storage & Commercial

Owner's Name: 360 Comal Storage LLC

Address: 12600 Hill Country Blvd, Ste. R-275, Bee Cave, TX

Phone #: (512) 947-7966

Fee Schedule:
5 or less tracts: $20/tract
6 or more tracts: $100 base fee + $5/tract

Total Fee: $ _____

Received by: _____

Make Check Payable to Comal County

According to TAC §285.4(c), persons proposing residential subdivisions, manufactured housing communities, multi-unit residential developments, business parks, or other similar structures that use OSSFs for sewage disposal shall submit planning materials, prepared by a professional engineer or professional sanitarian, for these developments to the permitting authority and receive approval prior to submitting an OSSF application:

- An overall site plan
- Topographic map
- 100-year floodplain map
- Soil survey
- Location of water wells
- Locations of easements as identified in TAC §285.91(10) (relating to Tables)
- A complete report detailing the types of OSSFs to be considered and their compatibility with area-wide drainage and groundwater
- A comprehensive drainage plan
- Edwards Aquifer requirements that are pertinent to the proposed OSSF
- If the proposed development includes restaurants or buildings with food service establishments, the planning materials must show adequate land area for doubling the land needed for the treatment units

Comal County also asks for an existing improvements sketch and gate combination(s) in order to adequately inspect the site for use of OSSFs for sewage disposal.

Applicant/Agent Signature

Date of Review (must be within 45 days of receipt): 4/18/23

☑ Approved

☐ Denied

Reason(s) for Denial: _____

Reviewer: _____, D.R.

*** Note: This sheet shall be first with all planning materials listed above following behind.**

Revised August 2010

Figure 9, Approved OSSF Licensing Authority Permit

«END OF ATTACHMENT C»

1.5. TEMPORARY STORMWATER SECTION

- TCEQ Temporary Stormwater Section (FORM-0602, Rev. 02/11/2015)
- Attachment A Spill Response Actions
- Attachment B Potential Sources of Contamination
- Attachment C Sequence of Major Activities
- Attachment D Temporary Best Management Practices and Measures
- Attachment E Request to Temporarily Seal a Feature
- Attachment F Structural Practices
- Attachment G Drainage Area Map
- Attachment H Temporary Sediment Pond(s) Plans and Calculations
- Attachment I Inspection and Maintenance for BMPs
- Attachment J Schedule of Interim and Permanent Soil Stabilization Practices

Temporary Stormwater Section

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b)(4)(A), (B), (D)(I) and (G); Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

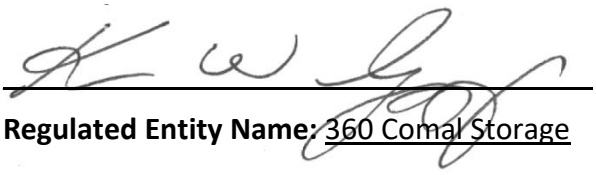
Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Temporary Stormwater Section** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

Print Name of Customer/Agent: Kevin W. Spraggins

Date: 09/11/2023

Signature of Customer/Agent:



Regulated Entity Name: 360 Comal Storage

Project Information

Potential Sources of Contamination

Examples: Fuel storage and use, chemical storage and use, use of asphaltic products, construction vehicles tracking onto public roads, and existing solid waste.

1. Fuels for construction equipment and hazardous substances which will be used during construction:

   ☐ The following fuels and/or hazardous substances will be stored on the site: _____

   These fuels and/or hazardous substances will be stored in:

   ☐ Aboveground storage tanks with a cumulative storage capacity of less than 250 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An Aboveground Storage Tank Facility Plan application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.

☒ Fuels and hazardous substances will not be stored on the site.

2. ☒ **Attachment A - Spill Response Actions**. A site specific description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is attached.

3. ☒ Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

4. ☒ **Attachment B - Potential Sources of Contamination**. A description of any activities or processes which may be a potential source of contamination affecting surface water quality is attached.

Sequence of Construction

5. ☒ **Attachment C - Sequence of Major Activities**. A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is attached.

   ☒ For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.

   ☒ For each activity described, include a description of appropriate temporary control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

6. ☒ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Jacobs Creek (ephemeral)

Temporary Best Management Practices (TBMPs)

Erosion control examples: tree protection, interceptor swales, level spreaders, outlet stabilization, blankets or matting, mulch, and sod. Sediment control examples: stabilized construction exit, silt fence, filter dikes, rock berms, buffer strips, sediment traps, and sediment basins. Please refer to the Technical Guidance Manual for guidelines and specifications. All structural BMPs must be shown on the site plan.

7. ☒ **Attachment D – Temporary Best Management Practices and Measures**. TBMPs and measures will prevent pollution of surface water, groundwater, and stormwater. The construction-phase BMPs for erosion and sediment controls have been designed to retain sediment on site to the extent practicable. The following information is attached:

☒ A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.

☒ A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.

☒ A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.

☒ A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.

8. ☐ The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.

☐ **Attachment E - Request to Temporarily Seal a Feature**. A request to temporarily seal a feature is attached. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

☒ There will be no temporary sealing of naturally-occurring sensitive features on the site.

9. ☒ **Attachment F - Structural Practices**. A description of the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site is attached. Placement of structural practices in floodplains has been avoided.

10. ☒ **Attachment G - Drainage Area Map**. A drainage area map supporting the following requirements is attached:

☒ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.

☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. Erosion and sediment controls other than sediment basins or sediment traps within each disturbed drainage area will be used.

11. ☒ **Attachment H - Temporary Sediment Pond(s) Plans and Calculations**. Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are attached.

☐ N/A

12. ☒ **Attachment I - Inspection and Maintenance for BMPs.** A plan for the inspection of each temporary BMP(s) and measure(s) and for their timely maintenance, repairs, and, if necessary, retrofit is attached. A description of the documentation procedures, recordkeeping practices, and inspection frequency are included in the plan and are specific to the site and/or BMP.

13. ☒ All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.

14. ☒ If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).

15. ☒ Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.

16. ☒ Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

Soil Stabilization Practices

Examples: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, or preservation of mature vegetation.

17. ☒ **Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices**. A schedule of the interim and permanent soil stabilization practices for the site is attached.

18. ☒ Records must be kept at the site of the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.

19. ☒ Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.

Administrative Information

20. ☒ All structural controls will be inspected and maintained according to the submitted and approved operation and maintenance plan for the project.

21. ☒ If any geologic or manmade features, such as caves, faults, sinkholes, etc., are discovered, all regulated activities near the feature will be immediately suspended. The appropriate TCEQ Regional Office shall be immediately notified. Regulated activities must cease and not continue until the TCEQ has reviewed and approved the methods proposed to protect the aquifer from any adverse impacts.

22. ☒ Silt fences, diversion berms, and other temporary erosion and sediment controls will be constructed and maintained as appropriate to prevent pollutants from entering sensitive features discovered during construction.

TEMPORARY STORMWATER SECTION (TCEQ-0602)

Attachment A SPILL RESPONSE ACTIONS

A site specific description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is attached.

Construction Phase Spill Prevention Control & Countermeasure Plan (SPCC)

Introduction

The objective of this section is to describe measures to prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

Contractor to notify all appropriate authorities if more than twenty-five gallons (25 gal) of hydrocarbons are spilled. The construction plans include the required notes regarding appropriate spill response actions as directed by TCEQ. There will be no temporary storage vessels of fuel or hydrocarbons to be stored on site.

If spills of any hydrocarbons occur, construction must contain spills by immediate action. Earthen materials must be kept readily available to provide a Dike. Sand should be used to help soak fuels. Property disposal of any materials used will be required.

Contractor must promote job site awareness to all employees involved. All employees must be made aware of the provisions in this report.

The following steps will help reduce the stormwater impacts of leaks and spills.

Education

1. Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills. Employees should also be aware of when spill must be reported to the TCEQ. Information available in 30 TAC 327.4 and 40 CFR 302.4
2. Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
3. Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
4. Establish a continuing education program to train new employees.
5. Have contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

1. To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110, 117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
2. Store hazardous materials and wastes in covered containers and protect from vandalism.
3. Place a stockpile of spill cleanup materials where it will be readily accessible.
4. Train employees in spill prevention and cleanup.
5. Designate responsible individuals to oversee and enforce control measures.

6. Spills should be covered and protected from storm water runoff during rainfall to the extent that it doesn't compromise cleanup activities.
7. Do not bury or wash spills with water.
8. Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.
9. Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with applicable regulations.
10. Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.
11. Place Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.
12. Keep waste storage areas clean, well-organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

Cleanup

1. Clean up leaks and spills immediately.
2. Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be disposed of as hazardous waste.
3. Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMP's in this section for specific information.

Minor Spills

1. Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
2. Use absorbent materials on small spills rather than hosing down or burying the spill.
3. Absorbent materials should be promptly removed and disposed of properly.
4. Follow the practice below for a minor spill:
    a) (a) Contain the spread of the spill.
    b) (b) Recover spilled materials.
    c) (c) Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.

Spills should be cleaned up immediately:

1. Contain spread of the spill.
2. Notify the project foreman immediately.
3. If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with the absorbent materials and do not let the spill spread widely.
4. If the spill occurs in dirt areas immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.

5. If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills

For significant or hazardous spills that are in reportable quantities:

1. Notify the TCEQ by telephone as soon as possible and within 24-hours at (512) 339-2929 (Austin) or (210) 490-3096 (San Antonio) between 8 AM and 5 PM. After hours, contact the Environmental Release Hotline at (800) 832-8224. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
2. For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110, 119 and 302, the contractor should notify the National Response Center at (800) 424-8802.
3. Notification should first be made by telephone and followed up with a written report.
4. The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
5. Other agencies which may need to be consulted include, but are not limited to, the Police Department, County Sheriff Office, Fire Departments, etc.

More information on spill rules and appropriate responses is available on the TCEQ website at:
https://www.tceq.texas.gov/response/spills

Vehicle & Equipment Maintenance

1. If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.
2. Regularly inspect onsite vehicles and equipment for leaks and repair immediately.
3. Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
4. Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
5. Place drip pans or absorbent materials under paving equipment when not in use.
6. Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.
7. Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.
8. Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.
9. Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle & Equipment Fueling

1. If fueling must occur on site, use designated areas, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.
2. Discourage "topping off" of fuel tanks.
3. Always use secondary containment, such as a drain pan, when fueling to catch spills/leaks.

«END OF ATTACHMENT A»

TEMPORARY STORMWATER SECTION (TCEQ-0602)

Attachment B POTENTIAL SOURCES OF CONTAMINATION

A description of any activities or processes which may be a potential source of contamination affecting surface water quality is attached.

Construction Phase PSOC

360 Comal Storage includes the construction of a ±9.07-acre R.V. and boat storage facility on a ±45.0-acre site. The Potential Sources of Contamination (PSOCs) that may occur during construction include sediment transport from runoff and fuel spills by the Contractor while refueling equipment. Other small quantities of solvent for construction may be present. Contractor shall keep secure all fuel transfers and any other contaminants used during construction. Silt fences and rock berms will aid in the removal of transported sediment from the runoff.

Potential Source	Preventative Measure
Construction equipment and vehicle drippings (petroleum products)	Vehicle maintenance, when possible, will be performed within the construction staging areas. This area shall be monitored daily for contamination. Spills to be handled according to the Construction SPCC.
Miscellaneous trash and litter from construction	Designated trash containers will be placed on the site to encourage proper trash disposal.
Construction debris	Construction debris will be monitored daily by contractor. Debris will be collected weekly and placed in disposal bins. Situations requiring immediate attention will be addressed on a case-by-case basis.
Asphalt products	After placement of asphalt, emulsion or coatings, the contractor will be responsible for immediate cleanup should an unexpected rain occur. For the duration of the asphalt product curing time, the contractor will maintain standby personnel and equipment to maintain an asphalt wash-off, should an unexpected rain occur. The contractor will be instructed not to place asphalt products on the ground within 48 hours of a forecasted rain.
Tar, fertilizers, cleaning solvents, detergents, and petroleum-based products	The contractor will be responsible for immediate cleanup should an unexpected rain occur. Debris will be collected weekly and deposited in on-site bins for offsite disposal. Situations requiring immediate attention will be handled on a case-by-case basis.
Sanitary waste from portable units	A pumping service collects sanitary waste on a regular schedule that is appropriate for the site. Situations requiring immediate attention will be addressed on a case-by-case basis.

Table 4, Potential Sources of Contamination During Construction

Please see **Attachment A SPILL RESPONSE ACTIONS** for how construction spills will be mitigated.

«END OF ATTACHMENT B»

TEMPORARY STORMWATER SECTION (TCEQ-0602)

Attachment C SEQUENCE OF MAJOR ACTIVITIES

A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is attached.

- For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.
- For each activity described, include a description of appropriate temporary control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

Construction Sequencing

This project, 360 Comal Storage, will be constructed in two phases, both totaling ±21.36-ac. of the overall ±45.0-ac. tract:

- Phase I Finished area for this phase will be ±9.07.ac. Construction to begin Summer 2023. Includes the first eight (8) storage buildings (open bay, metal roofed buildings), a rental office, paving, a commercial driveway on Purgatory Road, parking, concrete piers for building foundations, the detention/sedimentation basin for both phases, the OSSF for both phases, and the PWS for the whole 45-acre tract; and
- Phase II To begin Spring 2024. Includes an additional four (4) storage buildings paving and parking, concrete piers for building foundations. This WPAP will be amended with additional details of this future phase once the planning is complete (later this year).

The TOTAL DISTURBED AREA for Phase I of this project is ±24.96-acres of the ±45.0-acre tract. Below is the sequence of construction that we expect for this phase of the project:

1. Call Comal County and TCEQ 48-hours prior to beginning any work. Call DigTESS (811) for utilities locations at least two business days prior to beginning work.
2. Install temporary erosion controls prior to any clearing and grubbing.
3. Inspect erosion controls at least once every 14 calendar days, and within 24-hours of significant rainfall events (more than 0.5-inches of rain) to ensure they are functioning properly.
4. Construct drainage improvements (temporary controls: temporary sediment basin, silt fence, area inlet protection, rock berm(s), and a stabilized construction entrance/exit with concrete washout area).
5. Construct development (including permanent drainage controls) per approved plans.
6. Complete all construction and stabilize all disturbed areas.
7. Contact project engineer to inspect site. Final County inspection to be scheduled.
8. Complete any necessary final dress up of areas that were disturbed.
9. Remove and dispose of temporary erosion controls after site re-vegetation has occurred.

«END OF ATTACHMENT C»

TEMPORARY STORMWATER SECTION (TCEQ-0602)

Attachment D TEMPORARY BEST MANAGEMENT PRACTICES & MEASURES

TBMPs and measures will prevent pollution of surface water, groundwater, and stormwater. The construction-phase BMPs for erosion and sediment controls have been designed to retain sediment on site to the extent practicable. The following information is attached:

- A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.
- A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.
- A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.
- A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.

Effect of Site Construction

This project, 360 Comal Storage, will be constructed in two phases, both totaling ±21.36-ac. of the overall ±45.0-ac. tract:

- Phase I Finished area for this phase will be ±9.07.ac. Construction to begin Summer 2023. Includes the first eight (8) storage buildings (open bay, metal roofed buildings), a rental office, paving, a commercial driveway on Purgatory Road, parking, concrete piers for building foundations, the detention/sedimentation basin for both phases, the OSSF for both phases, and the PWS for the whole 45-acre tract; and
- Phase II To begin Spring 2024. Includes an additional four (4) storage buildings paving and parking, concrete piers for building foundations. This WPAP will be amended with additional details of this future phase once the planning is complete (later this year).

The clearing and grading of the land will disturb the largest area of soil, so temporary erosion control measures will be installed as the first step in construction. These TBMP improvements will be placed downgradient of the ±24.71-ac. disturbed area to prevent the site's sedimentation from running offsite, and upgradient of the proposed disturbed area to prevent offsite sedimentation from running onto the site. Please see sheet SHEET 2, C1.0, EROSION CONTROL PLAN, of the plan set for more details.

Temporary measures are intended to provide a method of slowing the flow or runoff from the construction site in order to allow sediment and suspended solids to settle out of the water. By containing the sediment and solids within the site, they will not enter surface streams and/or sensitive features.

TBMPs will remain in place and be maintained until all construction has ceased and a vegetative cover has been established.

Application of TBMPs

All installed erosion control measures will be inspected, and if necessary, repaired before any additional construction begins, as well as periodically throughout the construction process. The contractor will be responsible for all maintenance of erosion control measures, as well as the installation of all remaining on-site control measures, including the concrete truck washout, as necessary. The following measures are proposed prevent pollution for these areas:

Protection Type	Mitigation/TBMP
Upgradient stormwater, surface water, groundwater	Construction Entrance, Silt Fence, Mulch Socks, Rock Berms
Onsite stormwater, surface water, groundwater	Silt Fence, Mulch Socks, Temporary Sediment Basin, Area Inlet Controls, and Rock Berms. These measures maintain flow of water through the pond with no impoundment of stormwater except in large rainfall events
Streams, features, aquifer	Silt Fence, Mulch Socks, Rock Berms, Erosion Control Blankets. Additional measures include concrete and riprap channel protection where velocities are increased then return to the existing watershed.
Maintain natural flow	Temporary Sedimentation Basin, Rock Berms, Erosion Control Blankets.

Table 5, Application of TBMP's

TBMP Methodology

The methodology for pollution prevention of all on-site stormwater during construction will include:

- Silt Fence: Approximately 7,813 linear feet of silt fence will be installed, inspected, and maintained at the site along the downgradient boundary of the construction activities.
- Rock Berms: Approximately 120 linear feet of rock berm (or roughly six berms) will be installed, inspected, and maintained at the site with silt fence covering downgradient from areas of concentrated stormwater flow.
- Mulch Socks: Approximately 4,788 linear feet of compost filter socks, or mulch socks, will be installed, inspected, and maintained where stormwater discharge occurs as sheet flow, and to steeper slopes with faster flows if they have closer spacing, lie beside and/or on top of each other, have larger diameters, or work in combination with other stormwater controls such as Curlex matting/blankets.
- Inlet Protection: Four (4) area inlet protection socks will be installed, inspected, and maintained around operational inlets for which all or some of the inlet's drainage area is disturbed. Storm drain inlet protection is a secondary control device, meaning that construction staff should always use inlet protection in conjunction with other sediment and erosion control practices.
- Curlex Matting/Erosion Control Blankets: Approximately 5,721-square yards (51,489-sq.ft.) of erosion control blankets will be installed, inspected, and maintained. These blankets will be used to provide stabilization for the slopes in the detention basin and other areas where the slope is greater than 3:1. The blankets will cover the entire area of the graded slope and bottom channel. The bottom and side slopes will be seeded and mulched before the blanket is applied. The erosion control blankets will be installed once the basin has reached final grade.
- Construction Entrance: A construction entrance/exit with a concrete washout area will be installed, inspected, and maintained at the site to reduce the dispersion of sediment from the site.
- Temporary Sediment Basin: Because more than 10-acres is being disturbed at a time, rough grading of the detention basin should be done at the earliest possible stage of construction to act as a temporary sediment basin. See SHEET 3, C1.1, TEMPORARY SEDIMENT BASIN, for more details.
- Ungrouted Rock Riprap: Approximately 404-square yards (3,636-sq.ft.) of ungrouted rock riprap will be used for the temporary sediment trap.
- Staging Area: Installation of a construction staging area with a rain gauge and SWPPP Sign Board should be done at the beginning of the construction process and maintained throughout construction.
- Dust Control: Dust control will be implemented as needed once site grading has been initiated and during windy conditions (forecasted or actual wind conditions of 20 mph or greater) while site grading is occurring. Dust from the construction site will be controlled by using a mobile pressure-type distributor truck to apply potable water to disturbed areas. The mobile unit will apply water at a rate of 300-gallons per acre and minimized as necessary to prevent runoff and ponding.

- Temporary perimeter controls (silt fencing, high service rock berms) will not be removed until all construction activities at the site are complete, and soils have been stabilized. More details can be found on SHEET 4, C1.2, STABILIZATION & RESTORATION PLAN.
- All installed erosion control measures will be inspected, and if necessary, repaired before any additional construction begins, as well as periodically throughout the construction process. The contractor will be responsible for all maintenance of erosion control measures.
- No sensitive features are located on the property.
- In addition, the contractor has been directed to minimize disturbance to a reasonable working space.

«END OF ATTACHMENT D»

TEMPORARY STORMWATER SECTION (TCEQ-0602)

Attachment E REQUEST TO TEMPORARILY SEAL A FEATURE

A request to temporarily seal a feature is attached. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

Not applicable. There are no naturally-occurring sensitive features on the site.

«END OF ATTACHMENT E»

TEMPORARY STORMWATER SECTION (TCEQ-0602)

Attachment F STRUCTURAL PRACTICES

A description of the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site is attached. Placement of structural practices in floodplains has been avoided.

Temporary erosion control measures such as silt fences, mulch socks, and rock berms will be used until construction is complete and re-vegetation and paving have been established.

A temporary construction entrance consisting of crushed stone will be installed at the ingress/egress on Purgatory Road, as identified on the Erosion Control Plan. The entrance will prevent the off-site transport of sediment by construction vehicles. The stone will remain in place until the subgrade of pavement is installed at the site.

In addition, the contractor will be directed to minimize site disturbance and avoid having equipment in areas that are not necessary for the construction. Natural vegetation shall be left undisturbed and will help remove sediment if any bypass at silt fences or other structural measures occurs.

«END OF ATTACHMENT F»

TEMPORARY STORMWATER SECTION (TCEQ-0602)

Attachment G DRAINAGE AREA MAP

A drainage area map supporting the following requirements is attached:

- For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.
- For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.
- For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.
- There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.
- There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. Erosion and sediment controls other than sediment basins or sediment traps within each disturbed drainage area will be used.

The Drainage Area Map can be found in PART 3, CONSTRUCTION DRAWINGS, on SHEET 9, C5.0, PRE-DEVELOPMENT DRAINAGE AREA MAP, and SHEET 10, C5.1, POST-DEVELOPMENT DRAINAGE AREA MAP. Below is a snapshot of that DAM (post-development).

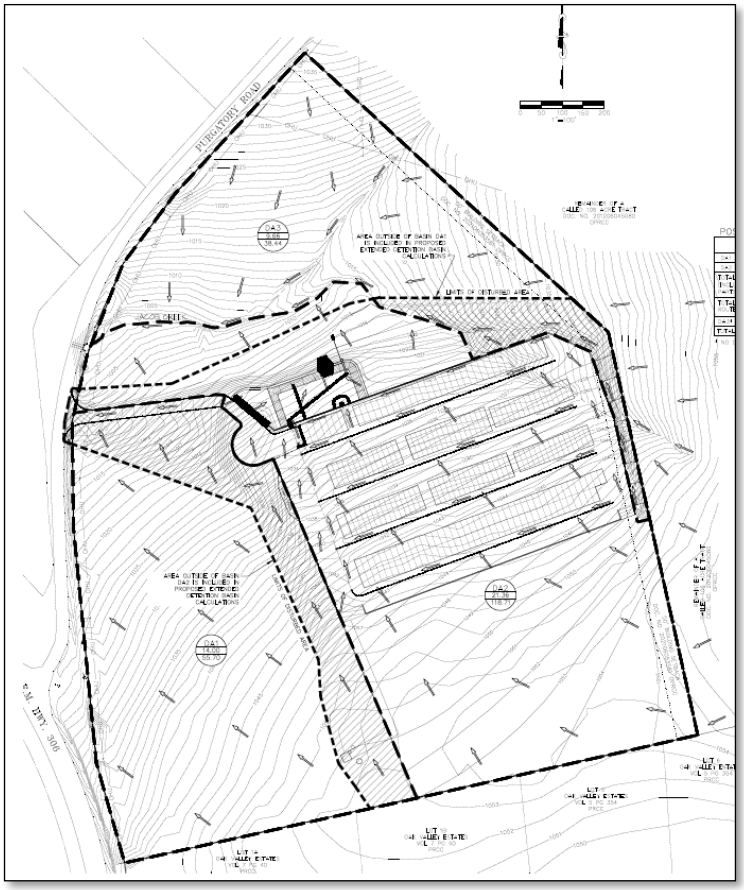


Figure 10, Snapshot of Drainage Area Map

The TOTAL DISTURBED AREA for Phase I and Phase II of this project is ±24.96 acres of the ±45.0-acre tract. Below is a snapshot of that area.

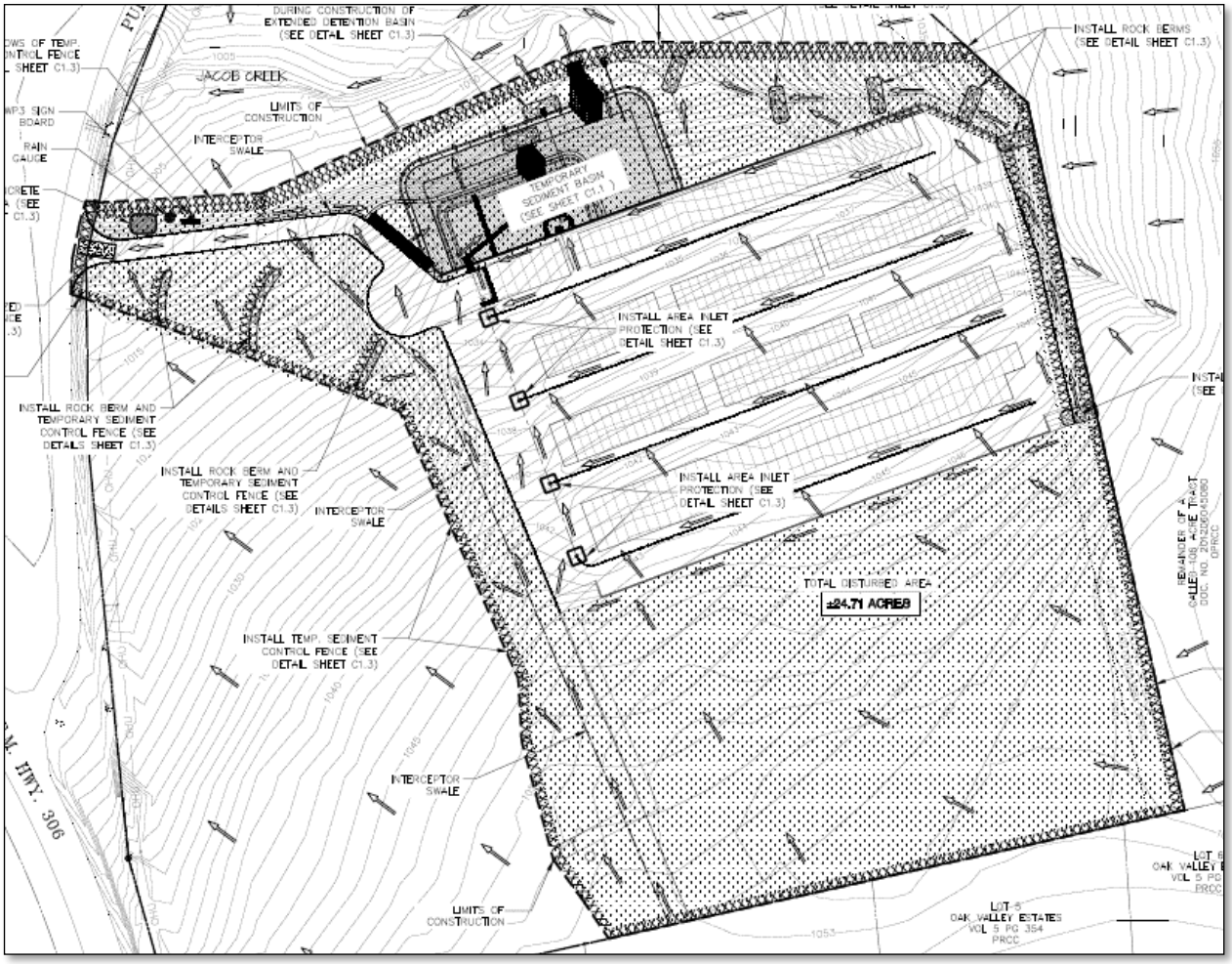


Figure 11, Snapshot of Total Disturbed Area

«END OF ATTACHMENT G»

TEMPORARY STORMWATER SECTION (TCEQ-0602)

Attachment H TEMPORARY SEDIMENT POND(S) PLANS & CALCULATIONS

Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are attached.

Please see SHEET 3, C1.1, TEMPORARY SEDIMENT BASIN in the Construction Drawings for a full depiction of this basin and its notes and details.

SEDIMENT BASIN CALCULATIONS:

DRAINAGE AREA TO CONTROL	31.02 Ac.
DISTURBED AREA (AC)	24.71 Ac.
2–YR, 24 HR. RAINFALL DEPTH	3.70 in
REQUIRED SEDIMENT BASIN SIZING	333,674 cf
PROPOSED BASIN AREA	335,508 cf
10–YR, 3 HR RUNOFF VOLUME	96.48 cfs

WEIR EQUATION: $Q = C_W L H^{1.5}$

Q = DISCHARGE OVER WEIR (10yr, 3hr)
C_W= WEIR COEFFICIENT, 2.60
L = LENGTH OF WEIR CREST, 21.0 ft.
H = DISTANCE BETWEEN WATER SURFACE AND THE CREST, 1.5 ft.

$Q = 2.60 * 21.0 * 1.5^{1.5} = 100.31$ cfs

PROPOSED EMERGENCY SPILLWAY (WEIR) TO BE 21 FEET WIDE WITH A HEIGHT OF 1.5 FEET AND SIDE SLOPES OF 3:1

PROPOSED RISER DATA

REQUIRED PERFORATION SIZE: $Ao = \frac{As \times \sqrt{2h}}{Cd \times 980{,}000}$

Where:
Ao = Area of the de–watering hole, ft2
As = Surface area of the basin, ft2
Cd = Coefficient of contraction, approximately 0.6
h = head of water above the hole, ft

$Ao = \frac{51{,}405 \text{ sf} \times \sqrt{2(2)}}{0.60\ (980{,}000)} = \frac{145{,}373}{588{,}000} = 0.25 \sim 3\text{" max.}$

Figure 12, Temporary Sedimentation Basin Calculations

«END OF ATTACHMENT H»

TEMPORARY STORMWATER SECTION (TCEQ-0602)

Attachment I INSPECTION & MAINTENANCE FOR BMPs

A plan for the inspection of each temporary BMP(s) and measure(s) and for their timely maintenance, repairs, and, if necessary, retrofit is attached. A description of the documentation procedures, recordkeeping practices, and inspection frequency are included in the plan and are specific to the site and/or BMP.

The Contractor will be directed to inspect and maintain all temporary BMPs. The design engineer will also make regular visits to the project and will provide visual inspections as well. Any deficiency noted must be corrected immediately by the contractor.

To manage this process a Stormwater Pollution Prevention Plan (SWPPP) has been developed and is managed by others. A copy of this SWPPP can be found attached to this application in **PART 2, THIRD PARTY REPORTS.**

The following TBMPs for the construction of this project are included in the SWPPP and the following inspection and maintenance procedures will be implemented:

1. Stabilized Construction Entrance/Exit, Silt fencing and rock berms must be in place prior to the start of construction and shall remain in place until construction has been complete, and the site stabilized from further erosion.
2. The contractor shall inspect the rock berms and silt fencing at least once a week and within 24-hours of a storm of 0.5-inches or more in depth. The contractor shall repair or replace any damaged TBMPs. The contractor shall correct damage or deficiencies as soon as practical after the inspection but no later than seven (7) days after the inspection.
3. Rock Berms.
    a) Contractor shall remove sediment and other debris when buildup reaches six (6) inches and dispose of the accumulated silt in an approval manner that shall not cause any additional siltation.
    b) Rock berms should be replaced when the structures ceases to function as intended due to silt accumulation among the rocks, washout, construction traffic damage, etc.
    c) The berm should be reshaped as needed during inspection.
    d) The rock berm should be left in place until all upstream areas are stabilized and accumulated silt removed.
4. Temporary Construction Entrance/Exit.
    a) All sediment spilled, dropped, washed, or tracked onto public right-of-way should be removed immediately by contractor.
    b) When necessary, wheels should be cleaned to remove sediment prior to entrance onto right-of-way.
    c) When washing is required, it should be done on an area stabilized with crushed stone that drains into an approved sediment trap or sediment basin.
    d) The entrance should be maintained in a condition that shall prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediments.
    e) All sediment should be prevented from entering any storm drain, ditch, or water course by using approved methods.

5. Silt Fence.
    a) Remove sediment when buildup reaches six (6) inches.
    b) When construction is complete, the sediment should be disposed of in a manner that shall not cause additional siltation and the prior location if the silt fence should be revegetated. The fence itself should be disposed of in an approved landfill.
    c) Inspect all fencing weekly and after any rainfall.
    d) Replace any torn fabric or install a second line of fencing parallel to the torn section.
    e) Replace or repair any sections crushed or collapsed in the course of construction activity. If a section of fence is obstructing vehicular access, consider relocating it to a spot where it shall provide equal protection, but shall not obstruct vehicles. A triangular filter dike may be preferable to a silt fence at common vehicle access points.
6. Contractor shall place trench excavation stabilization and silt fencing on the upgradient side of the trench.
7. All soil, sand, gravel, and excavated material stockpiled on-site shall have appropriately sized silt fencing placed upgradient and down gradient.
8. The contractor shall keep a record of the weekly inspections, noting the condition of the rock berms, silt fencing and construction entrance and any corrective action taken to maintain the erosion control structures. In addition to the inspection and maintenance reports, the operator should keep records of the construction activity on-site. At a minimum, the following information should be kept:
    a) The dates when major grading activities occur in a particular area.
    b) The dates when construction activities cease in an area, temporarily or permanently.
    c) The dates when an area is stabilized, temporarily or permanently.
    d) Records to be maintained in SWPPP.

«END OF ATTACHMENT I»

TEMPORARY STORMWATER SECTION (TCEQ-0602)

Attachment J SCHEDULE OF INTERIM & PERMANENT SOIL STABILIZATION PRACTICES

A schedule of the interim and permanent soil stabilization practices for the site is attached.

Please see SHEET 4, C1.2, STABILIZATION & RESTORATION PLAN in the Construction Drawings in PART 3 of this report.

Stabilization measures will be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and in no case will more than 14-days elapse after the construction activity in that portion of the site has temporarily or permanently ceased.

Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently cease is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 21-days, temporary stabilization measures do not have to be initiated on that portion of site.

If after 21-days, and construction activity will not be resumed, hydromulch shall be applied to all disturbed areas except in drainage channels or where slopes exceed 3:1.

In areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

All erosion control measures must remain in place until such stabilization has successfully occurred.

Owner shall consult with design engineer to determine all necessary measures to stabilize the site if construction does not resume.

TCEQ RG 348 dated July 2005 shall be used as a guide in determining these areas that may require stabilization.

«END OF ATTACHMENT J»

1.6. PERMANENT STORMWATER SECTION

- TCEQ PERMANENT STORMWATER SECTION (FORM-0600)
- Attachment A 20% or LESS IMPERVIOUS COVER WAIVER
- Attachment B BMPs FOR UPGRADIENT STORMWATER
- Attachment C BMPs FOR ON-SITE STORMWATER
- Attachment D BMPs FOR SURFACE STREAMS
- Attachment E REQUEST TO SEAL FEATURES
- Attachment F CONSTRUCTION PLANS
- Attachment G INSPECTION, MAINTENANCE, REPAIR & RETROFIT PLAN
- Attachment H PILOT-SCALE FIELD TESTING PLAN (if proposed)
- Attachment I MEASURES FOR MINIMIZING SURFACE STREAM CONTAMINATION

Permanent Stormwater Section

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b)(4)(C), (D)(Ii), (E), and (5), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

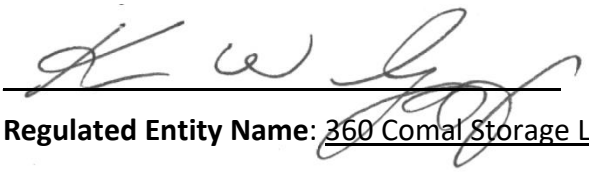
Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Permanent Stormwater Section** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

Print Name of Customer/Agent: Kevin W. Spraggins, P.E.

Date: 09/11/2023

Signature of Customer/Agent



Regulated Entity Name: 360 Comal Storage LLC

Permanent Best Management Practices (BMPs)

Permanent best management practices and measures that will be used during and after construction is completed.

1. ☒ Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.

   ☐ N/A

2. ☒ These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.

   ☒ The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

☐ A technical guidance other than the TCEQ TGM was used to design permanent BMPs and measures for this site. The complete citation for the technical guidance that was used is: _____

☐ N/A

3. ☒ Owners must insure that permanent BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the appropriate regional office within 30 days of site completion.

   ☐ N/A

4. Where a site is used for low density single-family residential development and has 20 % or less impervious cover, other permanent BMPs are not required. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

   ☐ The site will be used for low density single-family residential development and has 20% or less impervious cover.
   ☐ The site will be used for low density single-family residential development but has more than 20% impervious cover.
   ☒ The site will not be used for low density single-family residential development.

5. The executive director may waive the requirement for other permanent BMPs for multi-family residential developments, schools, or small business sites where 20% or less impervious cover is used at the site. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

   ☒ **Attachment A - 20% or Less Impervious Cover Waiver**. The site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is attached.
   ☐ The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.
   ☐ The site will not be used for multi-family residential developments, schools, or small business sites.

6. ☒ **Attachment B - BMPs for Upgradient Stormwater**.

☒ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is attached.

☐ No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.

☐ Permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, and an explanation is attached.

7. ☒ **Attachment C - BMPs for On-site Stormwater**.

☒ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is attached.

☐ Permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached.

8. ☒ **Attachment D - BMPs for Surface Streams**. A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is attached. Each feature identified in the Geologic Assessment as sensitive has been addressed.

☐ N/A

9. ☒ The applicant understands that to the extent practicable, BMPs and measures must maintain flow to naturally occurring sensitive features identified in either the geologic assessment, executive director review, or during excavation, blasting, or construction.

☒ The permanent sealing of or diversion of flow from a naturally-occurring sensitive feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed.

☐ **Attachment E - Request to Seal Features**. A request to seal a naturally-occurring sensitive feature, that includes, for each feature, a justification as to why no reasonable and practicable alternative exists, is attached.

10. ☒ **Attachment F - Construction Plans**. All construction plans and design calculations for the proposed permanent BMP(s) and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. The plans are attached and, if applicable include:

☒ Design calculations (TSS removal calculations)
☒ TCEQ construction notes
☒ All geologic features
☒ All proposed structural BMP(s) plans and specifications

☐ N/A

11. ☒ **Attachment G - Inspection, Maintenance, Repair and Retrofit Plan**. A plan for the inspection, maintenance, repairs, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan includes all of the following:

    ☒ Prepared and certified by the engineer designing the permanent BMPs and measures
    ☒ Signed by the owner or responsible party
    ☒ Procedures for documenting inspections, maintenance, repairs, and, if necessary retrofit
    ☒ A discussion of record keeping procedures

    ☐ N/A

12. ☐ **Attachment H - Pilot-Scale Field Testing Plan**. Pilot studies for BMPs that are not recognized by the Executive Director require prior approval from the TCEQ. A plan for pilot-scale field testing is attached.

    ☒ N/A

13. ☒ **Attachment I -Measures for Minimizing Surface Stream Contamination**. A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is attached. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity, which increase erosion that results in water quality degradation.

    ☐ N/A

Responsibility for Maintenance of Permanent BMP(s)

Responsibility for maintenance of best management practices and measures after construction is complete.

14. ☒ The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.

    ☐ N/A

15. ☒ A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development, or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.

    ☐ N/A

PERMANENT STORMWATER SECTION (TCEQ-0600)

Attachment A 20% or LESS IMPERVIOUS COVER WAIVER

The executive director may waive the requirement for other permanent BMPs for multifamily residential developments, schools, or small business sites where 20% or less impervious cover is used at the site. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

The site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is attached.

The site, as it is being developed today for an ±9.07-ac. R.V. and boat storage facility on a 45.0-ac. tract, is eligible for a small business 20% or less impervious cover waiver of permanent BMP's.

However, a detention/sedimentation basin and drainage channel has been provided for the site due to the proximity of Jacobs Creek and possible future development of the acreage west of the storage facility.

«END OF ATTACHMENT A»

PERMANENT STORMWATER SECTION (TCEQ-0600)

Attachment B BMPs FOR UPGRADIENT STORMWATER

- A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is attached;

The property as situated is mostly "dry" and drains to Jacobs Creek, an ephemeral creek that traverses the northern quarter of the tract from east to west. The "high point" of the tract is in the southeast corner, with the remainder sloping to the northwest and west. Very little offsite stormwater reaches the tract from the east or from the south.

Stormwater from the east will retain current drainage patterns by being directed into an unnamed natural drainage swale on the eastern boundary of the tract. This swale will be improved to a vegetated drainage channel.

Stormwater from the south will be allowed to retain its current sheet flow drainage patterns and, when entering the storage facility's tract, be directed to the extended detention basin, or, when entering the unimproved tract to the west, be unchanged and allowed to follow current drainage patterns.

«END OF ATTACHMENT B»

PERMANENT STORMWATER SECTION (TCEQ-0600)

Attachment C BMPs FOR ON-SITE STORMWATER

- A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is attached; or
- Permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached.

Extended Detention Basin

An extended detention basin can provide up to 75% TSS removal efficiency (according to the Edwards Aquifer Guidance Manual) and a storage volume above the invert of the lowest outlet, to temporarily detain a portion of stormwater runoff for an extended time period (up to 24-48 hours after a storm). By draining this volume over a longer period, the basin provides pollutant removal by allowing time for settling of particulate fractions.

Drainage Channel/Grassy Swale

A grassy swale/drainage channel can provide up to 70% TSS removal efficiency (according to the Edwards Aquifer Guidance Manual). It is being built in a natural drainage swale and will convey on-and off-site stormwater via current drainage patterns to the northern part of the property and the Jacobs Creek ephemeral creekbed.

Vegetated Filter Strips

Vegetated filter strips can provide up to 85% TSS removal efficiency (according to the Edwards Aquifer Guidance Manual). These will be installed in sections of land that are essentially flat or have low slopes. They are designed to accept runoff as overland sheet flow where runoff that would otherwise discharge directly to a receiving water, passes through the filter strip before entering a conveyance system or detention basin. This will both slow the runoff and provide some sedimentation control.

«END OF ATTACHMENT C»

PERMANENT STORMWATER SECTION (TCEQ-0600)

Attachment D BMPs FOR SURFACE STREAMS

A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is attached. Each feature identified in the Geologic Assessment as sensitive has been addressed.

There is no permanent surface water on the tract and no geologic features have been identified as sensitive. Jacobs Creek, an ephemeral creek in the northern part of the property, will remain undisturbed by the construction activities. The design includes an extended detention basin and a drainage channel as the primary water quality controls. This drainage design is developed in a way that minimizes its impact on the watershed and reduces the amount of pollutants generated by the site.

In addition to the basin, the design includes the use of vegetated filter strips, energy dissipaters, and rock berms to control pollution and erosion from released stormwater. These features serve to manage post-construction stormwater runoff before it is discharged downgradient from the site, removing upgradient and onsite sediment, and slowing the runoff to reduce downstream sedimentation and erosion.

«END OF ATTACHMENT D»

PERMANENT STORMWATER SECTION (TCEQ-0600)

Attachment E REQUEST TO SEAL FEATURES

A request to seal a naturally-occurring sensitive feature, that includes, for each feature, a justification as to why no reasonable and practicable alternative exists, is attached.

Not applicable. There are no sensitive features in the project area.

«END OF ATTACHMENT E»

PERMANENT STORMWATER SECTION (TCEQ-0600)

Attachment F CONSTRUCTION PLANS

All construction plans and design calculations for the proposed permanent BMP(s) and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. The plans are attached and, if applicable include:

- Design calculations (TSS removal calculations);
- TCEQ construction notes;
- All geologic features; and/or
- All proposed structural BMP(s) plans and specifications.

For more details about the permanent BMP's and the following calculations, please see PART 3, CONSTRUCTION DRAWINGS, in this report. Specifically, SHEET 8, C4.0, EXTENDED DETENTION BASIN. Below are snapshots of the calculations included in the design drawings for these water quality features.

IMPERVIOUS COVERAGE SUMMARY PER DRAINAGE AREA

DRAINAGE BASIN	AREA (acres)	IMPERVIOUS COVER (acres)	BMP	ANNUAL TSS GENERATED (lbs)	TSS REMOVED (lbs)
DA1 (UNCAPTURED)	14.00	0.31	NATURAL VFS	278	508
DISTURBED AREA TO BASIN	24.96	9.34	ENGINEERED VFS & EXT. DETENTION BASIN	8,384	8,384
DA3 (UNCAPTURED)	9.66	0.00	NATURAL VFS	0.00	146*
OVERALL SITE	45.02	9.65		8,662	9,038

* MAXIMUM POSSIBLE TSS LOAD REMOVED FROM UNDEVELOPED BASIN.

Figure 13, Snapshot of Impervious Cover Summary by Drainage Area

WATER QUALITY BASIN SUMMARY

DRAINAGE BASIN	AREA (acres)	IMPERVIOUS COVER (acres)	IMPERVIOUS COVER OVER-TREATED IN BASIN (acres)	REQUIRED WATER QUALITY VOLUME (CF)	DESIGNED WATER QUALITY VOLUME (CF)
BASIN 1 (TOTAL DISTURBED AREA WHICH INCLUDES DA1 AND PARTS OF DA2 & DA3)	24.96	9.34	3.60	19,150	25,611

Figure 14, Snapshot of Water Quality Basin Summary

WATER QUALITY CALCULATIONS:

DRAINAGE AREA TO CONTROL (LIMITS OF DISTURBED AREA)	24.96 Ac.	
DRAINAGE AREA IMPEVIOUS COVER (%)	37%	
DRAINAGE AREA IMPERVIOUS COVER (AC)	9.34 Ac.	
RAINFALL DEPTH	0.33 in	
POST-DEVELOPMENT RUNOFF COEFFICIENT	0.68 (WEIGHTED FACTOR USED)	
	REQUIRED	PROVIDED
WATER QUALITY VOLUME (WQV)	15,959 cf	
REQUIRED WQV FOR EXT. DETENTION BASIN (WQV x 1.20)	19,150 cf	25,611 cf
SEDIMENT FOREBAY AREA (WQV x 0.2)	3,192 cf	3,650 cf
VEGETATIVE FILTER STRIPS	–	4,530 sf

Figure 15, Snapshot of Water Quality Calculations

PROPOSED AVAILABLE DETENTION STORAGE

Stage (ft)	Elevation (ft)	Total Storage (cu ft)
0.00	1017.50	00
0.50	1018.00	5643
1.00	1018.50	11781
1.50	1019.00	18432
2.00	1019.50 (WQV)	25611
2.50	1020.00	33333
3.00	1020.50	41616
3.50	1021.00	50475
4.00	1021.50	59925
4.13	1021.63 (25-yr)	62500
4.48	1021.98 (100-yr)	69586
4.50	1022.00	69984
5.00	1022.50	80667
5.50	1023.00	91989

NOTE: PROPOSED POND VOLUME CALCULATED USING HYDROFLOW HYDROGRAPHS 2022 (CONIC METHOD).

PROPOSED POND DATA

REQUIRED ORIFICE SIZE: $Ao = \frac{0.001\ BMP\_Vol.}{C\sqrt{2gHavg}}$

BMP_Vol. = required basin volume (cu ft)
C = orifice coefficient (0.62)
g = acceleration of gravity (32.2 ft/s²)
Havg = $H_T/2$, avg. hydraulic head (ft)
H_T = total hydraulic head

$$\frac{0.001\ (19150)}{0.62\sqrt{2(32.2)(1.75)}} = \frac{19.15}{0.62\sqrt{112.7}} = 2.91 \sim 3\text{" max. orifice}$$

Havg = 3.50 / 2 = 1.73

TOP OF POND (MIN) = 1023.00 ft
TOP OF WEIR = 1020.50 ft
25 yr. W.S.E. = 1021.63 ft
100 yr. W.S.E. = 1021.98 ft

25yr AVAILABLE FREEBOARD (ft.)= TOP OF POND – W.S.E.
1023.0 – 1021.63 = 1.37 ft FREEBOARD

100yr AVAILABLE FREEBOARD (ft.)= TOP OF POND – W.S.E.
1023.0 – 1021.98 = 1.02 ft FREEBOARD

Figure 16, Snapshot of Pond Data & Storage Volume

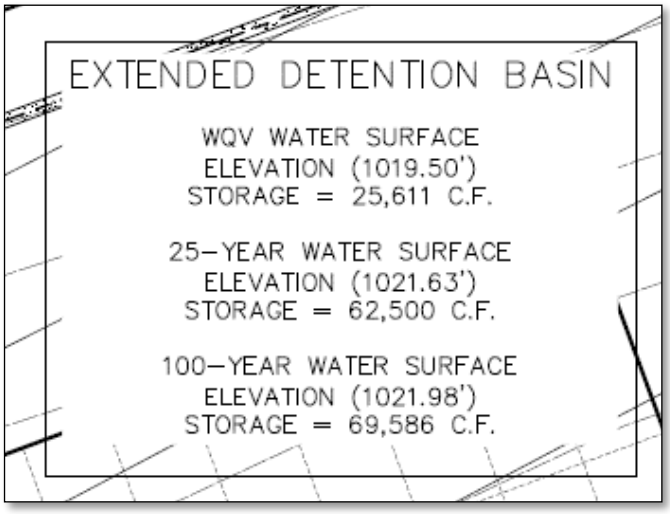


Figure 17, Snapshot of Water Surface Elevation in Pond

«END OF ATTACHMENT F»

PERMANENT STORMWATER SECTION (TCEQ-0600)

Attachment G INSPECTION, MAINTENANCE, REPAIR & RETROFIT PLAN

A plan for the inspection, maintenance, repairs, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan includes all of the following:

- Prepared and certified by the engineer designing the permanent BMPs and measures;
- Signed by the owner or responsible party;
- Procedures for documenting inspections, maintenance, repairs, and, if necessary retrofit; and
- A discussion of record keeping procedures.

The effectiveness of permanent erosion and sediment control BMPs and pollution prevention measures depend on consistent and continual inspection and maintenance. An effective inspection and maintenance plan ensures that a schedule and proper procedures are in place.

Inspections & Maintenance During Construction

For areas of the construction site that have not been finally stabilized, areas used for storage of materials, structural control measures, and locations where vehicles enter or exit the site, qualified personnel provided by the permittee and familiar with the SWPPP must inspect disturbed areas at least once every 14 calendar days and within 24 hours of the end of a storm of 0.5-inches or greater.

As an alternative to the above-described inspection schedule the SWPPP may be developed to require that these inspections occur at least once every seven (7) calendar days. If this alternative schedule is developed, the inspection must occur on a specifically defined day, regardless of whether there has been rainfall since the previous inspection.

An inspection and maintenance report shall be prepared for each inspection and the controls shall be revised on the SWPPP within seven (7) calendar days following the inspection.

Inspections & Maintenance After Construction

All erosion and sediment controls and other protective measures identified in the erosion/sedimentation control plan shall be maintained in good working order. If a repair is necessary, it shall be performed before the next anticipated storm event but no later than seven (7) calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from equipment.

If maintenance prior to the next anticipated storm event is impracticable, maintenance must be scheduled and accomplished as soon as practicable. Disturbed areas on which construction activities have ceased, temporarily or permanently, shall be stabilized within 14 calendar days unless they are scheduled to and do resume within 21 calendar days. The areas adjacent to creeks and drainageways shall have priority followed by protecting storm sewer inlets or culverts.

Permanent Level Spreaders Maintenance Plan

1. Permanent level spreaders should be inspected on a quarterly basis or after each rain event to locate and repair any damage or to clear debris or other obstructions so as to diminish flow capacity. Inspection should include the down slope area up to the receiving stream. Subsequent inspections can be performed twice annually after the area is stabilized.
2. Level Spreaders should be replaced when the structure ceases to function as intended.

Grass Vegetated Strip Maintenance Plan

1. The vegetated strip will be inspected at least twice annually for erosion and structural failures . Additional inspection should be performed after rainstorms to make sure that drainage paths are clear.
2. Grass in the strip will be mowed as needed to maintain a height of three to four (3-4) inches.
3. Remove trash, debris, grass clippings, trees, and other large vegetation from the strip semi-annually the first year then annually.
4. Remove sediment build-up within the strip once it has accumulated to three (3) inches on any spot, or cover vegetation. Excess sediment should be removed by hand or with flat-bottomed shovels. If areas are eroded, they should be filled, compacted, and reseeded.

Basin Maintenance Plan

1. Inspect basin on a quarterly basis and after every major storm for the first few months to ensure proper functioning. Subsequent inspections can be performed twice a year or more often if deemed necessary .
2. Silt should be removed when the accumulation exceeds six (6) inches. Sediment should be cleared from the inlet structure at least every year and from the sedimentation basin at least every five (5) years.
3. Accumulated paper, trash and debris should be removed every six (6) months or more often as necessary to maintain proper operation.
4. The basin shall be inspected annually, and repairs shall be made if necessary.
5. Clean underdrain piping network to remove any sediment buildup as needed to maintain design drawdown time.
6. A record should be kept of the dewatering time to determine if maintenance is necessary.

«END OF ATTACHMENT G»

PERMANENT STORMWATER SECTION (TCEQ-0600)

Attachment H PILOT-SCALE FIELD TESTING PLAN (if proposed)

Pilot studies for BMPs that are not recognized by the Executive Director require prior approval from the TCEQ. A plan for pilot-scale field testing is attached.

Not applicable. No Pilot Study is being proposed.

«END OF ATTACHMENT H»

PERMANENT STORMWATER SECTION (TCEQ-0600)

Attachment I MEASURES FOR MINIMIZING SURFACE STREAM CONTAMINATION

A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is attached. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity, which increase erosion that results in water quality degradation.

Post-Construction PSOC

According to TCEQ's Source Water Assessment & Protection Viewer (https://www.tceq.texas.gov/gis/swaview), the following two (2) items are the only Potential Sources of Contamination (PSOCs) found within a one-mile radius of the proposed 45.0-acre subject tract.

DISTANCE (from center of subject tract)	Site Name	PSOC ID	PSOC Type	Description
0.81	B J PEST CONTROL	101161	1-13	Pesticide Mf'g, Sale, Application (Business) Contaminant Groups: Inorganics & Organics [A business] that performs pesticide manufacturing, sales, or application. Chemicals associated with pesticides are present. [Data from] the Texas Comptroller's database.
1.11	SAC N PAC 604	208965	1-16	Petroleum Storage Tank (Business) Contaminant Groups: Inorganics & Organics [A business] that sells gasoline, diesel, jet fuel. Chemicals associated with petroleum products are present. [Data from] the TCEQ Petroleum Storage Tank database.

Table 6, PSOCs Within 1-mile of Subject Tract

Figure 18, Snapshot of PSOC Map

In addition to the above PSOCs, it is possible a hydrocarbon spill may occur within the proposed R.V. and boat storage business. A Spill Prevention Control & Countermeasure (SPCC) Plan will be developed based on the following outline.

Outline of Spill Prevention Control & Countermeasure Plan (SPCC)

Owner will notify all appropriate authorities if more than twenty-five gallons (25 gal) of hydrocarbons are spilled. There will be no temporary or permanent storage vessels of fuel or hydrocarbons to be stored on site.

If spills of any hydrocarbons occur, the owner must contain spills by immediate action. Earthen materials must be kept readily available to provide a dike around the spill. Sand and/or cat litter should be used to help soak up fuels and hydrocarbons. Proper disposal of any materials used will be required.

The owner must promote education of all employees involved.

Introduction

The objective of this section is to describe measures to prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

The following steps will help reduce the stormwater impacts of leaks and spills.

Education

1. Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills. Employees should also be aware of when spill must be reported to the TCEQ. Information available in 30 TAC 327.4 and 40 CFR 302.4
2. Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
3. Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
4. Establish a continuing education program to train new employees.
5. Have an owner's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

1. To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110, 117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
2. Store hazardous materials and wastes in covered containers and protect from vandalism.
3. Place a stockpile of spill cleanup materials where it will be readily accessible.
4. Train employees in spill prevention and cleanup.
5. Designate responsible individuals to oversee and enforce control measures.
6. Spills should be covered and protected from stormwater runoff during rainfall to the extent that it doesn't compromise cleanup activities.
7. Do not bury or wash spills with water.
8. Store and dispose of used clean up materials, contaminated materials, and any recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.
9. Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with applicable regulations.

10. Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.
11. Place Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.
12. Keep waste storage areas clean, well-organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

Cleanup

1. Clean up leaks and spills immediately.
2. Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be disposed of as hazardous waste.
3. Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMP's in this section for specific information.

Minor Spills

1. Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
2. Use absorbent materials on small spills rather than hosing down or burying the spill.
3. Absorbent materials should be promptly removed and disposed of properly.
4. Follow the practice below for a minor spill:
    a) Contain the spread of the spill.
    b) Recover spilled materials.
    c) Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

Semi-significant spills still can be controlled by the first responder along with the aid of other personnel. This response may require the cessation of all other activities.

Spills should be cleaned up immediately:

1. Contain spread of the spill.
2. Notify the project foreman immediately.
3. If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with the absorbent materials and do not let the spill spread widely.
4. If the spill occurs in dirt areas immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
5. If the spill occurs during rain, cover the spill with tarps or other material to prevent contaminating stormwater runoff.

Significant/Hazardous Spills

For significant or hazardous spills that are in reportable quantities:

1. Notify the TCEQ by telephone as soon as possible and within 24-hours at (512) 339-2929 (Austin) or (210) 490-3096 (San Antonio) between 8 AM and 5 PM. After hours, contact the Environmental Release Hotline at (800) 832-8224. It is the owner's responsibility to have all emergency phone numbers at the site.
2. For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110, 119 and 302, the contractor should notify the National Response Center at (800) 424-8802.
3. Notification should first be made by telephone and followed up with a written report.
4. The services of a spills contractor or a Haz-Mat team should be obtained immediately. Personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the site.
5. Other agencies which may need to be consulted include, but are not limited to, the Police Department, County Sheriff Office, Fire Departments, etc.

More information on spill rules and appropriate responses is available on the TCEQ website at:
https://www.tceq.texas.gov/response/spills

Vehicle & Equipment Maintenance

1. If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the run-on of stormwater and the run-off of spills.
2. Regularly inspect onsite vehicles and equipment for leaks and repair immediately.
3. Check incoming vehicles and equipment (including delivery trucks, customer vehicles, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
4. Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
5. Place drip pans or absorbent materials under paving equipment when not in use.
6. Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of them properly.
7. Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.
8. Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.
9. Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle & Equipment Fueling

1. If fueling must occur on site, use designated areas, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.
2. Discourage "topping off" of fuel tanks.
3. Always use secondary containment, such as a drain pan, when fueling to catch spills/leaks.

«END OF ATTACHMENT I»

1.7. AGENT AUTHORIZATION FORM (TCEQ-0599)

Agent Authorization Form
For Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

I Neil Francois,
Print Name of Applicant

Managing Member,
Title - Owner/President/Other

of 360 Comal Storage, LLC,
Corporation/Partnership/Entity Name

have authorized Kevin W. Spraggins, P.E.
Print Name of Agent/Engineer

of VEI Consulting Engineers
Print Name of Firm

to represent and act on the behalf of the above-named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to $10,000 per day per violation.
2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.
3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.
4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.
5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

TCEQ-0599 (Rev.04/01/2010) Page 1 of 2

SIGNATURE PAGE:

Applicant's Signature

8·21·2023
Date

THE STATE OF TEXAS §

County of TRAVIS §

BEFORE ME, the undersigned authority, on this day personally appeared NEIL FRANCOIS known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 21 day of August 2023.

(seal)

NOTARY PUBLIC'S SIGNATURE

SAMA REZA
Notary ID #132465848
My Commission Expires
May 6, 2024

TCEQ-0599 (Rev.04/01/2010)

Page 2 of 2

1.8. APPLICATION FEE FORM (TCEQ-0574)

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: 360 Comal Storage
Regulated Entity Location: 276 Purgatory Road, New Braunfels, Comal County, TX 78132
Name of Customer: 360 Comal Storage, LLC.
Contact Person: Neil Francois Phone: 512-947-7966
Customer Reference Number (if issued):CN 606161586
Regulated Entity Reference Number (if issued):RN 111774238

Austin Regional Office (3373)

☐ Hays ☐ Travis ☐ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☒ Comal ☐ Kinney

Application fees must be paid by check, certified check, or money order, payable to the **Texas Commission on Environmental Quality**. Your canceled check will serve as your receipt. **This form must be submitted with your fee payment**. This payment is being submitted to:

☐ Austin Regional Office
☐ Mailed to: TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☒ San Antonio Regional Office
☐ Overnight Delivery to: TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
(512)239-0357

Site Location (Check All That Apply):

☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	***Size***	***Fee Due***
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	45 Acres	$ 8,000.00
Sewage Collection System	1,423 L.F.	$ 711.50
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: _____ Date: 09/21/2023

Application Fee Schedule

Texas Commission on Environmental Quality

Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

Project	***Project Area in Acres***	***Fee***
One Single Family Residential Dwelling	< 5	$650
Multiple Single Family Residential and Parks	< 5 5 < 10 10 < 40 40 < 100 100 < 500 ≥ 500	$1,500 $3,000 $4,000 $6,500 $8,000 $10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1 1 < 5 5 < 10 10 < 40 40 < 100 ≥ 100	$3,000 $4,000 $5,000 $6,500 $8,000 $10,000

Organized Sewage Collection Systems and Modifications

Project	***Cost per Linear Foot***	***Minimum Fee-Maximum Fee***
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

Project	***Cost per Tank or Piping System***	***Minimum Fee-Maximum Fee***
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

Project	***Fee***
Exception Request	$500

Extension of Time Requests

Project	***Fee***
Extension of Time Request	$150

1.9. CORE DATA FORM (TCEQ-10400)

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 606161586		RN 111774238

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:*

360 Comal Storage, LLC

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
0804253136	32081224159		

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:

12600 Hill Country Blvd
Suite R-275

City	State	ZIP	ZIP + 4
Bee Cave	TX	78738	6768

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*
	Neil@360captx.com

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(512) 947-7966		( ) -

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.)*

360 Comal Storage

23. Street Address of the Regulated Entity: 276 Purgatory Road

(No PO Boxes)								
	City	New Braunfels	**State**	TX	**ZIP**	78624	**ZIP + 4**	
24. County	Comal							

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

25. Description to Physical Location:	11.0 Miles North of Comal County Courthouse				
26. Nearest City			**State**	**Nearest ZIP Code**	
New Braunfels			Tx	78132	
Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).					
27. Latitude (N) In Decimal:	29.847525		**28. Longitude (W) In Decimal:**	-98.118373	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	50	51.09	-98	7	6.1428

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)
4225		531130	

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

R.V. and Boat Storage

34. Mailing Address:	**12600 Hill Country Blvd Suite R-275**							
	City	**Bee Cave**	**State**	**Tx**	**ZIP**	**78738**	**ZIP + 4**	

35. E-Mail Address:	**Neil@360captx.com**

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(512) 947-7966		**( ) -**

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: WPAP

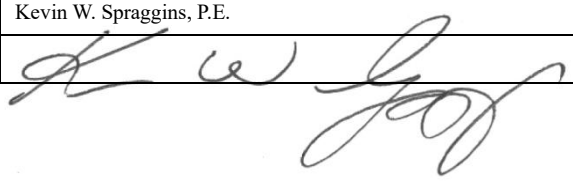
SECTION IV: Preparer Information

40. Name:	Gwen Wells	**41. Title:**	Technical Writer

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(830) 997-4744		( ) -	gwells@vei-tx.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:	VEI Consulting Engineers	**Job Title:**	President
Name *(In Print):*	Kevin W. Spraggins, P.E.	**Phone:**	(830) 997- **4744**
Signature:		**Date:**	09/11/2023

PART 2. THIRD PARTY REPORTS & MAPS

2.1 THIRD PARTY REPORTS

- Geotechnical Report by Rock Engineering & Testing Laboratory
- SWPPP & NOI by Q&A Diversified LLC
- USDA NRCS Web Soil Report

2.2 THIRD PARTY MAPS

- COMAL CAD Information
- Google Earth Image with USGS 7.5 Min. Topo Overlay
- USGS 7.5-Minute Series Map, Hunter Quadrangle
- Edwards Aquifer Viewer Maps with Overlay
- FEMA FIRMette
- US Fish & Wildlife Wetlands Inventory Map with Overlay
- TCEQ PSOC Map with Overlay
- Texas Parks & Wildlife Watershed Map with Overlay

2.1 THIRD PARTY REPORTS

- Geotechnical Report by Rock Engineering & Testing Laboratory
- SWPPP & NOI by Q&A Diversified LLC
- USDA NRCS Web Soil Report

· Geotechnical Engineering
· Construction Materials Engineering & Testing
· Soils · Asphalt · Concrete

February 10, 2022

JK Bernhard Construction Co.
2546 Goat Creek Road
Kerrville, TX 78028

Attention: Jarad Payne

SUBJECT: **SUBSURFACE EXPLORATION, LABORATORY TESTING PROGRAM, AND FOUNDATION AND PAVEMENT RECOMMENDATIONS FOR THE PROPOSED ALL STOR FM 306 & PURGATORY ROAD NEW BRAUNFELS, TEXAS RETL Project No.: 221383**

Dear Mr. Payne,

In accordance with our agreement, we have conducted a subsurface exploration and foundation and pavement evaluation for the above referenced project. The results of this exploration, together with our recommendations, are to be found in the accompanying report, an electronic copy of which is being transmitted herewith. RETL will provide up to two (2) versions of this report in hard copy at the request of the client.

Often, because of design and construction details that occur on a project, questions arise concerning soil conditions and Rock Engineering and Testing Laboratory, Inc. (RETL), would be pleased to continue its role as the Geotechnical Engineer during project implementation.

RETL also has great interest in providing materials testing and special inspection services during the construction phase of this project. If you will advise us of the appropriate time to discuss these engineering services, we will be pleased to meet with you at your convenience.

Sincerely,

J.R. Eichelberger, III, P.E.
Senior Project Engineer

Rock Engineering & Testing Laboratory, Inc.
www.rocktesting.com

6817 Leopard Street · Corpus Christi, Texas 78409-1703
Office: (361) 883-4555 · Fax: (361) 883-4711

10856 Vandale St · San Antonio, Texas 78216-3625
Office: (210) 495-8000 · Fax: (210) 495-8015

No.1 Roundville Lane · Round Rock, Texas 78664
Office: (512) 284-8022 · Fax: (512) 284-7764

SUBSURFACE EXPLORATION, LABORATORY TESTING PROGRAM, AND FOUNDATION AND PAVEMENT RECOMMENDATIONS FOR THE PROPOSED ALL STOR FM 306 & PURGATORY ROAD NEW BRAUNFELS, TEXAS

RETL PROJECT NUMBER: 221383

PREPARED FOR:

JK BERNHARD CONSTRUCTION CO.
2546 GOAT CREEK ROAD
KERRVILLE, TX 78028

FEBRUARY 9, 2022

PREPARED BY:

ROCK ENGINEERING AND TESTING LABORATORY, INC.
10856 VANDALE STREET
SAN ANTONIO, TEXAS 78216
PHONE: (210) 495-8000; FAX: (210) 495-8015

TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM REGISTRATION NUMBER 2101

Kyle D. Hammock, P.E.
Vice President - San Antonio

TABLE OF CONTENTS

Page

INTRODUCTION

This report presents the results of a soils exploration and foundation and pavement evaluation for the proposed All Stor to be constructed near the intersection of FM 306 & Purgatory Road in New Braunfels, Texas. This study was conducted for JK Bernhard Construction Co.

Authorization

The work for this project was performed in accordance with RETL Proposal Number SGP032621BR3 dated January 4, 2021. The proposal contained a scope of work, lump sum fee and limitations. The proposal was approved and signed by Jarad Payne on January 4, 2021 and returned to RETL via email.

Purpose and Scope

The purpose of this exploration was to evaluate the soil, rock, and groundwater conditions at the site and to provide foundation and pavement recommendations suitable for the proposed project.

The scope of the exploration and evaluation included the subsurface exploration, field and laboratory testing, engineering analysis and evaluation of the subsurface soils, provision of foundation and pavement recommendations, and preparation of this report.

The scope of services did not include an environmental assessment. Any statements in this report, or on the boring logs, regarding odors, colors, unusual or suspicious items or conditions are strictly for the information of the client.

General

The exploration and analysis of the subsurface conditions reported herein are considered sufficient in detail and scope to form a reasonable basis for the foundation and pavement designs. The recommendations submitted for the proposed project are based on the available subsurface information and the preliminary design details provided by the client. If the structural or civil engineer requires additional soil and rock parameters to complete the foundation and pavement designs, and the requested information can be obtained from the agreed upon scope of work, RETL will provide the requested information as a supplement to this report.

The Geotechnical Engineer states that the findings, recommendations, specifications or professional advice contained herein, have been presented after being prepared in a manner consistent with the level of care and skill ordinarily exercised by reputable members of the Geotechnical Engineer's profession practicing contemporaneously under similar conditions in the locality of the project. RETL operates in general accordance with "*Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction*", (ASTM D3740). No other representations are expressed or implied, and no warranty or guarantee is included or intended.

FIELD EXPLORATION

Scope

The field exploration was completed in order to evaluate the engineering characteristics of the subsurface conditions and included reconnaissance of the project site, drilling the test borings, and recovering disturbed samples and a relatively undisturbed sample of the subsurface materials encountered at the test boring locations. RETL performed a total of nine (9) borings at the site. The table below provides the boring location, identification, and depth:

SUMMARY OF BORING INFORMATION		
Boring Location	**Boring Identification**	**Boring Depth (ft)**
Phase 2	B-1 to B-5	20
Phase 1	B-6 to B-8	20
Entrance Roadway	B-9	6

RETL determined the number, depth, and location of the borings. RETL located the borings in the field and a subcontractor under the supervision of RETL performed the boring operations. Upon completion of the drilling operations and obtaining the groundwater observations, the bore holes were backfilled with excavated soil and rock and the site cleaned as required. A Boring Location Plan is provided in the Appendix of this report.

Drilling and Sampling Procedures

The borings were performed using a drilling rig equipped with a rotary head and air rotary drilling methods were used to advance the boreholes to their desired depths. Disturbed samples were obtained employing split-barrel sampling procedures in general accordance with the procedures for "*Penetration Test and Split-Barrel Sampling of Soils*" (ASTM D1586). A relatively undisturbed soil sample was obtained using thin-wall tube sampling procedures in accordance with the procedures for "*Thin Walled Tube Sampling of Soils*" (ASTM D1587). The sample obtained by this procedure were extruded by a hydraulic ram in the field.

The samples were classified in the field, placed in plastic bags, marked according to their boring number, depth, and any other pertinent field data, stored in special containers, and delivered to the laboratory for testing.

Field Tests and Measurements

Penetration Tests - During the sampling procedures, standard penetration tests (SPT) were performed to obtain the standard penetration value of the soil. The standard penetration value (N) is defined as the number of blows of a 140-pound hammer falling 30 inches required to advance the split-barrel sampler 1-foot into the soil. The sampler is lowered to the bottom of the previously cleaned drill hole and advanced by blows from the hammer. The number of blows is recorded for each of three successive 6-inch penetrations.

The "N" value is obtained by adding the second and third 6-inch increment number of blows. The results of standard penetration tests indicate the relative density of cohesionless soils and comparative consistency of cohesive soils or limestone rock, thereby providing a basis for estimating the relative strength and compressibility of the soil and rock profile components.

Water Level Observations - Water level observations were obtained during the test boring operations and are noted on the boring logs provided in the Appendix. The amount of water in open boreholes largely depends on the permeability of the soil and rock encountered at the boring locations. In relatively pervious soils, such as sandy soils, the indicated depths are usually reliable groundwater levels.

In relatively impervious soils, a suitable estimate of the groundwater depth may not be possible, even after several days of observation. Seasonal variations, temperature, land-use, proximity to a creek, and recent rainfall conditions may influence the depth to the groundwater.

Ground Surface Elevations - Ground surface elevations were not provided at the boring locations. All depths referred to in this report are reported from the level of the ground surface elevation at the boring locations during the time of our field investigation.

LABORATORY TESTING PROGRAM

In addition to the field investigation, a laboratory-testing program was conducted to determine additional pertinent engineering characteristics of the subsurface materials necessary in analyzing the behavior of the foundation and pavement systems for the proposed project.

The laboratory-testing program included supplementary visual classification (ASTM D2487) and water content tests (ASTM D2216) on all samples. In addition, selected samples were subjected to Atterberg limits tests (ASTM D4318), and percent material finer than the #200 sieve tests (ASTM D1140).

All phases of the laboratory-testing program were conducted in general accordance with applicable ASTM Specifications. The results of these tests are to be found on the accompanying boring logs provided in the Appendix.

SUBSURFACE CONDITIONS

General

The types of foundation bearing materials encountered in the test borings have been visually classified and are described in detail on the boring logs. The results of the standard penetration tests, strength test, water level observations, and laboratory tests are presented on the boring logs in numerical form. Representative samples of the soils were placed in polyethylene bags and are now stored in the laboratory for further analysis, if desired. Unless notified to the contrary, all samples will be disposed of three months after issuance of this report.

The stratification of the soil and rock, as shown on the boring logs, represents the soil and rock conditions at the actual boring locations. Variations may occur between, or beyond, the boring locations. Lines of demarcation represent the approximate boundary between different soil and rock types, but the transition may be gradual, or not clearly defined.

It should be noted that, whereby the test borings were drilled and sampled by experienced technicians, it is sometimes difficult to record changes in stratification within narrow limits. In the absence of foreign substances, it is also difficult to distinguish between discolored soils and clean soil fill.

Soil and Rock Conditions

The subsurface conditions encountered at the boring locations generally consist of an upper mantle of clay and clayey gravel soils with an approximate thickness of 1 to 3-feet over weathered limestone and competent limestone rock which extends to the boring termination depths of 20-feet. The clay and clayey gravel soils at the surface are moderate to very high in plasticity with a tested plasticity indices (PI) ranging from 27 to 54. The clay and clayey gravel soils are stiff to very hard with standard penetration tests (N values) ranging from 12 blows per foot to 50 blows for 3-inches of penetration. The weathered limestone and competent limestone materials are very hard.

Detailed descriptions of the soils and rock encountered at the boring locations are provided on the Logs of Boring attached. Representative samples of the soils and rock were placed in polyethylene bags and are now stored in the laboratory for further analysis, if desired. Unless notified to the contrary, the samples will be disposed of three months after issuance of this report.

The stratification of the soil and rock, as shown on the Logs of Boring, represents the soil and rock conditions at the actual boring locations. Variations may occur between, or beyond, the boring locations. Lines of demarcation represent the approximate boundary between different soil types, but the transition may be gradual, or not clearly defined.

It should be noted that, whereby the test borings were drilled and sampled by experienced technicians, it is sometimes difficult to record changes in stratification within narrow limits. In the absence of foreign substances, it is also difficult to distinguish between discolored soils and clean soil fill.

Seismic Site Class

The field investigation did not include a 100-foot deep boring, therefore, the soil properties are not known in sufficient detail to determine the Site Class per ASCE 7 Chapter 20. This section states that where site-specific data are not available to a depth of 100-feet, appropriate soil properties are permitted to be estimated by the registered design professional preparing the soil investigation report based on known geologic conditions. This site has stiff to very hard clay and clayey gravel soils underlain by limestone extending to the 20-foot depth. Table 20.3-1 Site Class Definitions of ASCE 7 Chapter 20, indicates that Site Class D materials should have soil undrained shear strengths between 1,000 and 2,000 psf and standard penetration resistances between 15 and 50 blows per foot. The on-site soils to the 3-foot depth have strengths similar to Site Class D materials; therefore, RETL recommends that Site Class D, "stiff soil profile" be assumed.

Groundwater Observations

Groundwater was not encountered in the borings during drilling nor measured upon completion of the drilling operations. It should be noted that water levels in open boreholes may require anywhere from several hours to several days to stabilize depending on the permeability of the soils and that groundwater levels at this site may be subject to seasonal conditions, recent rainfall, drought or temperature effects.

FOUNDATION RECOMMENDATIONS

Project Description

Based on the information provided, it is understood the project will consist of the development of a storage facility with a check-in office, climate-controlled storage buildings, RV and boat storage buildings, as well as parking and driveway areas. Anticipated loads were not provided, however, based on our experience with similar types of structures, maximum concentrated loads on the order of 30-kips are expected, with wall loads in the range of ½ to 1-kip per linear foot.

PVR Discussion

The clay and clayey gravel soils above the limestone at this site are moderate to very high in plasticity. **The maximum calculated total potential vertical rise (PVR) for slab-on-grade type construction at this is site is approximately 1½-inch or less.** The PVR was calculated using the Texas Department of Transportation Method TEX-124E and took into account the average depth of active zone, estimated to extend to a depth of approximately 3-feet, and the Atterberg limits test results of the soils encountered within the active zone.

It is important to note that the PVR value provided herein was calculated using the Texas Department of Transportation Method TEX-124E and represents the vertical rise that can be experienced by relatively dry subsoils subjected to increases in soil moisture content resulting from capillary effects or rainwater. The TEX-124E method is widely used in Texas for predicting expansive soil movements and has been found to be reasonably accurate for moisture variations resulting from normal seasonal and climatic controlled conditions (environmental conditions). The actual movement of the subsoils is dependent upon their change in moisture content.

Conditions that allow the soils to become saturated or significantly exceed typical moisture variations resulting from environmental conditions or exceed the dry and wet boundary conditions established by the TEX-124E method, such as poor drainage, broken utilities, and variations in subsurface groundwater sources, may result in higher magnitudes of moisture related soil movements than calculated by the PVR method provided herein.

It is anticipated that when completely inundated with water and allowed to become saturated, which would likely be the case if proper drainage around the structure is not provided or if a broken plumbing line was to occur, the subgrade soils could swell 2 to 3 times or more the magnitude estimated by the TEX-124E PVR represented herein. Differential vertical movements may occur over a distance equal to the depth of the active zone and can potentially be equal to the expected total movements.

To consistently reduce the PVR to approximately 1-inch or less, all surface clayey soils should be stripped to expose rock materials prior to constructing the building pads.

Slab-on-Grade Recommendations

The proposed buildings may be supported on a stiffened slab-on-grade foundation at this site. Grade beams and footings shall be founded on the natural soils or in properly compacted select fill at a minimum depth of 2-feet below the finished floor slab elevation. The exterior beams should also have a minimum embedment depth of 1½-feet below the final exterior grades. **Grade beams and footings bearing in properly compacted select fill can be designed for a net allowable unit soil bearing pressure of 2,000 psf. Grade beams and footings bearing on limestone materials can be designed for an allowable unit soil bearing pressure of 4,000 psf.** The net allowable unit soil bearing pressure provided utilizes a safety factor of at least 3.

The *"Design of Slab-On-Ground Foundations"* published by the Wire Reinforcement Institute, Inc. (Aug., 1981) utilizes the design criteria provided in the table below for design of stiffened slab-on-grade foundations for a PVR condition of approximately 1-inch or less:

WRI DESIGN CRITERIA	
Approximate PVR (in)	≤1
Climatic Rating (Cw)	17
Effective Plasticity Index	15
Soil/Climatic Rating Factor (1-C)	0.03
Maximum Beam Spacing (ft)	20

Laboratory test results and VOLFLO Version 1.5 software have been used to develop soil parameters based on the Post-Tensioning Institute 3rd Edition, "*Design and Construction of Post-Tensioned Slabs-On-Ground*" as indicated in the following table for a PVR of approximately 1-inch or less

3rd EDITION POST TENSION DESIGN PARAMETERS	
Approximate PVR	≤1
Moisture Penetration Distance; Em (center lift) (ft)	9.0
Moisture Penetration Distance; Em (edge lift) (ft)	5.0
Differential Movement; Ym (shrink) (center) (in)	-0.69
Differential Movement; Ym (swell) (edge) (in)	1.00

Soil supported floor slabs could be subject to slight vertical movements, as discussed earlier in this report. Even slight differential movements may cause distress to interior wall partitions and rigid exterior facades supported by a shallow slab-on-grade foundation resulting in cosmetic damage. This amount of movement should be understood and addressed during the design phase of the proposed structures planned for construction at this site.

The foundation excavations should be observed by a representative of RETL prior to steel or concrete placement to assess that the foundation materials are capable of supporting the design loads and to identify the acceptability of the bearing materials under the beams and footings.

Soft or loose zones encountered at the bottom of the foundation excavations should be removed to the level of competent materials as directed by the Geotechnical Engineer. Cavities formed as a result of excavation of soft or loose zones should be backfilled with properly compacted select fill.

After opening, footing excavations should be observed, and concrete placed as quickly as possible to avoid exposure of the footing bottoms to wetting and drying. Surface run-off water should be drained away from the excavations and not be allowed to pond. If it is required that foundation excavations be left open an extended period, they should be protected to reduce evaporation or entry of moisture.

SITE IMPROVEMENT METHODS

General Considerations

A majority of foundation related problems in the project area are attributable, at least in part, to poor drainage. Cohesive soils expand or shrink and sandy soils consolidate by absorbing or losing water. Reducing a soil's variation in moisture content will reduce its variation in volume. A number of measures may be used to attain a reduction in subsoil moisture content variations, thus reducing the soil's shrink/swell volume change potential. Some of these measures are outlined below:

- During construction, a positive drainage scheme should be implemented to prevent ponding of water on the subgrade.

- Positive drainage should be maintained around structures through a roof/gutter system connected to piping or directed to paved surfaces, transmitting water away from the foundation perimeters. In addition, positive grades sloping away from the foundations should be designed and implemented. We recommend that others devise an effective site drainage plan prior to commencement of construction to provide positive drainage away from the foundation perimeters and off the site, both during, and after construction.

- Trenches can serve as aqueducts that transport water beneath the structures and into foundation excavations causing foundation and floor slab distress and moisture transmission related problems. Clay plugs or collars should be installed in trenches just outside the building footprints to prevent horizontal migration of groundwater through trenches into the building pads. Provisions should be made to collect and remove all water which may migrate below the foundation.

- Vegetation placed in landscape beds that are adjacent to the structures should be limited to plants and shrubs that will not exceed a mature height of 3-feet. Large bushes and trees should be planted away from any slab foundation at a distance that will exceed their full mature height and canopy width.

All project features beyond the scope of those discussed above should be planned and designed similarly to attain a region of relatively uniform moisture content within the foundation areas. Poor drainage schemes are generally the primary cause of foundation problems on clay soils.

PAVEMENT CONSIDERATIONS

In designing the proposed parking areas and access driveways, the existing subgrade conditions must be considered together with the expected traffic use and loading conditions.

The conditions that influence pavement design can be summarized as follows:

1. Bearing values of the subgrade. These values can be represented by a California Bearing Ratio (CBR) for the design of flexible asphalt pavements, or a Modulus of Subgrade Reaction (K) for rigid concrete pavements.
2. Vehicular traffic, in terms of the number and frequency of vehicles and their range of axle loads.
3. Probable increase in vehicular use over the life of the pavement.
4. The availability of suitable materials to be used in the construction of the pavement and their relative costs.

Specific laboratory testing to define the subgrade strength (i.e. CBR/K values) has not been performed for this analysis. Based upon local experience and the plasticity indices of the in-situ subgrade soils, the CBR and K value for design have been selected as 3 and 100 pci, respectively.

Since traffic counts and design vehicles have not been provided, it is possible to provide non-engineered pavement sections based on pavement sections that have provided adequate serviceability for other similar projects in the area.

Parking areas and the access driveways can be designed with either a flexible or rigid pavement. It is important that the exposed subgrade is properly prepared prior to pavement installation.

Flexible Pavements

The recommended flexible pavement sections, using the locally available base material, are provided in the following table:

FLEXIBLE PAVEMENT		
Location	**Auto Parking**	**Access Drives**
Hot Mix Asphaltic Concrete	2"	2"
Limestone Base Material (TxDOT Item 247 Grade 2)	8"	12"
Compacted Subgrade	6"	6"

Allowances for proper drainage and proper material selection of base materials are most important for performance of asphaltic pavements. Ruts and birdbaths in asphalt pavements allow for quick deterioration of the pavement primarily due to saturation of the underlying base materials and subgrade soils.

Rigid Concrete Pavements

The use of concrete for paving has become more prevalent in recent years due to the long-term maintenance cost benefits of concrete pavement compared to asphalt pavements. Concrete pavement is recommended for the approaches, loading areas, and dumpster pads. The recommended rigid concrete pavement sections are provided in the following table:

RIGID PAVEMENT		
Location	**Light Duty**	**Heavy Duty Drives and Dumpster Pads**
Reinforced Concrete	6"	7"
Compacted Subgrade	6"	6"

The trash dumpster concrete pads should be large enough to accommodate both the front and rear wheels of the vehicles used to pick up the trash dumpsters. Maintenance or operations managers need to stress the importance of placing the trash dumpsters in their proper locations to reduce the distress trash pickup operations place on the pavement.

Pavement Material Recommendations

Compacted Subgrade - The upper 6-inches of exposed subgrade soils should be compacted to a minimum density of 95-percent of the maximum dry unit weight of the subgrade soils as determined by a standard Proctor test (ASTM D698). The moisture content of the subgrade soils should be maintained at or above the optimum moisture content.

Compacted FILL - After subgrade preparation is complete, the placement of properly compacted FILL soils may begin in the paved areas to raise the grades, where required. FILL soils could consist of on-site soils free of organics and other deleterious materials or imported soils with a maximum plasticity index (PI) of 25. The FILL used to raise the grade where required in the proposed parking and driveway areas should be placed in no greater than 8-inch thick loose lifts and compacted to at least 95-percent of the maximum dry density as determined by the Standard Proctor test (ASTM D-698). The moisture content of the soils should be at or above the optimum moisture content.

Base Material - Base materials in flexible pavement areas should meet the requirements set forth in the Texas Department of Transportation (TxDOT) 2014 Standard Specifications for Construction of Highways, Streets and Bridges; Item 247, Type A, Grade 1-2.

The base material should be placed in maximum 8-inch thick loose lifts and compacted to a minimum density of 95-percent of the maximum dry density as determined by the modified Proctor test (ASTM D1557). The moisture content of the base materials should be maintained within 2-percentage points of the optimum moisture content.

Hot Mix Asphaltic Concrete - Hot mix asphaltic concrete should meet the requirements set forth in TxDOT Item 340 or 341; Type D surface course. The asphaltic concrete should be compacted to between 91.5 and 96.3-percent of the theoretical density.

Rigid Concrete - The concrete pavement should be properly reinforced and jointed, as per ACI, and should have a minimum 28-day compressive strength of 3,000 psi. Expansion joints should be spaced no greater than 60-feet and should be sealed with an appropriate sealant so that moisture infiltration into the subgrade soils and resultant concrete deterioration at the joints is minimized. Control joint spacing should not exceed 15-feet and preferably less to adequately control cracking. The joints should be thoroughly cleaned, and sealant should be installed without overfilling before the pavement is opened to traffic.

Based on past experience with concrete pavements supported on similar subgrade soils, RETL recommends that reinforcement for concrete pavement consist of #4 bars (1/2-inch diameter) spaced at 18-inches on center each way. The splice length for #4 bars should not be less than 20-inches.

CONSTRUCTION CONSIDERATIONS

Site Preparation

Within the areas of the subject site where engineered improvements are planned, all vegetation, roots, objectionable materials, and topsoil should be stripped from the surface. Tree stumps should be ground down at least 12-inches below the final subgrade elevation. The stripped material should either be stockpiled for use in non-structural / landscaped areas or removed from the site. A stripping depth of at least 6-inches is recommended unless the competent natural soil or rock materials are encountered at depths shallower than 6-inches.

In the building foundation areas, the existing clayey soils shall be completely stripped from the surface to expose limestone materials prior to constructing the building pads. In addition, limestone rock should be excavated as required to provide a minimum of 1-foot of select fill beneath the floor slab of the structures. The undercut excavation should extend at least 5-feet beyond the perimeters of the foundations and any movement sensitive flatwork, and the subgrade should be relatively level after undercutting. All fill needed to raise the building pads above the existing grades shall be select fill.

Upon completion of the stripping and excavation operations, the exposed subgrade should be proof-rolled with a minimum 20-ton rubber tire dump truck or loader under the supervision of RETL to detect any soft areas prior to fill placement. If any soft pockets or pumping areas are identified, the objectionable materials should be removed to expose firm materials and the excavation replaced with compacted select fill. The RETL Geotechnical Engineer must approve the subgrade condition prior to the placement of select fill materials.

Subgrade Preparation

After proofrolling operations are completed, the exposed subgrade soils should be scarified to a depth of 6-inches, moisture conditioned if necessary, and compacted. The subgrade soils should be compacted to at least 95-percent of the maximum dry density as determined by the standard Proctor (ASTM D698). The moisture content of the subgrade soils should be maintained at or above the optimum moisture content. Limestone rock will not require compaction testing.

Select Fill

Imported select fill material used at this site for the building pads should be a minimum of 12-inches in thickness and should be a 2014 TxDOT Item 247, Type A, Grade 1-2 crushed limestone base with a maximum liquid limit of 40 percent and a maximum plasticity index (PI) of 10. The select fill should be placed in no greater than 8-inch thick loose lifts and shall be compacted to a minimum density of 95-percent of the maximum dry density as determined by the modified Proctor (ASTM D1557) and within 2-percentage points of the optimum moisture content. On site milled limestone with a maximum particle size of 3-inches and maximum plasticity index (PI) of 15 may also be used for select fill. The Geotechnical Engineer shall approve the select fill utilized at this site.

Earthwork and Foundation Acceptance

Exposure to the environment may weaken the soils at the foundation bearing level if excavations remain open for long periods of time. Therefore, it is recommended that the foundation excavations be extended to final grade and that the foundations be constructed as soon as possible to minimize potential damage to the bearing soils. The foundation bearing level should be free of loose soil, ponded water, or debris and should be observed prior to concreting by the Geotechnical Engineer, or his designated representative.

Foundation concrete should not be placed on soils that have been disturbed by rainfall or seepage. If the bearing soils are softened by surface water intrusion, or by desiccation, the unsuitable soils must be removed from the foundation excavation and be replaced with properly compacted select fill prior to placement of concrete.

The Geotechnical Engineer, or his designated representative, should monitor subgrade preparation and placement of select fill. As a guideline, a minimum of one in-place density test should be performed on the subgrade soils and each subsequent lift of fill for each 3,000 SF of slab area, or a minimum of three in-place density tests per testing interval, whichever is greater. The testing interval may be increased to 10,000 SF in paving areas. Any areas not meeting the required compaction should be recompacted and retested until compliance is met.

Vapor Retarder

Polyolefin vapor retarders with a permeance of less than 0.1 US perms (ASTM E96) and Class A strength should be placed under the concrete floor slabs on the select fill pads to reduce the transmission of water vapor from the supporting soil through the concrete slabs and to function as a slip sheet to reduce subgrade drag friction. A film thickness of 10 mils (0.25 mm) is typically used for reduced vapor transmission and durability during and after its installation.

The vapor retarder should be installed according to ASTM E1643, "Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs."

All penetrations through the vapor retarders should be sealed to ensure its integrity. The vapor retarders should be taped around all openings to ensure the effectiveness of the barrier. Grade stakes should not be driven through the barriers and care should be taken to avoid punctures during reinforcement and concrete placement. Placement of slab concrete directly on the vapor retarders increases the risks of surface dusting, blistering and slab curling making good concrete practice critical. A low water to cement ratio concrete mix design combined with proper and adequate curing procedures will help ensure a good quality slab.

Utilities

Utilities that project through slab-on-grade floors or walls should be designed with either some degree of flexibility, or with sleeves, in order to prevent damage to these lines should movement occur.

Expansion/Control Joints

Expansion and or control joints should be designed and placed in various portions of the structures, especially rigid masonry walls. Properly planned placement of these joints will assist in controlling the degree and location of material cracking that normally occurs due to material shrinkage, thermal affects, soil movements and other related structural conditions.

Rock Excavation

Very hard limestone rock was encountered at this site. Therefore, high powered rock excavation and rock hammer/sawing/milling equipment will be required at this site to perform excavations.

GENERAL COMMENTS

If significant changes are made in the character or location of the proposed project, a consultation should be arranged to review any changes with respect to the prevailing soil and rock conditions. At that time, it may be necessary to submit supplementary recommendations.

It is recommended that the services of RETL be engaged to test and evaluate the soils in the foundation excavations prior to concreting in order to verify that the bearing soils are consistent with those encountered in the borings. RETL cannot accept any responsibility for any conditions that deviate from those described in this report, nor for the performance of the foundations and pavements if not engaged to also provide construction observation and testing for this project. If it is required for RETL to accept any liability, then RETL must agree with the plans and perform such observation during construction as we recommend.

All sheeting, shoring and bracing of trenches, pits and excavations should be made the responsibility of the contractor and should comply with all current and applicable local, state and federal safety codes, regulations and practices, including the Occupational Safety and Health Administration.

APPENDIX

BORING LOCATION PLAN

NO SCALE
BORING LOCATIONS ARE APPROXIMATE

February 10, 2022
JK Bernhard Construction Co.
RETL Project No.: 221383

ALL STOR
FM 306 & Purgatory Road
New Braunfels, Texas

ROCK ENGINEERING AND TESTING LABORATORY, INC.
10856 VANDALE STREET
SAN ANTONIO, TEXAS 78216
(210) 495-8000

LOG OF BORING B-1

Rock Engineering & Testing Laboratory, Inc.
10856 Vandale Street
San Antonio, Texas 78216
Telephone: 210-495-8000
Fax: 210-495-8015

CLIENT: JK Bernhard Construction Co.
PROJECT: All Stor
LOCATION: FM 306 & Purgatory Rd; New Braunfels, TX
NUMBER: 221383
DATE(S) DRILLED: 01/13/2022

DRILLING METHOD(S):
Air Rotary

GROUNDWATER INFORMATION:
Groundwater was not encountered during the drilling operations and the boring was dry upon completion of the drilling operations.

SURFACE ELEVATION: N/A

FIELD DATA					LABORATORY DATA								
SOIL SYMBOL	DEPTH (FT)	SAMPLE NUMBER	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT	MOISTURE CONTENT (%)	ATTERBERG LIMITS LIQUID LIMIT LL	ATTERBERG LIMITS PLASTIC LIMIT PL	ATTERBERG LIMITS PLASTICITY INDEX PI	DRY DENSITY POUNDS/CU.FT	COMPRESSIVE STRENGTH (TONS/SQ FT)	MINUS NO. 200 SIEVE (%)	DESCRIPTION OF STRATUM
		SPT S-1		N= 28	26	77	23	54			65	**GRAVELLY FAT CLAY**, with weathered limestone, reddish-dark brown, moist, very stiff. (CH)
		SPT S-2		N= 50/2"	8							**LIMESTONE**, tan, dry, very hard.
	5	SPT S-3		N= 50/0"	1							Same as above.
		SPT S-4		N= 50/0"	2							Same as above.
		SPT S-5		N= 50/0"	2							**LIMESTONE**, tan, dry, very hard.
	10											
	15	SPT S-6		N= 50/0"	1							Same as above.
		SPT S-7		N= 50/0"	1							Same as above.
	20											Boring terminated at a depth of 20-feet.

N - STANDARD PENETRATION TEST RESISTANCE
Qc - STATIC CONE PENETROMETER TEST INDEX
P - POCKET PENETROMETER RESISTANCE

REMARKS:
Boring location determined by RETL. Drilling operations performed by a subcontractor to RETL.
GPS Coordinates: N 29.84704°, W -98.11749°

LOG OF BORING B-2

Rock Engineering & Testing Laboratory, Inc.
10856 Vandale Street
San Antonio, Texas 78216
Telephone: 210-495-8000
Fax: 210-495-8015

CLIENT: JK Bernhard Construction Co.
PROJECT: All Stor
LOCATION: FM 306 & Purgatory Rd; New Braunfels, TX
NUMBER: 221383
DATE(S) DRILLED: 01/13/2022

DRILLING METHOD(S):
Air Rotary

GROUNDWATER INFORMATION:
Groundwater was not encountered during the drilling operations and the boring was dry upon completion of the drilling operations.

SURFACE ELEVATION: N/A

SOIL SYMBOL	DEPTH (FT)	SAMPLE NUMBER	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT	MOISTURE CONTENT (%)	ATTERBERG LIMITS LIQUID LIMIT LL	ATTERBERG LIMITS PLASTIC LIMIT PL	ATTERBERG LIMITS PLASTICITY INDEX PI	DRY DENSITY POUNDS/CU.FT	COMPRESSIVE STRENGTH (TONS/SQ FT)	MINUS NO. 200 SIEVE (%)	DESCRIPTION OF STRATUM
		SPT S-1		N= 12	12						25	**CLAYEY GRAVEL**, with weathered limestone, dark brown and reddish-brown, moist, medium dense.
		SPT S-2		N= 50/1"	5							**LIMESTONE**, tan, dry, very hard.
	5	SPT S-3		N= 50/0"	2							Same as above.
		SPT S-4		N= 50/0"	2							Same as above.
	10	SPT S-5		N= 50/0"	2							**LIMESTONE**, tan, dry, very hard.
	15	SPT S-6		N= 50/0"	1							Same as above.
		SPT S-7		N= 50/0"	3							Same as above.
	20											Boring terminated at a depth of 20-feet.

N - STANDARD PENETRATION TEST RESISTANCE
Qc - STATIC CONE PENETROMETER TEST INDEX
P - POCKET PENETROMETER RESISTANCE

REMARKS:
Boring location determined by RETL. Drilling operations performed by a subcontractor to RETL.
GPS Coordinates: N 29.845561°, W -98.11794°

LOG_OF_BORING 221383 LOGS.GPJ ROCK_ETL.GDT 2/10/22

LOG OF BORING B-3

Rock Engineering & Testing Laboratory, Inc.
10856 Vandale Street
San Antonio, Texas 78216
Telephone: 210-495-8000
Fax: 210-495-8015

CLIENT: JK Bernhard Construction Co.
PROJECT: All Stor
LOCATION: FM 306 & Purgatory Rd; New Braunfels, TX
NUMBER: 221383
DATE(S) DRILLED: 01/13/2022

DRILLING METHOD(S):
Air Rotary

GROUNDWATER INFORMATION:
Groundwater was not encountered during the drilling operations and the boring was dry upon completion of the drilling operations.

SURFACE ELEVATION: N/A

SOIL SYMBOL	DEPTH (FT)	SAMPLE NUMBER	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT	MOISTURE CONTENT (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	DRY DENSITY POUNDS/CU.FT	COMPRESSIVE STRENGTH (TONS/SQ FT)	MINUS NO. 200 SIEVE (%)	DESCRIPTION OF STRATUM
		SPT S-1		N= 9-50/5"	5						25	**GRAVELLY FAT CLAY**, with weathered limestone, reddish-dark brown, dry, very hard.
		SPT S-2		N= 50/1"	1							**LIMESTONE**, tan, dry, very hard.
	5	SPT S-3		N= 50/0"	1							Same as above.
		SPT S-4		N= 50/0"	1							Same as above.
		SPT S-5		N= 50/0"	3							**LIMESTONE**, tan, dry, very hard.
	10											
		SPT S-6		N= 50/0"	2							Same as above.
	15											
		SPT S-7		N= 50/0"	2							Same as above.
	20											Boring terminated at a depth of 20-feet.

N - STANDARD PENETRATION TEST RESISTANCE
Qc - STATIC CONE PENETROMETER TEST INDEX
P - POCKET PENETROMETER RESISTANCE

REMARKS:
Boring location determined by RETL. Drilling operations performed by a subcontractor to RETL.
GPS Coordinates: N 29.84634°, W -98.11609°

LOG_OF_BORING 221383 LOGS.GPJ ROCK_ETL.GDT 2/10/22

LOG OF BORING B-4

Rock Engineering & Testing Laboratory, Inc.
10856 Vandale Street
San Antonio, Texas 78216
Telephone: 210-495-8000
Fax: 210-495-8015

CLIENT: JK Bernhard Construction Co.
PROJECT: All Stor
LOCATION: FM 306 & Purgatory Rd; New Braunfels, TX
NUMBER: 221383
DATE(S) DRILLED: 01/13/2022

DRILLING METHOD(S):
Air Rotary

GROUNDWATER INFORMATION:
Groundwater was not encountered during the drilling operations and the boring was dry upon completion of the drilling operations.

SURFACE ELEVATION: N/A

SOIL SYMBOL	DEPTH (FT)	SAMPLE NUMBER	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT	MOISTURE CONTENT (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	DRY DENSITY POUNDS/CU.FT	COMPRESSIVE STRENGTH (TONS/SQ FT)	MINUS NO. 200 SIEVE (%)	DESCRIPTION OF STRATUM
		SPT S-1		N= 34	21	52	20	32			74	**FAT CLAY WITH GRAVEL**, with weathered limestone, reddish-dark brown, moist, hard. (CH)
		SPT S-2		N= 50/1"	2							**LIMESTONE**, tan, dry, very hard.
	5	SPT S-3		N= 50/1"	2							Same as above.
		SPT S-4		N= 50/1"	2							Same as above.
		SPT S-5		N= 50/0"	0							**LIMESTONE**, tan, dry, very hard.
	10											
		SPT S-6		N= 50/0"	1							Same as above.
	15											
		SPT S-7		N= 50/0"	3							Same as above.
	20											Boring terminated at a depth of 20-feet.

N - STANDARD PENETRATION TEST RESISTANCE
Qc - STATIC CONE PENETROMETER TEST INDEX
P - POCKET PENETROMETER RESISTANCE

REMARKS:
Boring location determined by RETL. Drilling operations performed by a subcontractor to RETL.
GPS Coordinates: N 29.84638°, W -98.11387°

LOG_OF_BORING 221383 LOGS.GPJ ROCK_ETL.GDT 2/10/22

LOG OF BORING B-5

Rock Engineering & Testing Laboratory, Inc.
10856 Vandale Street
San Antonio, Texas 78216
Telephone: 210-495-8000
Fax: 210-495-8015

CLIENT: JK Bernhard Construction Co.
PROJECT: All Stor
LOCATION: FM 306 & Purgatory Rd; New Braunfels, TX
NUMBER: 221383
DATE(S) DRILLED: 01/13/2022

DRILLING METHOD(S):
Air Rotary

GROUNDWATER INFORMATION:
Groundwater was not encountered during the drilling operations and the boring was dry upon completion of the drilling operations.

SURFACE ELEVATION: N/A

SOIL SYMBOL	DEPTH (FT)	SAMPLE NUMBER	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT	MOISTURE CONTENT (%)	ATTERBERG LIMITS LIQUID LIMIT LL	ATTERBERG LIMITS PLASTIC LIMIT PL	ATTERBERG LIMITS PLASTICITY INDEX PI	DRY DENSITY POUNDS/CU.FT	COMPRESSIVE STRENGTH (TONS/SQ FT)	MINUS NO. 200 SIEVE (%)	DESCRIPTION OF STRATUM
		SPT S-1		N= 21-50/2"	19						79	**FAT CLAY WITH GRAVEL**, with weathered limestone, reddish-dark brown, moist, very hard.
		SPT S-2		N= 50/2"	8							**LIMESTONE**, with clay seams, tan, dry, very hard.
	5	SPT S-3		N= 50/0"	3							Same as above.
		SPT S-4		N= 50/1"	3							Same as above, sans clay seams.
		SPT S-5		N= 50/0"	2							**LIMESTONE**, tan, dry, very hard.
	10											
		SPT S-6		N= 50/0"	1							Same as above.
	15											
		SPT S-7		N= 50/1"	2							Same as above.
	20											Boring terminated at a depth of 20-feet.

N - STANDARD PENETRATION TEST RESISTANCE
Qc - STATIC CONE PENETROMETER TEST INDEX
P - POCKET PENETROMETER RESISTANCE

REMARKS:
Boring location determined by RETL. Drilling operations performed by a subcontractor to RETL.
GPS Coordinates: N 29.84710°, W -98.11446°

LOG OF BORING B-6

Rock Engineering & Testing Laboratory, Inc.
10856 Vandale Street
San Antonio, Texas 78216
Telephone: 210-495-8000
Fax: 210-495-8015

CLIENT: JK Bernhard Construction Co.
PROJECT: All Stor
LOCATION: FM 306 & Purgatory Rd; New Braunfels, TX
NUMBER: 221383
DATE(S) DRILLED: 01/13/2022

DRILLING METHOD(S):
Air Rotary

GROUNDWATER INFORMATION:
Groundwater was not encountered during the drilling operations and the boring was dry upon completion of the drilling operations.

SURFACE ELEVATION: N/A

SOIL SYMBOL	DEPTH (FT)	SAMPLE NUMBER	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT	MOISTURE CONTENT (%)	ATTERBERG LIMITS LIQUID LIMIT LL	ATTERBERG LIMITS PLASTIC LIMIT PL	ATTERBERG LIMITS PLASTICITY INDEX PI	DRY DENSITY POUNDS/CU.FT	COMPRESSIVE STRENGTH (TONS/SQ FT)	MINUS NO. 200 SIEVE (%)	DESCRIPTION OF STRATUM
		SPT S-1		N= 30	18						59	**GRAVELLY FAT CLAY**, with weathered limestone, dark brown, moist, hard.
		SPT S-2		N= 50/3"	27							**WEATHERED LIMESTONE**, reddish-brown, very hard.
	5	SPT S-3		N= 50/0"	2							**LIMESTONE**, tan, dry, very hard.
		SPT S-4		N= 50/0"	3							Same as above.
		SPT S-5		N= 50/0"	2							Same as above.
	10											
		SPT S-6		N= 50/0"	2							**LIMESTONE**, tan, dry, very hard.
	15											
		SPT S-7		N= 50/1"	6							Same as above, light brown.
	20											Boring terminated at a depth of 20-feet.

N - STANDARD PENETRATION TEST RESISTANCE
Qc - STATIC CONE PENETROMETER TEST INDEX
P - POCKET PENETROMETER RESISTANCE

REMARKS:
Boring location determined by RETL. Drilling operations performed by a subcontractor to RETL.
GPS Coordinates: N 29.84740°, W -98.11567°

LOG_OF_BORING 221383 LOGS.GPJ ROCK_ETL.GDT 2/10/22

LOG OF BORING B-7

Rock Engineering & Testing Laboratory, Inc.
10856 Vandale Street
San Antonio, Texas 78216
Telephone: 210-495-8000
Fax: 210-495-8015

CLIENT: JK Bernhard Construction Co.
PROJECT: All Stor
LOCATION: FM 306 & Purgatory Rd; New Braunfels, TX
NUMBER: 221383
DATE(S) DRILLED: 01/13/2022

DRILLING METHOD(S):
Air Rotary

GROUNDWATER INFORMATION:
Groundwater was not encountered during the drilling operations and the boring was dry upon completion of the drilling operations.

SURFACE ELEVATION: N/A

SOIL SYMBOL	DEPTH (FT)	SAMPLE NUMBER	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT	MOISTURE CONTENT (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	DRY DENSITY POUNDS/CU.FT	COMPRESSIVE STRENGTH (TONS/SQ FT)	MINUS NO. 200 SIEVE (%)	DESCRIPTION OF STRATUM
		SPT S-1		N= 27-50/5"	24						33	**CLAYEY GRAVEL**, with weathered limestone, brown, moist, very hard.
		SPT S-2		N= 50/0"	4							**LIMESTONE**, tan, dry, very hard.
	5	SPT S-3		N= 50/0"	2							Same as above.
		SPT S-4		N= 50/0"	2							Same as above.
		SPT S-5		N= 50/0"	1							**LIMESTONE**, tan, dry, very hard.
	10											
	15	SPT S-6		N= 50/0"	6							Same as above.
		SPT S-7		N= 50/0"	2							Same as above.
	20											Boring terminated at a depth of 20-feet.

N - STANDARD PENETRATION TEST RESISTANCE
Qc - STATIC CONE PENETROMETER TEST INDEX
P - POCKET PENETROMETER RESISTANCE

REMARKS:
Boring location determined by RETL. Drilling operations performed by a subcontractor to RETL.
GPS Coordinates: N 29.84797°, W -98.11695°

LOG_OF_BORING 221383 LOGS.GPJ ROCK_ETL.GDT 2/10/22

LOG OF BORING B-8

Rock Engineering & Testing Laboratory, Inc.
10856 Vandale Street
San Antonio, Texas 78216
Telephone: 210-495-8000
Fax: 210-495-8015

CLIENT: JK Bernhard Construction Co.
PROJECT: All Stor
LOCATION: FM 306 & Purgatory Rd; New Braunfels, TX
NUMBER: 221383
DATE(S) DRILLED: 01/13/2022

DRILLING METHOD(S):
Air Rotary

GROUNDWATER INFORMATION:
Groundwater was not encountered during the drilling operations and the boring was dry upon completion of the drilling operations.

SURFACE ELEVATION: N/A

SOIL SYMBOL	DEPTH (FT)	SAMPLE NUMBER	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (LL)	ATTERBERG LIMITS: PLASTIC LIMIT (PL)	ATTERBERG LIMITS: PLASTICITY INDEX (PI)	DRY DENSITY POUNDS/CU.FT	COMPRESSIVE STRENGTH (TONS/SQ FT)	MINUS NO. 200 SIEVE (%)	DESCRIPTION OF STRATUM
		SH S-1		P= 4.5+	27	48	21	27			54	**GRAVELLY LEAN CLAY**, dark brown, moist, very stiff. (CL)
		SPT S-2		N= 50/0"	7							**LIMESTONE**, tan, dry, very hard.
	5	SPT S-3		N= 50/0"	7							Same as above.
		SPT S-4		N= 50/0"	4							Same as above.
		SPT S-5		N= 50/1"	10							**LIMESTONE**, with reddish-brown clay seams, reddish-tan, moist, very hard.
	10											
		SPT S-6		N= 50/0"	4							Same as above, sans clay, tan, dry.
	15											
		SPT S-7		N= 50/0"	4							Same as above.
	20											Boring terminated at a depth of 20-feet.

N - STANDARD PENETRATION TEST RESISTANCE
Qc - STATIC CONE PENETROMETER TEST INDEX
P - POCKET PENETROMETER RESISTANCE

REMARKS:
Boring location determined by RETL. Drilling operations performed by a subcontractor to RETL.
GPS Coordinates: N 29.84796°, W -98.11460°

LOG OF BORING B-9

Rock Engineering & Testing Laboratory, Inc.
10856 Vandale Street
San Antonio, Texas 78216
Telephone: 210-495-8000
Fax: 210-495-8015

CLIENT: JK Bernhard Construction Co.
PROJECT: All Stor
LOCATION: FM 306 & Purgatory Rd; New Braunfels, TX
NUMBER: 221383
DATE(S) DRILLED: 01/13/2022

DRILLING METHOD(S):
Air Rotary

GROUNDWATER INFORMATION:
Groundwater was not encountered during the drilling operations and the boring was dry upon completion of the drilling operations.

SURFACE ELEVATION: N/A

FIELD DATA				LABORATORY DATA								
SOIL SYMBOL	DEPTH (FT)	SAMPLE NUMBER	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT	MOISTURE CONTENT (%)	ATTERBERG LIMITS LIQUID LIMIT LL	ATTERBERG LIMITS PLASTIC LIMIT PL	ATTERBERG LIMITS PLASTICITY INDEX PI	DRY DENSITY POUNDS/CU.FT	COMPRESSIVE STRENGTH (TONS/SQ FT)	MINUS NO. 200 SIEVE (%)	DESCRIPTION OF STRATUM
		SPT S-1		N= 50/3"	10						34	**CLAYEY GRAVEL**, with weathered limestone, brown, moist, very hard.
	1											
	2											
	3	SPT S-2		N= 50/0"	10							**LIMESTONE**, tan, moist, very hard.
	4											
	5	SPT S-3		N= 50/1"	7							Same as above, gray, dry.
	6											Boring terminated at a depth of 6-feet.

N - STANDARD PENETRATION TEST RESISTANCE
Qc - STATIC CONE PENETROMETER TEST INDEX
P - POCKET PENETROMETER RESISTANCE

REMARKS:
Boring location determined by RETL. Drilling operations performed by a subcontractor to RETL.
GPS Coordinates: N 29.84769°, W -98.11835°

LOG_OF_BORING 221383 LOGS.GPJ ROCK_ETL.GDT 2/10/22

Engineering & Testing
Laboratory, Inc.

Rock Engineering & Testing Laboratory
10856 Vandale Street
San Antonio, TX 78216
Telephone: 210-495-8000

KEY TO SOIL CLASSIFICATION AND SYMBOLS

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		SYMBOL	NAME
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GW	Well Graded Gravels or Gravel-Sand mixtures, little or no fines
		GP	Poorly Graded Gravels or Gravel-Sand mixtures, little or no fines
		GM	Silty Gravels, Gravel-Sand-Silt mixtures
		GC	Clayey Gravels, Gravel-Sand-Clay Mixtures
	SAND AND SANDY SOILS	SW	Well Graded Sands or Gravelly Sands, little or no fines
		SP	Poorly Graded Sands or Gravelly Sands, little or no fines
		SM	Silty Sands, Sand-Silt Mixtures
		SC	Clayey Sands, Sand-Clay mixtures
	SILTS AND CLAYS LL < 50	ML	Inorganic Silts and very fine Sands, Rock Flour, Silty or Clayey fine Sands or Clayey Silts
		CL	Inorganic Clays of low to medium plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays
		OL	Organic Silts and Organic Silt-Clays of low plasticity
	SILTS AND CLAYS LL > 50	MH	Inorganic Silts, Micaceous or Diatomaceous fine Sandy or Silty soils, Elastic Silts
		CH	Inorganic Clays of high plasticity, Fat Clays
		OH	Organic Clays of medium to high plasticity, Organic Silts
NON USCS MATERIALS			Limestone
			Marl/Claystone
			Sandstone

TERMS CHARACTERIZING SOIL STRUCTURE

SLICKENSIDED - having inclined planes of weakness that are slick and glossy in appearance

FISSURED - containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical

LAMINATED (VARVED) - composed of thin layers of varying color and texture, usually grading from sand or silt at the bottom to clay at the top

CRUMBLY - cohesive soils which break into small blocks or crumbs on drying

CALCAREOUS - containing appreciable quantities of calcium carbonate, generally nodular

WELL GRADED - having wide range in grain sizes and substantial amounts of all intermediate particle sizes

POORLY GRADED - predominantly of one grain size uniformly graded) or having a range of sizes with some intermediate size missing (gap or skip graded)

SYMBOLS FOR TEST DATA

- Groundwater Level (Initial Reading)
- Groundwater Level (Final Reading)
- Shelby Tube Sample
- SPT Samples
- Auger Sample
- Rock Core
- Texas Cone Penetrometer
- Grab Sample

TERMS DESCRIBING CONSISTENCY OF SOIL

COARSE GRAINED SOILS		FINE GRAINED SOILS		
DESCRIPTIVE TERM	NO. BLOWS/FT. STANDARD PEN. TEST	DESCRIPTIVE TERM	NO. BLOWS/FT. STANDARD PEN. TEST	UNCONFINED COMPRESSION TONS PER SQ. FT.
Very Loose	0 - 4	Very Soft	< 2	< 0.25
Loose	4 - 10	Soft	2 - 4	0.25 - 0.50
Medium	10 - 30	Firm	4 - 8	0.50 - 1.00
Dense	30 - 50	Stiff	8 - 15	1.00 - 2.00
Very Dense	over 50	Very Stiff	15 - 30	2.00 - 4.00
		Hard	over 30	over 4.00

Field Classification for "Consistency" of Fine Grained Soils is determined with a 0.25" diameter penetrometer

Texas Commission on Environmental Quality

Construction Notice of Intent

Site Information (Regulated Entity)

What is the name of the site to be authorized?	360 Comal Storage
Does the site have a physical address?	No
Physical Address	
Because there is no physical address, describe how to locate this site:	Purgatory Road approx 0.2 miles north of Hwy 306
City	New Braunfels
State	TX
ZIP	78132
County	COMAL
Latitude (N) (##.######)	29.849016
Longitude (W) (-###.######)	-98.11847
Primary SIC Code	
Secondary SIC Code	
Primary NAICS Code	
Secondary NAICS Code	
Regulated Entity Site Information	
What is the Regulated Entity's Number (RN)?	
What is the name of the Regulated Entity (RE)?	360 Comal Storage
Does the RE site have a physical address?	No
Physical Address	
Because there is no physical address, describe how to locate this site:	Purgatory Road approx 0.2 miles north of Hwy 306
City	New Braunfels
State	TX
ZIP	78132
County	COMAL
Latitude (N) (##.######)	29.849016
Longitude (W) (-###.######)	-98.11847
Facility NAICS Code	
What is the primary business of this entity?	Storage Facility

Customer (Applicant) Information

How is this applicant associated with this site?	Operator
What is the applicant's Customer Number (CN)?	CN605705052
Type of Customer	Sole Proprietorship

Full legal name of the applicant:	
Legal Name	J. K. Bernhard Construction Co., LLC
Texas SOS Filing Number	
Federal Tax ID	
State Franchise Tax ID	
State Sales Tax ID	
Local Tax ID	
DUNS Number	
Number of Employees	
Independently Owned and Operated?	Yes
I certify that the full legal name of the entity applying for this permit has been provided and is legally authorized to do business in Texas.	Yes
Responsible Authority Contact	
Organization Name	J. K. Bernhard Construction Co., LLC
Prefix	
First	Jarad
Middle	
Last	Payne
Suffix	
Credentials	
Title	Project Manager
Responsible Authority Mailing Address	
Enter new address or copy one from list:	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	2546 GOAT CREEK RD
Routing (such as Mail Code, Dept., or Attn:)	
City	KERRVILLE
State	TX
ZIP	78028
Phone (###-###-####)	2109738671
Extension	
Alternate Phone (###-###-####)	8308951498
Fax (###-###-####)	
E-mail	jaradp@jkbernhard.com

Application Contact

Person TCEQ should contact for questions about this application:	
Same as another contact?	
Organization Name	Q&A Diversified LLC
Prefix	

First	Hilda
Middle	
Last	Quinones
Suffix	
Credentials	
Title	SWPPP Consultant
Enter new address or copy one from list:	
Mailing Address	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	PO BOX 761283
Routing (such as Mail Code, Dept., or Attn:)	
City	SAN ANTONIO
State	TX
ZIP	78245
Phone (###-###-####)	2108968711
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	
E-mail	hildaq@qnadiversified.com

CNOI General Characteristics

1	Is the project or site located on Indian Country Lands?	No
2	Is the project or site associated to a facility that is licensed for the storage of high-level radioactive waste by the United States Nuclear Regulatory Commission under 10 CFR Part 72?	No
3	Is your construction activity associated with an oil and gas exploration, production, processing, or treatment, or transmission facility?	No
4	What is the Primary Standard Industrial Classification (SIC) Code that best describes the construction activity being conducted at the site?	1541
5	If applicable, what is the Secondary SIC Code(s)?	
6	What is the total number of acres that the construction project or site will disturb under the control of the primary operator?	24
7	What is the construction project or site type?	Commercial
8	Is the project part of a larger common plan of development or sale?	No
9	What is the estimated start date of the project?	04/24/2023
10	What is the estimated end date of the project?	04/30/2024
11	Will concrete truck washout be performed at the site?	Yes
12	What is the name of the first water body(s) to receive the stormwater runoff or potential runoff from the site?	Jacob Creeks, Guadalupe River
13	What is the segment number(s) of the classified water body(s) that the discharge will eventually reach?	1812

14	Is the discharge into a Municipal Separate Storm Sewer System (MS4)?	Yes
14.1	What is the name of the MS4 Operator?	Comal County
15	Is the discharge or potential discharge within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer, as defined in 30 TAC Chapter 213?	Yes
15.1	I certify that the copy of the TCEQ-approved Plan required by the Edwards Aquifer Rule (30 TAC Chapter 213) that is included or referenced in the Stormwater Pollution Prevention Plan will be implemented.	Yes
16	I certify that a stormwater pollution prevention plan (SWP3) has been developed, will be implemented prior to construction, and to the best of my knowledge and belief is compliant with any applicable local sediment and erosion control plans, as required in the general permit TXR150000. Note: For multiple operators who prepare a shared SWP3, the confirmation of an operator may be limited to its obligations under the SWP3 provided all obligations are confirmed by at least one operator.	Yes
17	I certify that I have obtained a copy and understand the terms and conditions of the Construction General Permit (TXR150000).	Yes
18	I understand that a Notice of Termination (NOT) must be submitted when this authorization is no longer needed.	Yes

Certification

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

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.

1. I am Otto Segner, the owner of the STEERS account ER067568.
2. I have the authority to sign this data on behalf of the applicant named above.
3. I have personally examined the foregoing and am familiar with its content and the content of any attachments, and based upon my personal knowledge and/or inquiry of any individual responsible for information contained herein, that this information is true, accurate, and complete.
4. I further certify that I have not violated any term in my TCEQ STEERS participation agreement and that I have no reason to believe that the confidentiality or use of my password has been compromised at any time.
5. I understand that use of my password constitutes an electronic signature legally equivalent to my written signature.
6. I also understand that the attestations of fact contained herein pertain to the implementation, oversight and enforcement of a state and/or federal environmental program and must be true and complete to the best of my knowledge.
7. I am aware that criminal penalties may be imposed for statements or omissions that I know or have reason to believe are untrue or misleading.
8. I am knowingly and intentionally signing Construction Notice of Intent.
9. My signature indicates that I am in agreement with the information on this form, and authorize its submittal to the TCEQ.

OPERATOR Signature: Otto Segner OPERATOR

Customer Number:	CN605705052
Legal Name:	J. K. Bernhard Construction Co., LLC
Account Number:	ER067568

Signature IP Address:	64.127.205.138
Signature Date:	2023-05-01
Signature Hash:	B46FF078987006EE073AAE18A61C254F20D2CC6A5C4C57CFD4F973464BD8BB9C
Form Hash Code at time of Signature:	C511B8A13E6EF01139A5390AE86A2B3FC34EBF7739AFC2E467E5681E75B0182C

Fee Payment

Transaction by:	The application fee payment transaction was made by ER067568/Otto Segner
Paid by:	The application fee was paid by OTTO SEGNER
Fee Amount:	$225.00
Paid Date:	The application fee was paid on 2023-05-01
Transaction/Voucher number:	The transaction number is 582EA000546810 and the voucher number is 637055

Submission

Reference Number:	The application reference number is 548344
Submitted by:	The application was submitted by ER067568/Otto Segner
Submitted Timestamp:	The application was submitted on 2023-05-01 at 09:52:18 CDT
Submitted From:	The application was submitted from IP address 64.127.205.138
Confirmation Number:	The confirmation number is 460715
Steers Version:	The STEERS version is 6.63

Additional Information

Application Creator: This account was created by Victoria Kinnamont

T.P.D.E.S. CONSTRUCTION

STORM WATER POLLUTION PREVENTION PLAN

360 Comal Storage

Hwy 306 & Purgatory Rd
New Braunfels, TX 78130

Prepared for:

JK Bernhard Construction Co LLC
2546 Goat Creek Rd
Kerrville, TX 78025

April 2023

1 GENERAL INFORMATION

1.1 Project/Site Information

Name:	360 Comal Storage Hwy 306 & Purgatory Rd New Braunfels, TX 78130
Coordinates:	Latitude: 29.849016° N / Longitude: -98.11847° W
Receiving Water:	Name: Guadalupe River Stream Segment #: 1812
Acreage:	LOC: 24.71 acres Entire Property: 45.00 acres
Estimated Start Date:	April 2023
Projected End Date:	April 2024
TPDES Permit Number:	_____
Inspection Frequency:	☐ At least once every fourteen (14) calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater ☒ At least once every seven (7) calendar days.

1.2 SWP3 Contact Information/Responsible Parties

Primary Operator:	JK Bernhard Construction Co LLC 2546 Goat Creek Rd Kerrville, TX 78025 (830) 895-1498
Project Manager:	Jarad Payne (210) 973-8671
Superintendent:	Marlin Roden (830) 460-1090
SWP3 Plan Preparation:	Q&A Diversified LLC PO Box 761283 San Antonio, TX 78245 (210) 896-8711
Inspector:	Martin Foisy / Hilda Quinones (Q&A Diversified LLC)
Owner:	360 Comal Storage LLC 12600 Hill Country Blvd Ste R275 Bee Cave, TX 78738 Neil Francios (512) 947-7966
Civil Engineer:	Vordenbaum Engineering Inc 507 E Hwy St Ste D Fredericksburg, TX 78624 Kevin Spraggins (830) 997-4744
MS4 Operator:	Comal County

1.3 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. Sign as required by 30 TAC 305.128.

Signed:  Date: 5/1/2023

Name: Otto Segner Title: PM

CONTENTS

APPENDICES

2 INTRODUCTION

The Texas Commission on Environmental Quality (TCEQ) promulgated storm water regulations pursuant to Section 26.040 of the Clean Water Act as a Texas Pollutant Discharge Elimination System (TPDES) General Permit No. TXR150000. This Storm Water Pollution Prevention Plan (SWP3) has been developed for the permitted construction site according to the provisions in Part III.F. of the General Permit.

The purpose of the SWP3 is to minimize the potential release of pollutants directly or indirectly into stormwater collection systems or Waters of the United States. The SWP3 is intended to serve as a road map for how the operator will comply with the conditions of the General Permit. Although some level of flexibility is allowed under this SWP3, the permitee will consult Q&A Diversified or the Engineer of Record if major changes are required. The information included within the report in no way relieves the operator from compliance with all regulations of the General Permit. The complete permit and regulations are available for viewing at https://www.tceq.texas.gov/downloads/permitting/stormwater/general/construction/2023-cgp-txr150000.pdf. Questions concerning the permit will be directed to the TCEQ Stormwater Team Leader Wastewater Permitting Section at (512) 239-4671 or swgp@tceq.texas.gov.

2.1 PERMITEES (OPERATORS)

Permitees may be defined as a primary or secondary operator. For more information regarding primary vs. secondary operators, authorities, and responsibilities, see TCEQ RG-468 Primary and Secondary Operators.

2.2 AUTHORIZATION FOR LARGE CONSTRUCTION ACTIVITIES

Discharges from sites where the commencement of construction activity occurs will be authorized prior to the commencement of any construction activities. Primary operators of large construction activities that qualify for coverage under the General Permit will submit a completed Notice of Intent (NOI) to TCEQ prior to commencing construction activity at the site.

Two (2) days prior to commencing construction activities, provide a copy of the NOI to the operator of any MS4 receiving the discharge and to any secondary construction operator.

2.2.1 Delegation of Authority Letters

If signatory authority is delegated by an authorized representative, then a Delegation of Signatories form will be submitted by the primary operator(s) electronically to TCEQ using the STEERS online permitting system. A new Delegation of Signatories form will be submitted if the delegation changes to another individual or position. A copy of the letter to be sent to TCEQ is included in Appendix A.

2.3 TERMINATION OF COVERAGE

Each operator that submitted an NOI will apply to terminate authorization. The Notice of Termination (NOT) will be submitted to TCEQ, and a copy of the NOT will be provided to the operator of the MS4 receiving the discharge within 30 days after any of the following conditions are met:

- Final stabilization has been achieved;
- Transfer of operational control has occurred; or
- Operator has obtained an alternative TPDES permit authorization.

Compliance with the conditions and requirements of this permit is required until the NOT is submitted and approved by TCEQ and the Construction Site Notice posting has been removed. If applicable, Secondary Operator's authorization to discharge under the General Permit terminates simultaneously.

2.4 RESPONSIBILITIES OF OPERATORS

All primary and secondary operators will be responsible for complying with the following requirements:

- Prominently post in a place for public viewing at the project site a signed copy of the TCEQ Construction Site Notice provided in Appendix A. The site notice will be displayed until final stabilization has been achieved.
- Implement and properly maintain all erosion and sediment controls presented in this SWP3.
- Keep an updated copy of the SWP3 on the project site or electronically throughout the duration of construction activities, updating and amending as necessary.
- Conduct regular site inspections as specified in Section 5.3.

2.4.1 Recordkeeping

Maintain a record of the dates when major earth disturbing or grading activities occur, when construction activities temporarily or permanently cease on a portion of the project site, and when temporary or final stabilization measures are implemented.

This SWP3 will be updated within 7 calendar days each time any of the below occurs. Record modifications in Appendix B.

- Change in design, construction, operation, or maintenance that has a significant effect on the discharge of pollutants that has not been previously addressed in the SWP3; or
- Changing site conditions based on updated plans and specifications, new operators, new areas of responsibility, and changes in Best Management Practices (BMPs); or
- Results of inspections or investigations indicate the SWP3 is proving ineffective in eliminating or significantly minimizing pollutants in discharges.

The permittee will retain the SWP3 for a minimum period of three (3) years from the date the operator terminates coverage.

2.4.2 Documentation for Compliance with Approved State and Local Plans

Permitees will ensure that the SWP3 is consistent with state and local plans. In addition to the requirements above, the project site is located within the jurisdiction of Comal County. A list of additional requirements, notifications and procedures is included in the plans and specifications.

3 PROJECT DESCRIPTION

3.1 DESCRIPTION OF CONSTRUCTION ACTIVITIES

The project scope of work consists of shrubbing and grading, paving, and construction of a detention pond with retaining wall and seven (7) office/storage structures. Erosion control measures will include silt fence, inlet protection, stabilized construction entrance, and rock berms.

3.2 PROJECT SCHEDULE AND SEQUENCE OF MAJOR GRADING ACTIVITIES

Estimated Timeline of Activity	***Major Construction Activities with BMPs***
April 2023	**Before any earth disturbing or mobilization activities begin** • Install erosion controls • Post site notice signage • File NOI, notify MS4, schedule preconstruction conference
Ongoing	**Stabilization** • Revegetate or landscape areas where activities have permanently ceased • Provide protective cover or erosion control where activities cease over 14 days
April 2024	**Final Stabilization** • Remove all temporary control BMPs and stabilize any areas disturbed by their removal as needed once stabilization is reached. • Remove site notice signage • File NOT, notify MS4, schedule environmental acceptance (if applicable)

This schedule will be updated during construction as part of the SWP3. Record project milestones with dates and locations. The following site information will be maintained.

- Site drawing with locations and dates when controls are installed and removed.
- The date(s) when major grading activities occur.
- The date(s) when construction activities temporarily/permanently cease on a portion or phase of the site.
- The date(s) when site stabilization measures are completed.

Use the Forms and Drawings provided in Appendix to list when activities begin/end and maintain As-Built Drawings.

3.3 PHASING AND CONSTRUCTION SEQUENCE PLAN

Refer to the project schedule for phasing and construction sequence.

3.4 POTENTIAL POLLUTANTS AND THEIR SOURCES

Potential Pollutants	Source
Sediments to stormwater runoff	Sheet flow over disturbed soil, topsoil placement, stockpiling and landscaping operations
Sediment tracking	Construction vehicles entering and exiting disturbed or laydown areas

Dust	Fugitive dust emissions generated from excavation, trenching, grading, stockpiles, haul trucks and wind
Petroleum products, lubricants, oil and grease	Oil, grease, fuel, and hydraulic fluid from construction equipment and vehicle drippings, hydrocarbons from asphalt paving operations, fueling activities, minor equipment maintenance, and utility line construction
Solid waste and debris	Unsecured trash and construction debris, miscellaneous trash and litter from construction workers and material wrappings
Solvents, detergents, adhesives, aggregates, paint, etc.	General building materials used in construction and landscaping
Concrete and mortar washwater	Concrete mixers, run off from concrete truck and tool wash out areas
Fertilizers (Phosphorus, Nitrogen)	Landscaping and vegetating activities
Pesticides	Standing water, pest control and vegetation
Sanitary waste	Portable units

4 SITE DESCRIPTION

4.1 ACREAGE, TOPOGRAPHY, VEGETATION AND EXISTING CONDITIONS

Construction activities will occur within the limits of construction (LOC) for this project which is 24.71 acres as specified in the Contract Drawings. The total number of acres of the entire property is 45.0 acres. The current site is pasture land with native grasses. The surface elevations range from 1001 ft to 1055 ft ASL.

4.2 FLOODPLAINS

The site is located within Zone X within the area of minimal flood hazard and outside regulatory flood zones based on FEMA FIRM 48091C0280F dated 09/02/2009.

4.3 CRITICAL HABITATS AND ENDANGERED SPECIES

The project is not within the boundaries of the critical habitats identified in the U.S. Fish and Wildlife Critical Habitat Portal for the occurrence of threatened, endangered, and candidate listed species. Refer to http://tpwd.texas.gov/gis/rtest/ for a list of Rare, Threatened, and Endangered Species of Texas by county.

4.4 SURFACE WATERS AND WETLANDS

Direct storm water runoff from the site flows in a northeasterly direction towards Jacobs Creek. Jacobs Creek flows to Guadalupe River Below Canyon Dam, Segment No. 1812 in Comal County. The waterbodies are NOT listed as impaired on the 2022 Texas Integrated Report - Texas 303(d) List.

According to the US Fish and Wildlife Service National Wetlands Inventory Map, there are wetlands adjoining the property or within 0.25 miles of the site. Jacobs Creek borders the northern side of the project site. It is a 3.21 acre Riverine habitat classified as R4SBC, with intermittent seasonal flow.

The site is located within the Edwards Aquifer Recharge Zone.

4.5 SOIL AND QUALITY OF DISCHARGE

4.5.1 Site Runoff Coefficient

This information is located in Appendix B on drawings C5.0 and C5.1.

4.5.2 25-Year Storm Event for 24-Hour Duration

Atlas 14 has determined the depth of precipitation of the rainfall amount for 25 year / 24-hour storm for the project site is 9.08 inches.

4.5.3 Soils

The geology in this zone can best be described as belonging to the Edwards Limestone Formation (Ked) which can be found in the San Antonio Sheet of the Geologic Atlas of Texas, San Antonio Sheet available online via https://txpub.usgs.gov/txgeology/. The Ked is part of the Cretaceous period, Comanchean series, Fredericksburg Group. It is described as including Georgetown at top; fine to coarse grained, abundant chert, medium gray to grayish brown; fossils are rudistids as reefs and individuals, miliolids, and shell fragments; solution zones and collapse breccia common; thickness 300-500 feet. USGS Pocket Geology is available as part of Appendix B.

Web Soil Survey Results shown in Appendix B are as follows.

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
RUD	Rumple-Comfort, rubbly association, 1 to 8 percent slopes	24.71	100%
Totals for Area of Interest		24.71	100.0%

5 REQUIREMENTS

Pollution prevention measures will be used to minimize the discharge of any pollutants or sediment by any means, via water, air, vehicles, etc. Operators will address exposure to precipitation, stormwater, wind and other weather events. Design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants.

5.1 GOALS AND CRITERIA

5.1.1 Storm Water Runoff

Control increased storm water runoff due to surface cover disturbance from construction activities for this project.

- Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
- Anticipate runoff volume due for extreme weather events.
- Direct stormwater to vegetated areas to maximize stormwater infiltration and reduce pollutant discharges.

5.1.2 Erosion On Site

Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.

- Control movement of sediment and soil from temporary stockpiles of soil.
- Prevent development of ruts due to equipment and vehicular traffic.
- Utilize dust control during arid/drought periods.

5.1.3 Erosion Off Site

Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.

- Prevent windblown soil from leaving the project site.
- Prevent tracking of mud onto public roads outside site.
- Prevent mud and sediment from flowing onto sidewalks and pavements.

5.1.4 Sedimentation of Waterways On-Site

Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.

- If sedimentation occurs, install or correct preventive measures immediately; remove deposited sediments;
- If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.

5.1.5 Sedimentation of Waterways Off Site

Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers. If sedimentation occurs, install or correct preventive measures immediately; remove deposited sediments.

5.1.6 Open Waters

Prevent standing water that could become stagnant, provide harboring/breeding habitats for pests or create noxious odors.

5.1.7 Air and Wind

Secure construction materials, packaging, solid waste, litter and other objects that could be blown offsite.

5.2 LIMITATIONS ON PERMIT COVERAGE

5.2.1 Eligible Non-Storm Water Discharges

The following are Non-Stormwater discharges authorized under this permit.

Eligible Non-Storm Water Discharge	Used? (Yes / No)	Pollution Prevention Measure(s)	Implementation Date
Fire Fighting Activities	☐ ☒	Silt Fences are placed in the surrounding area therefore all risk is mitigated for this item. Only in the event of a catastrophic event will this be utilized.	NA
Fire Hydrant Flushing	☒ ☐	Silt Fences are placed in the surrounding area therefore all risk is mitigated for this item.	During construction
Utility Flushing	☒ ☐	Silt Fences are placed in the surrounding area therefore all risk is mitigated for this item.	During construction
Washing of Vehicles or Pavement without Detergents or Soap	☒ ☐	Silt Fences are placed in the surrounding area therefore all risk is mitigated for this item. This will only be used to clean mud from tires if necessary.	During construction
Dust Control	☒ ☐	Water trucks may be utilized if wind erosion is observed throughout the site. Sprinkling will be applied at a rate of 3 gallons per acre to avoid soil becoming saturated or muddy.	Once demolition and grading activities commence and/or as soon as wind erosion is observed.
Air Conditioning Condensate	☒ ☐	Silt Fences are placed in the surrounding area therefore all risk is mitigated for this item.	During construction
Uncontaminated Ground/Spring Water	☒ ☐	Potable water may be used for landscape irrigation during final stabilization.	Once landscaping is in place
Irrigation Watering Drainage	☒ ☐	Potable water may be used for landscape irrigation during final stabilization.	Once landscaping is in place
Potable Water Sources (water line flushing)	☒ ☐	Silt Fences are placed in the surrounding area therefore all risk is mitigated for this item.	During construction

5.2.2 Prohibition of Non-Stormwater Discharges

Only discharges that are composed entirely of stormwater associated with construction activity may be authorized under this general permit. Prohibited discharges include:

- Any soils, construction items, materials or substances that can be entrained in stormwater or have the potential to become airborne.
- Wastewater from wash out of concrete, cleanout of paint, form release oils, curing compounds, and other construction materials.
- Fuels, oils, or other pollutants used in vehicle equipment operation and maintenance.
- Soaps or solvents used in vehicle and equipment washing.
- Toxic or hazardous substances from a spill or other release.
- Discharge water from dewatering operations directly into any live or intermittent stream, channel, wetlands, surface water or any storm sewer.

5.2.2.1 Wastewater

Wastewater discharges from construction activities are prohibited under this permit. Discharges of stormwater runoff or any type of wastewater from dust control, cleaning, washouts, pits or mixers are not allowed. Water generated from the flushing of lines or in conjunction with hydrostatic testing will be applied in accordance with all Federal, State, and local laws and regulations.

5.2.2.2 Dewatering

Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, are prohibited unless managed by appropriate controls to address sediment and prevent erosion. See Section 8.2.

5.2.2.3 Post Construction Discharges

Discharges that occur after construction activities have been completed, and after the construction site and any supporting activity have undergone final stabilization, following the submission of the NOT or removal of the TCEQ site notice are not eligible for coverage under the General Permit.

5.3 SWP3 SITE INSPECTIONS

Inspections are intended to identify areas where the pollutant control measures at the site are ineffective and are allowing, or could potentially allow, pollutants to be discharged from the project site.

5.3.1 Areas of Inspection

Inspections will include:

- All areas of soil disturbance
- Areas designated for material and equipment storage that are exposed to weather and precipitation
- Structural and non-structural control measures
- Known discharge locations or accessible points
- Permanent seeding and planted areas
- Vehicle access points
- General site cleanliness
- Adjoining roadways and areas downgrade of the project site
- Any other General Permit noncompliance

5.3.2 Inspector Qualifications

A qualified individual will perform routine inspections throughout all construction phases. A copy of the inspectors' qualifications and certifications are included in Appendix C.

5.3.3 Inspection Frequency

Inspections will occur at least every 7 days per the contract documents. Inspections scheduled for every 7 calendar days will occur on a specifically defined day, regardless of whether or not there has been a rainfall event since the previous inspection.

The inspection frequency schedule can only be changed a maximum of once per calendar month and will be implemented within the first 5 business days of the calendar month. A change in frequency will be documented in the SWP3.

Inspection may be suspended for adverse conditions. In the event of flooding or other dangerous conditions which prohibit access to the site, inspections will be conducted as soon as access is practicable. Adverse conditions that result in the temporary suspension of a permit requirement to inspect will be documented in the SWP3 as an amendment.

5.3.4 Reporting

A report summarizing the scope of any inspection will be completed within 24-hours following the inspection. Reports will be distributed electronically to all responsible personnel, owners, and engineers as specified, and filed in Appendix D.

5.3.5 Results of Inspections

An inspection report form has been provided in Appendix D. The inspection report will include observations and actions that need to be taken as a result of the inspection such as:

- Discharges of sediment or other pollutants from the site;
- BMPs that need to be maintained;
- BMPs that failed to operate as designed or proved inadequate; and
- Locations where additional BMPs are needed.

If inspection results determine site conditions and/or control measures are found to be inadequate, the SWP3 will be updated within a period of 7 calendar days. If control measures need to be modified to assure effectiveness or if additional measures are determined to be necessary, implementation will be completed prior to the next anticipated storm event or as soon as practicable.

Completed inspection reports are to be filed in Appendix D.

6 CONSTRUCTION ACTIVITIES AND SUPPORT FACILITIES

6.1 SEQUENCING OF CONSTRUCTION ACTIVITIES

Limit the area of disturbance to minimize soil loss and prevent the discharge of impaired water from the construction site and incorporate staged stabilization measures as work progresses throughout the project.

- Monitor the weather to schedule paving, concrete work, dust control, seeding or any other actives that will impact runoff.
- Avoid disturbing downslope areas of site until upgradient areas are stabilized.
- Minimize the amount of soil exposed during construction activity.
- Minimize the disturbance of steep slopes.
- Preserve native topsoil at the site, unless the intended function of a specific area of the site dictates that the topsoil be disturbed or removed, or it is infeasible.
- Minimize soil compaction and sediment discharges.
- Provide and maintain natural buffers.

6.2 SUPPORT FACILITIES, MATERIALS STORAGE AND POLLUTANT GENERATING ACTIVITIES

The following support facilities may be found at the site at any point during the construction.

Facility	***Description and BMPs***
Staging Area	Principal staging area where office trailer, main laydown, storage and portable toilets will be located.
Equipment Storage Area	Designated areas for equipment storage will be provided in areas away from controls. Drip pans will be used for machinery being stored for long periods of time.
Fuel and Maintenance Area	An impermeable surface will be designated for fueling and maintenance activities. Drip pans will be used.
Spoils / Stockpiles	Spoils will be stored in designated temporary spoils areas within the site. Stormwater perimeter control devices such as erosion control logs and silt fences will be installed at least 10 feet down-gradient from the stockpile. Remove as soon as possible. Stockpiles/spoils will be secured with erosion control blankets, seeding or tarps if they are not to be used within 14 days.
Materials Storage	Protected storage areas will be provided for potentially toxic material. Construction materials stored on site will be covered, or otherwise stored in a manner to reduce the possibility of a pollutant escaping the site. Chemicals used on site, including paints/solvents/sealants, will be kept in small quantities and stored in closed containers under cover and kept out of direct contact with stormwater.
Concrete Truck Washout	A washout container or pit will be provided to contain concrete washwater.
Solid Waste Storage	Containers for waste and construction debris storage will be provided until it has been removed for disposal. For containers that do not have lids, a cover will be utilized to minimize exposure of wastes to precipitation and wind discharge of pollutants.
Paint / Masonry Washout	Washout water areas will be designated. Wash waters will be properly disposed of and prohibited from being discharged to soils or drainage inlets.
Dewatering	All stormwater removed from excavations will be filtered prior to being discharged. All dewatering activities will be supervised and documented.
Masonry and Concrete Mixing Areas	Mortar and concrete mixers will be contained. Impermeable liners will be placed under mixers to avoid accumulations on soil.
Offsite	Off-site material storage and staging areas used solely by the project are considered part of the SWP3, and all applicable controls and BMPs will be utilized.

7 CONTROLS

7.1 EROSION CONTROL AND STABILIZATION PRACTICES

Erosion control and stabilization practices may include but are not limited to: establishment of temporary or permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of existing trees and vegetation, slope texturing, temporary velocity dissipation devices, flow diversion mechanisms, and other similar measures.

Stabilization is the most effective means to minimize erosion and offsite sediment. Stabilized soils have vegetative or other types of cover to prevent wind or water erosion. Maintaining stabilization involves taking key steps at planning and continuing until the end of construction. During project planning, efforts will be made to retain existing vegetation. This can be accomplished by phasing construction activity, limiting vehicular and equipment access and minimizing corridor widths for the utility construction.

7.2 STABILIZATION

Stabilization measures that provide a protective cover will be initiated immediately in portions of the site where construction activities have permanently ceased. In the context of this requirement, "immediately" means as soon as practicable, but no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased. These measures will be completed as soon as practicable, but no more than 14 calendar days after the initiation of soil stabilization measures.

Permanent stabilization will be achieved prior to removing any erosion or sedimentation controls at the site or terminating the permit. TCEQ does not expect that temporary or permanent stabilization measures will be applied to areas that are intended to be left un-vegetated or un-stabilized following construction.

7.3 SEDIMENT BASINS

A drainage ditch leading to a detention pond will be located at the north side of the LOC. The detention pond is designed for flows from Drainage Area 2, noted in Appendix B, Sheet C5.1. Although more than 10 acres may be disturbed on the project site, no more than 10 acres will be disturbed within a common drainage area at one time, as the site is comprised of multiple sub-drainage areas. Other BMPs will be utilized for site disturbance and all are adequate for the drainage areas served.

7.4 PROJECT CONTROLS AND PRACTICES

The Contract Documents prepared for the project have identified controls needed to reduce or eliminate potential contamination of stormwater run-off. Below is a list BMPs used, where they are located, when they will be implemented, and whether they are temporary or permanent.

Controls and Practices	***Location On-Site***	***Implementation Date***	***Temporary or Permanent***
Silt Fence	Appendix B	Prior to Construction	Temporary
Stabilized Construction Entrance	Appendix B	Prior to Construction	Temporary
Sediment Basin	Appendix B	Prior to Construction	Permanent
Rock Berms	Appendix B	Prior to Construction	Temporary

Inlet Protection	Appendix B	Ongoing over the life of the project	Temporary
Pavement and Sidewalks	Appendix B	Paving	Permanent
Landscaping	Appendix B	When construction items are completed	Permanent

7.5 MAINTENANCE REQUIREMENTS

All protective measures will be maintained in working condition. Structural controls will be properly installed and maintained according to the manufacturer's or designer's specifications.

As soon as the permittee determines that BMPs are not operating effectively, through inspections or other means, then the permittee will perform maintenance as necessary to ensure the continued effectiveness of controls, and prior to the next rain event if feasible. If maintenance prior to the next anticipated storm event is impracticable, the reason will be documented and maintenance will be scheduled and accomplished as soon as possible.

Erosion and sediment controls that have been intentionally disabled, run-over, removed, or otherwise rendered ineffective will be replaced or corrected immediately upon discovery.

Maintenance of the pollution control measures incorporated into this project will be conducted to ensure effectiveness. This includes repairs to all erosion and sediment controls, including cleanout of all built up sediments. Particular attention will be paid to the sedimentation areas at rock berms and silt fences. Contaminated sediment removed from containment areas (vehicle maintenance, concrete washout pits, etc.) will be disposed of off-site in accordance with appropriate regulations. If sediment or other pollutant escapes the site, the permittee will work with the downgradient property owner to remove or remediate as soon as possible.

BMPs Installed	***Inspection / Maintenance Schedule***
Silt Fence	Silt fence will be inspected to ensure there are no gaps where the fence meets the ground or tears along the length of the fence. If gaps or tears are found during inspection, the fence will be repaired or replaced. Accumulated sediment will be removed from the fence base if it reaches one-third of the height of the fence and hauled for redistribution. If accumulated sediment is creating a noticeable strain on the fence and the fence might fail from a storm event, the sediment will be removed more frequently.
Stabilized Construction Exit	The construction exit will be inspected to ensure sediment is not being tracked or flowing onto roadways. The exit will be maintained in a condition that will prevent sediment tracking offsite. This could require adding additional crushed stone to the exit. All sediment tracked, spilled, dropped, or washed onto the road will be swept up immediately. Once sediment clogs the voids in the crushed stone and the effectiveness of the anti-tracking pad is no longer keeping sediment on the site, the pad will be top dressed with clean crushed stone. The pad will be reshaped as needed for drainage and runoff control. Broken road pavement as a result of construction activities on roadways immediately adjacent to the project site will be repaired immediately. The stone anti-tracking pad will be removed before the subgrade of pavement is applied to the entryway. The removed

	stone and sediment from the pad will be hauled off-site and disposed by the operator in accordance with the contract.
Sediment Basin	Sediment basin will be inspected after each storm event to ensure proper drainage from the collection pool and to determine the need for structural repairs. Dewatering devices will be inspected and any trash and debris found will be removed. Eroded earthen embankments will be repaired and displaced stones from rock dams will be replaced immediately. Sediment accumulation will be removed when it exceeds 50 percent of the storage volume. Sediment removed during cleaning will be moved to an upland area and stabilized so it will not re-enter the drainage course.
Rock Berms	Rock Berms will be inspected to ensure the integrity of the wire mesh along the length of the berm. If gaps or tears are found during inspection, the mesh will be repaired or replaced. Accumulated sediment will be removed from the mesh base if it reaches one-third of the height of the rock berm and hauled for redistribution.
Inlet Protection	Inlet protection will be inspected to the check placement to prevent gaps between device and curb. Torn fabric will be patched or replace. Accumulated sediment will be removed when buildup reaches a depth of 3”.
Concrete Wash Out Pit	Pit will be inspected to ensure proper function. If any plastic linings and/or sidewalls have been damaged they will be repaired. Once the area is filled at 75% capacity the washout will be allowed to evaporate or vacuumed to avoid overflow.

8 OTHER REQUIRED CONTROLS

8.1 DEMOLITION

For demolition of any structure that was built or renovated before 1980, implement controls to minimize the exposure of polychlorinated biphenyls (PCBs) that may be contained in building materials, including paint, caulk, and fluorescent lighting fixtures, to precipitation and to stormwater; and ensure that disposal of such materials is performed in compliance with applicable state, federal, and local laws.

8.2 DEWATERING

Discharges from dewatering activities, including discharges from dewatering of trenches, ponds, pits footings and excavations, are prohibited unless managed by appropriate controls and the permitee observes, evaluates and documents dewatering activities.

8.2.1 Requirements And Restrictions

Dewatering after a rain event or after groundwater intrusion will be conducted in a manner that does not cause pollution, erosion or sedimentation. Water to be disposed will be free from silt and other objectionable materials.

No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "Waters of the State" are allowed.

Do not allow discharged water to pond/stand for long periods of time to prevent mosquito harborage and minimize odors.

Never release waters contaminated with building materials, adhesives, petroleum products or concrete slurry.

Water from dewatering operations will be treated by filtration, settling basins, or other approved method to reduce the amount of pollutants and sediment contained in the water to allowable levels.

8.2.2 Observation And Evaluation Of Dewatering Controls

Personnel provided by the permittee will observe and evaluate dewatering controls at a minimum of once per day on the days where dewatering discharges from the construction site occur. Personnel conducting these evaluations will be knowledgeable of the General Permit, the construction activities, and the SWP3 for the site.

A report summarizing the scope of any observation and evaluation will be completed within 24-hours following the evaluation. The report will also include:

- Date of the observations and evaluation;
- Name(s) and title(s) of personnel making the observations and evaluation;
- Approximate times that the dewatering discharge began and ended on the day of evaluation, or if the dewatering discharge is a continuous discharge that continues after normal business hours, indicate that the discharge is continuous;
- Estimates of the rate (in gallons per day) of discharge on the day of evaluation;
- Whether or not any indications of pollutant discharge were observed at the point of discharge (e.g., foam, oil sheen, noticeable odor, floating solids, suspended sediments, or other obvious indicators of stormwater pollution); and
- Major observations including the locations of where erosion and discharges of sediment or other pollutants from the site have occurred; locations of BMPs that need to be maintained; locations

of BMPs that failed to operate as designed or proved inadequate for a particular location; and locations where additional BMPs are needed.
- Actions taken as a result of evaluations, including the date(s) of actions taken, will be described. Reports will identify any incidents of non-compliance.

Use form provided in Appendix D and file each report.

8.2.3 Best Management Practices

Avoid the need for dewatering whenever possible by allowing evaporation or scheduling work during dry conditions.

Install a trench or berm or other protective measures around the perimeter of any excavation prior to storm events to keep water from flowing inside.

Pump stormwater to vegetative buffers, sediment basins, or detention ponds before discharging offsite.

Sequence construction so vegetated discharge areas are available for dewatering. Release pumped water gradually so to not flood or inundate vegetation.

Permitee will have on hand enough equipment, hoses, filter bags, erosion control logs/matting or aggregate rock to be used as need.

Filter bags are manufactured products made typically from woven monofilament polypropylene textile (coarse material, e.g., sands) or non-woven geotextile (silts and clays chosen for the predominant sediment size). Filter bags are single-use products that will be replaced when they become clogged or half-full of sediment.

Permitee may use pipes and any pumps necessary to dewater. Utilize a floating suction hose or equivalent method to minimize the potential for pumping sediment directly from the bottom of pond, pit or trench. Pump intakes will be fitted with filter screening to prevent large objectionable material from entering the pump.

All stormwater removed from excavations will be discharged in accordance with the SWP3. If discharge is not possible, then water removed will be collected in tanks in accordance with the TCEQ and any other agencies with jurisdiction over the activity.

9 BEST MANAGEMENT PRACTICES

9.1 EMPLOYEE AND SUBCONTRACTOR TRAINING

An employee training program can be developed to educate personnel responsible for implementing any component of the SWP3, or personnel otherwise responsible for stormwater pollution prevention, with the provisions of the SWP3. Pre-construction and weekly meetings can be used as a form of training by discussing concept activities, problems, solutions, and BMP implementation. Weekly inspection reports can serve as a tool to explain scenarios and some solutions to educate the team and subcontractor personnel. Weekly meetings can be used as a form of documentation to verify training.

9.2 SEVERE STORMS

In the event of a severe storm warning, the permitee will:

- Secure equipment and materials and place materials that could be damaged in protected areas.
- Check for loose materials, equipment, debris, and other objects that could be blown away.
- Tarp stockpiles when unprotected.
- Ensure that all temporary erosion controls are adequate.

9.3 STREET SWEEPING

- Consider street sweeping frequency based on factors such as traffic volume, land use, field observations of sediment, proximity to watercourses, etc. Maintain sweeping contractor invoices and schedule.
- Increase the sweeping frequency for streets with high pollutant loadings, especially in high traffic or after rainy conditions.
- Conduct street sweeping as needed prior to wetter seasons to remove accumulated sediment.
- Increase sweeping for special problem areas like during periods of heavy traffic in and out of the site, prior to rain events and high litter.
- Perform street cleaning during dry weather if possible.

9.4 DUST CONTROL

During extended dry periods, dust control will be performed routinely. A water spray truck or sprinklers may be used for the spraying of unpaved access roads and disturbed areas during times that fugitive dust emissions are deemed to be an issue. Other dust control measures include matting, mulching, vegetative cover, spray-on adhesives, and irrigation.

All haul trucks are required to use tarps while transporting soils. Trucks fitted with tarps will be required to deploy such tarps at the site entrance and exit.

9.5 MASONRY WORK AREAS

Place a bermed area with liner under mixers to avoid mortar from seeping or running off onto the soil. Wastewater will be disposed of in washout or appropriate container. Do not allow masonry or concrete dust to accumulate on unprotected soils.

9.6 CONCRETE

Concrete wash water contains toxic metals, and is caustic and corrosive with a pH near 12. The high pH can increase the toxicity of other substances in the surface waters and soils. Wash water dumped on the ground can run off the site to adjoining roads and enter storm drains, which discharge to nearby surface waters causing water quality issues, and harm to aquatic life.

Discharges of any type of wastewater from washout pits or mixers into stormwater drains are strictly prohibited. The discharge of concrete truck washout water is prohibited at all times.

- Never washout onto unprotected soil or stormwater drains.
- The disposal of washout water from concrete trucks will not cause or contribute to groundwater contamination.
- Concrete truck wash-out water will be discharged to areas at the construction site where structural controls have been established to prevent direct discharge to surface waters, or to areas that have a minimal slope that allow infiltration and filtering of wash-out water. Structural controls may consist of temporary berms, temporary shallow pits, temporary storage tanks with slow rate release, or other reasonable measures to prevent runoff from the construction site.
- The water will be allowed to evaporate, and any remaining mortar or concrete will be disposed of.
- Do not place washout containers on uneven surfaces.
- Do not allow trash or construction debris to accumulate in washout containers.
- Wash out of concrete trucks during rainfall events will be minimized. The operator will insure that its BMPs are sufficient to prevent the discharge of wash out as the result of rainfall or stormwater runoff.

The onsite disposal of water resulting from the wash out of concrete trucks may be conducted, provided that the requirements of the General Permit are met. Operators can find recommendations for addressing concrete washout at: https://www3.epa.gov/npdes/pubs/concretewashout.pdf.

9.7 WASHWATER

Use phosphate-free biodegradable detergents for cleaning structures, concrete areas and equipment. Never use a detergent or degreaser that has a potential detrimental effect on the environment. Prevent runoff of any kind of contaminated flow. Contain and recycle or dispose of wash waters that are contaminated.

9.8 WASTE MANAGEMENT

All waste materials will be collected and disposed of into onsite metal dumpsters. Exposure of wastes to both precipitation and wind will be minimized.

- Dumpsters will have a secure watertight lid, be placed away from storm water conveyances and drains, and meet all federal, state, and municipal regulations.
- Wastes will be cleaned up immediately if containers overflow.
- Only trash and construction debris from the site will be deposited in the dumpster. No construction materials will be buried on-site.
- All personnel will be instructed regarding the correct disposal of trash and construction debris. Notices/signs that state these practices will be posted and the individual who manages day-to-day site operations will be responsible for seeing that these practices are followed.
- No demolition waste, road base, fill, spoils, concrete, debris, wash out water, oil or chemical products will be allowed to enter into or be placed where it may be washed by rainfall into inlets or channels.
- Use only containers that are in good condition. Remove vessels before they have a chance to leak, rust or fail. Initiate removal/disposal when 75% capacity is reached.
- Trees, limbs, leaves, brush, and vegetation from clearing operations will be disposed off-site in accordance with applicable regulations.

9.8.1 Litter Controls

Provide trash receptacles around the site and near areas where workers park, have meals or congregate. Collect litter periodically to avoid dispersal of trash offsite. Close waste container lids at the

end of the workday. For containers that do not have lids, provide a cover to minimize exposure of wastes to precipitation and the discharge of pollutants.

9.8.2 Recycling

Packaging and construction materials such as wood, plastic and paper will be recycled to the maximum extent possible and not disposed of in a landfill. Permitee will provide designated containers for segregating waste.

9.9 PORTABLE RESTROOM FACILITIES

The portable toilets will be located away from any concentrated drainage flow paths, roadways and equipment traffic flow.

- All facilities will have collection pans underneath or earthen berms with liners as secondary containment for spills and leaks.
- Sanitary waste will be regularly collected from portable units by a licensed sanitary waste management contractor.
- Locate at least 20 feet from the nearest storm-drain inlet, water feature or sensitive-feature buffer area.
- Secure all portable toilets with a stake driven into the ground to prevent tipping by accident, weather, or vandalism.

9.10 STOCKPILES AND EXCAVATED MATERIALS

Materials will have storm water perimeter control devices such silt fence or erosion control logs. Materials excavated from utility trenching will be protected from upgradient storm run-on. Trees and shrubs from site clearing can be shredded and used as mulching material after site stabilization. Stockpiles/spoils can be secured with erosion control blankets, seeding or tarps if they are not to be used within 14 days to prevent fugitive dust. Remove stockpiles as soon as possible. Stormwater perimeter control devices can be installed at least 10 feet from stockpile materials to prevent controls from being damaged by material or equipment.

10 HAZARDOUS MATERIALS

All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals, acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) will be stored in an appropriate manner when not in use.

10.1 BEST MANAGEMENT PRACTICES

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of hazardous materials and substances:

- Personnel will be trained in the proper storage, use, and disposal of on-site materials;
- All products will be used in strict compliance with instructions on the product label;
- Products will be kept in their original containers with the original manufacturer's label in legible condition;
- Substances will not be mixed with one another unless recommended by the manufacturer;
- Material safety data sheets (SDS's) will be procured and used for each material;
- Whenever possible, all of a product will be used up before disposing of the container;
- Materials will be stored in a secured location to prevent unauthorized use or vandalism;
- Store under cover to limit exposure to precipitation when not in use;
- Do not store incompatible materials in same container or near each other.

10.1.1 Fertilizers

Fertilizers used will be applied only in the minimum amounts recommended by the manufacturer and Engineer. Once applied, fertilizer will be worked into the soil to limit exposure to stormwater runoff. If stored onsite, all fertilizer will be stored in accordance with the manufacturers' recommendations and in a covered storage shed with proper ventilation. If re-sealable, fertilizers will be stored in their original bag/container. Otherwise, partially used bags of fertilizer will be transferred to sealable plastic bins to avoid spills.

10.1.2 Paints

All containers will be tightly sealed, properly labeled, and stored when not required for use onsite. Washouts or cleaning of tools will be in contained and never disposed of in a storm drain or unprotected soil.

10.1.3 Drums, Totes and Containers

Clearly label all containers. All containers will be completely sealed and watertight if located in areas where there is no cover. Store on wooden pallets and/or on nonporous surfaces. Provide sufficient spacing or aisles for access for moving equipment and emergency response. Do not store near drains, or in areas where they could be damaged by moving equipment or vehicles.

10.1.4 Petroleum, Oils and Lubricants (POL)

The uncontrolled discharge of POLs to groundwater, surface water or soil is prohibited. Immediate action will be taken to control, contain, and recover any discharged product.

10.1.4.1 Vehicle/Equipment Fueling and Maintenance

An impermeable surface will be designated for fueling and maintenance activities. This area will be equipped with a sign, fire extinguisher and spill containment material. If spills occur, they will be cleaned up immediately.

All major equipment and vehicle maintenance will be performed off-site. Equipment will be inspected daily by first operator. Equipment and vehicles with leaks will be removed from the project. Drip pans

will be placed under all equipment receiving maintenance and vehicles and equipment parked on the site overnight.

When vehicle fueling will occur on-site, the fueling activity will occur using drip pans or on an impermeable surface. Ample supplies of spill cleanup material will be available and accessible to clean up spills. Oily rags will be properly disposed of.

10.1.4.2 Onsite Fuel Storage Tanks

The use of on-site temporary construction fuel storage is limited to tank sizes which can only store unregulated quantities of fuel and have spill containment devices with a containment capacity of at least 110% of the storage container.

All tanks above 1,350 gallons will be registered with TCEQ thirty (30) days prior to installation and require a spill prevention control and countermeasure plan meeting the requirements of Title 40 CFR Part 112 as governed by EPA.

10.2 GOOD HOUSEKEEPING

The following good housekeeping practices will be followed on site during the construction project:

- Storage will be limited to reasonable quantities or only enough product required to complete the job.
- Store in a neat, orderly manner and, if possible, under the roof or other enclosure.
- All containers will be completely sealed and watertight if located in areas where there is no cover.
- Store on wooden pallets and/or on nonporous surfaces.
- Provide sufficient spacing or aisles for access for equipment and emergency response.
- Do not store near drains, or in areas where they could be damaged by moving equipment or vehicles.

10.3 DISPOSAL

Hazardous waste materials and surplus products will be disposed of in the manner specified by federal, state, and/or local regulations and by the manufacturer of such products.

- All of the product in a container will be removed before the container is disposed of.
- All such containers will be triple-rinsed with water prior to disposal. The rinse water used in these containers will be disposed of in a manner in compliance with state and federal regulations and will not be allowed to mix with stormwater discharges.
- Waste materials will be collected in receptacles designed for the purpose and disposed of off-site in accordance with applicable regulations.

10.4 RECOMMENDED RESPONSE EQUIPMENT

Ensure the onsite containment and spill equipment is in-stock and readily available.

- Drip Pans / Buckets
- Absorbent Booms / Socks (Pigs)
- Absorbent Pads
- Disposable Bags with Ties
- Peat Sorb or Granular Absorbent such as kitty litter or sawdust
- Non-sparking shovels
- Acid neutralizing powder
- Brooms, dust pans, mops and rags
- Personal Protection Equipment
- Metal disposal containers
- Fire extinguishers

10.5 SPILLS

No spilled hazardous materials or hazardous wastes will be allowed to come in contact with precipitation, stormwater discharges or unprotected soils. If such contact occurs, the discharge will be contained until appropriate measures in compliance with state and federal regulations are taken to remediate the contamination.

It is the permitees' responsibility to minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.

Spills or leaks will be cleaned up immediately after they occur and properly documented.

Personnel will be made aware of the procedures, usage and the locations of cleanup and containment supplies. Materials and equipment necessary for spill containment and cleanup will be kept in the storage areas or activity areas.

10.5.1 Minor Spills

Spills that are safely controlled and cleaned by personnel and pose no significant harm to the environment are considered minor spills. These are spills that occur near the source and are not likely to migrate from the site. All spills will be reported to onsite supervisor.

- DO NOT cover up any spill! All spills will be appropriately recovered via the use of vacuum equipment, absorbents, excavation, etc.
- Concrete areas – Clean initially with dry cleanup methods. Never wash down areas before dry cleanup has been done. Ensure that wash water is collected and properly disposed of.
- Soil and vegetated areas – Do not allow spills to penetrate soil. Never bury any spill.
- Shovel or sweep any granular sorbent from the spill area and place it in a proper disposal container. Do not hose contaminated granular sorbents with water.
- Dispose of sorbents properly. Granular sorbents contaminated with oil usually can be disposed of with the regular trash. Sorbents contaminated with gasoline, diesel and other fluids will be disposed of as a hazardous waste, unless testing proves otherwise.
- Remove and properly dispose of all spilled and contaminated material. Spoils are to be drummed or placed in containers.

10.5.2 Major Spills

Releases that cannot be controlled and remediated by onsite personnel, spilled materials which endanger human health, or pose a danger of fire or explosion are considered "Major Spill Emergencies." If the spill is large enough to spread beyond the immediate spill area, reaches storm water drain systems, or causes an oil sheen on nearby surface water, the spills require immediate response from specialists and proper notification to emergency response officials and other regulatory agencies.

In the event of a major release or spill emergency:

- If feasible, and if it is safe to do so, stop the source of the release.
- All workers and the public will immediately evacuate the spill site and move to a safe distance away from the spill.
- A senior on-site person will call for medical assistance if workers are injured (no worker will engage in rescue operations unless they have been properly trained and equipped).
- Notify the local Fire Department or Police Department at 911.
- The area will be closed off and kept "as is" at the time of the incident. This is vital for effective incident investigation.

10.5.3 Regulatory Spill Reporting Requirements

State and Federal regulations define the reportable quantities (RQ) for spills onto land or surface water. Where a leak, spill, or other release containing a hazardous substance in an amount equal to or in excess of a RQ occurs during a 24-hour period, the permitee will notify TCEQ and the National Response Center (NRC) as soon as one has knowledge of the release. Within 7 calendar days of knowledge of the release, provide a description of the release, the circumstances leading to the release, investigations and remediations.

Regulatory Authority	Type of Oil	Reportable Quantity (RQ)	
		Onto land	Into Water
State of Texas (TCEQ) 1-800-832-8224	Petroleum Fuels Used Oil Spent/Contaminated Oil	≥25 gal	Sheen
	Lube Oil, Hydraulic Fluid Transformer Oil, Other Non-Fuel Oils	≥210 gal	Sheen
Federal (NRC) 1-800-424-8802	Oil of Any Type	See product specific requirements	Sheen

Appendix A – TPDES General Permit, March 5, 2023, Permit Forms and MS4 Letter

Responsible Party Certification

"I certify under penalty of law that I understand the terms and conditions of the TPDES Permit that authorizes the storm water discharges associated with industrial activity from the construction site identified in this certification."

Company: _____ Phone: _____

Name: _____ Trade: _____

Signature: _____ Date: _____

Company: _____ Phone: _____

Name: _____ Trade: _____

Signature: _____ Date: _____

Company: _____ Phone: _____

Name: _____ Trade: _____

Signature: _____ Date: _____

Company: _____ Phone: _____

Name: _____ Trade: _____

Signature: _____ Date: _____

Company: _____ Phone: _____

Name: _____ Trade: _____

Signature: _____ Date: _____

Company: _____ Phone: _____

Name: _____ Trade: _____

Signature: _____ Date: _____

Company: _____ Phone: _____

Name: _____ Trade: _____

Signature: _____ Date: _____

Use additional sheets as necessary.

TCEQ Large Construction Site Notice

Primary Operator

Large construction sites disturb more than five acres or are part of a larger common plan of development that disturbs more than five acres. Primary operators of large construction sites will fill out this notice. Primary operators will then post this notice at the construction site in a location where it is safely and readily available for viewing by the general public and local, state, and federal authorities. Additional information about the TCEQ Construction Stormwater General Permit may be found on TCEQ's webpage on Assistance Tools for Construction Stormwater General Permits.

Note: You must also develop a Stormwater Pollution Prevention Plan prior to the commencement of construction.

Site-Specific TPDES Authorization Number: TXR15 TXR1552MQ

Primary Operator Name: JK Bernhard Construction Co LLC

Contact Name and Phone Number: Jarad Payne (210) 973-8671 or Marlin Roden (830) 460-1090

Project Description:

Physical Location/Description Purgatory Road approx 0.2 miles north of Hwy 306 in New Braunfels, Comal County, TX

Estimated Start Date April 2023

Projected End Date or Date Disturbed Soils Will Be Stabilized April 2024

Location of Stormwater Pollution Prevention Plan (SWP3): In trailer or via telephone at (210) 896-8711.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
Texas Pollutant Discharge Elimination System
Stormwater Construction General Permit

The Notice of Intent (NOI) for the facility listed below was received on May 1, 2023. The intent to discharge stormwater associated with construction activity under the terms and conditions imposed by the Texas Pollutant Discharge Elimination System (TPDES) stormwater Construction General Permit (CGP) TXR150000 is acknowledged. Your facility's unique TPDES CGP stormwater authorization number is:

TXR1552MQ

Coverage Effective: May 01, 2023

The TCEQ's stormwater CGP requires certain stormwater pollution prevention and control measures, possible monitoring and reporting, and periodic inspections. Among the conditions and requirements of this permit, you must have prepared and implemented a stormwater pollution prevention plan (SWP3) that is tailored to your construction site. As a facility authorized to discharge under the stormwater CGP, all terms and conditions must be complied with to maintain coverage and avoid possible penalties.

Project/Site Information:
RN111728580
360 Comal Storage
Purgatory Road Approx 0.2 Miles North of Hwy 306
New Braunfels, TX 78132
Comal County

Operator:
CN605705052
J. K. Bernhard Construction Co., LLC
2546 Goat Creek Rd
Kerrville, TX 78028

This CGP and all authorizations expire on March 5, 2028, unless otherwise amended. If you have any questions related to processing of your application, you may contact the Stormwater Processing Center by **email at** SWPERMIT@tceq.texas.gov **or by telephone at (512) 239-3700**. For technical issues, you may contact the stormwater technical staff by **email at** SWGP@tceq.texas.gov **or by telephone at (512) 239-4671**. Also, you may obtain information on the TCEQ web site at https://www.tceq.texas.gov/goto/wq-dpa. A copy of this document should be kept with your SWP3.

Issued Date: May 01, 2023

FOR THE COMMISSION

Texas Commission on Environmental Quality

Construction Notice of Intent

Site Information (Regulated Entity)

What is the name of the site to be authorized?	360 Comal Storage
Does the site have a physical address?	No
Physical Address	
Because there is no physical address, describe how to locate this site:	Purgatory Road approx 0.2 miles north of Hwy 306
City	New Braunfels
State	TX
ZIP	78132
County	COMAL
Latitude (N) (##.######)	29.849016
Longitude (W) (-###.######)	-98.11847
Primary SIC Code	
Secondary SIC Code	
Primary NAICS Code	
Secondary NAICS Code	
Regulated Entity Site Information	
What is the Regulated Entity's Number (RN)?	
What is the name of the Regulated Entity (RE)?	360 Comal Storage
Does the RE site have a physical address?	No
Physical Address	
Because there is no physical address, describe how to locate this site:	Purgatory Road approx 0.2 miles north of Hwy 306
City	New Braunfels
State	TX
ZIP	78132
County	COMAL
Latitude (N) (##.######)	29.849016
Longitude (W) (-###.######)	-98.11847
Facility NAICS Code	
What is the primary business of this entity?	Storage Facility

Customer (Applicant) Information

How is this applicant associated with this site?	Operator
What is the applicant's Customer Number (CN)?	CN605705052
Type of Customer	Sole Proprietorship

Full legal name of the applicant:	
Legal Name	J. K. Bernhard Construction Co., LLC
Texas SOS Filing Number	
Federal Tax ID	
State Franchise Tax ID	
State Sales Tax ID	
Local Tax ID	
DUNS Number	
Number of Employees	
Independently Owned and Operated?	Yes
I certify that the full legal name of the entity applying for this permit has been provided and is legally authorized to do business in Texas.	Yes
Responsible Authority Contact	
Organization Name	J. K. Bernhard Construction Co., LLC
Prefix	
First	Jarad
Middle	
Last	Payne
Suffix	
Credentials	
Title	Project Manager
Responsible Authority Mailing Address	
Enter new address or copy one from list:	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	2546 GOAT CREEK RD
Routing (such as Mail Code, Dept., or Attn:)	
City	KERRVILLE
State	TX
ZIP	78028
Phone (###-###-####)	2109738671
Extension	
Alternate Phone (###-###-####)	8308951498
Fax (###-###-####)	
E-mail	jaradp@jkbernhard.com

Application Contact

Person TCEQ should contact for questions about this application:	
Same as another contact?	
Organization Name	Q&A Diversified LLC
Prefix	

First	Hilda
Middle	
Last	Quinones
Suffix	
Credentials	
Title	SWPPP Consultant
Enter new address or copy one from list:	
Mailing Address	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	PO BOX 761283
Routing (such as Mail Code, Dept., or Attn:)	
City	SAN ANTONIO
State	TX
ZIP	78245
Phone (###-###-####)	2108968711
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	
E-mail	hildaq@qnadiversified.com

CNOI General Characteristics

1	Is the project or site located on Indian Country Lands?	No
2	Is the project or site associated to a facility that is licensed for the storage of high-level radioactive waste by the United States Nuclear Regulatory Commission under 10 CFR Part 72?	No
3	Is your construction activity associated with an oil and gas exploration, production, processing, or treatment, or transmission facility?	No
4	What is the Primary Standard Industrial Classification (SIC) Code that best describes the construction activity being conducted at the site?	1541
5	If applicable, what is the Secondary SIC Code(s)?	
6	What is the total number of acres that the construction project or site will disturb under the control of the primary operator?	24
7	What is the construction project or site type?	Commercial
8	Is the project part of a larger common plan of development or sale?	No
9	What is the estimated start date of the project?	04/24/2023
10	What is the estimated end date of the project?	04/30/2024
11	Will concrete truck washout be performed at the site?	Yes
12	What is the name of the first water body(s) to receive the stormwater runoff or potential runoff from the site?	Jacob Creeks, Guadalupe River
13	What is the segment number(s) of the classified water body(s) that the discharge will eventually reach?	1812

14	Is the discharge into a Municipal Separate Storm Sewer System (MS4)?	Yes
14.1	What is the name of the MS4 Operator?	Comal County
15	Is the discharge or potential discharge within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer, as defined in 30 TAC Chapter 213?	Yes
15.1	I certify that the copy of the TCEQ-approved Plan required by the Edwards Aquifer Rule (30 TAC Chapter 213) that is included or referenced in the Stormwater Pollution Prevention Plan will be implemented.	Yes
16	I certify that a stormwater pollution prevention plan (SWP3) has been developed, will be implemented prior to construction, and to the best of my knowledge and belief is compliant with any applicable local sediment and erosion control plans, as required in the general permit TXR150000. Note: For multiple operators who prepare a shared SWP3, the confirmation of an operator may be limited to its obligations under the SWP3 provided all obligations are confirmed by at least one operator.	Yes
17	I certify that I have obtained a copy and understand the terms and conditions of the Construction General Permit (TXR150000).	Yes
18	I understand that a Notice of Termination (NOT) must be submitted when this authorization is no longer needed.	Yes

Certification

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

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.

1. I am Otto Segner, the owner of the STEERS account ER067568.
2. I have the authority to sign this data on behalf of the applicant named above.
3. I have personally examined the foregoing and am familiar with its content and the content of any attachments, and based upon my personal knowledge and/or inquiry of any individual responsible for information contained herein, that this information is true, accurate, and complete.
4. I further certify that I have not violated any term in my TCEQ STEERS participation agreement and that I have no reason to believe that the confidentiality or use of my password has been compromised at any time.
5. I understand that use of my password constitutes an electronic signature legally equivalent to my written signature.
6. I also understand that the attestations of fact contained herein pertain to the implementation, oversight and enforcement of a state and/or federal environmental program and must be true and complete to the best of my knowledge.
7. I am aware that criminal penalties may be imposed for statements or omissions that I know or have reason to believe are untrue or misleading.
8. I am knowingly and intentionally signing Construction Notice of Intent.
9. My signature indicates that I am in agreement with the information on this form, and authorize its submittal to the TCEQ.

OPERATOR Signature: Otto Segner OPERATOR

Customer Number:	CN605705052
Legal Name:	J. K. Bernhard Construction Co., LLC
Account Number:	ER067568

Signature IP Address:	64.127.205.138
Signature Date:	2023-05-01
Signature Hash:	B46FF078987006EE073AAE18A61C254F20D2CC6A5C4C57CFD4F973464BD8BB9C
Form Hash Code at time of Signature:	C511B8A13E6EF01139A5390AE86A2B3FC34EBF7739AFC2E467E5681E75B0182C

Fee Payment

Transaction by:	The application fee payment transaction was made by ER067568/Otto Segner
Paid by:	The application fee was paid by OTTO SEGNER
Fee Amount:	$225.00
Paid Date:	The application fee was paid on 2023-05-01
Transaction/Voucher number:	The transaction number is 582EA000546810 and the voucher number is 637055

Submission

Reference Number:	The application reference number is 548344
Submitted by:	The application was submitted by ER067568/Otto Segner
Submitted Timestamp:	The application was submitted on 2023-05-01 at 09:52:18 CDT
Submitted From:	The application was submitted from IP address 64.127.205.138
Confirmation Number:	The confirmation number is 460715
Steers Version:	The STEERS version is 6.63

Additional Information

Application Creator: This account was created by Victoria Kinnamont

Texas Commission on Environmental Quality

P.O. Box 13087, Austin, Texas 78711-3087

GENERAL PERMIT TO DISCHARGE UNDER THE

TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM

under provisions of
Section 402 of the Clean Water Act
and Chapter 26 of the Texas Water Code

This permit supersedes and replaces
TPDES General Permit No. TXR150000,
effective March 5, 2018, and amended January 28, 2022

Construction sites that discharge stormwater associated with construction activity located in the state of Texas may discharge to surface water in the state only according to monitoring requirements and other conditions set forth in this general permit, as well as the rules of the Texas Commission on Environmental Quality (TCEQ or Commission), the laws of the State of Texas, and other orders of the Commission of the TCEQ. The issuance of this general permit does not grant to the permittee the right to use private or public property for conveyance of stormwater and certain non-stormwater discharges along the discharge route. This includes property belonging to but not limited to any individual, partnership, corporation or other entity. Neither does this general 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 general permit and the authorization contained herein shall expire at midnight, on March 5, 2028.

EFFECTIVE DATE: March 5, 2023

ISSUED DATE: February 27, 2023

For the Commission

TPDES GENERAL PERMIT NUMBER TXR150000

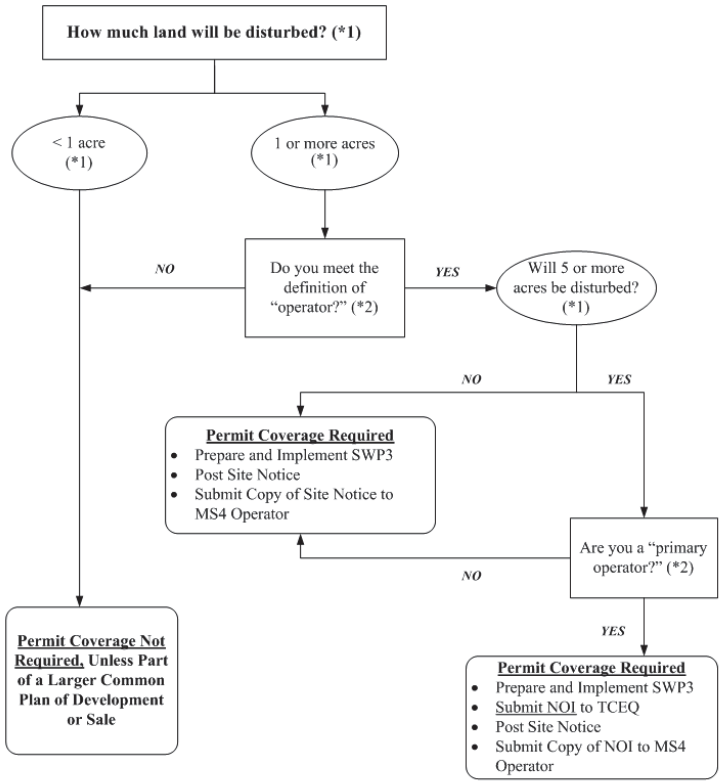
RELATING TO STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES

Table of Contents

Part I. Flow Chart and Definitions

Section A. Flow Chart to Determine Whether Coverage is Required

When calculating the acreage of land area disturbed, include the disturbed land-area of all construction and construction support activities.



*(*1) To determine the size of the construction project, use the size of the entire area to be disturbed, and include the size of the larger common plan of development or sale, if the project is part of a larger project (refer to Part I.B., "Definitions," for an explanation of "common plan of development or sale").*

*(*2) Refer to the definitions for "operator," "primary operator," and "secondary operator" in Part I., Section B. of this permit.*

Section B. Definitions

Arid Areas – Areas with an average annual rainfall of zero (0) to ten (10) inches.

Best Management Practices (BMPs) – Schedules of activities, prohibitions of practices, maintenance procedures, structural controls, local ordinances, and other management practices to prevent or reduce the discharge of pollutants. BMPs also include treatment requirements, operating procedures, and practices to control construction site runoff, spills or leaks, waste disposal, or drainage from raw material storage areas.

Commencement of Construction – The initial disturbance of soils associated with clearing, grading, or excavation activities, as well as other construction-related activities (e.g., demolition; grubbing; stockpiling of fill material; placement of raw materials at the site).

Common Plan of Development – A construction activity that is completed in separate stages, separate phases, or in combination with other construction activities. A common plan of development (also known as a "common plan of development or sale") is identified by the documentation for the construction project that identifies the scope of the project, and may include plats, blueprints, marketing plans, contracts, building permits, a public notice or hearing, zoning requests, or other similar documentation and activities. A common plan of development does not necessarily include all construction projects within the jurisdiction of a public entity (e.g., a city or university). Construction of roads or buildings in different parts of the jurisdiction would be considered separate "common plans," with only the interconnected parts of a project being considered part of a "common plan" (e.g., a building and its associated parking lot and driveways, airport runway and associated taxiways, a building complex, etc.). Where discrete construction projects occur within a larger common plan of development or sale but are located one quarter (¼) mile or more apart, and the area between the projects is not being disturbed, each individual project can be treated as a separate plan of development or sale, provided that any interconnecting road, pipeline or utility project that is part of the same "common plan" is not included in the area to be disturbed.

Construction Activity – Includes soil disturbance activities, including clearing, grading, excavating, construction-related activity (e.g., stockpiling of fill material, demolition), and construction support activity. This does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site (e.g., the routine grading of existing dirt roads, asphalt overlays of existing roads, the routine clearing of existing rights-of-way, and similar maintenance activities). Regulated construction activity is defined in terms of small and large construction activity.

Construction Support Activity – A construction-related activity that specifically supports construction activity, which can involve earth disturbance or pollutant-generating activities of its own, and can include, but are not limited to, activities associated with concrete or asphalt batch plants, rock crushers, equipment staging or storage areas, chemical storage areas, material storage areas, material borrow areas, and excavated material disposal areas. Construction support activity must only directly support the construction activity authorized under this general permit.

Dewatering – The act of draining accumulated stormwater or groundwater from building foundations, vaults, trenches, and other similar points of accumulation.

Discharge – For the purposes of this permit, the drainage, release, or disposal of pollutants in stormwater and certain non-stormwater from areas where soil disturbing activities (e.g., clearing, grading, excavation, stockpiling of fill material, and demolition), construction materials or equipment storage or maintenance (e.g., fill piles, borrow area, concrete truck wash out, fueling), or other industrial stormwater directly related to the construction process (e.g., concrete or asphalt batch plants) are located.

Drought-Stricken Area – For the purposes of this permit, an area in which the National Oceanic and Atmospheric Administration's U.S. Seasonal Drought Outlook indicates for the period during which the construction will occur that any of the following conditions are likely: (1) "Drought to persist or intensify", (2) "Drought ongoing, some improvement", (3) "Drought likely to improve, impacts ease", or (4) "Drought development likely". See http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html.

Edwards Aquifer – As defined under Texas Administrative Code (TAC) § 213.3 of this title (relating to the Edwards Aquifer), that portion of an arcuate belt of porous, water-bearing, predominantly carbonate rocks known as the Edwards and Associated Limestones in the Balcones Fault Zone trending from west to east to northeast in Kinney, Uvalde, Medina, Bexar, Comal, Hays, Travis, and Williamson Counties; and composed of the Salmon Peak Limestone, McKnight Formation, West Nueces Formation, Devil's River Limestone, Person Formation, Kainer Formation, Edwards Formation, and Georgetown Formation. The permeable aquifer units generally overlie the less-permeable Glen Rose Formation to the south, overlie the less-permeable Comanche Peak and Walnut Formations north of the Colorado River, and underlie the less-permeable Del Rio Clay regionally.

Edwards Aquifer Recharge Zone – Generally, that area where the stratigraphic units constituting the Edwards Aquifer crop out, including the outcrops of other geologic formations in proximity to the Edwards Aquifer, where caves, sinkholes, faults, fractures, or other permeable features would create a potential for recharge of surface waters into the Edwards Aquifer. The recharge zone is identified as that area designated as such on official maps located in the offices of the Texas Commission on Environmental Quality (TCEQ) and the appropriate regional office. The Edwards Aquifer Map Viewer, located at https://www.tceq.texas.gov/gis/edwards-viewer.html

Edwards Aquifer Contributing Zone – The area or watershed where runoff from precipitation flows downgradient to the recharge zone of the Edwards Aquifer. The contributing zone is located upstream (upgradient) and generally north and northwest of the recharge zone for the following counties: all areas within Kinney County, except the area within the watershed draining to Segment No. 2304 of the Rio Grande Basin; all areas within Uvalde, Medina, Bexar, and Comal Counties; all areas within Hays and Travis Counties, except the area within the watersheds draining to the Colorado River above a point 1.3 miles upstream from Tom Miller Dam, Lake Austin at the confluence of Barrow Brook Cove, Segment No. 1403 of the Colorado River Basin; and all areas within Williamson County, except the area within the watersheds draining to the Lampasas River above the dam at Stillhouse Hollow reservoir, Segment No. 1216 of the Brazos River Basin. The contributing zone is illustrated on the Edwards Aquifer map viewer at https://www.tceq.texas.gov/gis/edwards-viewer.html

Effluent Limitations Guideline (ELG) – Defined in 40 Code of Federal Regulations (CFR) § 122.2 as a regulation published by the Administrator under § 304(b) of the Clean Water Act (CWA) to adopt or revise effluent limitations.

Facility or Activity – For the purpose of this permit, referring to a construction site, the location of construction activity, or a construction support activity that is regulated under this general permit, including all contiguous land and fixtures (for example, ponds and materials stockpiles), structures, or appurtenances used at a construction site or industrial site.

Final Stabilization – A construction site status where any of the following conditions are met:

(a) All soil disturbing activities at the site have been completed and a uniform (that is, evenly distributed, without large bare areas) perennial vegetative cover with a density of at least 70% of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or equivalent permanent stabilization measures (such as the use of riprap, or gabions) have been employed.

(b) For individual lots in a residential construction site by either:

  (1) the homebuilder completing final stabilization as specified in condition (a) above; or

  (2) the homebuilder establishing temporary stabilization for an individual lot prior to the time of transfer of the ownership of the home to the buyer and after informing the homeowner of the need for, and benefits of, final stabilization. If temporary stabilization is not feasible, then the homebuilder may fulfill this requirement by retaining perimeter controls or BMPs, and informing the homeowner of the need for removal of temporary controls and the establishment of final stabilization. Fulfillment of this requirement must be documented in the homebuilder's stormwater pollution prevention plan (SWP3).

(c) For construction activities on land used for agricultural purposes (such as pipelines across crop or range land), final stabilization may be accomplished by returning the disturbed land to its preconstruction agricultural use. Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to surface water and areas that are not being returned to their preconstruction agricultural use must meet the final stabilization conditions of condition (a) above.

(d) In arid, semi-arid, and drought-stricken areas only, all soil disturbing activities at the site have been completed and both of the following criteria have been met:

  (1) temporary erosion control measures (for example, degradable rolled erosion control product) are selected, designed, and installed along with an appropriate seed base to provide erosion control for at least three years without active maintenance by the operator, and

  (2) the temporary erosion control measures are selected, designed, and installed to achieve 70% of the native background vegetative coverage within three years.

High-Level Radioactive Waste – Meaning as assigned by 42 United States Code (U.S.C.) Section 10101 (12) and includes spent nuclear fuel as defined by 42 U.S.C. Section 10101 (23).

Hyperchlorination of Waterlines – Treatment of potable water lines or tanks with chlorine for disinfection purposes, typically following repair or partial replacement of the waterline or tank, and subsequently flushing the contents.

Impaired Water – A surface water body that is identified as impaired on the latest approved CWA § 303(d) List or waters with an EPA-approved or established total maximum daily load (TMDL) that are found on the latest EPA approved *Texas Integrated Report of Surface Water Quality for CWA Sections 305(b) and 303(d)*, which lists the category 4 and 5 water bodies.

Indian Country Land – (1) All land within the limits of any Indian reservation under the jurisdiction of the United States government, notwithstanding the issuance of any patent, and, including rights-of-way running through the reservation; (2) all dependent Indian communities with the borders of the United States whether within the originally or subsequently acquired territory thereof, and whether within or without the limits of a state; and (3) all Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same. (40 CFR § 122.2)

Indian Tribe – Any Indian Tribe, band, group, or community recognized by the Secretary of the Interior and exercising governmental authority over a Federal Indian Reservation (40 CFR § 122.2).

Infeasible – Not technologically possible, or not economically practicable and achievable in light of best industry practices. (40 CFR § 450.11(b)).

Large Construction Activity – Construction activities including clearing, grading, and excavating that result in land disturbance of equal to or greater than five (5) acres of land. Large construction activity also includes the disturbance of less than five (5) acres of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb equal to or greater than five (5) acres of land. Large construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site (for example, the routine grading of existing dirt roads, asphalt overlays of existing roads, the routine clearing of existing right-of-ways, and similar maintenance activities).

Linear Project – Includes the construction of roads, bridges, conduits, substructures, pipelines, sewer lines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities in a long, narrow area.

Low Rainfall Erosivity Waiver (LREW) – A written submission to the executive director from an operator of a construction site that is considered as small construction activity under the permit, which qualifies for a waiver from the requirements for small construction activities, only during the period of time when the calculated rainfall erosivity factor is less than five (5).

Minimize – To reduce or eliminate to the extent achievable using stormwater controls that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer System (MS4) – A separate storm sewer system owned or operated by the United States, a state, city, town, county, district, association, or other public body (created by or pursuant to state law) having jurisdiction over the disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under state law such as a sewer district, flood control or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, that discharges to surface water in the state.

Notice of Change (NOC) – Written notification to the executive director from a discharger authorized under this permit, providing changes to information that was previously provided to the agency in a notice of intent form.

Notice of Intent (NOI) – A written submission to the executive director from an applicant requesting coverage under this general permit.

Notice of Termination (NOT) – A written submission to the executive director from a discharger authorized under this general permit requesting termination of coverage.

Operator – The person or persons associated with a large or small construction activity that is either a primary or secondary operator as defined below:

Primary Operator – The person or persons associated with construction activity that meets either of the following two criteria:

(a) the person or persons have on-site operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or

(b) the person or persons have day-to-day operational control of those activities at a construction site that are necessary to ensure compliance with a Stormwater Pollution Prevention Plan (SWP3) for the site or other permit conditions (for example, they are authorized to direct workers at a site to carry out activities required by the SWP3 or comply with other permit conditions).

Secondary Operator – The person or entity, often the property owner, whose operational control is limited to:

(a) the employment of other operators, such as a general contractor, to perform or supervise construction activities; or

(b) the ability to approve or disapprove changes to construction plans and specifications, but who does not have day-to-day on-site operational control over construction activities at the site.

Secondary operators must either prepare their own SWP3 or participate in a shared SWP3 that covers the areas of the construction site, where they have control over the construction plans and specifications.

If there is not a primary operator at the construction site, then the secondary operator is defined as the primary operator and must comply with the requirements for primary operators.

Outfall – For the purpose of this permit, a point source at the point where stormwater runoff associated with construction activity discharges to surface water in the state and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels, or other conveyances that connect segments of the same stream or other water of the U.S. and are used to convey waters of the U.S.

Permittee – An operator authorized under this general permit. The authorization may be gained through submission of a notice of intent, by waiver, or by meeting the requirements for automatic coverage to discharge stormwater runoff and certain non-stormwater discharges from construction activity.

Point Source – Any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are, or may be, discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff (40 CFR § 122.2).

Pollutant – Dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, filter backwash, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into any surface water in the state. The term "pollutant" does not include tail water or runoff water from irrigation or rainwater runoff from cultivated or uncultivated rangeland, pastureland, and farmland. For the purpose of this permit, the term “pollutant” includes sediment.

Pollution – The alteration of the physical, thermal, chemical, or biological quality of, or the contamination of, any surface water in the state that renders the water harmful, detrimental, or injurious to humans, animal life, vegetation, or property or to public health, safety, or welfare, or impairs the usefulness or the public enjoyment of the water for any lawful or reasonable purpose (Texas Water Code (TWC) § 26.001(14)).

Rainfall Erosivity Factor (R factor) – The total annual erosive potential that is due to climatic effects, and is part of the Revised Universal Soil Loss Equation (RUSLE).

Receiving Water – A "Water of the United States" as defined in 40 CFR § 122.2 or a surface water in the state into which the regulated stormwater discharges.

Semi-arid Areas – Areas with an average annual rainfall of 10 to 20 inches.

Separate Storm Sewer System – A conveyance or system of conveyances (including roads with drainage systems, streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains), designed or used for collecting or conveying stormwater; that is not a combined sewer, and that is not part of a publicly owned treatment works (POTW).

Small Construction Activity – Construction activities including clearing, grading, and excavating that result in land disturbance of equal to or greater than one (1) acre and less than five (5) acres of land. Small construction activity also includes the disturbance of less than one (1) acre of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb equal to or greater than one (1) and less than five (5) acres of land. Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site (for example, the routine grading of existing dirt roads, asphalt overlays of existing roads, the routine clearing of existing right-of-ways, and similar maintenance activities).

Steep Slopes – Where a state, Tribe, local government, or industry technical manual (e.g., stormwater BMP manual) has defined what is to be considered a "steep slope", this permit's definition automatically adopts that definition. Where no such definition exists, steep slopes are automatically defined as those that are 15 percent or greater in grade.

Stormwater (or Stormwater Runoff) – Rainfall runoff, snow melt runoff, and surface runoff and drainage.

Stormwater Associated with Construction Activity – Stormwater runoff, as defined above, from a construction activity.

Structural Control (or Practice) – A pollution prevention practice that requires the construction of a device, or the use of a device, to reduce or prevent pollution in stormwater runoff. Structural controls and practices may include but are not limited to: silt fences, earthen dikes, drainage swales, sediment traps, check dams, subsurface drains, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, and temporary or permanent sediment basins.

Surface Water in the State – Lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, wetlands, marshes, inlets, canals, the Gulf of Mexico inside the territorial limits of the state (from the mean high water mark (MHWM) out 10.36 miles into the Gulf), and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, navigable or non-navigable, and including the beds and banks of all water-courses and bodies of surface water, that are wholly or partially inside or bordering the state or subject to the jurisdiction of the state; except that waters in treatment systems which are authorized by state or federal law, regulation, or permit, and which are created for the purpose of waste treatment are not considered to be water in the state.

Temporary Stabilization – A condition where exposed soils or disturbed areas are provided a protective cover or other structural control to prevent the migration of pollutants. Temporary stabilization may include temporary seeding, geotextiles, mulches, and other techniques to reduce or eliminate erosion until either permanent stabilization can be achieved or until further construction activities take place.

Thawing Conditions – For the purposes of this permit, thawing conditions are expected based on the historical likelihood of two (2) or more days with daytime temperatures greater than 32 degrees Fahrenheit (°F). This date can be determined by looking at historical weather data.

NOTE: The estimation of thawing conditions is for planning purposes only. During construction, the permittee will be required to conduct site inspections based upon actual conditions (i.e., if thawing conditions occur sooner than expected, the permittee will be required to conduct inspections at the regular frequency).

Total Maximum Daily Load (TMDL) – The total amount of a pollutant that a water body can assimilate and still meet the Texas Surface Water Quality Standards.

Turbidity – A condition of water quality characterized by the presence of suspended solids and/or organic material.

Waters of the United States – Waters of the United States or waters of the U.S. means the term as defined in 40 CFR § 122.2.

Part II. Permit Applicability and Coverage

Section A. Discharges Eligible for Authorization

1. Stormwater Associated with Construction Activity

   Discharges of stormwater runoff and certain non-stormwater discharges from small and large construction activities may be authorized under this general permit, except as described in Part II.C. of this permit.

2. Discharges of Stormwater Associated with Construction Support Activities

   Discharges of stormwater runoff and certain non-stormwater discharges from construction support activities as defined in Part I.B. of this general permit may be authorized, provided that the following conditions are met:

   (a) the construction support activities are located within one (1) mile from the boundary of the construction site where the construction activity authorized under the permit is being conducted that requires the support of these activities;

   (b) an SWP3 is developed and implemented for the permitted construction site according to the provisions in Part III.F. of this general permit, including appropriate controls and measures to reduce erosion and the discharge of pollutants in stormwater runoff according to the provisions in Part IV. of this general permit;

   (c) the activities are directly related to the construction site;

   (d) the activities are not a commercial operation, nor serve other unrelated construction projects; and

   (e) the activities do not continue to operate beyond the completion of the construction activity at the project it supports.

   Construction support activities that operate outside the terms provided in (a) through (e) above must obtain authorization under a separate Texas Pollutant Discharge Elimination System (TPDES) permit, which may include the TPDES Multi-Sector General Permit (MSGP), TXR050000 (related to stormwater discharges associated with industrial activity), an alternative general permit (if available), or an individual water quality permit.

3. Non-Stormwater Discharges

   The following non-stormwater discharges from sites authorized under this general permit are also eligible for authorization under this general permit:

(a) discharges from emergency fire-fighting activities (emergency fire-fighting activities do not include washing of trucks, run-off water from training activities, test water from fire suppression systems, or similar activities);

(b) uncontaminated fire hydrant flushings (excluding discharges of hyperchlorinated water, unless the water is first dechlorinated and discharges are not expected to adversely affect aquatic life), which include flushings from systems that utilize potable water, surface water, or groundwater that does not contain additional pollutants (uncontaminated fire hydrant flushings do not include systems utilizing reclaimed wastewater as a source water);

(c) water from the routine external washing of vehicles, the external portion of buildings or structures, and pavement, where solvents, detergents, and soaps are not used, where spills or leaks of toxic or hazardous materials have not occurred (unless spilled materials have been removed; and if local state, or federal regulations are applicable, the materials are removed according to those regulations), and where the purpose is to remove mud, dirt, or dust;

(d) uncontaminated water used to control dust;

(e) potable water sources, including waterline flushings, but excluding discharges of hyperchlorinated water, unless the water is first dechlorinated and discharges are not expected to adversely affect aquatic life;

(f) uncontaminated air conditioning condensate;

(g) uncontaminated ground water or spring water, including foundation or footing drains where flows are not contaminated with industrial materials such as solvents; and

(h) lawn watering and similar irrigation drainage.

4. Other Permitted Discharges

Any discharge authorized under a separate National Pollutant Discharge Elimination System (NPDES), TPDES, or TCEQ permit may be combined with discharges authorized by this general permit, provided those discharges comply with the associated permit.

Section B. Concrete Truck Wash Out

The wash out of concrete trucks at regulated construction sites must be performed in accordance with the requirements of Part VI of this general permit.

Section C. Limitations on Permit Coverage

1. Post Construction Discharges

Discharges that occur after construction activities have been completed, and after the construction site and any supporting activity site have undergone final stabilization, are not eligible for coverage under this general permit. Discharges originating from the sites are not authorized under this general permit following the submission of the Notice of Termination (NOT) or removal of the appropriate TCEQ site notice, as applicable, for the regulated construction activity.

2. Prohibition of Non-Stormwater Discharges

Except as otherwise provided in Part II.A. of this general permit, only discharges that are composed entirely of stormwater associated with construction activity may be authorized under this general permit.

3. Compliance with Water Quality Standards

Discharges to surface water in the state that would cause, have the reasonable potential to cause, or contribute to a violation of water quality standards or that would fail to protect and maintain existing designated uses of surface water in the state are not eligible for coverage under this general permit. The executive director may require an application for an individual permit or alternative general permit (see Parts II.H.2. and 3.) to authorize discharges to surface water in the state if the executive director determines that any activity will cause, has the reasonable potential to cause, or contribute to a violation of water quality standards or is found to cause, has the reasonable potential to cause, or contribute to, the impairment of a designated use. The executive director may also require an application for an individual permit considering factors described in Part II.H.3. of this general permit.

4. Impaired Receiving Waters and Total Maximum Daily Load (TMDL) Requirements

The permittee shall determine whether the authorized discharge is to an impaired water body on the latest EPA-approved CWA § 303(d) List or waters with an EPA-approved or established TMDL that are found on the latest EPA-approved *Texas Integrated Report of Surface Water Quality for CWA Sections 305(b) and 303(d)*, which lists the category 4 and 5 water bodies.

New sources or new discharges of the pollutants of concern to impaired waters are not authorized by this permit unless otherwise allowable under 30 TAC Chapter 305 and applicable state law. Impaired waters are those that do not meet applicable water quality standard(s) and are listed as category 4 or 5 in the current version of the *Texas Integrated Report of Surface Water Quality for CWA Sections 305(b) and 303(d)*, and waterbodies listed on the CWA § 303(d) List. Pollutants of concern are those for which the water body is listed as impaired.

Discharges of the pollutants of concern to impaired water bodies for which there is a TMDL are not eligible for coverage under this general permit unless they are consistent with the approved TMDL. Permittees must incorporate the conditions and requirements applicable to their discharges into their SWP3, in order to be eligible for coverage under this general permit. For consistency with the construction stormwater-related items in an approved TMDL, the SWP3 must be consistent with any applicable condition, goal, or requirement in the TMDL, TMDL Implementation Plan (I-Plan), or as otherwise directed by the executive director.

5. Discharges to the Edwards Aquifer Recharge or Contributing Zone

Discharges cannot be authorized by this general permit where prohibited by 30 TAC Chapter 213 (relating to Edwards Aquifer). In addition, commencement of construction (see definition for commencement of construction in Part I.B. above)) at a site regulated under 30 TAC Chapter 213, may not begin until the appropriate Edwards Aquifer Protection Plan (EAPP) has been approved by the TCEQ's Edwards Aquifer Protection Program.

(a) For new discharges located within the Edwards Aquifer Recharge Zone, or within that area upstream from the recharge zone and defined as the Contributing Zone (CZ), operators must meet all applicable requirements of, and operate according to, 30 TAC Chapter 213 (Edwards Aquifer Rule) in addition to the provisions and requirements of this general permit.

(b) For existing discharges located within the Edwards Aquifer Recharge Zone, the requirements of the agency-approved Water Pollution Abatement Plan (WPAP) under the Edwards Aquifer Rule are in addition to the requirements of this general permit. BMPs and maintenance schedules for structural stormwater controls, for example, may be required as a provision of the rule. All applicable requirements of the Edwards Aquifer Rule for reductions of suspended solids in stormwater runoff are in addition to the requirements in this general permit for this pollutant.

(c) For discharges located within ten (10) stream miles upstream of the Edwards Aquifer recharge zone, applicants shall also submit a copy of the NOI to the appropriate TCEQ regional office.

Counties: Comal, Bexar, Medina, Uvalde, and Kinney

Contact: TCEQ Water Program Manager
San Antonio Regional Office
14250 Judson Road
San Antonio, Texas 78233-4480
(210) 490-3096

Counties: Williamson, Travis, and Hays

Contact: TCEQ Water Program Manager
Austin Regional Office
12100 Park 35 Circle
Room 179, Building A
Austin, Texas 78753
(512) 339-2929

6. Discharges to Specific Watersheds and Water Quality Areas

Discharges otherwise eligible for coverage cannot be authorized by this general permit where prohibited by 30 TAC Chapter 311 (relating to Watershed Protection) for water quality areas and watersheds.

7. Protection of Streams and Watersheds by Other Governmental Entities

This general permit does not limit the authority or ability of federal, other state, or local governmental entities from placing additional or more stringent requirements on construction activities or discharges from construction activities.

8. Indian Country Lands

Stormwater runoff from construction activities occurring on Indian Country lands are not under the authority of the TCEQ and are not eligible for coverage under this general permit. If discharges of stormwater require authorization under federal NPDES regulations, authority for these discharges must be obtained from the U.S. Environmental Protection Agency (EPA).

9. Exempt Oil and Gas Activities

The CWA § 402(l)(2) provides that stormwater discharges from construction activities related to oil and gas exploration, production, processing, or treatment, or transmission facilities are exempt from regulation under this permit. The term “oil and gas exploration, production, processing, or treatment operations, or transmission facilities” is defined in 33 U.S.C. Annotated § 1362 (24).

The exemption in CWA § 402(l)(2) *includes* stormwater discharges from construction activities regardless of the amount of disturbed acreage, which are necessary to prepare a site for drilling and the movement and placement of drilling equipment, drilling waste management pits, in field treatment plants, and in field transportation infrastructure (e.g., crude oil pipelines, natural gas treatment plants, and both natural gas transmission pipeline compressor and crude oil pumping stations) necessary for the operation of most producing oil and gas fields. Construction activities are defined in 33 U.S. Code § 1362(24) and interpreted by EPA in the final rule. *See* June 12, 2006 Amendments to the NPDES Regulations for Storm Water Discharges Associated with Oil and Gas Exploration, Production, Processing, or Treatment Operations or Transmission Facilities (71 FR 33628, Part V. Terminology).

The exemption *does not include* stormwater discharges from the construction of administrative buildings, parking lots, and roads servicing an administrative building at an oil and gas site, as these are considered traditional construction activities.

As described in 40 CFR § 122.26(c)(1)(iii) [*regulations prior to 2006*], discharges from oil and gas construction activities are waived from CWA § 402(l)(2) permit coverage *unless* the construction activity (or construction support activity) has had a discharge of stormwater resulting in the discharge of a reportable quantity of oil or hazardous substances or the discharge contributes to a violation of water quality standards.

Exempt oil and gas activities which have lost their exemption as a result of one of the above discharges, must obtain permit coverage under this general permit, an alternative general permit, or a TPDES individual permit prior to the next discharge.

10. Stormwater Discharges from Agricultural Activities

Stormwater discharges from agricultural activities that are not point source discharges of stormwater are not subject to TPDES permit requirements. These activities may include clearing and cultivating ground for crops, construction of fences to contain livestock, construction of stock ponds, and other similar agricultural activities. Discharges of stormwater runoff associated with the construction of facilities that are subject to TPDES regulations, such as the construction of concentrated animal feeding operations, would be point sources regulated under this general permit.

11. Endangered Species Act

Discharges that would adversely affect a listed endangered or threatened aquatic or aquatic-dependent species or its critical habitat are not authorized by this permit, unless the requirements of the Endangered Species Act are satisfied. Federal requirements related to endangered species apply to all TPDES permitted discharges and site-specific controls may be required to ensure that protection of endangered or threatened species is achieved. If a permittee has concerns over potential impacts to listed species, the permittee may contact TCEQ for additional information.

12. Storage of High-Level Radioactive Waste

Discharges of stormwater from construction activities associated with the construction of a facility that is licensed for the storage of high-level radioactive waste by the United States Nuclear Regulatory Commission under 10 CFR Part 72 are not authorized by this general permit. Texas Health and Safety Code (THSC) § 401.0525 prohibits TCEQ from issuing any TPDES authorizations for the construction or operation of these facilities.

Discharges of stormwater from the construction activities associated with the construction of a facility located at the site of currently or formerly operating nuclear power reactors and currently or formerly operating nuclear research and test reactors operated by a university are not prohibited under THSC § 401.0525 and continue to be regulated under this general permit.

13. Other

Nothing in Part II. of the general permit is intended to negate any person's ability to assert *force majeure* (act of God, war, strike, riot, or other catastrophe) defenses found in 30 TAC § 70.7

Section D. Deadlines for Obtaining Authorization to Discharge

1. Large Construction Activities

(a) New Construction – Discharges from sites where the commencement of construction activity occurs on or after the effective date of this general permit must be authorized, either under this general permit or a separate TPDES permit, prior to the commencement of those construction activities.

(b) Ongoing Construction – Operators of large construction activities continuing to operate after the effective date of this permit, and authorized under the TPDES Construction General Permit (CGP) TXR150000 (effective on March 5, 2018, and amended on January 28, 2022), must submit an NOI to renew authorization or an NOT to terminate coverage under this general permit within 90 days of the effective date of this general permit. During this interim or grace period, as a requirement of this TPDES permit, the operator must continue to meet the conditions and requirements of the issued and amended 2018 TPDES CGP.

2. Small Construction Activities

(a) New Construction – Discharges from sites where the commencement of construction activity occurs on or after the effective date of this general permit must be authorized, either under this general permit or a separate TPDES permit, prior to the commencement of those construction activities.

(b) Ongoing Construction – Discharges from ongoing small construction activities that commenced prior to the effective date of this general permit, and that do not meet the conditions to qualify for termination of this permit as described in Part II.F. of this general permit, must meet the requirements to be authorized, either under this general permit or a separate TPDES permit, within 90 days of the effective date of this general permit. During this interim period, as a requirement of this TPDES permit, the operator must continue to meet the conditions and requirements of the issued and amended 2018 TPDES CGP.

Section E. Obtaining Authorization to Discharge

1. Automatic Authorization for Small Construction Activities with Low Potential for Erosion

Operators of small construction activity, as defined in Part I.B. of this general permit, shall not submit an NOI for coverage, unless otherwise required by the executive director.

Operators of small construction activities, which occur in certain counties and during periods of low potential for erosion that do not meet the conditions of the waiver described in Part II.G. of this general permit, may be automatically authorized under this general permit if all the following conditions are met prior to the commencement of construction.

(a) The construction activity occurs in a county and during the corresponding date range(s) listed in Appendix A;

(b) The construction activity is initiated and completed, including either final or temporary stabilization of all disturbed areas, within the time frame identified in Appendix A for the location of the construction site;

(c) All temporary stabilization is adequately maintained to effectively reduce or prohibit erosion, permanent stabilization activities have been initiated, and a condition of final stabilization is completed no later than 30 days following the end date of the time frame identified in Appendix A for the location of the construction site; the permittee signs a completed TCEQ Small Construction Site Notice for low potential for erosion (Form TCEQ-20964), including the certification statement;

(d) A signed and certified copy of the TCEQ Small Construction Site Notice for low potential for erosion is posted at the construction site in a location where it is readily available for viewing by the general public, local, state, and federal authorities prior to commencing construction activities, and maintained in that location until final stabilization has been achieved;

NOTE: Posted TCEQ site notices may have a redacted signature as long as there is an original signed and certified TCEQ site notice, with a viewable signature, located on-site and available for review by any applicable regulatory authority.

(e) A copy of the signed and certified TCEQ Small Construction Site Notice for low potential for erosion is provided to the operator of any MS4 receiving the discharge at least two (2) days prior to commencement of construction activities;

(f) Discharges of stormwater runoff or other non-stormwater discharges from any supporting concrete batch plant or asphalt batch plant is separately authorized under an individual TPDES permit, another TPDES general permit, or under an individual TCEQ permit where stormwater and non-stormwater is disposed of by evaporation or irrigation (discharges are adjacent to water in the state); and

(g) Any non-stormwater discharges are either authorized under a separate permit or authorization, are not considered by TCEQ to be a wastewater, or are captured and routed for disposal at a publicly operated treatment works or licensed waste disposal facility.

If all of the conditions in (a) – (h) above are met, then the operator(s) of small construction activities with low potential for erosion are not required to develop a SWP3.

If an operator is conducting small construction activities and any of the above conditions (a) – (h) are not met, the operator cannot declare coverage under the automatic authorization for small construction activities with low potential for erosion and must meet the requirements for automatic authorization (all other) small construction activities, described below in Part II.E.2.

For small construction activities that occur during a period with a low potential for erosion, where automatic authorization under this section is not available, an operator may apply for and obtain a waiver from permitting (Low Rainfall Erosivity Waiver – LREW), as described in Part II.G. of this general permit. Waivers from coverage under the LREW do not allow for any discharges of non-stormwater and the operator must ensure that discharges on non-stormwater are either authorized under a separate permit or authorization.

2. Automatic Authorization for Small Construction Activities

Operators of small construction activities as defined in Part I.B. of this general permit shall not submit an NOI for coverage, unless otherwise required by the executive director.

Operators of small construction activities, as defined in Part I.B. of this general permit or as defined but who do not meet in the conditions and requirements located in Part II.E.1 above, may be automatically authorized for small construction activities, provided that they meet all of the following conditions:

(a) develop a SWP3 according to the provisions of this general permit, that covers either the entire site or all portions of the site for which the applicant is the operator, and implement the SWP3 prior to commencing construction activities;

(b) all operators of regulated small construction activities must post a copy of a signed and certified TCEQ Small Construction Site Notice (Form TCEQ-20963), the notice must be posted at the construction site in a location where it is safely and readily available for viewing by the general public, local, state, and federal authorities, at least two (2) days prior to commencing construction activity , and maintain the notice in that location until completion of the construction activity (for linear construction activities, e.g. pipeline or highway, the TCEQ site notice must be placed in a publicly accessible location near where construction is actively underway; notice for these linear sites may be relocated, as necessary, along the length of the project, and the notice must be safely and readily available for viewing by the general public; local, state, and federal authorities);

(c) operators must maintain a posted TCEQ Small Construction Site Notice on the approved TCEQ form at the construction site until final stabilization has been achieved; and

NOTE: Posted TCEQ site notices may have a redacted signature as long as there is an original signed and certified TCEQ Small Construction Site Notice, with a viewable signature, located on-site and available for review by an applicable regulatory authority.

(d) provide a copy of the signed and certified TCEQ Small Construction Site Notice to the operator of any municipal separate storm sewer system (MS4) receiving the discharge at least two (2) days prior to commencement of construction activities.

(e) if signatory authority is delegated by an authorized representative, then a Delegation of Signatory form must be submitted as required by 30 TAC § 305.128 (relating to Signatories to Reports). Operators for small construction activities must submit this form via mail following the instructions on the approved TCEQ paper form. A new Delegation of Signatory form must be submitted if the delegation changes to another individual or position.

As described in Part I.B of this general permit, large construction activities include those that will disturb less than five (5) acres of land, but that are part of a larger common plan of development or sale that will ultimately disturb five (5) or more acres of land and must meet the requirements of Part II.E.3. below.

3. Authorization for Large Construction Activities

Operators of large construction activities that qualify for coverage under this general permit must meet all of the following conditions:

(a) develop a SWP3 according to the provisions of this general permit that covers either the entire site or all portions of the site where the applicant is the operator. The SWP3 must be developed and implemented prior to obtaining coverage and prior to commencing construction activities;

(b) primary operators of large construction activities must submit an NOI prior to commencing construction activity at a construction site. A completed NOI must be submitted to TCEQ electronically using the online ePermits system on TCEQ's website.

Operators with an electronic reporting waiver must submit a completed paper NOI to TCEQ at least seven (7) days prior to commencing construction activity to obtain provisional coverage 48-hours from the postmark date for delivery to the TCEQ. An authorization is no longer provisional when the executive director finds the NOI is administratively complete, and an authorization number is issued to the permittee for the construction site indicated on the NOI.

If an additional primary operator is added after the initial NOI is submitted, the additional primary operator must meet the same requirements for existing primary operator(s), as indicated above.

If the primary operator changes due to responsibility at the site being transferred from one primary operator to another after the initial NOI is submitted, the new primary operator must submit an electronic NOI, unless they request and obtain a waiver from electronic reporting, at least ten (10) days prior to assuming operational control of a construction site and commencing construction activity.

(c) all operators of large construction activities must post a TCEQ Large Construction Site Notice on the approved TCEQ form (Form TCEQ-20961) in accordance with Part III.D.2. of this permit. The TCEQ site notice must be located where it is safely and readily available for viewing by the general public, local, state, and federal authorities prior to commencing construction activities, and must be maintained in that location until final stabilization has been achieved. For linear construction activities, e.g., pipeline or highway, the TCEQ site notice must be placed in a publicly accessible location near where construction is actively underway; notice for these linear sites may be relocated, as necessary, along the length of the project, and the notice must be safely and readily available for viewing by the general public, local, state, and federal authorities;

(d) two days prior to commencing construction activities, all primary operators must:

i. provide a copy of the signed NOI to the operator of any MS4 receiving the discharge and to any secondary construction operator, and

ii. list in the SWP3 the names and addresses of all MS4 operators receiving a copy;

(e) if signatory authority is delegated by an authorized representative, then a Delegation of Signatories form must be submitted as required by 30 TAC § 305.128 (relating to Signatories to Reports). Primary operators must submit this form electronically using the State of Texas Environmental Electronic Reporting System (STEERS), TCEQ's online permitting system, or by paper if the permittee requested and obtained an electronic reporting waiver. A new Delegation of Signatories form must be submitted, if the delegation changes to another individual or position;

(f) all persons meeting the definition of "secondary operator" in Part I of this permit are hereby notified that they are regulated under this general permit, but are not required to submit an NOI, provided that a primary operator at the site has submitted an NOI, or prior to commencement of construction activities, a primary operator is required to submit an NOI and the secondary operator has provided notification to the operator(s) of the need to obtain coverage (with records of notification available upon request). Any secondary operator notified under this provision may alternatively submit an NOI under this general permit, may seek coverage under an alternative TPDES individual permit, or may seek coverage under an alternative TPDES general permit if available; and

(g) all secondary operators of large construction activities must post a copy of the signed and certified TCEQ Large Construction Site Notice for Secondary Operators on the approved TCEQ form (Form TCEQ-20962) and provide a copy of the signed and certified TCEQ site notice to the operator of any MS4 receiving the discharge at least two (2) days prior to the commencement construction activities.

NOTE: Posted TCEQ site notices may have a redacted signature as long as there is an original signed and certified TCEQ Large Construction Site Notice for Secondary Operators, with a viewable signature, located on-site and available for review by an applicable regulatory authority.

Applicants must submit an NOI using the online ePermits system (accessed using STEERS) available through the TCEQ website, or request and obtain a waiver from electronic reporting from the TCEQ. Waivers from electronic reporting are not transferrable and expire on the same date as the authorization to discharge.

4. Waivers for Small Construction Activities:

Operators of certain small construction activities may obtain a waiver from coverage under this general permit, if applicable. The requirements are outlined in Part II.G. below.

5. Effective Date of Coverage

(a) Operators of small construction activities as described in either Part II.E.1. or II.E.2. above are authorized immediately following compliance with the applicable conditions of Part II.E.1. or II.E.2. Secondary operators of large construction activities as described in Part II.E.3. above are authorized immediately following compliance with the applicable conditions in Part II.E.3. For activities located in areas regulated by 30 TAC Chapter 213, related to the Edwards Aquifer, this authorization to discharge is separate from the requirements of the operator's responsibilities under that rule. Construction may not commence for sites regulated under 30 TAC Chapter 213 until all applicable requirements of that rule are met.

(b) Primary operators of large construction activities as described in Part II.E.3. above that electronically submit an NOI are authorized immediately following confirmation of receipt of the electronic form by the TCEQ, unless otherwise notified by the executive director.

Operators with an electronic reporting waiver are provisionally authorized 48-hours from the date that a completed paper NOI is postmarked for delivery to the TCEQ, unless otherwise notified by the executive director. An authorization is no longer provisional when the executive director finds the NOI is administratively complete and an authorization number is issued to the permittee for the construction site indicated on the NOI.

For construction activities located in areas regulated by 30 TAC Chapter 213, related to the Edwards Aquifer, this authorization to discharge is separate from the requirements of the operator's responsibilities under that rule. Construction activities may not commence for sites regulated under 30 TAC Chapter 213 until all applicable requirements of that rule are met.

(c) Operators are not prohibited from submitting late NOIs or posting late site notices to obtain authorization under this general permit. The TCEQ reserves the right to take appropriate enforcement action for any unpermitted activities that may have occurred between the time construction commenced and authorization under this general permit was obtained.

(d) If operators that submitted NOIs have active authorizations for construction activities that are ongoing when this general permit expires on March 5, 2028, and a new general permit is issued, a 90-day interim (grace) period is granted to provide coverage that is administratively continued until operators with active authorizations can obtain coverage under the newly issued CGP. The 90-day grace period starts on the effective date of the newly issued CGP.

6. Contents of the NOI

The NOI form shall require, at a minimum, the following information:

(a) the TPDES CGP authorization number for existing authorizations under this general permit, where the operator submits an NOI to renew coverage within 90 days of the effective date of this general permit;

(b) the name, address, and telephone number of the operator filing the NOI for permit coverage;

(c) the name (or other identifier), address, county, and latitude/longitude of the construction project or site;

(d) the number of acres that will be disturbed by the applicant;

(e) the estimated construction project start date and end date;

(f) confirmation that the project or site will not be located on Indian Country lands;

(g) confirmation if the construction activity is associated with an oil and gas exploration, production, processing, or treatment, or transmission facility (see Part II.C.9.)

(h) confirmation that the construction activities are not associated with the construction of a facility that is licensed for the storage of high-level radioactive waste by the United States Nuclear Regulatory Commission under 10 CFR Part 72 (see Part II.C.12.);

(i) confirmation that a SWP3 has been developed in accordance with all conditions of this general permit, that it will be implemented prior to commencement of construction activities, and that it is compliant with any applicable local sediment and erosion control plans; for multiple operators who prepare a shared SWP3, the confirmation for an operator may be limited to its obligations under the SWP3 provided all obligations are confirmed by at least one operator;

(j) name of the receiving water(s);

(k) the classified segment number for each classified segment that receives discharges from the regulated construction activity (if the discharge is not directly to a classified segment, then the classified segment number of the first classified segment that those discharges reach); and

(l) the name of all surface waters receiving discharges from the regulated construction activity that are on the latest EPA-approved CWA § 303(d) List of impaired waters or *Texas Integrated Report of Surface Water Quality for CWA Sections 305(b) and 303(d)* as not meeting applicable state water quality standards.

7. Notice of Change (NOC)

(a) If relevant information provided in the NOI changes, the operator that has submitted the NOI must submit an NOC to TCEQ at least fourteen (14) days before the change occurs. Where a 14-day advance notice is not possible, the operator must submit an NOC to TCEQ within fourteen (14) days of discovery of the change. If the operator becomes aware that it failed to submit any relevant facts or submitted

incorrect information in an NOI, the correct information must be submitted to TCEQ in an NOC within fourteen (14) days after discovery.

(b) Information on an NOC may include, but is not limited to, the following:

i. a change in the description of the construction project;

ii. an increase in the number of acres disturbed (for increases of one (1) or more acres);

iii. or the name of the operator (where the name of the operator has changed).

(c) Electronic NOC.

Applicants must submit an NOC using the online ePermits system available through the TCEQ website, or request and obtain a waiver from electronic reporting from the TCEQ. All waivers from electronic reporting are not transferrable. Electronic reporting waivers expire on the same date as the authorization to discharge, except for temporary waivers that expire one (1) year from issuance. A copy of the NOC form or letter must also be placed in the SWP3 and provided to the operator of any MS4 receiving the discharge. Operators are authorized immediately following confirmation of receipt of the electronic form by the TCEQ, unless otherwise notified by the executive director.

(d) Paper NOC.

Applicants who request and obtain an electronic reporting waiver shall submit the NOC on a paper form provided by the executive director, or by letter if an NOC form is not available.

(e) A copy of the NOC form or letter must also be placed in the SWP3 and provided to the operator of any MS4 receiving the discharge. A list that includes the names and addresses of all MS4 operators receiving a copy of the NOC (or NOC letter) must be included in the SWP3. Information that may not be included on an NOC includes but is not limited to the following:

i. transfer of operational control from one operator to another, including a transfer of the ownership of a company. A transfer of ownership of a company includes changes to the structure of a company, such as changing from a partnership to a corporation or changing corporation types, so that the filing or charter number that is on record with the Texas Secretary of State (SOS) must be changed.

ii. coverage under this general permit is not transferable from one operator to another. Instead, the new operator will need to submit an NOI or LREW, as applicable, and the previous operator will need to submit an NOT.

iii. a decrease in the number of acres disturbed. This information must be included in the SWP3 and retained on site.

8. Signatory Requirement for NOI Forms, NOT Forms, NOC Forms, and Construction Site Notices

NOI forms, NOT forms, NOC forms, and Construction Site Notices that require a signature must be signed according to 30 TAC § 305.44 (relating to Signatories for Applications).

Section F. Terminating Coverage

1. Notice of Termination (NOT) Required

Each operator that has submitted an NOI for authorization of large construction activities under this general permit must apply to terminate that authorization following the conditions described in this section of the general permit.

Authorization of large construction must be terminated by submitting an NOT electronically via the online ePermits system available through the TCEQ website, or on a paper NOT form to TCEQ supplied by the executive director with an approved waiver from electronic reporting. Authorization to discharge under this general permit terminates at midnight on the day a paper NOT is postmarked for delivery to the TCEQ or immediately following confirmation of the receipt of the NOT submitted electronically by the TCEQ.

Applicants must submit an NOT using the online ePermits system available through the TCEQ website, or request and obtain a waiver from electronic reporting from the TCEQ. Waivers from electronic reporting are not transferrable and expire on the same date as the authorization to discharge, except for temporary waivers that expire one (1) year from issuance.

The NOT must be submitted to TCEQ, and a copy of the NOT provided to the operator of any MS4 receiving the discharge (with a list in the SWP3 of the names and addresses of all MS4 operators receiving a copy), within 30 days after any of the following conditions are met:

(a) final stabilization has been achieved on all portions of the site that are the responsibility of the operator;

(b) a transfer of operational control has occurred (See Section II.F.4. below); or

(c) the operator has obtained alternative authorization under an individual TPDES permit or alternative TPDES general permit.

Compliance with the conditions and requirements of this permit is required until the NOT is submitted and approved by TCEQ.

2. Minimum Contents of the NOT

The NOT form shall require, at a minimum, the following information:

(a) if authorization for construction activity was granted following submission of an NOI, the permittee's site-specific TPDES authorization number for a specific construction site;

(b) an indication of whether final stabilization has been achieved at the site and a NOT has been submitted or if the permittee is simply no longer an operator at the site;

(c) the name, address, and telephone number of the permittee submitting the NOT;

(d) the name (or other identifier), address, county, and location (latitude/longitude) of the construction project or site; and

(e) a signed certification that either all stormwater discharges requiring authorization under this general permit will no longer occur, or that the applicant is no longer the operator of the facility or construction site, and that all temporary structural erosion controls have either been removed, will be removed on a schedule defined in the SWP3, or have been transferred to a new operator if the new operator has applied for permit coverage. Erosion controls that are designed to remain in place for an indefinite period, such as mulches and fiber mats, are not required to be removed or scheduled for removal.

3. Termination of Coverage for Small Construction Sites and for Secondary Operators at Large Construction Sites

   (a) Each operator that has obtained automatic authorization for small construction or is a secondary operator for large construction must perform the following when terminating coverage under the permit:

      i. remove the TCEQ site notice;

      ii. complete the applicable portion of the TCEQ site notice related to removal of the TCEQ site notice; and

      iii. submit a copy of the completed TCEQ site notice to the operator of any MS4 receiving the discharge (or provide alternative notification as allowed by the MS4 operator, with documentation of such notification included in the SWP3).

   (b) The activities described in Part II.F.3.(a) above must be completed by the operator within 30 days of meeting any of the following conditions:

      i. final stabilization has been achieved on all portions of the site that are the responsibility of the operator;

      ii. a transfer of day-to-day operational control over activities necessary to ensure compliance with the SWP3 and other permit conditions has occurred (See Section II.F.4. below); or

      iii. the operator has obtained alternative authorization under an individual or general TPDES permit.

   For Small Construction Sites and Secondary Operators at Large Construction Sites, authorization to discharge under this general permit terminates immediately upon removal of the applicable TCEQ construction site notice. Compliance with the conditions and requirements of this permit is required until the TCEQ construction site notice is removed. The construction site notice cannot be removed until final stabilization has been achieved.

4. Transfer of Day-to-Day Operational Control

   (a) When the primary operator of a large construction activity changes or operational control over activities necessary to ensure compliance with the SWP3 and other permit conditions is transferred to another primary operator, the original operator must do the following:

      i. submit an NOT within ten (10) days prior to the date that responsibility for operations terminates, and the new operator must submit an NOI at least ten (10) days prior to the transfer of operational control, in accordance with condition (c) below; and

      ii. submit a copy of the NOT from the primary operator terminating its coverage under the permit and its operational control of the construction site and submit a copy of the NOI from the new primary operator to the operator of any MS4 receiving the discharge in accordance with Part II.F.1. above.

   (b) For transfer of operational control, operators of small construction activities and secondary operators of large construction activities who are not required to submit an NOI must do the following:

      i. the existing operator must remove the original TCEQ construction site notice, and the new operator must post the required TCEQ construction site notice prior to the transfer of operational control, in accordance with the conditions in Part II.F.4.(c) i or ii below; and

      ii. a copy of the TCEQ construction site notice, which must be completed and provided to the operator of any MS4 receiving the discharge, in accordance with Part II.F.3. above.

   (c) Each operator is responsible for determining its role as an operator as defined in Part I.B. and obtaining authorization under the permit, as described above in Part II.E. 1. - 3. Where authorization has been obtained by submitting an NOI for coverage under this general permit, permit coverage is not transferable from one operator to another. A transfer of operational control can include changes to the structure of a company, such as changing from a partnership to a corporation, or changing to a different corporation type such that a different filing (or charter) number is established with the Texas Secretary of State (SOS). A transfer of operational control can also occur when one of the following criteria is met, as applicable:

      i. another operator has assumed control over all areas of the site that do not meet the definition for final stabilization;

      ii. all silt fences and other temporary erosion controls have either been removed, scheduled for removal as defined in the SWP3, or transferred to a new operator, provided that the original permitted operator has attempted to notify the new operator in writing of the requirement to obtain permit coverage. Records of this notification (or attempt at notification) shall be retained by the operator transferring operational control to another operator in accordance with Part VI of this permit. Erosion controls that are designed to remain in place for an indefinite period, such as mulches and fiber mats, are not required to be removed or scheduled for removal; or

      iii. a homebuilder has purchased one (1) or more lots from an operator who obtained coverage under this general permit for a common plan of development or sale. The homebuilder is considered a new operator and shall comply with the requirements of this permit. Under these circumstances, the homebuilder is only responsible for compliance with the general permit requirements as they apply to the lot(s) it has operational control over in a larger common plan of development, and the original operator remains responsible for common controls or discharges, and must amend its SWP3 to remove the lot(s) transferred to the homebuilder.

Section G. Waivers from Coverage

The executive director may waive the otherwise applicable requirements of this general permit for stormwater discharges from small construction activities under the terms and conditions described in this section.

1. Waiver Applicability and Coverage

   Operators of small construction activities may apply for and receive a waiver from the requirements to obtain authorization under this general permit, when the calculated rainfall erosivity (R) factor for the entire period of the construction project is less than five (5).

   The operator must submit a Low Rainfall Erosivity Waiver (LREW) certification form to the TCEQ electronically via the online ePermits system available through the TCEQ website. The LREW form is a certification by the operator that the small construction activity will commence and be completed within a period when the value of the calculated R factor is less than five (5).

Applicants who request and obtain an electronic reporting waiver shall submit the LREW on a paper form provided by the executive director at least seven (7) days prior to commencing construction activity to obtain provisional coverage 48-hours from the postmark date for delivery to the TCEQ. An authorization is no longer provisional when the executive director finds the LREW is administratively complete, and an authorization number is issued to the permittee for the construction site indicated on the LREW. Waivers from electronic reporting are not transferrable and expire on the same date as the authorization to discharge, except for temporary waivers that expire one (1) year from issuance.

This LREW from coverage does not apply to any non-stormwater discharges, including what is allowed under this permit. The operator must ensure that all non-stormwater discharges are either authorized under a separate permit or authorization or are captured and routed to an authorized treatment facility for disposal.

2. Steps to Obtaining a Waiver

The construction site operator may calculate the R factor to request a waiver using the following steps:

(a) estimate the construction start date and the construction end date. The construction end date is the date that final stabilization will be achieved.

(b) find the appropriate Erosivity Index (EI) zone in Appendix B of this permit.

(c) find the EI percentage for the project period by adding the results for each period of the project using the table provided in Appendix D of this permit, in EPA Fact Sheet 2.1, or in USDA Handbook 703, by subtracting the start value from the end value to find the percent EI for the site.

(d) refer to the Isoerodent Map (Appendix C of this permit) and interpolate the annual isoerodent value for the proposed construction location.

(e) multiply the percent value obtained in Step (c) above by the annual isoerodent value obtained in Step (d). This is the R factor for the proposed project. If the value is less than five (5), then a waiver may be obtained. If the value is five (5) or more, then a waiver may not be obtained, and the operator must obtain coverage under Part II.E.2. of this permit.

Alternatively, the operator may calculate a site-specific R factor utilizing the following online calculator: https://lew.epa.gov/, or using another available resource.

A copy of the LREW certification form is not required to be posted at the small construction site.

3. Effective Date of an LREW

Unless otherwise notified by the executive director, operators of small construction activities seeking coverage under an LREW are provisionally waived from the otherwise applicable requirements of this general permit 48-hours from the date that a completed paper LREW certification form is postmarked for delivery to TCEQ, or immediately upon receiving confirmation of approval of an electronic submittal, made via the online ePermits system available through the TCEQ website.

Applicants seeking coverage under an LREW must submit an application for an LREW using the online ePermits system available through the TCEQ website, or request and obtain a waiver from electronic reporting from the TCEQ. Waivers from electronic reporting are not transferrable and expire on the same date as the authorization to discharge.

4. Activities Extending Beyond the LREW Period

If a construction activity extends beyond the approved waiver period due to circumstances beyond the control of the operator, the operator must either:

(a) recalculate the R factor using the original start date and a new projected ending date, and if the R factor is still under five (5), submit a new LREW form at least two (2) days before the end of the original waiver period; or

(b) obtain authorization under this general permit according to the requirements for automatic authorization for small construction activities in Part II.E.2. of this permit, prior to the end of the approved LREW period.

Section H. Alternative TPDES Permit Coverage

1. Individual Permit Alternative

Any discharge eligible for coverage under this general permit may alternatively be authorized under an individual TPDES permit according to 30 TAC Chapter 305 (relating to Consolidated Permits). Applications for individual permit coverage must be submitted at least 330 days prior to commencement of construction activities to ensure timely authorization. Existing coverage under this general permit should not be terminated until an individual permit is issued and in effect.

2. General Permit Alternative

Any discharges eligible for authorization under this general permit may alternatively be authorized under a separate general permit according to 30 TAC Chapter 205 (relating to General Permits for Waste Discharges), as applicable.

3. Individual Permit Required

The executive director may require an operator of a construction site, otherwise eligible for authorization under this general permit, to apply for an individual TPDES permit in the following circumstances:

(a) the conditions of an approved TMDL or TMDL I-Plan on the receiving water;

(b) the activity being determined to cause, has a reasonable potential to cause, or contribute to a violation of water quality standards or being found to cause, or contribute to, the loss of a designated use of surface water in the state; and

(c) any other consideration defined in 30 TAC Chapter 205 (relating to General Permits for Waste Discharges) including 30 TAC § 205.4(c)(3)(D), which allows the commission to deny authorization under the general permit and require an individual permit if a discharger has been determined by the executive director to have been out of compliance with any rule, order, or permit of the commission, including non-payment of fees assessed by the executive director.

A discharger with a TCEQ compliance history rating of “unsatisfactory” is ineligible for coverage under this general permit. In that case, 30 TAC § 60.3 requires the executive director to deny or suspend an authorization to discharge under a general permit. However, per TWC § 26.040(h), a discharger is entitled to a hearing before the commission prior to having an authorization denied or suspended for having an “unsatisfactory” compliance history.

Denial of authorization to discharge under this general permit or suspension of a permittee’s authorization under this general permit for reasons other than compliance history shall be done according to commission rules in 30 TAC Chapter 205 (relating to General Permits for Waste Discharges).

Section I. Permit Expiration

1. This general permit is effective for a term not to exceed five (5) years. All active discharge authorizations expire on the date provided on page one (1) of this permit. Following public notice and comment, as provided by 30 TAC § 205.3 (relating to Public Notice, Public Meetings, and Public Comment), the commission may amend, revoke, cancel, or renew this general permit. All authorizations that are active at the time the permit term expires will be administratively continued as indicated in Part II.I.2. below and in Part II.D.1.(b) and D.2.(b) of this permit.
2. If the executive director publishes a notice of the intent to renew or amend this general permit before the expiration date, the permit will remain in effect for existing, authorized discharges until the commission takes final action on the permit. Upon issuance of a renewed or amended permit, permittees may be required to submit an NOI within 90 days following the effective date of the renewed or amended permit, unless that permit provides for an alternative method for obtaining authorization.
3. If the commission does not propose to reissue this general permit within 90 days before the expiration date, permittees shall apply for authorization under an individual permit or an alternative general permit. If the application for an individual permit is submitted before the expiration date, authorization under this expiring general permit remains in effect until the issuance or denial of an individual permit. No new NOIs will be accepted nor new authorizations honored under the general permit after the expiration date.

Part III. Stormwater Pollution Prevention Plans (SWP3)

All regulated construction site operators shall prepare an SWP3, prior to submittal of an NOI, to address discharges authorized under Parts II.E.2. and II.E.3. of this general permit that will reach waters of the U.S. This includes discharges to MS4s and privately owned separate storm sewer systems that drain into surface water in the state or waters of the U.S.

Individual operators at a site may develop separate SWP3s that cover only their portion of the project, provided reference is made to the other operators at the site. Where there is more than one (1) SWP3 for a site, operators must coordinate to ensure that BMPs and controls are consistent and do not negate or impair the effectiveness of each other. Regardless of whether a single comprehensive SWP3 is developed or separate SWP3s are developed for each operator, it is the responsibility of each operator to ensure compliance with the terms and conditions of this general permit in the areas of the construction site where that operator has control over construction plans and specifications or day-to-day operations.

An SWP3 must describe the implementation of practices that will be used to minimize to the extent practicable the discharge of pollutants in stormwater associated with construction activity and non-stormwater discharges described in Part II.A.3., in compliance with the terms and conditions of this permit.

An SWP3 must also identify any potential sources of pollution that have been determined to cause, have a reasonable potential to cause, or contribute to a violation of water quality standards or have been found to cause or contribute to the loss of a designated use of surface water in the state from discharges of stormwater from construction activities and construction support activities. Where potential sources of these pollutants are present at a construction site, the SWP3 must also contain a description of the management practices that will be used to prevent these pollutants from being discharged into surface water in the state or waters of the U.S.

> NOTE: Construction support activities can also include vehicle repair areas, fueling areas, etc. that are present at a construction site solely for the support construction activities and are only used by operators at the construction site.

The SWP3 is intended to serve as a road map for how the construction operator will comply with the effluent limits and other conditions of this permit. Additional portions of the effluent limits are established in Part IV. of the permit.

Section A. Shared SWP3 Development

For more effective coordination of BMPs and opportunities for cost sharing, a cooperative effort by the different operators at a site is encouraged. Operators of small and large construction activities must independently obtain authorization under this permit but may work together with other regulated operators at the construction site to prepare and implement a single, comprehensive SWP3, which can be shared by some or all operators, for the construction activities that each of the operators are performing at the entire construction site.

1. The SWP3 must include the following:
   (a) for small construction activities – the name of each operator that participates in the shared SWP3;
   (b) for large construction activities – the name of each operator that participates in the shared SWP3, the general permit authorization numbers of each operator (or the date that the NOI was submitted to TCEQ by each operator that has not received an authorization number for coverage under this permit); and
   (c) for large and small construction activities – the signature of each operator participating in the shared SWP3.
2. The SWP3 must clearly indicate which operator is responsible for satisfying each shared requirement of the SWP3. If the responsibility for satisfying a requirement is not described in the plan, then each permittee is entirely responsible for meeting the requirement within the boundaries of the construction site where they perform construction activities. The SWP3 must clearly describe responsibilities for meeting each requirement in shared or common areas.
3. The SWP3 may provide that one operator is responsible for preparation of a SWP3 in compliance with the CGP, and another operator is responsible for implementation of the SWP3 at the project site.

Section B. Responsibilities of Operators

1. Secondary Operators and Primary Operators with Control Over Construction Plans and Specifications

   All secondary operators and primary operators with control over construction plans and specifications shall:
   (a) ensure the project specifications allow or provide that adequate BMPs are developed to meet the requirements of Part III of this general permit;
   (b) ensure that the SWP3 indicates the areas of the project where they have control over project specifications, including the ability to make modifications in specifications;
   (c) ensure that all other operators affected by modifications in project specifications are notified in a timely manner so that those operators may modify their BMP s as necessary to remain compliant with the conditions of this general permit; and

(d) ensure that the SWP3 for portions of the project where each operator has control indicates the name and site-specific TPDES authorization number(s) for operators with the day-to-day operational control over those activities necessary to ensure compliance with the SWP3 and other permit conditions. If a primary operator has not been authorized or has abandoned the site, the secondary operator is considered to be the responsible party and must obtain authorization as a primary operator under the permit, until the authority for day-to-day operational control is transferred to another primary operator. The new primary operator must update or develop a new SWP3 that will reflect the transfer of operational control and include any additional updates to the SWP3 to meet requirements of the permit.

2. Primary Operators with Day-to-Day Operational Control

   Primary operators with day-to-day operational control of those activities at a project that are necessary to ensure compliance with an SWP3 and other permit conditions must ensure that the SWP3 accomplishes the following requirements:

   (a) meets the requirements of this general permit for those portions of the project where they are operators;

   (b) identifies the parties responsible for implementation of BMPs described in the SWP3;

   (c) indicates areas of the project where they have operational control over day-to-day activities; and

   (d) the name and site-specific TPDES authorization number of the parties with control over project specifications, including the ability to make modifications in specifications for areas where they have operational control over day-to-day activities.

Section C. Deadlines for SWP3 Preparation, Implementation, and Compliance

The SWP3 must be prepared prior to obtaining authorization under this general permit, and implemented prior to commencing construction activities that result in soil disturbance. The SWP3 must be prepared so that it provides for compliance with the terms and conditions of this general permit.

Section D. Plan Review and Making Plans Available

1. The SWP3 must be retained on-site at the construction site or, if the site is inactive or does not have an on-site location to store the plan, a notice must be posted describing the location of the SWP3. The SWP3 must be made readily available at the time of an on-site inspection to: the executive director; a federal, state, or local agency approving sediment and erosion plans, grading plans, or stormwater management plans; local government officials; and the operator of a municipal separate storm sewer receiving discharges from the site. If the SWP3 is retained off-site, then it shall be made available as soon as reasonably possible. In most instances, it is reasonable that the SWP3 shall be made available within 24 hours of the request.

   NOTE: The SWP3 may be prepared and kept electronically, rather than in paper form, if the records are: (a) in a format that can be read in a similar manner as a paper record; (b) legally valid with no less evidentiary value than their paper equivalent; and (c) immediately accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be, if the records were stored in paper form.

2. Operators with authorization for construction activity under this general permit must post a TCEQ site notice at the construction site at a place readily available for viewing by the general public, and local, state, and federal authorities.

   (a) Primary and secondary operators of large construction activities must each post a TCEQ construction site notice, respective to their role as an operator at the construction site, as required above and according to requirements in Part II.E.3. of this general permit.

   (b) Primary and secondary operators of small construction activities must post the TCEQ site notice as required in Part III.D.2.(a) above and for the specific type of small construction described in Part II.E.1. and 2. of the permit.

   (c) If the construction project is a linear construction project, such as a pipeline or highway, the notices must be placed in a publicly accessible location near where construction is actively underway. TCEQ construction site notices for small and large construction activities at these linear construction sites may be relocated, as necessary, along the length of the project, but must still be readily available for viewing by the general public; local, state, and federal authorities; and contain the following information:

      i. the site-specific TPDES authorization number for the project if assigned;

      ii. the operator name, contact name, and contact phone number;

      iii. a brief description of the project; and

      iv. the location of the SWP3.

3. This permit does not provide the general public with any right to trespass on a construction site for any reason, including inspection of a site; nor does this permit require that permittees allow members of the general public access to a construction site.

Section E. Revisions and Updates to SWP3s

The permittee must revise or update the SWP3, including the site map, within seven (7) days of when any of the following occurs:

1. a change in design, construction, operation, or maintenance that has a significant effect on the discharge of pollutants and that has not been previously addressed in the SWP3;
2. changing site conditions based on updated plans and specifications, new operators, new areas of responsibility, and changes in BMPs; or
3. results of inspections or investigations by construction site personnel authorized by the permittee, operators of a municipal separate storm sewer system receiving the discharge, authorized TCEQ personnel, or a federal, state or local agency approving sediment and erosion plans indicate the SWP3 is proving ineffective in eliminating or significantly minimizing pollutants in discharges authorized under this general permit.

Section F. Contents of SWP3

The SWP3 must be developed and implemented by primary operators of small and large construction activities and include, at a minimum, the information described in this section and must comply with the construction and development effluent guidelines in Part IV. of the general permit.

1. A site or project description, which includes the following information:

   (a) a description of the nature of the construction activity;

   (b) a list of potential pollutants and their sources;

   (c) a description of the intended schedule or sequence of activities that will disturb soils for major portions of the site, including estimated start dates and duration of activities;

(d) the total number of acres of the entire property and the total number of acres where construction activities will occur, including areas where construction support activities (defined in Part I.B. of this general permit) occur;

(e) data describing the soil or the quality of any discharge from the site;

(f) a map showing the general location of the site (e.g., a portion of a city or county map);

(g) a detailed site map (or maps) indicating the following:

i. property boundary(ies);

ii. drainage patterns and approximate slopes anticipated before and after major grading activities;

iii. areas where soil disturbance will occur (note any phasing), including any demolition activities;

iv. locations of all controls and buffers, either planned or in place;

v. locations where temporary or permanent stabilization practices are expected to be used;

vi. locations of construction support activities, including those located off-site;

vii. surface waters (including wetlands) either at, adjacent, or in close proximity to the site, and also indicate whether those waters are impaired;

NOTE: Surface waters adjacent to or in close proximity to the site means any receiving waters within the site and all receiving waters within one mile downstream of the site's discharge point(s).

viii. locations where stormwater discharges from the site directly to a surface water body or a municipal separate storm sewer system;

ix. vehicle wash areas; and

x. designated points on the site where vehicles will exit onto paved roads (for instance, this applies to construction transition from unstable dirt areas to exterior paved roads).

Where the amount of information required to be included on the map would result in a single map being difficult to read and interpret, the operator shall develop a series of maps that collectively include the required information.

(h) the location and description of support activities authorized under the permittee's NOI, including asphalt plants, concrete plants, and other activities providing support to the construction site that is authorized under this general permit;

(i) the name of receiving waters at or near the site that may be disturbed or that may receive discharges from disturbed areas of the project;

(j) a copy of this TPDES general permit (an electronic copy of this TPDES general permit or a current link to this TPDES general permit on the TCEQ webpage is acceptable);

(k) the NOI and the acknowledgement of provisional and non-provisional authorization for primary operators of large construction sites, and the TCEQ site notice for small construction sites and for secondary operators of large construction sites;

(l) if signatory authority is delegated by an authorized representative, then a copy of the formal notification to TCEQ, as required by 30 TAC 305.128 relating to Signatories to Reports must be filed in the SWP3 and made available for review upon request by TCEQ or local MS4 Operator. For primary operators of large construction activities, the formal notification to TCEQ must be submitted either electronically through

STEERS, TCEQ's electronic reporting system, or, if qualifying for an electronic reporting waiver, by paper on a Delegation of Signatories form. For operators or small construction activities, the formal notification to TCEQ must be submitted by paper on a Delegation of Signatories form.

(m) stormwater and allowable non-stormwater discharge locations, including storm drain inlets on site and in the immediate vicinity of the construction site where construction support activities will occur; and

(n) locations of all pollutant-generating activities at the construction site and where construction support activities will occur, such as the following: Paving operations; concrete, paint and stucco washout and water disposal; solid waste storage and disposal; and dewatering operations.

2. A description of the BMPs that will be used to minimize pollution in runoff.

The description must identify the general timing or sequence for installation and implementation. At a minimum, the description must include the following components:

(a) General Requirements

i. Erosion and sediment controls must be designed to retain sediment on-site to the extent practicable with consideration for local topography, soil type, and rainfall.

ii. Control measures must be properly selected, installed, and maintained according to good engineering practices, and the manufacturer's or designer's specifications.

iii. Controls must be developed to minimize the offsite transport of litter, construction debris, construction materials, and other pollutants required of Part IV.D.

(b) Erosion Control and Stabilization Practices

The SWP3 must include a description of temporary and permanent erosion control and stabilization practices for the construction site, where small or large construction activity will occur. The erosion control and stabilization practices selected by the permittee must be compliant with the requirements for sediment and erosion control, located in Part IV. of this permit. The description of the SWP3 must also include a schedule of when the practices will be implemented. Site plans must ensure that existing vegetation at the construction site is preserved where it is possible.

i. Erosion control and stabilization practices may include but are not limited to: establishment of temporary or permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of existing trees and vegetation, slope texturing, temporary velocity dissipation devices, flow diversion mechanisms, and other similar measures.

ii. The following records must be maintained and either attached to or referenced in the SWP3, and made readily available upon request to the parties listed in Part III.D.1 of this general permit:

(A) the dates when major grading activities occur;

(B) the dates when construction activities temporarily or permanently cease on a portion of the site; and

(C) the dates when stabilization measures are initiated.

iii. Erosion control and stabilization measures must be initiated immediately in portions of the site where construction activities have temporarily ceased and will not resume for a period exceeding fourteen (14) calendar days. Stabilization

measures that provide a protective cover must be initiated immediately in portions of the site where construction activities have permanently ceased. The term "immediately" is used to define the deadline for initiating stabilization measures. In the context of this requirement, "immediately" means as soon as practicable, but no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased. Except as provided in (A) through (D) below, these measures must be completed as soon as practicable, but no more than fourteen (14) calendar days after the initiation of soil stabilization measures:

(A) where the immediate initiation of vegetative stabilization measures after construction activity has temporarily or permanently ceased due to frozen conditions, non-vegetative controls must be implemented until thawing conditions (as defined in Part I.B. of this general permit) are present, and vegetative stabilization measures can be initiated as soon as practicable.

(B) in arid areas, semi-arid areas, or drought-stricken areas, as they are defined in Part I.B. of this general permit, where the immediate initiation of vegetative stabilization measures after construction activity has temporarily or permanently ceased or is precluded by arid conditions, other types of erosion control and stabilization measures must be initiated at the site as soon as practicable. Where vegetative controls are infeasible due to arid conditions, and within fourteen (14) calendar days of a temporary or permanent cessation of construction activity in any portion of the site, the operator shall immediately install non-vegetative erosion controls in areas of the construction site where construction activity is complete or has ceased. If non-vegetative controls are infeasible, the operator shall install temporary sediment controls as required in Part III.F.2.(b)iii.(C) below.

(C) in areas where non-vegetative controls are infeasible, the operator may alternatively utilize temporary perimeter controls. The operator must document in the SWP3 the reason why stabilization measures are not feasible, and must demonstrate that the perimeter controls will retain sediment on site to the extent practicable. The operator must continue to inspect the BMPs at the frequencies established in Part III.F.8.(c) for unstabilized sites.

(D) the requirement for permittees to initiate stabilization is triggered as soon as it is known with reasonable certainty that construction activity at the site or in certain areas of the site will be stopped for 14 or more additional calendar days. If the initiation or completion of vegetative stabilization is prevented by circumstances beyond the control of the permittee, the permittee must employ and implement alternative stabilization measures immediately. When conditions at the site changes that would allow for vegetative stabilization, then the permittee must initiate or complete vegetative stabilization as soon as practicable.

iv. Final stabilization must be achieved prior to termination of permit coverage.

v. TCEQ does not expect that temporary or permanent stabilization measures to be applied to areas that are intended to be left un-vegetated or un-stabilized following construction (e.g., dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, or materials).

(c) Sediment Control Practices

The SWP3 must include a description of any sediment control practices used to remove eroded soils from stormwater runoff, including the general timing or sequence for implementation of controls. Controls selected by the permittee must be compliant with the requirements in Part IV. of this permit.

i. Sites With Drainage Areas of Ten (10) or More Acres

(A) Sedimentation Basin(s) or Impoundments

(1) A sedimentation basin or similar impoundment is required, where feasible, for a common drainage location that serves an area with ten (10) or more acres disturbed at one time. A sedimentation basin or impoundment may be temporary or permanent, and must provide sufficient storage to contain a calculated volume of runoff from a 2-year, 24-hour storm from each disturbed acre drained. When calculating the volume of runoff from a 2-year, 24-hour storm event, it is not required to include the flows from offsite areas and flow from onsite areas that are either undisturbed or have already undergone permanent stabilization, if these flows are diverted around both the disturbed areas of the site and the sediment basin or similar impoundment. Capacity calculations shall be included in the SWP3. Sedimentation basins must be designed for and appropriate for controlling runoff at the site and existing detention or retention ponds at the site may not be appropriate.

(2) Where rainfall data is not available, or a calculation cannot be performed, the sedimentation basin must provide at least 3,600 cubic feet of storage per acre drained until final stabilization of the site.

(3) If a sedimentation basin or impoundment is not feasible, then the permittee shall provide equivalent control measures until final stabilization of the site. In determining whether installing a sediment basin or impoundment is feasible, the permittee may consider factors such as site soils, slope, available area, public safety, precipitation patterns, site geometry, site vegetation, infiltration capacity, geotechnical factors, depth to groundwater, and other similar considerations. The permittee shall document the reason that the sediment basins or impoundments are not feasible, and shall utilize equivalent control measures, which may include a series of smaller sediment basins or impoundments.

(4) Unless infeasible, when discharging from sedimentation basins and impoundments, the permittee shall utilize outlet structures that withdraw water from the surface.

(B) Perimeter Controls: At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries of the construction area, and for those side slope boundaries deemed appropriate as dictated by individual site conditions.

ii. Controls for Sites with Drainage Areas Less than Ten (10) Acres:

(A) Sediment traps and sediment basins may be used to control solids in stormwater runoff for drainage locations serving less than ten (10) acres. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries of the construction area, and for those side slope boundaries deemed appropriate as dictated by individual site conditions.

(B) Alternatively, a sediment basin that provides storage for a calculated volume of runoff from a 2-year, 24-hour storm from each disturbed acre drained may be utilized. Where rainfall data is not available or a calculation cannot be performed, a temporary or permanent sediment basin providing 3,600 cubic feet of storage per acre drained may be provided. If a calculation is performed, then the calculation shall be included in the SWP3.

(C) If sedimentation basins or impoundments are used, the permittee shall comply with the requirements in Part IV.F. of this general permit.

3. Description of Permanent Stormwater Controls

A description of any stormwater control measures that will be installed during the construction process to control pollutants in stormwater discharges that may occur after construction operations have been completed must be included in the SWP3. Permittees are responsible for the installation and maintenance of stormwater management measures, as follows:

(a) permittees authorized under the permit for small construction activities are responsible for the installation and maintenance of stormwater control measures prior to final stabilization of the site; or

(b) permittees authorized under the permit for large construction activities are responsible for the installation and maintenance of stormwater control measures prior to final stabilization of the site and prior to submission of an NOT.

4. Other Required Controls and BMPs

(a) Permittees shall minimize, to the extent practicable, the off-site vehicle tracking of sediments and dust. The SWP3 shall include a description of controls utilized to control the generation of pollutants that could be discharged in stormwater from the site.

(b) The SWP3 must include a description of construction and waste materials expected to be stored on-site and a description of controls to minimize pollutants from these materials.

(c) The SWP3 must include a description of potential pollutant sources in discharges of stormwater from all areas of the construction site where construction activity, including construction support activities, will be located, and a description of controls and measures that will be implemented at those sites to minimize pollutant discharges.

(d) Permittees shall place velocity dissipation devices at discharge locations and along the length of any outfall channel (i.e., runoff conveyance) to provide a non-erosive flow velocity from the structure to a water course, so that the natural physical and biological characteristics and functions are maintained and protected.

(e) Permittees shall design and utilize appropriate controls in accordance with Part IV. of this permit to minimize the offsite transport of suspended sediments and other pollutants if it is necessary to pump or channel standing water from the site.

(f) Permittees shall ensure that all other required controls and BMPs comply with all of the requirements of Part IV. of this general permit.

(g) For demolition of any structure with at least 10,000 square feet of floor space that was built or renovated before January 1, 1980, and the receiving waterbody is impaired for polychlorinated biphenyls (PCBs):

i. implement controls to minimize the exposure of PCB-containing building materials, including paint, caulk, and pre-1980 fluorescent lighting fixtures to precipitation and to stormwater; and

ii. ensure that disposal of such materials is performed in compliance with applicable state, federal, and local laws.

5. Documentation of Compliance with Approved State and Local Plans

(a) Permittees must ensure that the SWP3 is consistent with requirements specified in applicable sediment and erosion site plans or site permits, or stormwater management site plans or site permits approved by federal, state, or local officials.

(b) SWP3s must be updated as necessary to remain consistent with any changes applicable to protecting surface water resources in sediment erosion site plans or site permits, or stormwater management site plans or site permits approved by state or local official for which the permittee receives written notice.

(c) If the permittee is required to prepare a separate management plan, including but not limited to a WPAP or Contributing Zone Plan in accordance with 30 TAC Chapter 213 (related to the Edwards Aquifer), then a copy of that plan must be either included in the SWP3 or made readily available upon request to authorized personnel of the TCEQ. The permittee shall maintain a copy of the approval letter for the plan in its SWP3.

6. Maintenance Requirements

(a) All protective measures identified in the SWP3 must be maintained in effective operating condition. If, through inspections or other means, as soon as the permittee determines that BMPs are not operating effectively, then the permittee shall perform maintenance as necessary to maintain the continued effectiveness of stormwater controls, and prior to the next rain event if feasible. If maintenance prior to the next anticipated storm event is impracticable, the reason shall be documented in the SWP3 and maintenance must be scheduled and accomplished as soon as practicable. Erosion and sediment controls that have been intentionally disabled, run-over, removed, or otherwise rendered ineffective must be replaced or corrected immediately upon discovery.

(b) If periodic inspections or other information indicates a control has been used incorrectly, is performing inadequately, or is damaged, then the operator shall replace or modify the control as soon as practicable after making the discovery.

(c) Sediment must be removed from sediment traps and sedimentation ponds no later than the time that design capacity has been reduced by 50%. For perimeter controls such as silt fences, berms, etc., the trapped sediment must be removed before it reaches 50% of the above-ground height.

(d) If sediment escapes the site, accumulations must be removed at a frequency that minimizes off-site impacts, and prior to the next rain event, if feasible. If the permittee does not own or operate the off-site conveyance, then the permittee shall work with the owner or operator of the property to remove the sediment.

7. Observation and Evaluation of Dewatering Controls Pursuant to Part IV.C. of this General Permit

(a) Personnel provided by the permittee must observe and evaluate dewatering controls at a minimum of once per day on the days where dewatering discharges from the construction site occur. Personnel conducting these evaluations must be knowledgeable of this general permit, the construction activities at the site, and the SWP3 for the site. Personnel conducting these evaluations are not required to have signatory authority for reports under 30 TAC § 305.128 (relating to Signatories to Reports).

(b) Requirements for Observations and Evaluations

i. A report summarizing the scope of any observation and evaluation must be completed within 24-hours following the evaluation. The report must also include, at a minimum, the following:

(A) date of the observations and evaluation;

(B) name(s) and title(s) of personnel making the observations and evaluation;

(C) approximate times that the dewatering discharge began and ended on the day of evaluation, or if the dewatering discharge is a continuous discharge that continues after normal business hours, indicate that the discharge is continuous (this information can be reported by personnel initiating the dewatering discharge);

(D) estimates of the rate (in gallons per day) of discharge on the day of evaluation;

(E) whether or not any indications of pollutant discharge were observed at the point of discharge (e.g., foam, oil sheen, noticeable odor, floating solids, suspended sediments, or other obvious indicators of stormwater pollution); and

(F) major observations, including: the locations of where erosion and discharges of sediment or other pollutants from the site have occurred; locations of BMPs that need to be maintained; locations of BMPs that failed to operate as designed or proved inadequate for a particular location; and locations where additional BMPs are needed.

ii. Actions taken as a result of evaluations, including the date(s) of actions taken, must be described within, and retained as a part of, the SWP3. Reports must identify any incidents of non-compliance. Where a report does not identify any incidents of non-compliance, the report must contain a certification that the facility or site is in compliance with the SWP3 and this permit. The report must be retained as part of the SWP3 and signed by the person and in the manner required by 30 TAC § 305.128 (relating to Signatories to Reports).

iii. The names and qualifications of personnel making the evaluations for the permittee may be documented once in the SWP3 rather than being included in each report.

8. Inspections of All Controls

(a) Personnel provided by the permittee must inspect disturbed areas (cleared, graded, or excavated) of the construction site that do not meet the requirements of final stabilization in this general permit, all locations where stabilization measures have been implemented, areas of construction support activity covered under this permit, stormwater controls (including pollution prevention controls) for evidence of, or the potential for, the discharge of pollutants, areas where stormwater typically flows within the construction site, and points of discharge from the construction site.

i. Personnel conducting these inspections must be knowledgeable of this general permit, the construction activities at the site, and the SWP3 for the site.

ii. Personnel conducting these inspections are not required to have signatory authority for inspection reports under 30 TAC § 305.128 (relating to Signatories to Reports).

(b) Requirements for Inspections

i. Inspect all stormwater controls (including sediment and erosion control measures identified in the SWP3) to ensure that they are installed properly, appear to be operational, and minimizing pollutants in discharges, as intended.

ii. Identify locations on the construction site where new or modified stormwater controls are necessary.

iii. Check for signs of visible erosion and sedimentation that can be attributed to the points of discharge where discharges leave the construction site or discharge into any surface water in the state flowing within or adjacent to the construction site.

iv. Identify any incidents of noncompliance observed during the inspection.

v. Inspect locations where vehicles enter or exit the site for evidence of off-site sediment tracking.

vi. If an inspection is performed when discharges from the construction site are occurring: identify all discharge points at the site, and observe and document the visual quality of the discharge (i.e., color, odor, floating, settled, or suspended solids, foam, oil sheen, and other such indicators of pollutants in stormwater).

vii. Complete any necessary maintenance needed, based on the results of the inspection and in accordance with the requirements listed in Part III.F.6. above.

(c) Inspection frequencies:

i. Inspections of construction sites must be conducted at least once every fourteen (14) calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater, unless as otherwise provided below in Part III.F.8.(c)ii. – v. below.

(A) If a storm event produces 0.5 inches or more of rain within a 24-hour period (including when there are multiple, smaller storms that alone produce less than 0.5 inches but together produce 0.5 inches or more in 24 hours), you are required to conduct one inspection within 24 hours of when 0.5 inches of rain or more has fallen. When the 24-hour inspection time frame occurs entirely outside of normal working hours, you must conduct an inspection by no later than the end of the next business day.

(B) If a storm event produces 0.5 inches or more of rain within a 24-hour period on the first day of a storm and continues to produce 0.5 inches or more of rain on subsequent days, you must conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the last day of the storm that produces 0.5 inches or more of rain (i.e., only two (2) inspections would be required for such a storm event). When the 24-hour inspection time frame occurs entirely outside of normal working hours, you must conduct an inspection by no later than the end of the next business day.

ii. Inspection frequencies must be conducted at least once every month in areas of the construction site that meet final stabilization or have been temporarily stabilized.

iii. Inspection frequencies for construction sites, where runoff is unlikely due to the occurrence of frozen conditions at the site, must be conducted at least once every month until thawing conditions begin to occur (see definitions for thawing conditions in Part I.B.). The SWP3 must also contain a record of the approximate beginning and ending dates of when frozen conditions occurred at the site, which resulted in inspections being conducted monthly, while those

conditions persisted, instead of at the interval of once every fourteen (14) calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.

iv. In arid, semi-arid, or drought-stricken areas, inspections must be conducted at least once every month and within 24 hours after the end of a storm event of 0.5 inches or greater. The SWP3 must also contain a record of the total rainfall measured, as well as the approximate beginning and ending dates of when drought conditions occurred at the site, which resulted in inspections being conducted monthly, while those conditions persisted, instead of at the interval of once every fourteen (14) calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.

v. As an alternative to the inspection schedule in Part III.F.8.(c)i. above, the SWP3 may be developed to require that these inspections will occur at least once every seven (7) calendar days. If this alternative schedule is developed, then the inspection must occur regardless of whether or not there has been a rainfall event since the previous inspection.

vi. The inspection procedures described in Part III.F.8.(c)i. – v above can be performed at the frequencies and under the applicable conditions indicated for each schedule option, provided that the SWP3 reflects the current schedule and that any changes to the schedule are made in accordance with the following provisions: the inspection frequency schedule can only be changed a maximum of once per calendar month and implemented within the first five (5) business days of a calendar month; and the reason for the schedule change documented in the SWP3 (e.g., end of "dry" season and beginning of "wet" season).

(d) Utility line installation, pipeline construction, and other examples of long, narrow, linear construction activities may provide inspection personnel with limited access to the areas described in Part III.F.8.(a) above.

i. Inspection of linear construction sites could require the use of vehicles that could compromise areas of temporary or permanent stabilization, cause additional disturbance of soils, and result in the increase the potential for erosion. In these circumstances, controls must be inspected at least once every fourteen (14) calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater, but representative inspections may be performed.

ii. For representative inspections, personnel must inspect controls along the construction site for 0.25 mile above and below each access point where a roadway, undisturbed right-of-way, or other similar feature intersects the construction site and allows access to the areas described in Part III.F.8.(a) above. The conditions of the controls along each inspected 0.25-mile portion may be considered as representative of the condition of controls along that reach extending from the end of the 0.25-mile portion to either the end of the next 0.25-mile inspected portion, or to the end of the project, whichever occurs first.

As an alternative to the inspection schedule described in Part III.F.8.(c)i. above, the SWP3 may be developed to require that these inspections will occur at least once every seven (7) calendar days. If this alternative schedule is developed, the inspection must occur regardless of whether or not there has been a rainfall event since the previous inspection.

iii. the SWP3 for a linear construction site must reflect the current inspection schedule. Any changes to the inspection schedule must be made in accordance with the following provisions:

(A) the schedule may be changed a maximum of one time each month;

(B) the schedule change must be implemented at the beginning of a calendar month, and

(C) the reason for the schedule change must be documented in the SWP3 (e.g., end of "dry" season and beginning of "wet" season).

(e) Adverse Conditions.

Requirements for inspections may be temporarily suspended for adverse conditions. Adverse conditions are conditions that are either dangerous to personnel (e.g., high wind, excessive lightning) or conditions that prohibit access to the site (e.g., flooding, freezing conditions). Adverse conditions that result in the temporary suspension of a permit requirement to inspect must be documented and included as part of the SWP3. Documentation must include:

i. the date and time of the adverse condition,

ii. names of personnel that witnessed the adverse condition, and

iii. a narrative for the nature of the adverse condition.

(f) In the event of flooding or other adverse conditions which prohibit access to the inspection sites, inspections must be conducted as soon as access is practicable. Inspection Reports.

i. A report summarizing the scope of any inspection must be completed within 24-hours following the inspection. The report must also include the date(s) of the inspection and major observations relating to the implementation of the SWP3. Major observations in the report must include: the locations of where erosion and discharges of sediment or other pollutants from the site have occurred; locations of BMPs that need to be maintained; locations of BMPs that failed to operate as designed or proved inadequate for a particular location; and locations where additional BMPs are needed.

ii. Actions taken as a result of inspections, including the date(s) of actions taken, must be described within, and retained as a part of, the SWP3. Reports must identify any incidents of non-compliance. Where a report does not identify any incidents of non-compliance, the report must contain a certification that the facility or site is in compliance with the SWP3 and this permit. The report must be retained as part of the SWP3 and signed by the person and in the manner required by 30 TAC § 305.128 (relating to Signatories to Reports).

iii. The names and qualifications of personnel making the inspections for the permittee may be documented once in the SWP3 rather than being included in each report.

(g) The SWP3 must be modified based on the results of inspections, as necessary, to better control pollutants in runoff. Revisions to the SWP3 must be completed within seven (7) calendar days following the inspection. If existing BMPs are modified or if additional BMPs are necessary, an implementation schedule must be described in the SWP3 and wherever possible those changes implemented before the next storm event. If implementation before the next anticipated storm event is impracticable, these changes must be implemented as soon as practicable. If necessary, modify your site map to reflect changes to your stormwater controls that are no longer accurately reflected on the current site map.

9. The SWP3 must identify and ensure the implementation of appropriate pollution prevention measures for all eligible non-stormwater components of the discharge, as listed in Part II.A.3. of this permit.

10. The SWP3 must include the information required in Part III.B. of this general permit.

11. The SWP3 must include pollution prevention procedures that comply with Part IV.D. of this general permit.

Part IV. Erosion and Sediment Control Requirements Applicable to All Sites

Except as provided in 40 CFR §§ 125.30-125.32, any discharge regulated under this general permit, with the exception of sites that obtained waivers based on low rainfall erosivity, must achieve, at a minimum, the following effluent limitations representing the degree of effluent reduction attainable by application of the best practicable control technology currently available (BPT). The BPT are also required by and must satisfy the Effluent Limitations Guideline (ELG) permitting requirement for application of 40 CFR § 450.24 New Source Performance Standards (NSPS), 40 CFR § 450.22 Best Available Technology Economically Achievable (BAT), and 40 CFR § 450.23 Best Conventional Pollutant Control Technology (BCT).

Section A. Erosion and Sediment Controls

Design, install, and maintain effective erosion controls and sediment controls to minimize the discharge of pollutants. At a minimum, such controls must be designed, installed, and maintained to:

1. control stormwater volume and velocity within the site to minimize soil erosion in order to minimize pollutant discharges;
2. control stormwater discharges, including both peak flowrates and total stormwater volume, to minimize channel and streambank erosion and scour in the immediate vicinity of discharge point(s);
3. minimize the amount of soil exposed during construction activity;
4. minimize the disturbance of steep slopes;
5. minimize sediment discharges from the site. The design, installation, and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting stormwater runoff, and soil characteristics, including the range of soil particle sizes expected to be present on the site;
6. provide and maintain appropriate natural buffers around surface water in the state. Direct stormwater to vegetated areas and maximize stormwater infiltration to reduce pollutant discharges, unless infeasible. If providing buffers is infeasible, the permittee shall document the reason that natural buffers are infeasible and shall implement additional erosion and sediment controls to reduce sediment load;
7. preserve native topsoil at the site, unless the intended function of a specific area of the site dictates that the topsoil be disturbed or removed, or it is infeasible; and
8. minimize soil compaction. In areas of the construction site where final vegetative stabilization will occur or where infiltration practices will be installed, either:
   (a) restrict vehicle and equipment use to avoid soil compaction; or
   (b) prior to seeding or planting areas of exposed soil that have been compacted, use techniques that condition the soils to support vegetative growth, if necessary and feasible.

   Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted.
9. TCEQ does not consider stormwater control features (e.g., stormwater conveyance channels, storm drain inlets, sediment basins) to constitute “surface water” for the purposes of triggering the buffer requirement in Part IV.A.(6) above.

Section B. Soil Stabilization

Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating, or other earth disturbing activities have permanently ceased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding fourteen (14) calendar days. In the context of this requirement, “immediately” means as soon as practicable, but no later than the end of the next workday, following the day when the earth-disturbing activities have temporarily or permanently ceased. Temporary stabilization must be completed no more than fourteen (14) calendar days after initiation of soil stabilization measures, and final stabilization must be achieved prior to termination of permit coverage. In arid, semi-arid, and drought-stricken areas where initiating vegetative stabilization measures immediately is infeasible, alternative non-vegetative stabilization measures must be employed as soon as practicable. Refer to Part III.F.2.(b) for complete erosion control and stabilization practice requirements. In limited circumstances, stabilization may not be required if the intended function of a specific area of the site necessitates that it remain disturbed.

Section C. Dewatering

Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, are prohibited, unless managed by appropriate controls to address sediment and prevent erosion. Operators must observe and evaluate the dewatering controls once per day while the dewatering discharge occurs as described in Part III.F.7. of this general permit.

Section D. Pollution Prevention Measures

Design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants. At a minimum, such measures must be designed, installed, implemented, and maintained to:

1. minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
2. minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to precipitation and to stormwater;
3. minimize the exposure of waste materials by closing waste container lids at the end of the workday and during storm events. For waste containers that do not have lids, where the container itself is not sufficiently secure enough to prevent the discharge of pollutants absent a cover and could leak, the permittee must provide either a cover (e.g., a tarp, plastic sheeting, temporary roof) to minimize exposure of wastes to precipitation, stormwater, and wind, or a similarly effective means designed to minimize the discharge of pollutants (e.g., secondary containment). Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use);
4. minimize exposure of wastes by implementing good housekeeping measures. Wastes must be cleaned up and disposed of in designated waste containers on days of operation at the site. Wastes must be cleaned up immediately if containers overflow;

5. minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures. Where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302 occurs during a 24-hour period, you must notify the National Response Center (NRC) at (800) 424-8802 in accordance with the requirements of 40 CFR Part 110, 40 CFR Part 117, and 40 CFR Part 302 as soon as you have knowledge of the release. You must also, within seven (7) calendar days of knowledge of the release, provide a description of the release, the circumstances leading to the release, and the date of the release; and
6. minimize exposure of sanitary waste by positioning portable toilets so that they are secure and will not be tipped or knocked over, and so that they are located away from surface water in the state and stormwater inlets or conveyances.

Section E. Prohibited Discharges

The following discharges are prohibited:

1. wastewater from wash out of concrete, unless managed by an appropriate control;
2. wastewater from wash out and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;
3. fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
4. soaps or solvents used in vehicle and equipment washing; and
5. toxic or hazardous substances from a spill or other release.

Section F. Surface Outlets

When discharging from basins and impoundments, utilize outlet structures that withdraw water from the surface, unless infeasible. If infeasible, the permittee must provide documentation in the SWP3 to support the determination, including the specific conditions or time periods when this exception will apply.

Part V. Stormwater Runoff from Concrete Batch Plants

Discharges of stormwater runoff from concrete batch plants present at regulated construction sites and operated as a construction support activity may be authorized under the provisions of this general permit, provided that the following requirements are met for concrete batch plant(s) authorized under this permit. Only the discharges of stormwater runoff and non-stormwater from concrete batch plants that meet the requirements of a construction support activity can be authorized under this permit (see the requirements for "Non-Stormwater Discharges" in Part II.A.3. and "Discharges of Stormwater Associated with Construction Support Activity" in Part II.A.2.).

If discharges of stormwater runoff or non-stormwater from concrete batch plants are not authorized under this general permit, then discharges must be authorized under an alternative general permit or individual permit [see the requirement in Part II.A.2.(c)].

This permit does not authorize the discharge or land disposal of any wastewater from concrete batch plants at regulated construction sites. Authorization for these wastes must be obtained under an individual permit or an alternative general permit.

Section A. Benchmark Sampling Requirements

1. Operators of concrete batch plants authorized under this general permit shall sample the stormwater runoff from the concrete batch plants according to the requirements of this section of this general permit, and must conduct evaluations on the effectiveness of the SWP3 based on the following benchmark monitoring values:

Table 1. Benchmark Parameters

Benchmark Parameter	Benchmark Value	Sampling Frequency	Sample Type
Oil and Grease (*1)	15 mg/L	1/quarter (*2) (*3)	Grab (*4)
Total Suspended Solids (*1)	50 mg/L	1/quarter (*2) (*3)	Grab (*4)
pH	6.0 – 9.0 Standard Units	1/quarter (*2) (*3)	Grab (*4)
Total Iron (*1)	1.3 mg/L	1/quarter (*2) (*3)	Grab (*4)

(*1) All analytical results for these parameters must be obtained from a laboratory that is accredited based on rules located in 30 TAC § 25.4 (a) or through the National Environmental Laboratory Accreditation Program (NELAP). Analysis must be performed using sufficiently sensitive methods for analysis that comply with the rules located in 40 CFR §§ 136.1(c) and 122.44(i)(1)(iv).

(*2) When discharge occurs. Sampling is required within the first 30 minutes of discharge. If it is not practicable to take the sample, or to complete the sampling, within the first 30 minutes, sampling must be completed within the first hour of discharge. If sampling is not completed within the first 30 minutes of discharge, the reason must be documented and attached to all required reports and records of the sampling activity.

(*3) Sampling must be conducted at least once during each of the following periods. The first sample must be collected during the first full quarter that a stormwater discharge occurs from a concrete batch plant authorized under this general permit.

January through March
April through June
July through September
October through December

For projects lasting less than one full quarter, a minimum of one sample shall be collected, provided that a stormwater discharge occurred at least once following submission of the NOI or following the date that automatic authorization was obtained under Part II.E.2., and prior to terminating coverage.

(*4) A grab sample shall be collected from the stormwater discharge resulting from a storm event that is at least 0.1 inches of measured precipitation that occurs at least 72 hours from the previously measurable storm event. The sample shall be collected downstream of the concrete batch plant, and where the discharge exits any BMPs utilized to handle the runoff from the batch plant, prior to commingling with any other water authorized under this general permit.

2. The permittee must compare the results of sample analyses to the benchmark values above, and must include this comparison in the overall assessment of the SWP3's effectiveness. Analytical results that exceed a benchmark value are not a violation of this permit, as these values are not numeric effluent limitations. Results of analyses are indicators that modifications of the SWP3 should be assessed and may be necessary to protect water quality. The operator must investigate the cause for each exceedance and must document the results of this investigation in the SWP3 by the end of the quarter following the sampling event.

   The operator's investigation must identify the following:

   (a) any additional potential sources of pollution, such as spills that might have occurred;

   (b) necessary revisions to good housekeeping measures that are part of the SWP3;

   (c) additional BMPs, including a schedule to install or implement the BMPs; and

   (d) other parts of the SWP3 that may require revisions in order to meet the goal of the benchmark values.

   Background concentrations of specific pollutants may also be considered during the investigation. If the operator is able to relate the cause of the exceedance to background concentrations, then subsequent exceedances of benchmark values for that pollutant may be resolved by referencing earlier findings in the SWP3. Background concentrations may be identified by laboratory analyses of samples of stormwater run-on to the permitted facility, by laboratory analyses of samples of stormwater run-off from adjacent non-industrial areas, or by identifying the pollutant is a naturally occurring material in soils at the site.

Section B. Best Management Practices (BMPs) and SWP3 Requirements

Minimum SWP3 Requirements – The following are required in addition to other SWP3 requirements listed in this general permit, which include, but are not limited to the applicable requirements located in Part III.F.8. of this general permit, as follows:

1. Description of Potential Pollutant Sources – The SWP3 must provide a description of potential sources (activities and materials) that can cause, have a reasonable potential to cause or contribute to a violation of water quality standards or have been found to cause, or contribute to, the loss of a designated use of surface water in the state in stormwater discharges associated with concrete batch plants authorized under this permit. The SWP3 must describe the implementation of practices that will be used to minimize to the extent practicable the discharge of pollutants in stormwater discharges associated with industrial activity and non-stormwater discharges (described in Part II.A.3. of this general permit), in compliance with the terms and conditions of this general permit, including the protection of water quality, and must ensure the implementation of these practices.

   The following must be developed, at a minimum, in support of developing this description:

   (a) Drainage – The site map must include the following information:

      i. the location of all outfalls for stormwater discharges associated with concrete batch plants that are authorized under this permit;

      ii. a depiction of the drainage area and the direction of flow to the outfall(s);

      iii. structural controls used within the drainage area(s);

      iv. the locations of the following areas associated with concrete batch plants that are exposed to precipitation: vehicle and equipment maintenance activities (including fueling, repair, and storage areas for vehicles and equipment scheduled for maintenance); areas used for the treatment, storage, or disposal of wastes; liquid storage tanks; material processing and storage areas; and loading and unloading areas; and

      v. the locations of the following: any bag house or other dust control device(s); recycle/sedimentation pond, clarifier or other device used for the treatment of facility wastewater (including the areas that drain to the treatment device); areas with significant materials; and areas where major spills or leaks have occurred.

   (b) Inventory of Exposed Materials – A list of materials handled at the concrete batch plant that may be exposed to stormwater and precipitation and that have a potential to affect the quality of stormwater discharges associated with concrete batch plants that are authorized under this general permit.

   (c) Spills and Leaks – A list of significant spills and leaks of toxic or hazardous pollutants that occurred in areas exposed to stormwater and precipitation and that drain to stormwater outfalls associated with concrete batch plants authorized under this general permit must be developed, maintained, and updated as needed.

   (d) Sampling Data – A summary of existing stormwater discharge sampling data must be maintained, if available.

2. Measures and Controls – The SWP3 must include a description of management controls to regulate pollutants identified in the SWP3's "Description of Potential Pollutant Sources" from Part V.B.1. of this permit, and a schedule for implementation of the measures and controls. This must include, at a minimum:

   (a) Good Housekeeping – Good housekeeping measures must be developed and implemented in the area(s) associated with concrete batch plants.

      i. Operators must prevent or minimize the discharge of spilled cement, aggregate (including sand or gravel), settled dust, or other significant materials from paved portions of the site that are exposed to stormwater. Measures used to minimize the presence of these materials may include regular sweeping or other equivalent practices. These practices must be conducted at a frequency that is determined based on consideration of the amount of industrial activity occurring in the area and frequency of precipitation, and shall occur at least once per week when cement or aggregate is being handled or otherwise processed in the area.

      ii. Operators must prevent the exposure of fine granular solids, such as cement, to stormwater. Where practicable, these materials must be stored in enclosed silos, hoppers or buildings, in covered areas, or under covering.

   (b) Spill Prevention and Response Procedures – Areas where potential spills that can contribute pollutants to stormwater runoff and precipitation, and the drainage areas from these locations, must be identified in the SWP3. Where appropriate, the SWP3 must specify material handling procedures, storage requirements, and use of equipment. Procedures for cleaning up spills must be identified in the SWP3 and made available to the appropriate personnel.

   (c) Inspections – Qualified facility personnel (i.e., a person or persons with knowledge of this general permit, the concrete batch plant, and the SWP3 related to the concrete batch plant(s) for the site) must be identified to inspect designated equipment and areas of the facility specified in the SWP3. Personnel conducting these inspections are not required to have signatory authority for inspection reports under 30 TAC § 305.128. Inspections of facilities in operation must be performed

once every seven (7) days. Inspections of facilities that are not in operation must be performed at a minimum of once per month. The current inspection frequency being implemented at the facility must be recorded in the SWP3. The inspection must take place while the facility is in operation and must, at a minimum, include all areas that are exposed to stormwater at the site, including material handling areas, above ground storage tanks, hoppers or silos, dust collection/containment systems, truck wash down and equipment cleaning areas. Follow-up procedures must be used to ensure that appropriate actions are taken in response to the inspections. Records of inspections must be maintained and be made readily available for inspection upon request.

(d) Employee Training – An employee training program must be developed to educate personnel responsible for implementing any component of the SWP3, or personnel otherwise responsible for stormwater pollution prevention, with the provisions of the SWP3. The frequency of training must be documented in the SWP3, and at a minimum, must consist of one (1) training prior to the initiation of operation of the concrete batch plant.

(e) Record Keeping and Internal Reporting Procedures – A description of spills and similar incidents, plus additional information that is obtained regarding the quality and quantity of stormwater discharges, must be included in the SWP3. Inspection and maintenance activities must be documented and records of those inspection and maintenance activities must be incorporated in the SWP3.

(f) Management of Runoff – The SWP3 shall contain a narrative consideration for reducing the volume of runoff from concrete batch plants by diverting runoff or otherwise managing runoff, including use of infiltration, detention ponds, retention ponds, or reusing of runoff.

3. Comprehensive Compliance Evaluation – At least once per year, one or more qualified personnel (i.e., a person or persons with knowledge of this general permit, the concrete batch plant, and the SWP3 related to the concrete batch plant(s) for the site) shall conduct a compliance evaluation of the plant. The evaluation must include the following:

(a) visual examination of all areas draining stormwater associated with regulated concrete batch plants for evidence of, or the potential for, pollutants entering the drainage system. These include, but are not limited to: cleaning areas, material handling areas, above ground storage tanks, hoppers or silos, dust collection/containment systems, and truck wash down and equipment cleaning areas. Measures implemented to reduce pollutants in runoff (including structural controls and implementation of management practices) must be evaluated to determine if they are effective and if they are implemented in accordance with the terms of this permit and with the permittee's SWP3. The operator shall conduct a visual inspection of equipment needed to implement the SWP3, such as spill response equipment.

(b) based on the results of the evaluation, the following must be revised as appropriate within two (2) weeks of the evaluation: the description of potential pollutant sources identified in the SWP3 (as required in Part V.B.1., "Description of Potential Pollutant Sources"); and pollution prevention measures and controls identified in the SWP3 (as required in Part V.B.2., "Measures and Controls"). The revisions may include a schedule for implementing the necessary changes.

(c) the permittee shall prepare and include in the SWP3 a report summarizing the scope of the evaluation, the personnel making the evaluation, the date(s) of the evaluation, major observations relating to the implementation of the SWP3, and actions taken in response to the findings of the evaluation. The report must identify any incidents of noncompliance. Where the report does not identify incidences of noncompliance, the report must contain a statement that the evaluation did not identify any

incidence(s), and the report must be signed according to 30 TAC § 305.128 (relating to Signatories to Reports).

(d) the Comprehensive Compliance Evaluation may substitute for one of the required inspections delineated in Part V.B.2.(c) of this general permit.

Section C. Prohibition of Wastewater Discharges

Wastewater discharges associated with concrete production including wastewater disposal by land application are not authorized under this general permit. These wastewater discharges must be authorized under an alternative TCEQ water quality permit or otherwise disposed of in an authorized manner. Discharges of concrete truck wash out at construction sites may be authorized if conducted in accordance with the requirements of Part VI of this general permit.

Part VI. Concrete Truck Wash Out Requirements

This general permit authorizes the land disposal of wash out from concrete trucks at construction sites regulated under this general permit, provided the following requirements are met. Any discharge of concrete production wastewater to surface water in the state must be authorized under a separate TCEQ general permit or individual permit.

A. Discharge of concrete truck wash out water to surface water in the state, including discharge to storm sewers, is prohibited by this general permit.

B. Concrete truck wash out water shall be disposed in areas at the construction site where structural controls have been established to prevent discharge to surface water in the state, or to areas that have a minimal slope that allow infiltration and filtering of wash out water to prevent discharge to surface water in the state. Structural controls may consist of temporary berms, temporary shallow pits, temporary storage tanks with slow rate release, or other reasonable measures to prevent runoff from the construction site.

C. Wash out of concrete trucks during rainfall events shall be minimized. The discharge of concrete truck wash out water is prohibited at all times, and the operator shall insure that its BMPs are sufficient to prevent the discharge of concrete truck wash out as the result of rainfall or stormwater runoff.

D. The disposal of wash out water from concrete trucks, made under authorization of this general permit must not cause or contribute to groundwater contamination.

E. If a SWP3 is required to be implemented, the SWP3 shall include concrete wash out areas on the associated site map.

Part VII. Retention of Records

The permittee must retain the following records for a minimum period of three (3) years from the date that a NOT is submitted as required in Part II.F.1. and 2. of this permit. For activities in which an NOT is not required, records shall be retained for a minimum period of three (3) years from the date that the operator terminates coverage under Section II.F.3. of this permit. Records include:

A. a copy of the SWP3;

B. all reports and actions required by this permit, including a copy of the TCEQ construction site notice;

C. all data used to complete the NOI, if an NOI is required for coverage under this general permit; and

D. all records of submittal of forms submitted to the operator of any MS4 receiving the discharge and to the secondary operator of a large construction site, if applicable.

Part VIII. Standard Permit Conditions

A. The permittee has a duty to comply with all permit conditions. Failure to comply with any permit condition is a violation of the permit and statutes under which it was issued (CWA and TWC), and is grounds for enforcement action, for terminating, revoking and reissuance, or modification, or denying coverage under this general permit, or for requiring a discharger to apply for and obtain an individual TPDES permit, based on rules located in TWC § 23.086, 30 TAC § 305.66, and 40 CFR § 122.41 (a).

B. Authorization under this general permit may be modified, suspended, revoked and reissued, terminated or otherwise suspended for cause, based on rules located in TWC § 23.086, 30 TAC § 305.66, and 40 CFR § 122.41(f). Filing a notice of planned changes or anticipated non-compliance by the permittee does not stay any permit condition. The permittee must furnish to the executive director, upon request and within a reasonable time, any information necessary for the executive director to determine whether cause exists for modifying, revoking and reissuing, terminating or, otherwise suspending authorization under this permit, based on rules located in TWC § 23.086, 30 TAC § 305.66, and 40 CFR § 122.41 (h). Additionally, the permittee must provide to the executive director, upon request, copies of all records that the permittee is required to maintain as a condition of this general permit.

C. It is not a defense for a discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the permit conditions.

D. Inspection and entry shall be allowed under TWC Chapters 26-28, Texas Health and Safety Code §§ 361.032-361.033 and 361.037, and 40 CFR § 122.41(i). The statement in TWC § 26.014 that commission entry of a facility shall occur according to 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 or site, but merely describes the commission's duty to observe appropriate rules and regulations during an inspection.

E. The discharger is subject to administrative, civil, and criminal penalties, as applicable, under TWC Chapter 7 for violations including but not limited to the following:

1. 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 CWA § 402, or any requirement imposed in a pretreatment program approved under CWA §§ 402(a)(3) or 402(b)(8);
2. knowingly making any false statement, representation, or certification in any record or other document submitted or required to be maintained under a permit, including monitoring reports or reports of compliance or noncompliance; and
3. knowingly violating CWA §303 and placing another person in imminent danger of death or serious bodily injury.

F. All reports and other information requested by the executive director must be signed by the person and in the manner required by 30 TAC § 305.128 (relating to Signatories to Reports).

G. Authorization under this general permit does not convey property or water rights of any sort and does not grant any exclusive privilege.

H. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

I. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

J. The permittee shall comply with the monitoring and reporting requirements in 40 CFR § 122.41(j) and (l), as applicable.

K. Analysis must be performed using sufficiently sensitive methods for analysis that comply with the rules located in 40 CFR §§ 136.1(c) and 122.44(i)(1)(iv).

Part IX. Fees

A. A fee of must be submitted along with the NOI:

1. $225 if submitting an NOI electronically, or
2. $325 if submitting a paper NOI.

B. Fees are due upon submission of the NOI. An NOI will not be declared administratively complete unless the associated fee has been paid in full.

C. No separate annual fees will be assessed for this general permit. The Water Quality Annual Fee has been incorporated into the NOI fees as described above.

Appendix A: Automatic Authorization

Periods of Low Erosion Potential by County – Eligible Date Ranges

Andrews: Nov. 15 - Apr. 30

Archer: Dec. 15 - Feb. 14

Armstrong: Nov. 15 - Apr. 30

Bailey: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Baylor: Dec. 15 - Feb. 14

Borden: Nov. 15 - Apr. 30

Brewster: Nov. 15 - Apr. 30

Briscoe: Nov. 15 - Apr. 30

Brown: Dec. 15 - Feb. 14

Callahan: Dec. 15 - Feb. 14

Carson: Nov. 15 - Apr. 30

Castro: Nov. 15 - Apr. 30

Childress: Dec. 15 - Feb. 14

Cochran: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Coke: Dec. 15 - Feb. 14

Coleman: Dec. 15 - Feb. 14

Collingsworth: Jan. 1 - Mar. 30, or Dec. 1 - Feb. 28

Concho: Dec. 15 - Feb. 14

Cottle: Dec. 15 - Feb. 14

Crane: Nov. 15 - Apr. 30

Crockett: Nov. 15 - Jan. 14, or Feb. 1 - Mar. 30

Crosby: Nov. 15 - Apr. 30

Culberson: Nov. 1 - May 14

Dallam: Nov. 1 - Apr. 14, or Nov. 15 - Apr. 30

Dawson: Nov. 15 - Apr. 30

Deaf Smith: Nov. 15 - Apr. 30

Dickens: Nov. 15 - Jan. 14, or Feb. 1 - Mar. 30

Dimmit: Dec. 15 - Feb. 14

Donley: Jan. 1 - Mar. 30, or Dec. 1 - Feb. 28

Eastland: Dec. 15 - Feb. 14

Ector: Nov. 15 - Apr. 30

Edwards: Dec. 15 - Feb. 14

El Paso: Jan. 1 - Jul. 14, or May 15 - Jul. 31, or Jun. 1 - Aug. 14, or Jun. 15 - Sept. 14, or Jul. 1 - Oct. 14, or Jul. 15 - Oct. 31, or Aug. 1 - Apr. 30, or Aug. 15 - May 14, or Sept. 1 - May 30, or Oct. 1 - Jun. 14, or Nov. 1 - Jun. 30, or Nov. 15 - Jul. 14

Fisher: Dec. 15 - Feb. 14

Floyd: Nov. 15 - Apr. 30

Foard: Dec. 15 - Feb. 14

Gaines: Nov. 15 - Apr. 30

Garza: Nov. 15 - Apr. 30

Glasscock: Nov. 15 - Apr. 30

Hale: Nov. 15 - Apr. 30

Hall: Feb. 1 - Mar. 30

Hansford: Nov. 15 - Apr. 30

Hardeman: Dec. 15 - Feb. 14

Hartley: Nov. 15 - Apr. 30

Haskell: Dec. 15 - Feb. 14

Hockley: Nov. 1 - Apr. 14, or Nov. 15 - Apr. 30

Howard: Nov. 15 - Apr. 30

Hudspeth: Nov. 1 - May 14

Hutchinson: Nov. 15 - Apr. 30

Irion: Dec. 15 - Feb. 14

Jeff Davis: Nov. 1 - Apr. 30 or Nov. 15 - May 14

Jones: Dec. 15 - Feb. 14

Kent: Nov. 15 - Jan. 14 or Feb. 1 - Mar. 30

Kerr: Dec. 15 - Feb. 14

Kimble: Dec. 15 - Feb. 14

King: Dec. 15 - Feb. 14

Kinney: Dec. 15 - Feb. 14

Knox: Dec. 15 - Feb. 14

Lamb: Nov. 1 - Apr. 14, or Nov. 15 - Apr. 30

Loving: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Lubbock: Nov. 15 - Apr. 30

Lynn: Nov. 15 - Apr. 30

Martin: Nov. 15 - Apr. 30

Mason: Dec. 15 - Feb. 14

Maverick: Dec. 15 - Feb. 14

McCulloch: Dec. 15 - Feb. 14

Menard: Dec. 15 - Feb. 14

Midland: Nov. 15 - Apr. 30

Mitchell: Nov. 15 - Apr. 30

Moore: Nov. 15 - Apr. 30

Motley: Nov. 15 - Jan. 14, or Feb. 1 - Mar. 30

Nolan: Dec. 15 - Feb. 14

Oldham: Nov. 15 - Apr. 30

Parmer: Nov. 1 - Apr. 14, or Nov. 15 - Apr. 30

Pecos: Nov. 15 - Apr. 30

Potter: Nov. 15 - Apr. 30

Presidio: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Randall: Nov. 15 - Apr. 30

Reagan: Nov. 15 - Apr. 30

Real: Dec. 15 - Feb. 14

Reeves: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Runnels: Dec. 15 - Feb. 14

Schleicher: Dec. 15 - Feb. 14

Scurry: Nov. 15 - Apr. 30

Shackelford: Dec. 15 - Feb. 14

Sherman: Nov. 15 - Apr. 30

Stephens: Dec. 15 - Feb. 14

Sterling: Nov. 15 - Apr. 30

Stonewall: Dec. 15 - Feb. 14

Sutton: Dec. 15 - Feb. 14

Swisher: Nov. 15 - Apr. 30

Taylor: Dec. 15 - Feb. 14

Terrell: Nov. 15 - Apr. 30

Terry: Nov. 15 - Apr. 30

Throckmorton: Dec. 15 - Feb. 14

Tom Green: Dec. 15 - Feb. 14

Upton: Nov. 15 - Apr. 30

Uvalde: Dec. 15 - Feb. 14

Val Verde: Nov. 15 - Jan. 14, or Feb. 1 - Mar. 30

Ward: Nov. 1 - Apr. 14, or Nov. 15 - Apr. 30

Wichita: Dec. 15 - Feb. 14

Wilbarger: Dec. 15 - Feb. 14

Winkler: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Yoakum: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Young: Dec. 15 - Feb. 14

Wheeler: Jan. 1 - Mar. 30, or Dec. 1 - Feb. 28

Zavala: Dec. 15 - Feb. 14

Appendix B: Storm Erosivity (EI) Zones in Texas

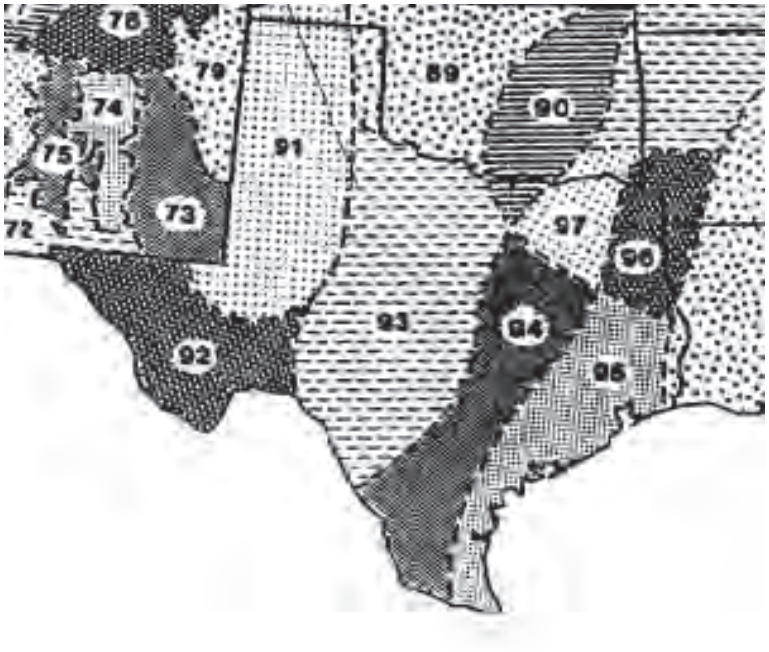


Figure B. EI Distribution Zones

Adapted from Chapter 2 of USDA Agriculture Handbook 703: "Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE)," U.S. Department of Agriculture, Agricultural Research Service

Appendix C: Isoerodent Map

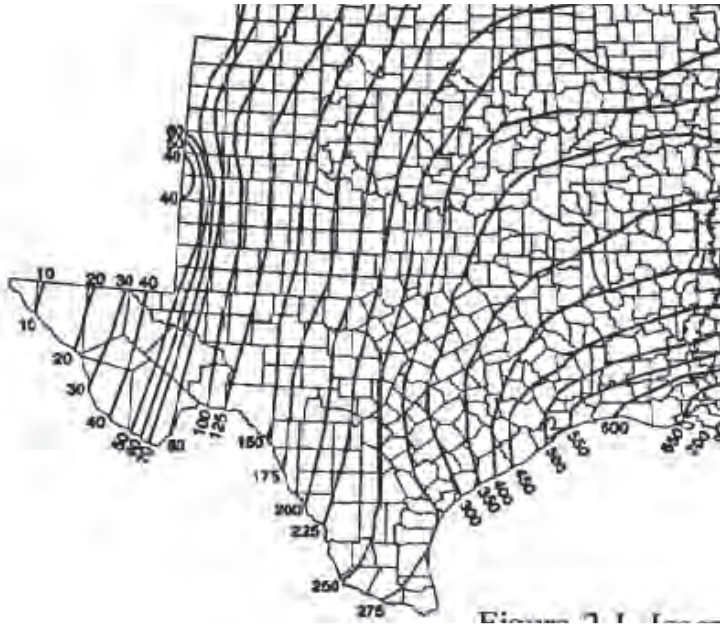


Figure C. Isoerodent Map of Texas. Units are hundreds ft*tonf*in(ac*h*yr)$^{-1}$

Adapted from Chapter 2 of USDA Agriculture Handbook 703: "Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE)," U.S. Department of Agriculture, Agricultural Research Service

Appendix D: Erosivity Indices for EI Zones in Texas

Table D. EI as percentage of average annual computed selected geographic areas (EI number) by date period (month/day).

Date Periods* (Month/Day)

EI #	1/1	1/16	1/31	2/15	3/1	3/16	3/31	4/15	4/30	5/15	5/30	6/14	6/29	7/14	7/29	8/13	8/28	9/12	9/27	10/12	10/27	11/11	11/26	12/11	12/31
89	0	1	1	2	3	4	7	2	8	27	38	48	55	62	69	76	83	90	94	97	98	99	100	100	100
90	0	1	2	3	4	6	8	13	21	29	37	46	54	60	65	69	74	81	87	92	95	97	98	99	100
91	0	0	0	0	1	1	1	2	6	16	29	39	46	53	60	67	74	81	88	95	99	99	100	100	100
92	0	0	0	0	1	1	1	2	6	16	29	39	46	53	60	67	74	81	88	95	99	99	100	100	100
93	0	1	1	2	3	4	6	8	13	25	40	49	56	62	67	72	76	80	85	91	97	98	99	99	100
94	0	1	2	4	6	8	10	15	21	29	38	47	53	57	61	65	70	76	83	88	91	94	96	98	100
95	0	1	3	5	7	9	11	14	18	27	35	41	46	51	57	62	68	73	79	84	89	93	96	98	100
96	0	2	4	6	9	12	17	23	30	37	43	49	54	58	62	66	70	74	78	82	86	90	94	97	100
97	0	1	3	5	7	10	14	20	28	37	48	56	61	64	68	72	77	81	86	89	92	95	98	99	100
106	0	3	6	9	13	17	21	27	33	38	44	49	55	61	67	71	75	78	81	84	86	90	94	97	100

*Each period begins on the date listed in the table above and lasts until the day before the following period. The final period begins on December 11 and ends on December 31.

Table adapted from Chapter 2 of USDA Agriculture Handbook 703: "Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE)," U.S. Department of Agriculture, Agricultural Research Service.

Appendix B – Site Maps and Erosion Control Drawings

12.0 STORM WATER POLLUTION PREVENTION

12.1 The drawing represents the site map portion of the Storm Water Pollution Prevention Plan (SWPPP) only and is intended to be used by others in meeting the SWPPP as defined in the publication EPA 832-R-92-005. Neither the drawing nor these specifications signify certification. As outlined in the above referenced publication, ultimate responsibility, including but not limited to permits, notice of intents, maintenance, reports, record keeping, etc. lies with others.

12.2 The drawings and these specifications are part of a Storm Water Pollution Prevention Plan. The Contractor shall be responsible for the implementation and maintenance of said plan. The Contractor shall submit a Notice Of Intent (NOI) at least 48 hours prior to the commencement of construction activities. The Contractor shall be responsible for the required certification by the NOI's Storm Water Pollution Prevention Plan. The Contractor shall complete the Storm Water Pollution Prevention Plan, inspection and maintenance report forms every seven days and within 24 hours of a rainfall event of 0.5 inches or more. Copies shall be given to the Engineer and Owner, and be kept on site at all times.

12.3 TEMPORARY SEDIMENT CONTROL FENCE (SILT FENCE)

12.3.1 Steel posts which support the temporary sediment control fence (silt fence) shall be installed on a slight angle toward the anticipated runoff source. Post must be embedded a minimum of one (1) foot.

12.3.2 The toe of the temporary sediment control fence (silt fence) shall be trenched in with a spade or mechanical trencher, so that the downslope face of the trench is flat and perpendicular to the line of the flow. Where fence can not be trenched in (e.g. pavement) weight fabric flap with washed gravel on uphill side to prevent flow under fence.

12.3.3 The trench must be a minimum of six (6) inches deep and six (6) inches wide to allow for the temporary sediment control fence (silt fence) fabric to be laid in the ground and backfilled with compacted material.

12.3.4 Temporary sediment control fence (silt fence) should be securely fastened to each steel support post or to woven wire, which is in turn attached to the steel fence post.

12.3.5 Inspection shall be made weekly or after each rainfall event and repair or replacement shall be made promptly as needed.

12.3.6 Temporary sediment control fence (silt fence) shall be removed when the site is completely stabilized so as not to block or impede storm flow or drainage.

12.3.7 Accumulated silt shall be removed when it reaches a depth of six (6) inches. The silt shall be disposed of in an approved site and in such a manner as to not contribute to additional siltation.

12.4 Rock berm (optional)

12.4.1 Use only open-graded rock, with most of the fines removed.

12.4.2 Stone shall be crushed and, unless otherwise specified, shall be at least 3 inches in diameter and less than 1 cubic foot in volume.

12.4.3 The rock berm shall be embedded into the soil a minimum of four (4) inches.

12.4.4 The rock berm shall be inspected after each rain, and the stone shall be replaced when the structure ceases to function as intended, due to silt accumulation among the rocks, without construction traffic damage, etc.

12.4.5 When silt reaches a depth equal to one-third the height of the berm or one (1) feet, whichever is less, the silt will be removed and disposed of in an approved site and in such a manner as to not create a siltation problem.

12.4.6 When the site is completely stabilized, the berm will be removed and disposed of in an approved manner.

12.5 STABILIZED CONSTRUCTION ENTRANCE

12.5.1 The stabilized construction entrance shall be 12 feet wide minimum by 50 feet long minimum by 8 inches minimum thickness.

12.5.2 The crushed stone shall be open graded rock 3 inches to 5 inches in diameter with most of the fines removed.

12.5.3 Geotextile (filter fabric), if required by soil conditions, shall meet the following properties:

12.5.3.1 Grab Tensile Strength by ASTM D1682 = 220 lbs.

12.5.3.2 Elongation Failure by ASTM D1682 = 60%

12.5.3.3 Mullen Burst Strength by ASTM D3768 = 430 lbs.

12.5.3.4 Puncture Strength by ASTM D751 (modified) = 125 lbs.

12.5.3.5 Equivalent Openings by US Std. Sieve (CW-02215) size 40-80.

12.5.4 Washing – when necessary, wheels shall be cleaned to remove sediment prior to entrance onto public roadway. When washing is required, it shall be done on an area stabilized with crushed stone which drains into an approved strap or sediment basin. All sediment shall be prevented from entering any storm drain, ditch, or watercourse using approved methods.

12.5.5 Maintenance – the entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public roadways. This may require periodic top dressing with additional stone as conditions demand, and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public roadway must be removed immediately.

12.5.6 Drainage – entrance must be properly graded or incorporate a drainage swale to prevent runoff from leaving the construction site.

12.6 HYDROMULCHING OR SODDING

12.6.1 Upon completion of earthmoving activity, all ditch and disturbed areas will be immediately seeded with bermuda grass or other appropriate seed. This activity will be done prior to paving or subgrade treatment.

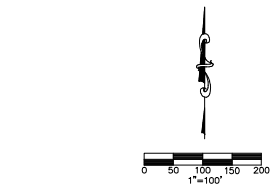
12.6.2 The contractor shall hydromulch or sod all exposed cuts and fills upon completion of grading and installation of all utilities. The seeding or erosion control shall be applied at the specified rate over areas disturbed by construction as follows:

12.6.2.1 From September 15 to March 1, seeding shall be with a combination of one (1) pound per thousand (1000) square feet of unhulled bermuda and three (3) pounds per thousand (1000) square feet of winter rye with a purity of 95% with 85% germination.

12.6.2.2 From March 1 to September 15, seeding shall be with hulled bermuda grass (cynoden dactolyn) at a rate of one (1) pound per thousand (1000) square feet with a purity of 95% with 85% germination.

12.6.3 Fertilizer shall have an analysis of 15-10-5 and shall be applied at the rate of 600 pounds per acre. Mulch type to be conwed, applied at a rate of 2100 pounds per acre. Restoration shall be acceptable when the grass has reached a height of at least 1-1/2" (95%) coverage and no bare spots larger than 16 square feet.

12.6.4 The seeded or planted area is to be irrigated or sprinkled in a manner which will not erode the topsoil but will sufficiently soak the soil to a depth of six (6) inches. The irrigation shall occur at seven day intervals for the first two months. Rainfall occurrences of at least one (1) inch shall postpone the watering operation for one week.

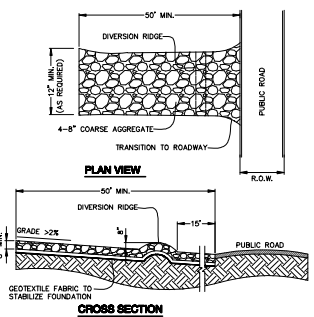


NOTES:

1. STORM WATER POLLUTION PREVENTION PLAN INSPECTIONS ARE TO BE PERFORMED BY OTHERS.
2. INSTALL ALL PROPOSED EROSION CONTROL MEASURES IN ACCORDANCE WITH TCEQ STANDARDS.
3. SUBMITTAL OF TCEQ NOTICE OF INTENT (NOI) AND NOTICE OF TERMINATION (NOT) BY OTHERS.

LEGEND

- XXXXXXXXX SILT FENCE
- PROPOSED INLET PROTECTION
- PROPOSED LIMITS OF CONSTRUCTION
- STABLIZED CONSTRUCTION ENTRANCE
- PROPOSED GRASS SEEDING
- PROPOSED ROCK BERM
- DRAINAGE AREA FLOW DIRECTION



STABLIZED CONSTRUCTION ENTRANCE

NTS

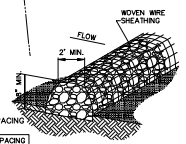
NOTES:

1. USE A 4 TO 8 INCH WASHED STONE AND PLACE WITH A MINIMUM THICKNESS OF 8 INCHES.
2. USE GEOTEXTILE FABRIC WITH AN APPROXIMATE WEIGHT OF 4 OZ/YD2 AS NEEDED TO IMPROVE STABILITY.
3. THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OF THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.
4. THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.
5. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN IF NECESSARY.
6. INSPECT ENTRANCE/EXIT AFTER EACH RAIN EVENT (0.5 INCH OR MORE). REPAIR ANY DAMAGE BY ADDING STONE AND/OR CLEANING ANY MEASURES USED TO TRAP SEDIMENT.
7. PROMPTLY REMOVE ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY. DISPOSE OF SEDIMENT IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION.
8. WHEN CONSTRUCTION IS COMPLETE, PROPERLY DISPOSE OF ANY SEDIMENT BUILDUP AND RESTORE THE PRIOR LOCATION OF THE ENTRANCE/EXIT.

ROCK BERM SPACING ON CHANNELS

DITCH SLOPE	SPACING
30%	10 ft.
20%	15 ft.
15%	20 ft.
10%	35 ft.
5%	55 ft.
3%	100 ft.
2%	150 ft.
1%	300 ft.
0.5%	600 ft.

(APPLIES FOR ROCK BERMS, BRUSH BERMS AND FIBER ROLLS)

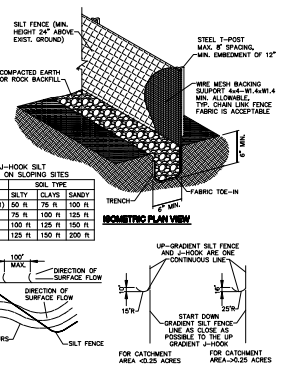


NOTES:

1. USE CLEAN, OPEN GRADED 3 TO 5 INCH DIAMETER ROCK (MAY USE ROCK NATIVE TO SITE).
2. USE A WOVEN WIRE SHEATHING (MAX. OPENING OF 1 INCH AND A MIN. WIRE DIAMETER OF 20 GA. GALVANIZED), AND SECURE WITH SHOAT RINGS.
3. THE HEIGHT SHOULD BE AT LEAST 16" AND THE TOP WIDTH OF AT LEAST 2 FEET.
4. INSTALL BERM ALONG A CONSTANT CONTOUR AND PERPENDICULAR TO THE FLOW PATH TO PREVENT RUNOFF FROM ESCAPING AROUND THE SIDES.
5. INSPECT WEEKLY AND AFTER EACH RAIN EVENT (0.5 INCH OR MORE) TO LOCATE AND REPAIR ANY DAMAGE.
6. REMOVE SEDIMENT WHEN BUILD-UP REACHES 6 INCHES. DISPOSE OF SEDIMENT IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION.
7. WHEN CONSTRUCTION IS COMPLETE, PROPERLY DISPOSE OF ANY SEDIMENT BUILD-UP. THE ROCK BERM SHOULD BE REMOVED WHEN THE SITE HAS BEEN RE-VEGETATED, BUT MAY BE LEFT IN-PLACE AS A PERMANENT BMP IN CERTAIN CASES (E.G. WHEN USED AS A CHECK DAM IN A CONSTRUCTED DITCH OR SWALE).

ROCK BERM

NTS



RECOMMENDED J-HOOK SILT FENCE SPACING ON SLOPING SITES

SOIL ANGLE	SOIL TYPE		
	SILTY	CLAYS	SANDY
VERY STEEP (1:1)	50 ft	75 ft	100 ft
STEEP (2:1)	75 ft	100 ft	125 ft
MODERATE (4:1)	100 ft	125 ft	150 ft
SLIGHT (10:1)	125 ft	150 ft	200 ft

J-HOOK PLACEMENT DETAILS

NOTES:

1. USE POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN OR NON-WOVEN FABRIC (36 INCHES WIDE, WEIGHING 4 OZ/YD) AND 2"x4", 12 GAUGE MINIMUM WOVEN WIRE BACKING.
2. USE STEEL FENCE POSTS, AT LEAST 4 FEET LONG, EMBEDDED 1 FOOT (MIN.) DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER.
3. TOE IN THE SILT FENCE SO THAT THE DOWN-SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW (6"x6" TRENCH). WHERE FENCE CANNOT BE TRENCHED IN (E.G. PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.
4. USE J-HOOKS AS NEEDED WHEN SILT FENCES CROSS CONTOURS LINES TO CREATE CATCHMENT AREAS AND SLOW FLOW VELOCITY. USE J-HOOKS AT DOWNHILL FENCE ENDS TO PREVENT RUNOFF FROM ESCAPING AROUND SIDES. REFER TO J-HOOK PLACEMENT DETAIL.
5. INSPECT SILT FENCES WEEKLY AND AFTER EACH RAIN EVENT (0.5 INCHES OR MORE) TO LOCATE AND REPAIR ANY DAMAGE. REPLACE ANY TORN FABRIC AND REPAIR ANY SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY.
6. REMOVE SEDIMENT WHEN BUILD-UP REACHES 6 INCHES. DISPOSE OF SEDIMENT IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION.
7. WHEN CONSTRUCTION IS COMPLETE, PROPERLY DISPOSE OF ANY SEDIMENT BUILD-UP AND RESTORE THE PRIOR LOCATION OF THE SILT FENCE. THE FENCE MATERIALS SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL OR REUSED IF IN SERVICEABLE CONDITION.

TEMPORARY SEDIMENT CONTROL FENCE

NTS

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830-997-4744 FAX 830-997-6907
In Karnes 830-885-4770 FAX 830-885-7441
TEXAS REGISTRATION #F-465

KEVIN W. SPROCHNI — 84823 — REGISTERED PROFESSIONAL ENGINEER — STATE OF TEXAS

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPROCHNI, P.E. 84823 ON 07/ 06/ 2022

EROSION CONTROL PLAN

ALL-STAR STORAGE FACILITY

HIGHWAY 306 AND PURGATORY ROAD

NEW BRAUNFELS TEXAS

DRAWN BY:	KS
DATE:	07/ 06/ 2022
CHK. BY (PM):	
CHK. BY (EM):	
REVISION:	
JOB NO:	22023

EROSION CONTROL PLAN

SHEET NUMBER

C1.0

2 OF 10

Start Date: 00/00/0000
File No.

NOTES:

1. CONTRACTOR TO VERIFY LOCATION OF EXISTING UTILITIES.

2. THIS DRAWING AND SERVICES BY VEI DO NOT INCLUDE SUBMISSION TO ARCHITECTURAL BARRIERS FOR ADA REVIEW. REVIEW, IF REQUIRED, IS BY OTHERS.

3. SIDEWALK FROM HANDICAP PARKING AREA TO BUILDING ENTRANCES MUST COMPLY WITH ALL ADA GUIDELINES.

4. THE DRAWING AND SERVICES BY VEI DO NOT INCLUDE "AS-BUILT" INSPECTIONS NOR SERVICES PAST DELIVERY OF THIS DRAWING.

5. ALL DIMENSIONS ARE MEASURED BACK TO BACK OF CURB UNLESS OTHERWISE NOTED.

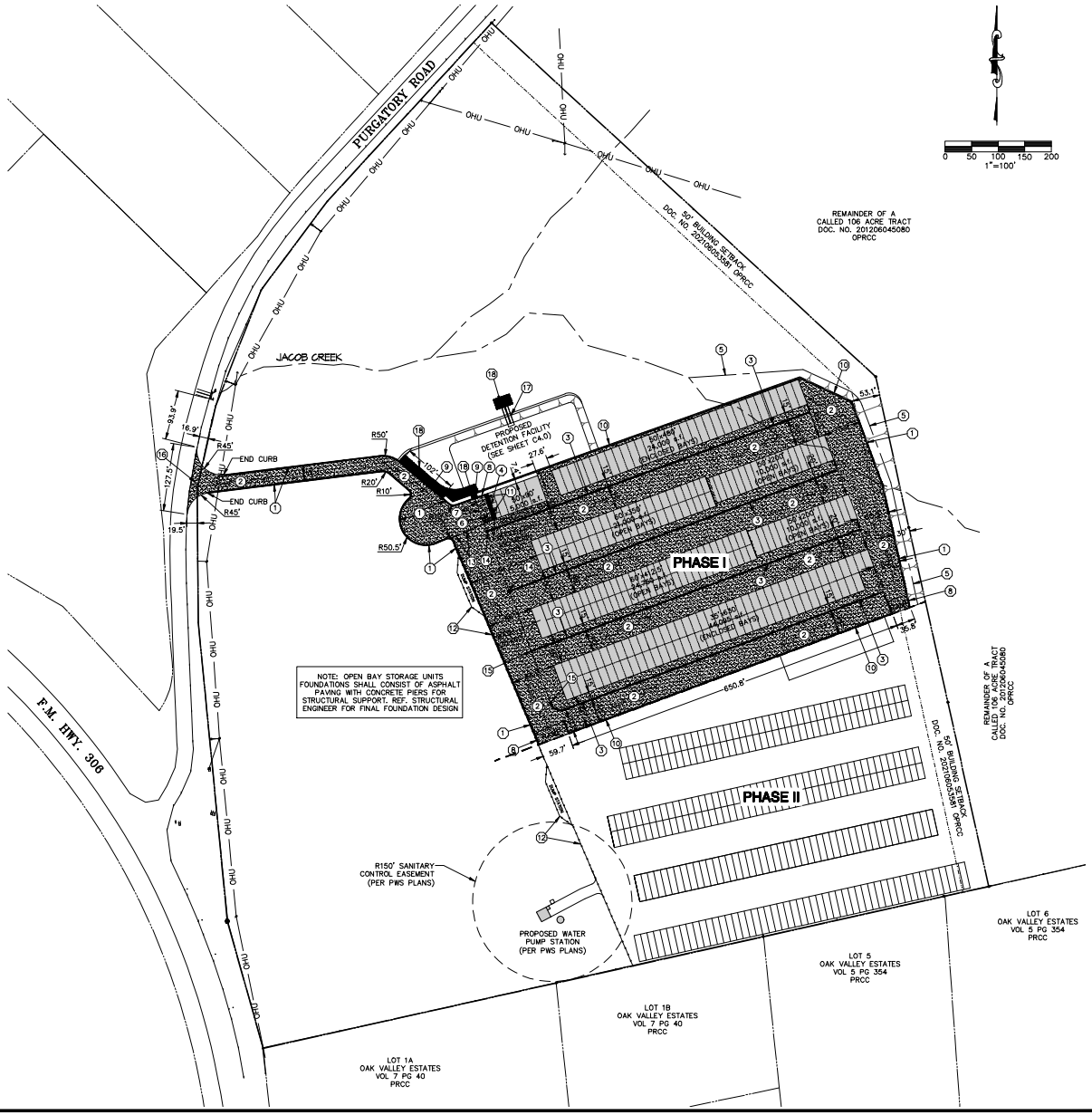
6. ALL BUILDING DIMENSIONS DERIVED FROM ARCHITECTURAL DRAWINGS. DUE TO THE INHERENT INACCURACY OF REPRODUCTION, DO NOT SCALE FROM THESE DRAWINGS.

7. CONTRACTOR SHALL VERIFY ALL DIMENSIONS WITH ARCHITECT AND OWNER PRIOR TO START OF CONSTRUCTION.

8. REFER TO LANDSCAPE ARCHITECT PLANS FOR LANDSCAPE AND POOL AREAS.

9. THE LOCATION OF EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE BASED ON AVAILABLE RECORDS. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY OCCUR DURING CONSTRUCTION.

10. REFERENCE GEOTECHNICAL REPORT BY ROCK ENGINEERING & TESTING LABORATORY, INC., PROJECT NO. 221383 DATED FEBRUARY 9, 2022 FOR ALL PAVEMENT THICKNESSES, SUBGRADE PREPARATION AND DESIGN ALTERNATIVES.



SUMMARY TABLE

LOT AREA	1,960,073 sq. ft. / 45.00 Ac.
PROPOSED BUILDINGS AREA	141,630 sq. ft. / 3.25 Ac.
PARKING SPACES REQUIRED (1 PER 300 s.f. of RETAIL AREA – MIN. 4 SPACES)	2
PARKING SPACES PROVIDED	5
HANDICAP PARKING SPACES REQUIRED	1
HANDICAP PARKING SPACES PROVIDED	1
PERVIOUS AREA	1,564,963 sq. ft. / 35.93 Ac.
IMPERVIOUS AREA	395,110 sq. ft. / 9.07 Ac.
PROPOSED IMPERVIOUS PERCENTAGE	20%

CONSTRUCTION LEGEND

1. CONSTRUCT CONCRETE CURB AND GUTTER PER DETAIL (SEE SHEET C7.0)
2. CONSTRUCT ASPHALT PAVEMENT PER DETAIL (SEE SHEET C7.0)
3. CONSTRUCT 2-FT WIDE RIBBON CURB PER DETAIL (SEE SHEET C7.0)
4. CONSTRUCT CONCRETE SIDEWALK PER DETAIL (SEE SHEET C7.0)
5. CONSTRUCT EARTHEN DRAINAGE CHANNEL (SEE SHEET C3.0)
6. INSTALL ACCESSIBLE SPACES PER DETAIL (SEE SHEET C7.0)
7. INSTALL PAVEMENT STRIPING PER NOTES (SEE SHEET C8.0)
8. TRANSITION 6" CURB TO 0" HEIGHT PER DETAIL (SEE SHEET C7.0)
9. INSTALL SAW-TOOTH CURB OPENING PER DETAIL (SEE SHEET C7.0)
10. CONSTRUCT RETAINING WALL (PER OWNER/ ARCH)
11. INSTALL CONCRETE WHEEL STOPS PER DETAIL (SEE SHEET C7.0)
12. INSTALL NEW FENCE (PER OWNER/ ARCH)
13. INSTALL NEW GATE (PER OWNER/ ARCH)
14. INSTALL 3'X5.5' GRATE INLET PER DETAIL (SEE SHEETS C3.0 AND C7.0)
15. INSTALL 3'X3' GRATE INLET PER DETAIL (SEE SHEETS C3.0 AND C7.0)
16. CONSTRUCT COMMERCIAL DRIVEWAY PER COMAL COUNTY STANDARDS & REGULATIONS (SEE COMAL COUNRT ROAD DEPARTMENT FOR DETAILS)
17. CONSTRUCT POND OVERFLOW STRUCTURE PER DETAILS (SEE SHEET C4.0)
18. INSTALL CONCRETE RIPRAP PER DETAIL (SEE SHEET C4.0)

LEGEND

EXISTING

- PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- EXISTING OVERHEAD UTILITY LINE
- EXISTING CREEK/RIVER CENTERLINE
- EXISTING FENCE LINE
- BUILDING SETBACK LINE
- EXISTING CONCRETE CURB
- IRON ROD FOUND
- IRON ROD SET

PROPOSED

- PROPOSED BUILDING
- PROPOSED CONCRETE PAVING
- PROPOSED ASPHALT PAVING
- PROPOSED PARKING STRIPE
- PROPOSED RIP-RAP
- PROPOSED FLOWLINE
- PROPOSED FENCE LINE
- PROPOSED RETAINING WALL
- PROPOSED CONCRETE CURB
- PROPOSED PHASE LINE
- PROPOSED HANDICAP SPACE
- PROPOSED WHEEL STOP
- SEE CONSTRUCTION LEGEND
- PROPOSED NUMBER OF PARKING SPACES
- PROPOSED SWALE
- BERM (FILL)
- PROPOSED 3FT GRATE INLET

KEVIN W. SPRADLING
84823
REGISTERED PROFESSIONAL ENGINEER
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRADLING, P.E. 84823 ON 07/ 06/ 2022

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830-997-4744 FAX 830-997-8807
In Kerrville 830-895-4770 FAX 830-895-7441
TEXAS REGISTRATION # F-165

ALL-STAR STORAGE FACILITY
DIMENSION CONTROL PLAN
HIGHWAY 306 AND PURGATORY ROAD
NEW BRAUNFELS TEXAS

DRAWN BY:	KS
DATE:	07/ 06/ 2022
CHK. BY (###):	
CHK. BY (###):	
REVISION:	
JOB NO:	22023

DIMENSION CONTROL PLAN
SHEET NUMBER
C2.0
3 OF 10

Start Date: 06/01/2022
File no. 22023 Civil Master.dwg

NOTES:

1. CONTRACTOR TO VERIFY LOCATION OF EXISTING UTILITIES.

2. THIS DRAWING AND SERVICES BY VEI DO NOT INCLUDE SUBMISSION TO ARCHITECTURAL BARRIERS FOR ADA REVIEW. REVIEW, IF REQUIRED, IS BY OTHERS.

3. SIDEWALK FROM HANDICAP PARKING AREA TO BUILDING ENTRANCES MUST COMPLY WITH ALL ADA GUIDELINES.

4. THE DRAWING AND SERVICES BY VEI DO NOT INCLUDE "AS-BUILT" INSPECTIONS NOR SERVICES PAST DELIVERY OF THIS DRAWING.

5. ALL DIMENSIONS ARE MEASURED BACK TO BACK OF CURB.

6. ALL BUILDING DIMENSIONS DERIVED FROM ARCHITECTURAL DRAWINGS. DUE TO THE INHERENT INACCURACY OF REPRODUCTION, DO NOT SCALE FROM THESE DRAWINGS. CONTRACTOR SHALL VERIFY ALL DIMENSIONS WITH ARCHITECT AND OWNER PRIOR TO START OF CONSTRUCTION.

7. REFER TO LANDSCAPE ARCHITECT PLANS FOR LANDSCAPE AREAS.

8. PLANS DO NOT INCLUDE DEMOLITION OF EXISTING IMPROVEMENTS.

9. THE LOCATION OF EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE BASED ON AVAILABLE RECORDS. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY OCCUR DURING CONSTRUCTION.

10. ALL CURBS ARE 6" IN HEIGHT UNLESS OTHERWISE NOTED.

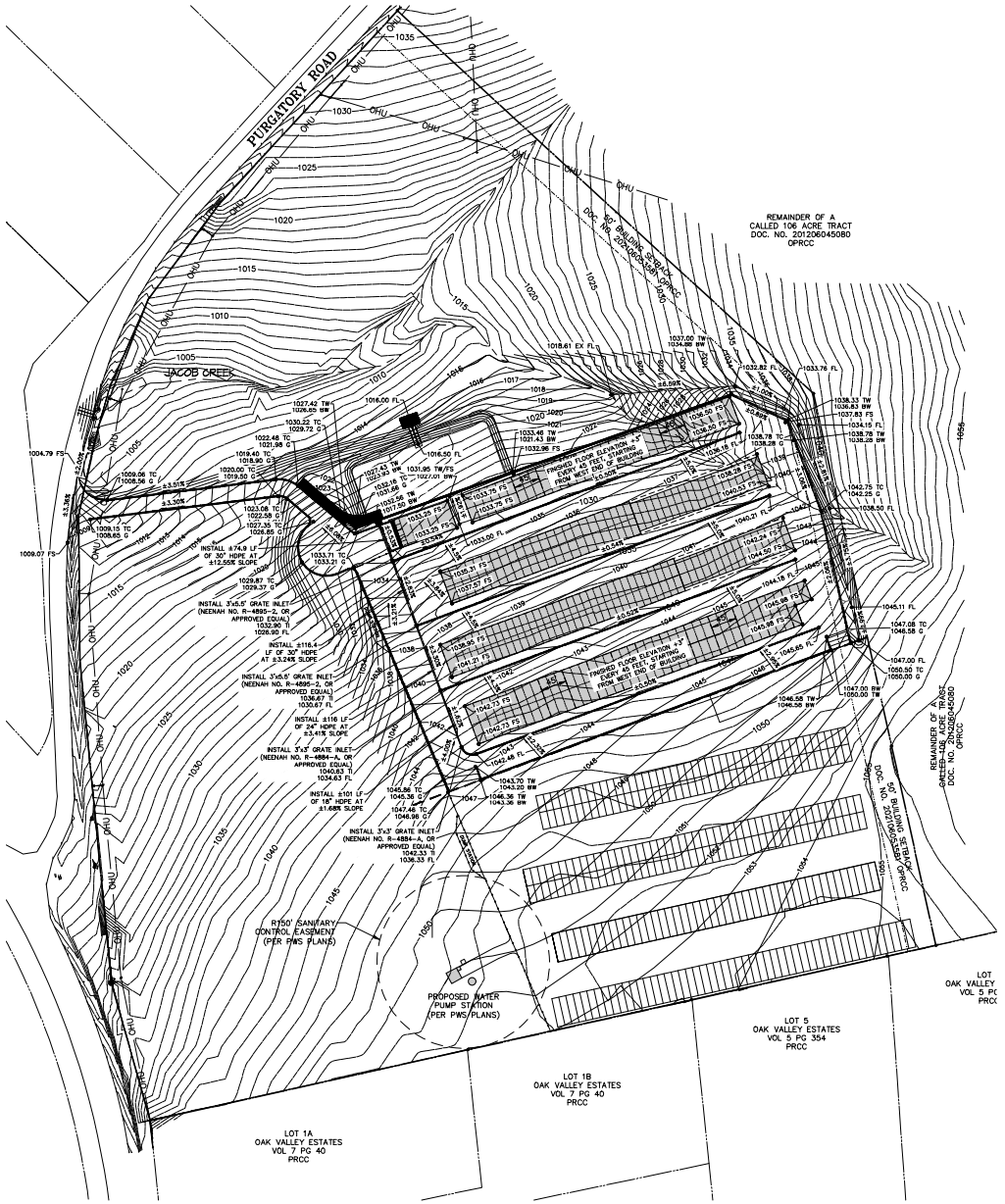
11. ALL SLOPES ARE MAXIMUM 3:1.

12. CONTRACTOR TO MATCH EXISTING GRADES AT ALL PROPERTY LINES.

13. ALL RIP-RAP INSTALLED TO ROUGHLY CONSIST OF 6" – 12" BOULDERS CEMENTED IN PLACE.

14. RETAIN WALL DESIGN NOT INCLUDED. CONSULT WITH SOILS AND STRUCTURAL ENGINEER ON REQUIRED WALL DESIGN.

15. ANY DESIGN PHILOSOPHIES DISCREPANCIES, CHANGES OR CONFLICTS WITH OTHER DOCUMENTS OR SPECIFICATIONS OR WITH ANY ITEMS ON THESE CONSTRUCTION DOCUMENTS ARE TO BE REPORTED TO OUR ENGINEERING FIRM AND THE ENGINEER OF RECORD IN WRITING IMMEDIATELY UPON DISCOVERY (24 HRS). IF ITEMS ARE NOT REPORTED IMMEDIATELY, CHANGES OR CONFLICT CORRECTIONS MADE BY OTHERS ARE DEEMED APPROVED BY THE OWNER AND THEIR CONSTRUCTION MANAGER AND ARE NOT THE RESPONSIBILITY OF THE ENGINEER OF RECORD OR THE ENGINEERING FIRM OF WHICH HE IS EMPLOYED. BOTH, THE ENGINEER OF RECORD AND THE ENGINEERING FIRM ARE INDEMNIFIED FROM ANY ISSUES, PROBLEMS, OR GRIEVANCES FROM THESE NON DISCLOSED ITEMS.



LEGEND

EXISTING

- *PROPERTY BOUNDARY*
- *ADJACENT PROPERTY BOUNDARY*
- *EXISTING OVERHEAD UTILITY LINE*
- *EXISTING EASEMENT*
- *EXISTING CREEK/RIVER CENTERLINE*
- *EXISTING CONTOURS*
- *EXISTING FENCE LINE*
- *EXISTING CONCRETE CURB*
- *IRON ROD FOUND*
- *IRON ROD SET*
- *EXISTING UTILITY POLE*

PROPOSED

- PROPOSED BUILDING
- PROPOSED PARKING STRIPE
- PROPOSED RIP-RAP
- PROPOSED FLOWLINE
- PROPOSED CONTOURS
- PROPOSED FENCE LINE
- PROPOSED RETAINING WALL
- PROPOSED CONCRETE CURB
- PROPOSED CABLE TV LINE
- PROPOSED 3FT GRATE INLET
- PROPOSED HANDICAP SPACE
- XX.XX TC / XX.XX G — PROPOSED SPOT ELEVATIONS
- ±2.00% — PROPOSED SLOPE AND FLOW DIRECTION
- G — GUTTER
- TC — TOP OF CURB
- TI — TOP OF INLET
- TW — TOP OF WALL
- BW — BOTTOM OF WALL
- FF — FINISH FLOOR
- FS — FINISH SURFACE
- FL — FLOWLINE
- PROPOSED SWALE
- BERM (FILL)

KEVIN W. SPRADLING
84823
REGISTERED PROFESSIONAL ENGINEER
STATE OF TEXAS
"THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRADLING, P.E. 84823 ON 07/ 06/ 2022"

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830-997-4744 FAX 830-997-8807
In Kerrville 830-895-4770 FAX 830-895-7441
TEXAS REGISTRATION #F-165

GRADING PLAN

ALL-STAR STORAGE FACILITY

HIGHWAY 306 AND PURGATORY ROAD

NEW BRAUNFELS TEXAS

DRAWN BY:	KS
DATE:	07/ 06/ 2022
CHK. BY (###):	
CHK. BY (###):	
REVISION:	
JOB NO:	22023

GRADING PLAN

SHEET NUMBER

C3.0

4 OF 10

Start Date: 06/01/2022
File no. 22023 Civil Master.dwg

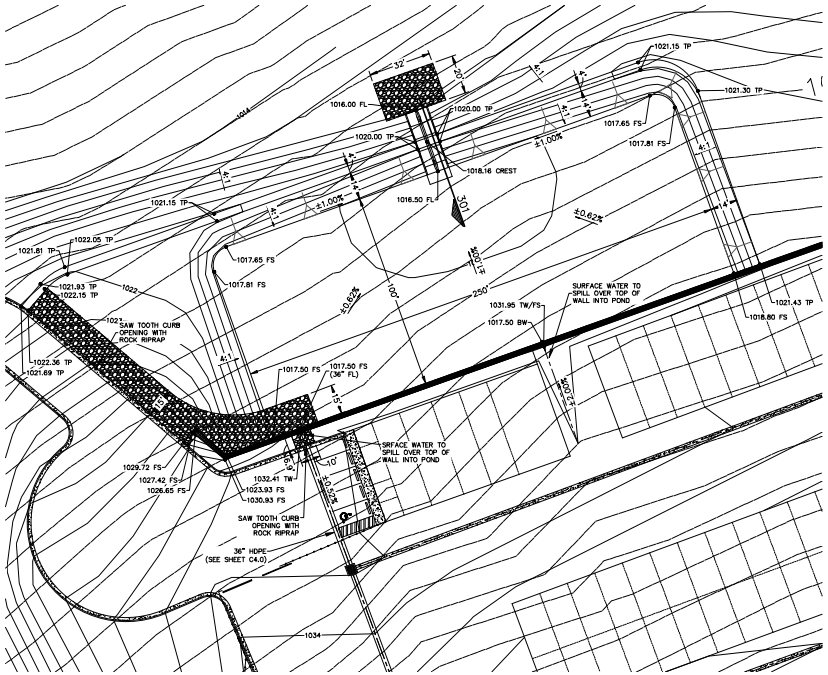
LEGEND

EXISTING

- *PROPERTY BOUNDARY*
- *ADJACENT PROPERTY BOUNDARY*
- *EXISTING CREEK/RIVER CENTERLINE*
- *EXISTING FENCE LINE*
- *EXISTING CONCRETE CURB*
- 1500 *EXISTING CONTOURS*

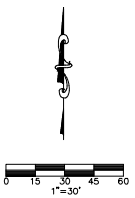
PROPOSED

- PROPOSED BUILDING
- PROPOSED PARKING STRIPE
- PROPOSED RIP-RAP
- PROPOSED FLOWLINE
- PROPOSED FENCE LINE
- PROPOSED RETAINING WALL
- PROPOSED CONCRETE CURB
- 1500 PROPOSED CONTOURS
- XX.XX TC / XX.XX G PROPOSED SPOT ELEVATIONS
- ±2.00% PROPOSED SLOPE AND FLOW DIRECTION
- G GUTTER
- TC TOP OF CURB
- TI TOP OF INLET
- TW TOP OF WALL
- BW BOTTOM OF WALL
- FF FINISH FLOOR
- FS FINISH SURFACE
- FL FLOWLINE
- PROPOSED SWALE
- BERM (FILL)
- PROPOSED 3FT GRATE INLET

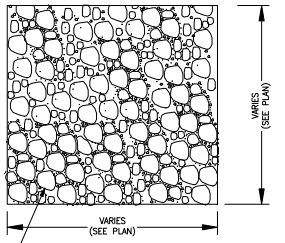


DENTENTION POND PLAN 300

1" = 30'

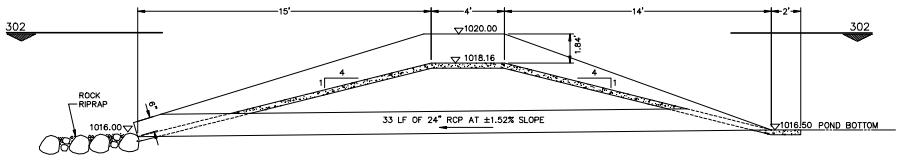


NOTE:
THE PROPOSED STORM WATER DETENTION FACILITY IS DESIGNED FOR FLOWS FROM DRAINAGE AREA 2 ONLY. SEE SHEET C5.1 FOR EXTENTS OF DRAINAGE AREA 2.



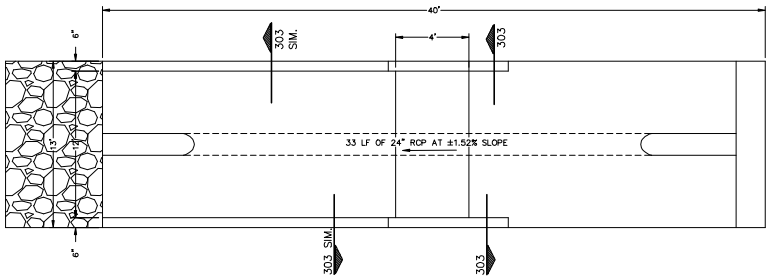
RIP-RAP BOULDERS (FOR DRAINAGE PURPOSES)

NOT TO SCALE



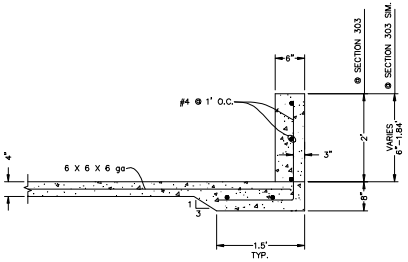
SECTION 301

NOT TO SCALE



SECTION 302 PLAN VIEW

NOT TO SCALE



SECTION 303 AND SECTION 303 SIM

NOT TO SCALE

KEVIN W. SPRADLING
84823
REGISTERED
PROFESSIONAL ENGINEER
STATE OF TEXAS
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRADLING, P.E. 84823 ON 07/06/2022

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830-997-4744 FAX 830-997-8807
In Kerrville 830-895-4770 FAX 830-895-7441
TEXAS REGISTRATION # F-165

STORM WATER DETENTION PLAN

ALL-STAR STORAGE FACILITY

HIGHWAY 306 AND PURGATORY ROAD

NEW BRAUNFELS TEXAS

DRAWN BY:	KS
DATE:	07/ 06/ 2022
CHK. BY (PM):	
CHK. BY (QAM):	
REVISION:	
JOB NO:	22023

STORM WATER DETENTION PLAN

SHEET NUMBER

C4.0

5 OF 10

Start Date: 00/00/0000
File No.

LEGEND

- 5 / 0.000 / 0.00 — AREA LABEL, DRAINAGE AREA ACRES, FLOW RATE (cfs)
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA FLOW DIRECTION

PRE-DEVELOPMENT DRAINAGE DATA

DRAINAGE AREA	C	AREA (acres)	Tc (min.)	I_2 (in/hr.)	Q_2 cfs	I_5 (in/hr.)	Q_5 cfs	I_{10} (in/hr.)	Q_{10} cfs	I_{25} (in/hr.)	Q_{25} cfs	I_{50} (in/hr.)	Q_{50} cfs	I_{100} (in/hr.)	Q_{100} cfs
DA1	0.35	45.00	10.0	4.61	72.61	6.20	97.65	7.43	117.02	9.11	143.48	10.40	163.80	11.80	185.85

STATE OF TEXAS
KEVIN W. SPRAGGINS
84823
REGISTERED
PROFESSIONAL ENGINEER
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRAGGINS, P.E. 84823 ON 07/06/2022

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830-997-4744 FAX 830-997-8807
In Kerrville 830-895-4770 FAX 830-895-7441
TEXAS REGISTRATION #F-435

PRE-DEVELOPMENT DRAINAGE AREA MAP

ALL-STAR STORAGE FACILITY

HIGHWAY 306 AND PURGATORY ROAD

NEW BRAUNFELS TEXAS

DRAWN BY:	KS
DATE:	07/ 06/ 2022
CHK. BY (mm)	
CHK. BY (mm)	
REVISION:	
JOB NO:	22023

PRE-DEVELOPMENT DRAINAGE AREA MAP

SHEET NUMBER

C5.0

6 OF 10

Start Date: 00/00/0000
File No.

LEGEND

- 5 / 0.000 / 0.00 — AREA LABEL, DRAINAGE AREA ACRES, FLOW RATE (cfs)
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA FLOW DIRECTION

PRE–DEVELOPMENT DRAINAGE DATA

DRAINAGE AREA	C	AREA (acres)	Tc (min.)	I_2 (in/hr.)	Q_2 cfs	I_5 (in/hr.)	Q_5 cfs	I_{10} (in/hr.)	Q_{10} cfs	I_{25} (in/hr.)	Q_{25} cfs	I_{50} (in/hr.)	Q_{50} cfs	I_{100} (in/hr.)	Q_{100} cfs
DA1	0.35	45.00	10.0	4.61	72.61	6.20	97.65	7.43	117.02	9.11	143.48	10.40	163.80	11.80	185.85

POST–DEVELOPMENT DRAINAGE DATA

DRAINAGE AREA	C	AREA (acres)	Tc (min.)	I_2 (in/hr.)	Q_2 cfs	I_5 (in/hr.)	Q_5 cfs	I_{10} (in/hr.)	Q_{10} cfs	I_{25} (in/hr.)	Q_{25} cfs	I_{50} (in/hr.)	Q_{50} cfs	I_{100} (in/hr.)	Q_{100} cfs
DA1	0.35	27.33	10.0	4.66	44.61	6.19	59.20	7.39	70.66	8.97	85.77	10.18	97.35	11.46	109.58
DA2	*0.97	17.68	10.0	4.76	79.99	6.31	106.13	7.54	126.68	9.16	153.77	10.39	174.54	11.70	196.46
DA2 THRU POND	–	17.68	10.0	–	11.12	–	20.02	–	29.99	–	44.50	–	56.04	–	68.31
TOTAL FLOWS LEAVING SITE	–	45.00	–	–	55.73	–	79.22	–	100.65	–	130.27	–	153.39	–	177.89

*WEIGHTED "C" FACTOR USED. SEE CALCULATIONS, THIS SHEET

DRAINAGE AREA "DA2" (POST–DEVELOPMENT)

UNDEVELOPED "C" FACTOR = 0.35
DEVELOPED "C" FACTOR = 1.00

FORMULA: 0.35 x Ac. pervious = A
1.00 x Ac. impervious = B
(A+B+C) / Total Ac. = Weighted "C" Factor

TOTAL DRAINAGE AREA = 17.68 Ac.
PERVIOUS AREA = 0.90 Ac.
IMPERVIOUS AREA = 16.78 Ac.

CALCULATIONS: 0.35 x 0.90 Ac. = 0.32
1.00 x 16.78 Ac. = 16.78
(0.32 + 16.78) / 17.68 Ac. = 0.97 Weighted "C" Factor

KEVIN W. SPRADLING
84823
REGISTERED PROFESSIONAL ENGINEER
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRADLING, P.E. 84823 ON 07/06/2022

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830-997-4744 FAX 830-997-8907
In Kerrville 830-895-4770 FAX 830-895-7441
TEXAS REGISTRATION #F-105

POST-DEVELOPMENT DRAINAGE AREA MAP

ALL-STAR STORAGE FACILITY

HIGHWAY 306 AND PURGATORY ROAD

NEW BRAUNFELS TEXAS

DRAWN BY:	KS
DATE:	07/ 06/ 2022
CHK. BY (init)	
CHK. BY (init)	
REVISION:	
JOB NO:	22023

POST–DEVELOPMENT DRAINAGE AREA MAP

SHEET NUMBER

C5.1

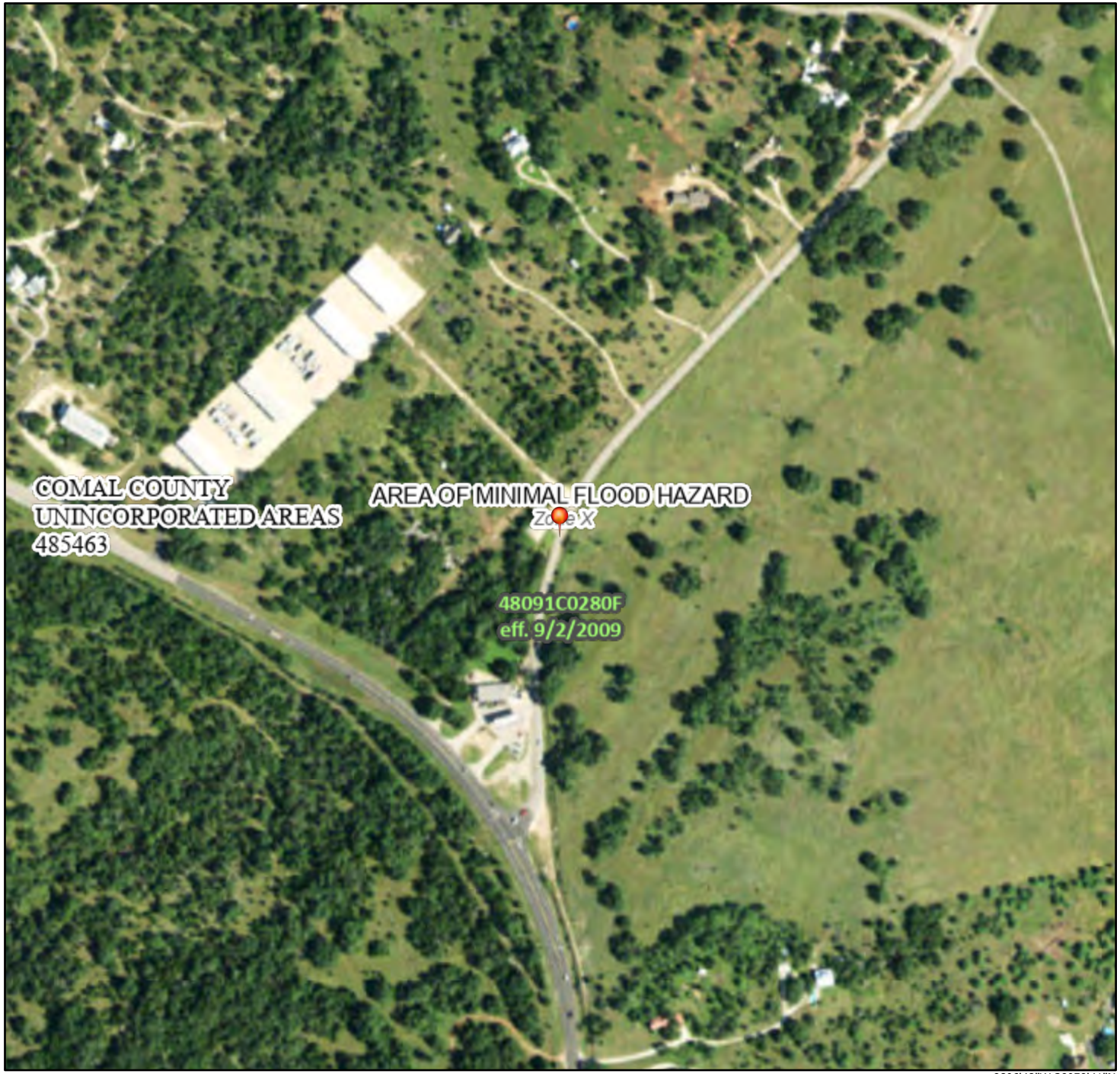
7 OF 10

Start Date: 00/00/0000
File No.

National Flood Hazard Layer FIRMette

FEMA

98°7'25"W 29°51'12"N



98°6'48"W 29°50'41"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

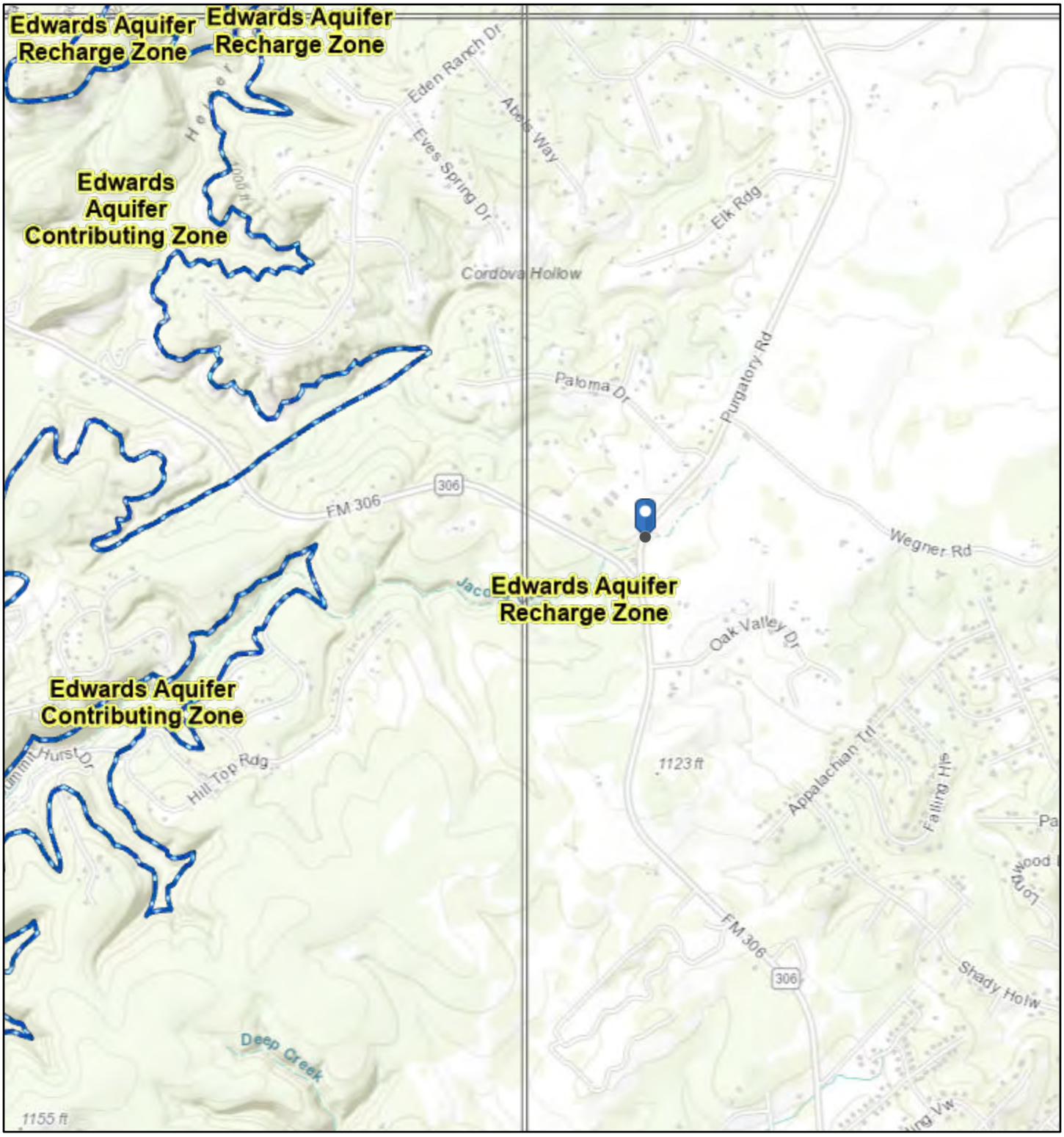
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/14/2023 at 12:24 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Edwards Aquifer



4/13/2023, 2:21:17 PM

1:36,112

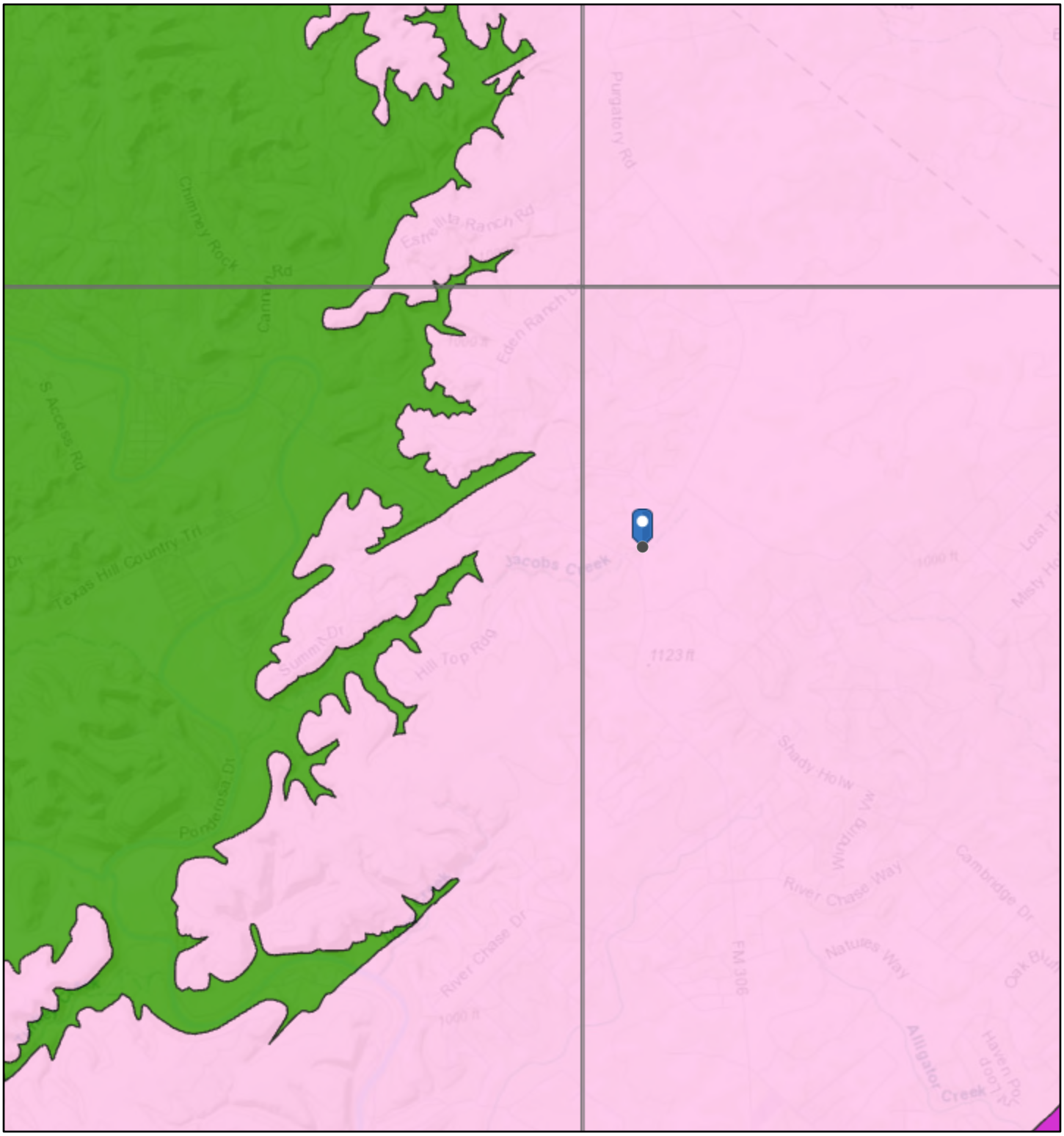
0 0.28 0.55 1.1 mi

0 0.42 0.85 1.7 km

- Edwards Aquifer Label
- Edwards Aquifer Boundary
- Edwards Aquifer Boundary central line
- 7.5 Minute Quad Grid
- TCEQ_EDWARDS_OFFICIAL_MAPS

City of Austin, Comal County, Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA, TCEQ

Edwards Aquifer



4/13/2023, 2:20:43 PM

1:72,224

0 0.5 1 2 mi

0 0.75 1.5 3 km

Edwards Aquifer

- Recharge Zone
- Transition Zone
- Contributing Zone
- 7.5 Minute Quad Grid
- TCEQ_EDWARDS_OFFICIAL_MAPS

TCEQ, City of Austin, Comal County, Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, NGA, EPA, USDA

Web AppBuilder for ArcGIS
City of Austin, Comal County, Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, NGA, EPA, USDA | TCEQ |

U.S. Fish and Wildlife Service
National Wetlands Inventory

National Wetlands Inventory

April 13, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Topographic Map 0.6 mi

4/13/2023, 2:28:15 PM

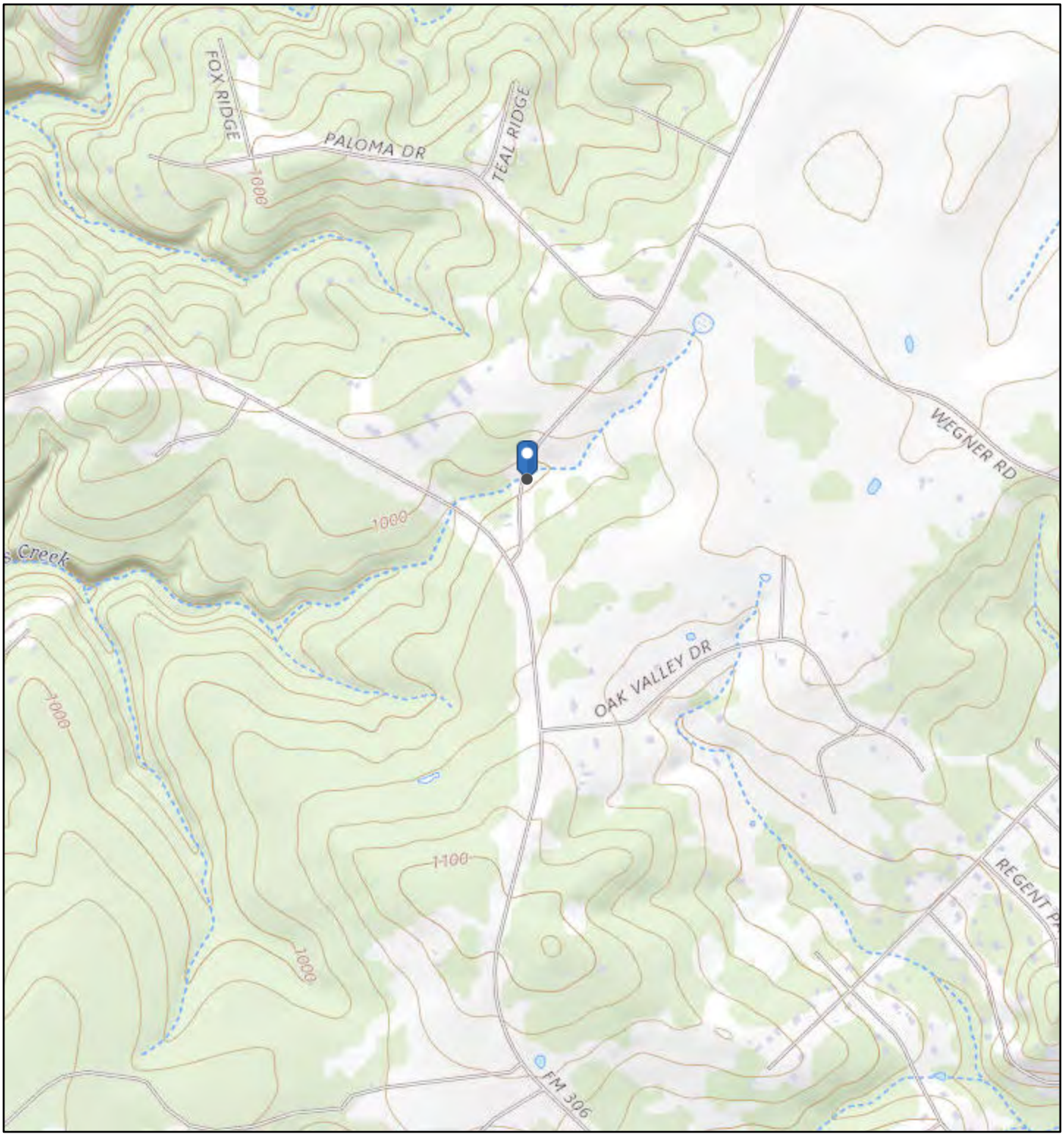
1:36,112

0 0.28 0.55 1.1 mi

0 0.42 0.85 1.7 km

Copyright:© 2013 National Geographic Society, i-cubed, TCEQ

Surface Water 0.3 mi



4/13/2023, 2:35:14 PM

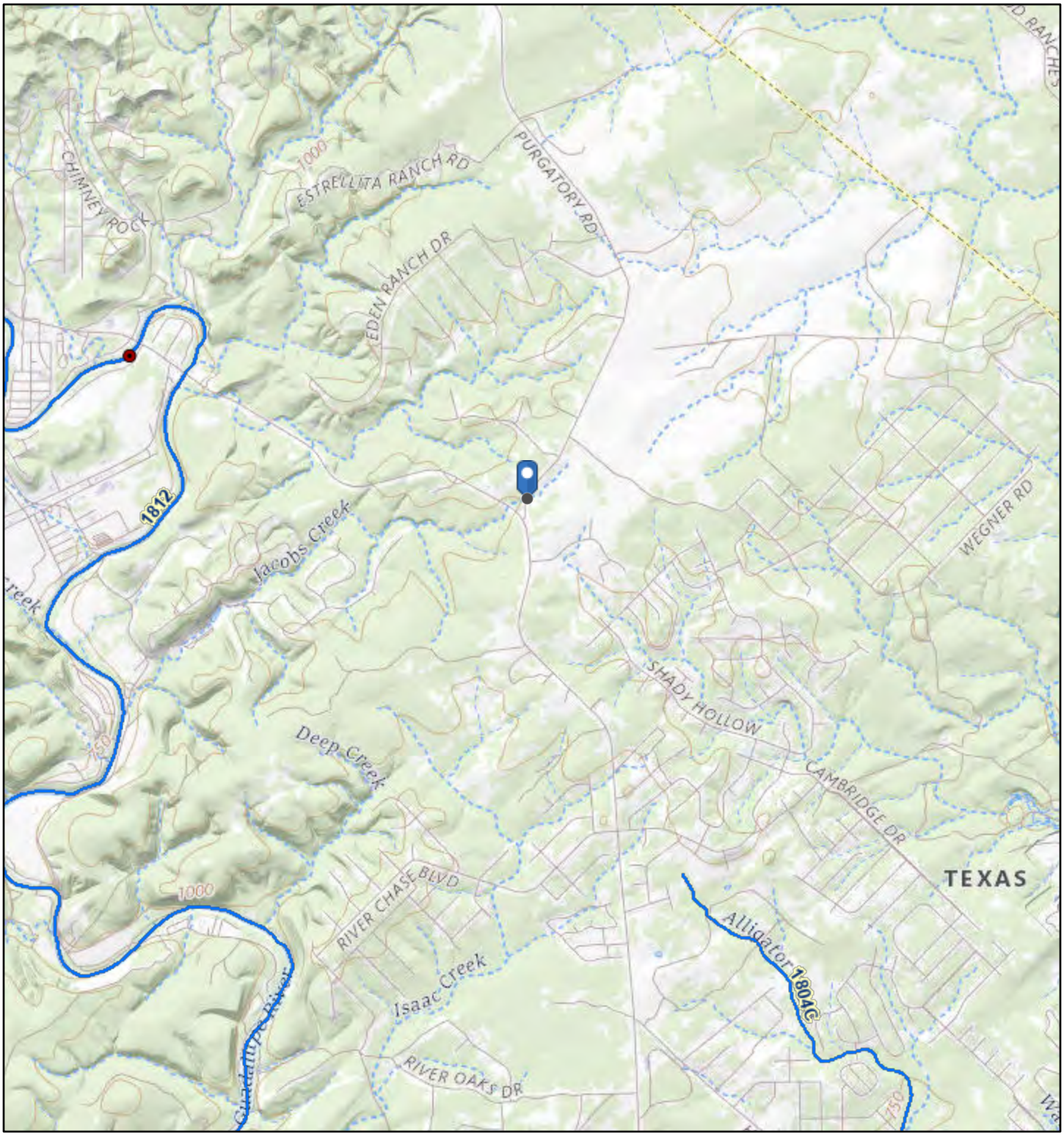
1:18,056

0 0.13 0.25 0.5 mi

0 0.2 0.4 0.8 km

TCEQ, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems;

Surface Water 1 mi



4/13/2023, 2:32:06 PM

1:72,224

0 0.5 1 2 mi

0 0.75 1.5 3 km

Stream Segments

SWQM Stations (Active)

TCEQ, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems;

Search for a place

Project Location

Scale: Not to Scale

Map Scale: 1:3,280 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Comal and Hays Counties, Texas
Survey Area Data: Version 19, Aug 24, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 15, 2020—Nov 16, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
RUD	Rumple-Comfort, rubbly association, 1 to 8 percent slopes	30.6	100.0%
Totals for Area of Interest		**30.6**	**100.0%**

Appendix C – Inspector Qualifications

CISEC, Inc.

Board of Directors

certifies that

Martin Foisy

has successfully passed the In-Training certification examination and therefore, as required by CISEC, Inc., is authorized to use the title of

Certified Inspector of Sediment and Erosion Control-In Training

Given this 20th day of December, 2016

Tina K. Evans

CISEC, Inc. President

CISEC, Inc. Board of Director

0186-IT

Certification Number

© 2016 Great Papers

Appendix D – Inspection Reports
Dewatering Observation & Evaluation Reports

General Information

Inspector Name:

Title:

Company Name:

Address:

Email:

Phone No.:

Present Phase of Construction:

Inspection Location:

Inspection Frequency *(Note: You may be subject to different inspection frequencies in different areas of the site.) Check all that apply.:*

[ ] Standard Frequency

[ ] Weekly

[ ] Every 14 days and within 24 hours of a 0.25" rain event

[ ] Increased Frequency

✦ Every 7 days and within 24 hours of a 0.25" rain event (for areas of sites discharging to sediment or nutrient-impaired waters or to waters designated as Tier 2, Tier 2.5, or Tier 3)

[ ] Reduced Frequency

[ ] Once per month (for stabilized area)

[ ] Once per month and within 24 hours of a 0.25" rain (for arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought)

[ ] Once per month (for frozen conditions where earth-disturbing activities are being conducted)

[ ] Other

Was this inspection triggered by a 0.5" storm event? :
Total rainfall amount that triggered the inspection:
Unsafe Conditions for Inspection:
Did you determine that any portion of your site was unsafe for inspection per CGP Part 4.1.5? :

Condition and Effectiveness of Erosion and Sediment (E&S) Controls				
Type/Location of E&S Control	**Repairs or Other Maintenance Needed?***	**Corrective Action Required?***	**Date on Which Maintenance or Corrective Action First Identified?**	**Notes**
Construction Entrance				
Silt Fence				
Gravel Bag Berm				
Inlet Protection				
Concrete Washouts				
Straw Wattles				
Tree Protection				
Fuel / Oil Containment and Spills				
Site Notice Posted at Entrance				
Cleanliness – Site Perimeter				
Cleanliness – Construction Laydown / Material Area				

Stabilization of Exposed Soil (CGP Part 2.2)			
Stabilization Area	**Stabilization Method**	**Have You Initiated Stabilization?**	**Notes**

Description of Discharges (CGP Part 4.1.6.6)
Was a stormwater discharge or other discharge occurring from any part of your site at the time of the inspection? :

State/Local Requirements - OPTIONAL		
Requirement	**Date**	**Notes**

Contractor or Subcontractor Certification and Signature
"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 gathered and evaluated 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 that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." **Signature of Contractor or Subcontractor:** _____ **Date:** _____ **Printed Name and Affiliation:** _____
Certification and Signature by Permittee
"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 gathered and evaluated 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 that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." Signature of Permittee or Duly Authorized Representative: _____ Date: _____ Printed Name and Affiliation: _____

Dewatering Observation & Evaluation Report **Project Name:** _____

Section A – Dewatering Discharges Complete this section within 24 hours of completing the observation. (If necessary, complete additional observation reports for each observation location.)	
Observation & Evaluation Information	
Inspector Name:	**Title:**
Company Name:	**Email:**
Address:	**Phone Number:**
Observation & Evaluation Details	
Observation Date:	**Observation Location:**
Discharge Start Time:	**Discharge End Time:**
Discharge Continuous? ☐ Yes ☐ No (continuous discharge that continues after normal business hours)	**Rate of Discharge (gallons per day):**
Describe Indicators of Pollutant Discharge at Point of Dewatering Discharge: (e.g., foam, oil sheen, noticeable odor, floating solids, suspended sediments, or other obvious indicators of stormwater pollution)	
Major Observations: (locations of where erosion and discharges of sediment or other pollutants from the site have occurred; locations of BMPs that need to be maintained; locations of BMPs that failed to operate as designed or proved inadequate for a particular location; and locations where additional BMPs are needed)	
Actions Taken As a Result of Evaluation: (include date)	
I certify that the facility or site is in compliance with the SWP3 and the CGP. ☐ Yes ☐ No (Describe Incidents of Non-Compliance, include date)	

Dewatering Observation & Evaluation Report **Project Name:** _____

Section B – Signature and 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." Sign as required by 30 TAC 305.128.	
MANDATORY: Signature of Operator or "Duly Authorized Representative:"	
Signature:	**Date:**
Printed Name:	**Title:**
OPTIONAL: Signature of Contractor or Subcontractor	
Signature:	**Date:**
Printed Name:	**Title:**

General Tips for Using This Template

This Dewatering Observation & Evaluation Report Template is provided to assist you in preparing dewatering observation reports for TCEQ's 2023 Construction General Permit (CGP). If you are covered under the 2023 CGP, you can use this template to create a dewatering observation report form that complies with the minimum reporting requirements of Part III.F.7. of the CGP. Note that the use of this form is optional; you may use your own report form provided it includes the minimum information required in Part III.F.7 of the CGP.

This template is for dewatering observations and evaluations only.

The following tips for using this template will help you ensure that the minimum permit requirements are met:

- **Review the requirements.** Before you start developing your report form, read the CGP's requirements. This will ensure that you have a working understanding of the permit's underlying requirements.
- **Complete all required blank fields.** Fill out all blank fields. Only by filling out all fields will the template be compliant with the requirements of the permit. (Note: Where you do not need the number of rows provided in the template form for your observation, you may delete these as you see fit. Or, if you need more space to document your findings, you may insert additional rows in the electronic version of this form or use the bottom of the page in the field version of this form.)
- **Use your site map to document observation findings.** In several places in the template, you are directed to specify the location of certain features of your site, including where stormwater controls are installed and where you will be stabilizing exposed soil. You are also asked to fill in location information for unsafe conditions and the locations of any discharges occurring during your observations. Where you are asked for location information, you are encouraged to reference the point on your SWPPP site map that corresponds to the requested location on the observation form. Using the site map as a tool in this way will help you conduct efficient observations, will assist you in evaluating problems found, and will ensure proper documentation.
- **Include the observation form with your SWPPP.** Once your form is complete, make sure to include a copy of the observation form in your SWPPP in accordance with Part III.F.7. of the CGP.
- **Retain copies of all observation reports with your records.** You must also retain copies of all observation reports in your records in accordance with the requirements in Part III.F.7. of the CGP. These reports must be retained for at least 3 years from the date your permit coverage expires or is terminated in accordance with the requirements in Part II.F. of the CGP.

Instructions for Section A

Inspector Name - Enter the name of the person that conducted the observation and evaluation. Include the person's contact information (title, affiliated company name, address, email, and phone number).

Observation Date - Enter the date you performed the observation and evaluation.

Observation Location - If your project has multiple locations where you conduct separate dewatering observations, specify the location where this observation is being conducted. Otherwise, you can enter "dewatering operation."

Discharge Start and End Times - Enter the approximate time the dewatering discharge started and ended on the day of the observation. If the dewatering discharge is a continuous discharge that continues after normal business hours, indicate that the discharge is continuous.

Rate of Discharge - Enter the rate of discharge in gallons per day on the day of observation.
To estimate the approximate discharge rate on the day of dewatering observation, one approach is to use the manufacturer's design pump rating for the pump model in use. For example, a pump rated at 164 gpm (gallons per minute) by the manufacturer can be assumed to be discharging at 164 gpm in most cases. To convert to gallons per day, multiply the rate in gpm by the ratio of minutes in one-day (1,440 minutes per day), resulting in a discharge rate of 236,160 gallons per day.
In cases where the dewatering discharge is being pumped over long distances or a substantial distance uphill, which will result in a reduced pump rate relative to manufacturer's specification, the operator may improve the accuracy of the estimate by estimating the time required to fill a container of a known volume. For example, if it takes 60 seconds to fill an empty 55-gallon barrel, the estimated discharge rate is 55 gpm, or 79,200 gallons per day.

Indicators of Pollutant Discharge - For the point of discharge, describe any indications of pollutant discharge (e.g., foam, oil sheen, noticeable odor, floating solids, suspended sediments, or other obvious indicators of stormwater pollution).

Major Observations - Provide major observations including the locations of where erosion and discharges of sediment or other pollutants from the site have occurred; locations of BMPs that need to be maintained; locations of BMPs that failed to operate as designed or proved inadequate for a particular location; and locations where additional BMPs are needed.

Corrective Action - Describe actions taken as a result of evaluations, including the date(s) of actions taken.

Non-Compliance - Identify any incidents of non-compliance. **Where a report does not identify any incidents of non-compliance, the report must contain a certification that the facility or site is in compliance with the SWP3 and the CGP.**

Instructions for Section B

Each observation report must be signed and certified to be considered complete (30 TAC § 305.128).

Operator or "Duly Authorized Representative" – MANDATORY

At a minimum, the dewatering observation report must be signed by either (1) the person who signed the NOI, or (2) a duly authorized representative of that person. The report must be retained as part of the SWP3 and signed by the person and in the manner required by 30 TAC § 305.128 (relating to Signatories to Reports).

Contractor or Subcontractor - OPTIONAL

Where you rely on a contractor or subcontractor to complete the dewatering observation report, you should consider requiring the individual(s) to sign and certify each report. Note that this does not relieve you, the permitted operator, of the requirement to sign and certify the dewatering observation report as well. If applicable, sign, date, and print your name and affiliation.

Note

While every effort has been made to ensure the accuracy of all instructions contained in this template, it is the permit, not this template, that determines the actual obligations of regulated construction stormwater discharges. In the event of a conflict between this template and any corresponding provision of the CGP, you must abide by the requirements in the permit.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Comal and Hays Counties, Texas

360 Comal Storage

March 23, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:3,620 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Comal and Hays Counties, Texas
Survey Area Data: Version 19, Aug 24, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 15, 2020—Nov 16, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
RUD	Rumple-Comfort, rubbly association, 1 to 8 percent slopes	46.2	100.0%
Totals for Area of Interest		**46.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Comal and Hays Counties, Texas

RUD—Rumple-Comfort, rubbly association, 1 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2ylvc
Elevation: 800 to 1,650 feet
Mean annual precipitation: 33 to 37 inches
Mean annual air temperature: 65 to 70 degrees F
Frost-free period: 220 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Rumple and similar soils: 60 percent
Comfort and similar soils: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rumple

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Colluvium and/or residuum weathered from limestone

Typical profile

A - 0 to 10 inches: very gravelly clay loam
Bt1 - 10 to 14 inches: very gravelly clay
Bt2 - 14 to 28 inches: extremely cobbly clay
R - 28 to 59 inches: bedrock

Properties and qualities

Slope: 1 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R081CY359TX - Gravelly Redland 29-35 PZ
Hydric soil rating: No

Description of Comfort

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from limestone

Typical profile

A - 0 to 6 inches: extremely stony clay
Bt - 6 to 12 inches: extremely stony clay
R - 12 to 40 inches: bedrock

Properties and qualities

Slope: 1 to 8 percent
Surface area covered with cobbles, stones or boulders: 30.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Very low (about 0.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R081CY360TX - Low Stony Hill 29-35 PZ
Hydric soil rating: No

Minor Components

Tarpley

Percent of map unit: 15 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R081CY361TX - Redland 29-35 PZ
Hydric soil rating: No

Rock outcrop

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex

Across-slope shape: Convex
Hydric soil rating: No

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

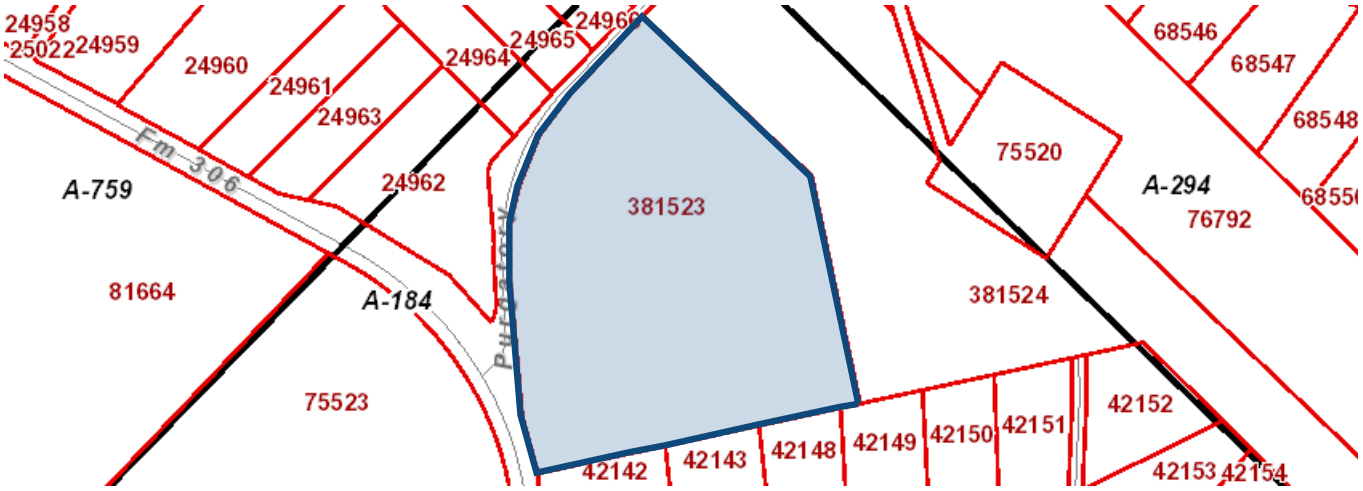
United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

2.2 THIRD PARTY MAPS

- Comal County CAD Information
- Google Earth Image with USGS 7.5 Min. Topo with Overlay
- USGS 7.5-Minute Series Map, Hunter Quadrangle
- Edwards Aquifer Viewer Maps with Overlay
- FEMA FIRMette
- US Fish & Wildlife Wetlands Inventory Map with Overlay
- TCEQ PSOC Map with Overlay
- Texas Parks & Wildlife Watershed Map with Overlay

Map



Property Details

Account		
Property ID:	381523	**Geographic ID:** 740184000501
Type:	Real	**Zoning:**
Property Use:		
Location		
Situs Address:	276 PURGATORY RD NEW BRAUNFELS, TX 78132	
Map ID:	4K-A184-TR 6	**Mapsco:**
Legal Description:	A-184 SUR- 8 WM GAYLORD, ACRES 45.	
Abstract/Subdivision:	A0184 - A-184 SUR- 8 WM GAYLORD	
Neighborhood:	RURAL2 Rural Ac. Area 2	
Owner		
Owner ID:	1079790	
Name:	360 COMAL STORAGE LLC	
Agent:	MICHEL GRAY ROGERS LLP (1080701)	
Mailing Address:	12600 HILL COUNTRY BLVD SUITE R-275 BEE CAVES, TX 78738	
% Ownership:	100.0%	
Exemptions:	For privacy reasons not all exemptions are shown online.	

Property Values

Improvement Homesite Value:	N/A (+)
Improvement Non-Homesite Value:	N/A (+)
Land Homesite Value:	N/A (+)

Land Non-Homesite Value:	N/A (+)
Agricultural Market Valuation:	N/A (+)
Market Value:	N/A (=)
Ag Use Value:	N/A (-)
Appraised Value:	N/A (=)
Homestead Cap Loss:	N/A (-)
Assessed Value:	N/A

Information provided for research purposes only. Legal descriptions and acreage amounts are for appraisal district use only and should be verified prior to using for legal purpose and or documents. Please contact the Appraisal District to verify all information for accuracy.

Property Taxing Jurisdiction

Owner: 360 COMAL STORAGE LLC **%Ownership:** 100.0%

Entity	Description	Market Value	Taxable Value
046	COMAL COUNTY	N/A	N/A
046LR	COMAL COUNTY LATERAL ROAD	N/A	N/A
CAD	CAD	N/A	N/A
EDW	Edwards Water	N/A	N/A
ES2	(ESD2) COMAL COUNTY EMERGENCY SERVICES DISTRICT NO. 2 (EMS)	N/A	N/A
ES3	(ESD3) COMAL COUNTY EMERGENCY SERVICES DISTRICT NO. 3 (FIRE)	N/A	N/A
SCIS	COMAL ISD	N/A	N/A
ZZZ	Credit	N/A	N/A

Property Land

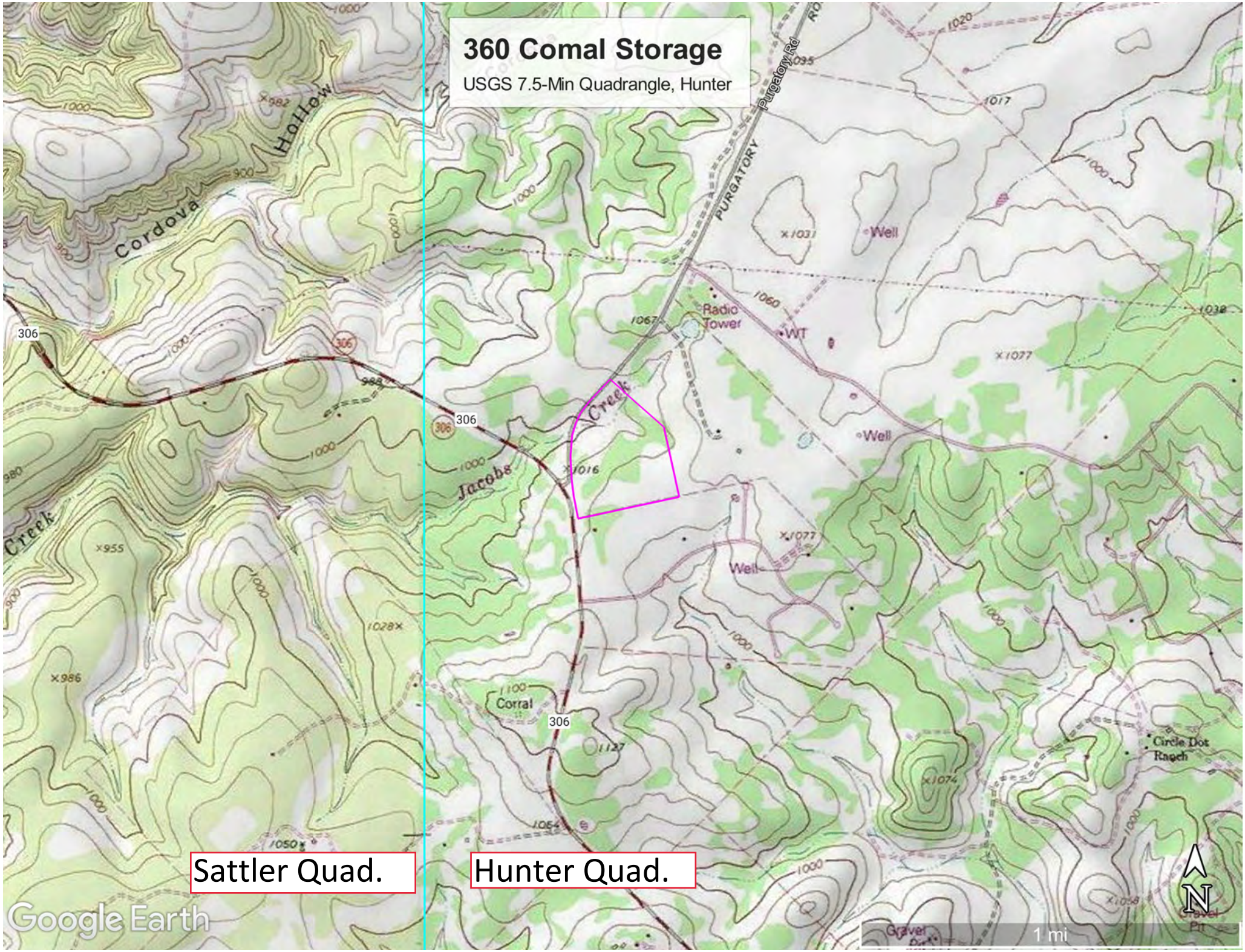
Type	Description	Acreage	Sqft	Eff Front	Eff Depth	Market Value	Prod. Value
1NPG	NATIVE PASTURE (GOOD)	45.0000	1,960,200.00	0.00	0.00	N/A	N/A

Property Roll Value History

Year	Improvements	Land Market	Ag Valuation	Appraised	HS Cap Loss	Assessed
2023	N/A	N/A	N/A	N/A	N/A	N/A
2022	$0	$1,307,810	$4,010	$4,010	$0	$4,010
2021	$0	$733,390	$3,740	$3,740	$0	$3,740
2020	$0	$733,390	$3,420	$3,420	$0	$3,420
2019	$0	$661,330	$2,880	$2,880	$0	$2,880
2018	$0	$379,690	$2,840	$2,840	$0	$2,840
2017	$0	$379,690	$2,840	$2,840	$0	$2,840
2016	$0	$379,690	$2,880	$2,880	$0	$2,880
2015	$0	$453,460	$2,970	$2,970	$0	$2,970
2014	$0	$453,460	$2,840	$2,840	$0	$2,840
2013	$0	$453,460	$3,020	$3,020	$0	$3,020

Property Deed History

Deed Date	Type	Description	Grantor	Grantee	Volume	Page	Number
10/13/2021	WD	WARRANTY DEED	J & F DEVELOPMENT LLC	360 COMAL STORAGE LLC	202206038068		202206038068
10/12/2021	WD	WARRANTY DEED	LACKEY ANNA M ET AL	J & F DEVELOPMENT LLC	202106053581		202106053581
1/8/2018	EXCTR	EXECUTORS DEED	LACKEY GEORGE E & ANNA M	LACKEY ANNA M ET AL	201806001260		201806001260
12/20/2012	COMMI	COMMUNITY INTEREST DEED	LACKEY GEORGE E	LACKEY GEORGE E & ANNA M	201206044993		


360 Comal Storage
USGS 7.5-Min Quadrangle, Hunter
Purgatory Rd
PURGATORY
Cordova
Hollow
Creek
Jacobs
Creek
306
Radio Tower
WT
Well
Well
Well
Corral
Circle Dot Ranch
Gravel Pit
Sattler Quad.
Hunter Quad.
Google Earth
1 mi
N

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

HUNTER QUADRANGLE
TEXAS
7.5-MINUTE SERIES

360 Comal Location

Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 14R

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery.....NAIP, September 2016 - November 2016
Roads..... U.S. Census Bureau, 2015 - 2019
Names.....GNIS, 1979 - 2022
Hydrography.....National Hydrography Dataset, 2002 - 2018
Contours.....National Elevation Dataset, 2021
Boundaries.....Multiple sources; see metadata file 2019 - 2021

Wetlands.....FWS National Wetlands Inventory Not Available

MN
GN
3°54′ 69 MILS
0°28′ 8 MILS
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
NU
00
NT
Grid Zone Designation 14R

SCALE 1:24 000
1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1 MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 FEET

CONTOUR INTERVAL 20 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

TEXAS
QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

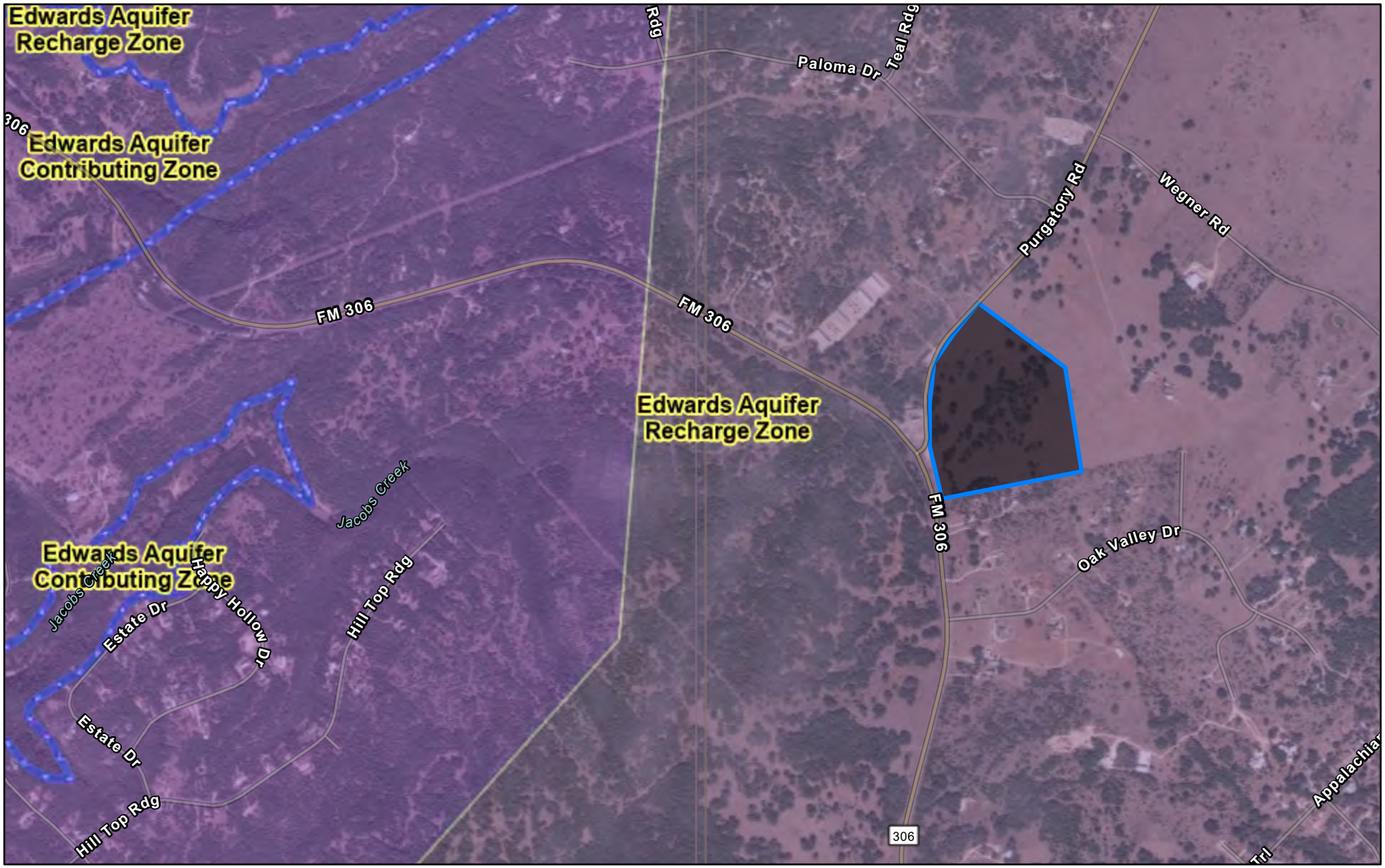
ADJOINING QUADRANGLES
1 Devils Backbone
2 Wimberley
3 San Marcos North
4 Sattler
5 San Marcos South
6 New Braunfels West
7 New Braunfels East
8 Geronimo

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

HUNTER, TX
2022

NSN 7643016396625
NGA REF NO.USGSX24K70441

Edwards Aquifer Viewer - 360 Comal Storage



8/2/2023, 5:26:07 PM

1:18,056

0 0.13 0.25 0.5 mi

0 0.2 0.4 0.8 km

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Esri Community Maps Contributors, City of Austin, Texas Parks & Wildlife,

Edwards Aquifer Label

Edwards Aquifer Boundary

Edwards Aquifer Boundary central line

Groundwater Conservation Districts

Comal Trinity GCD

Edwards Aquifer Authority

TX Counties

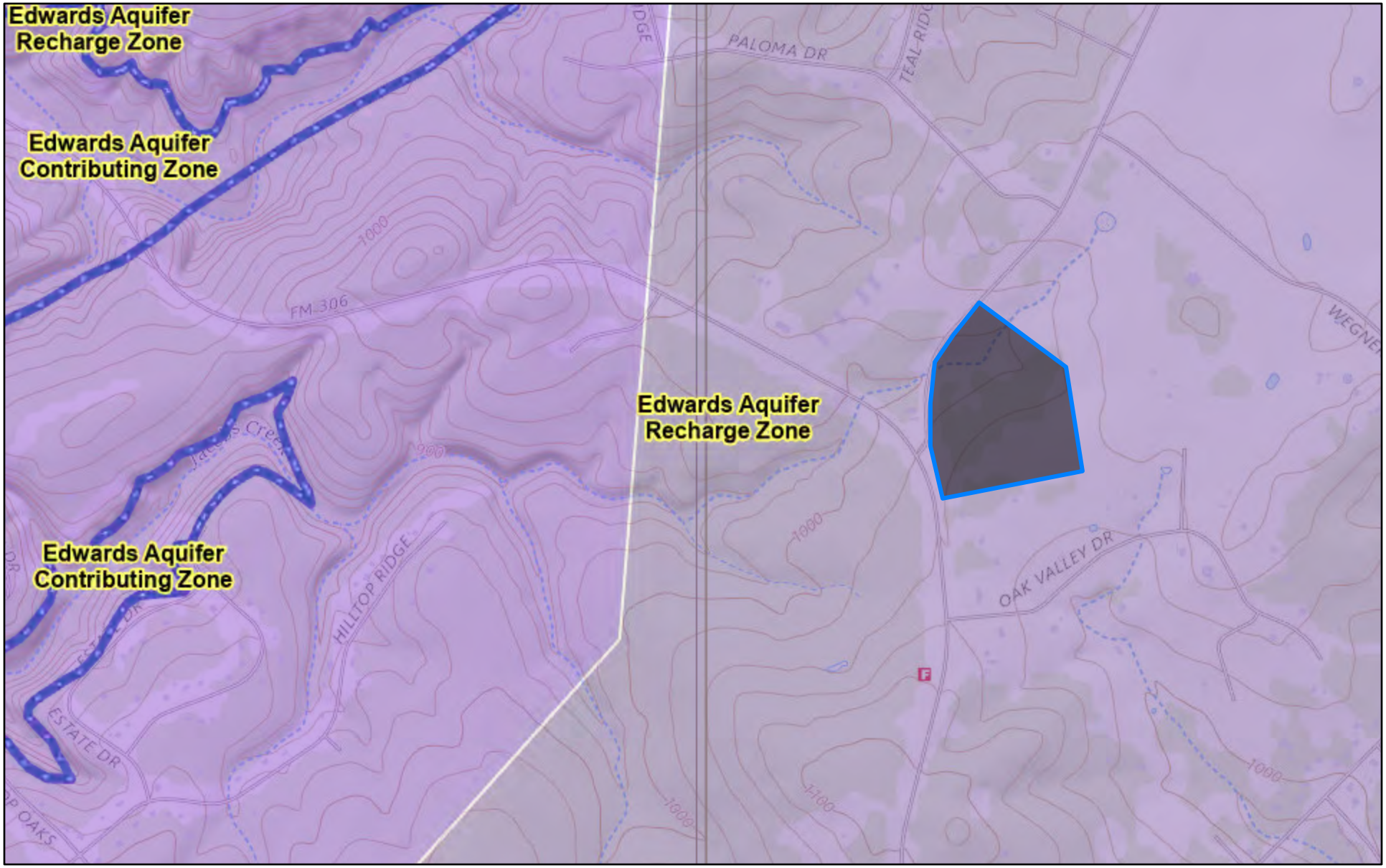
7.5 Minute Quad Grid

TCEQ_EDWARDS_OFFICIAL_MAPS

Web AppBuilder for ArcGIS

TCEQ | Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community | Esri Community Maps Contributors, City of Austin, Comal County, Texas Parks & Wildlife, © OpenStreetMap, Microsoft, CONANP, Esri, HERE, Garmin, Foursquare, SafeGraph,

Edwards Aquifer Viewer - 360 Comal Storage



8/2/2023, 5:29:14 PM

1:18,056

0 0.13 0.25 0.5 mi

0 0.2 0.4 0.8 km

Edwards Aquifer Label

Edwards Aquifer Boundary

Edwards Aquifer Boundary central line

Groundwater Conservation Districts

Comal Trinity GCD

Edwards Aquifer Authority

TX Counties

7.5 Minute Quad Grid

TCEQ_EDWARDS_OFFICIAL_MAPS

TCEQ, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National

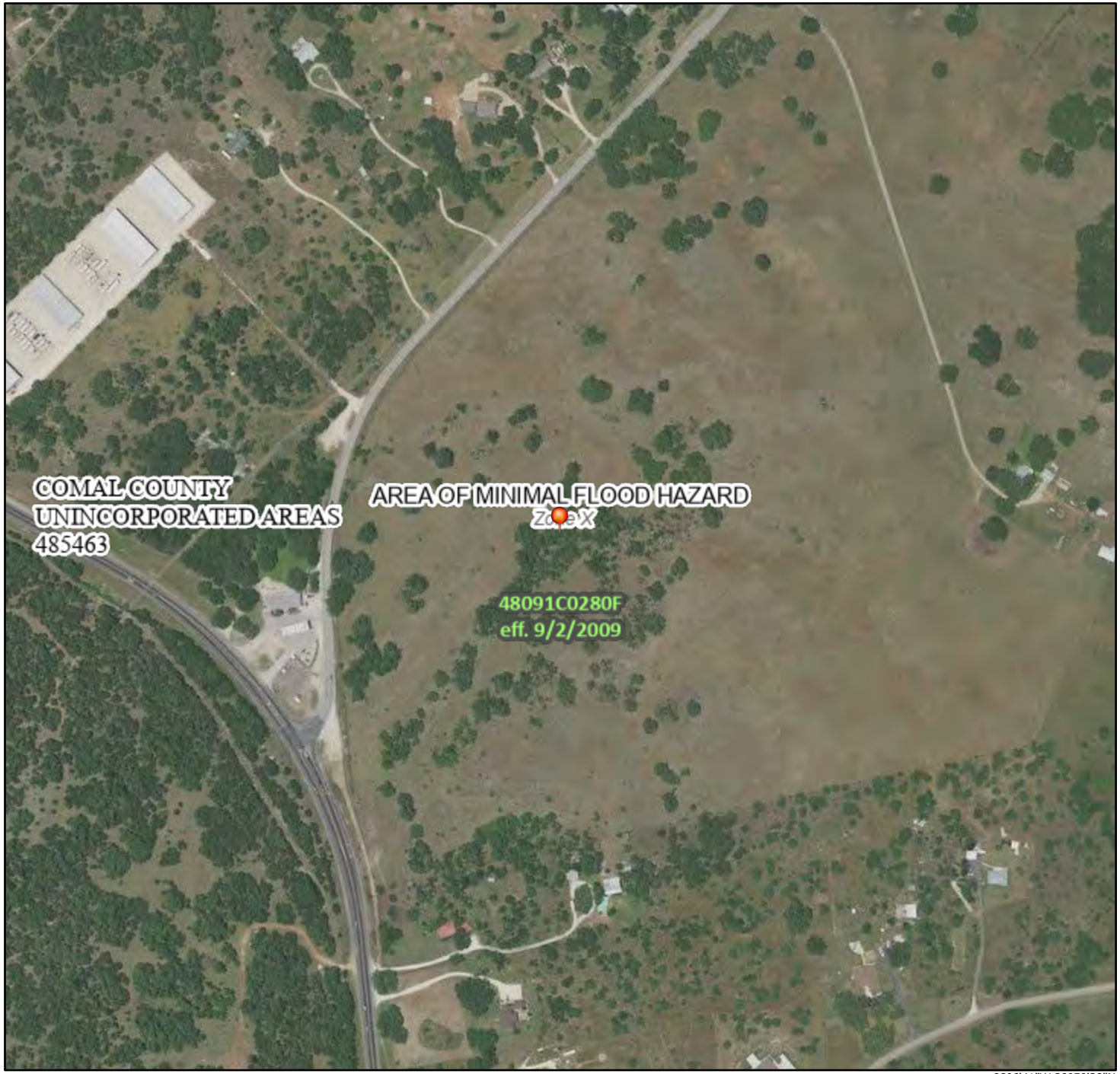
Web AppBuilder for ArcGIS

TCEQ | USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset;

National Flood Hazard Layer FIRMette

FEMA

98°7'18"W 29°51'9"N



98°6'41"W 29°50'38"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/11/2023 at 2:02 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

U.S. Fish and Wildlife Service
National Wetlands Inventory

360 Comal Storage

August 11, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Classification code: R4SBC

System **Riverine (R)** : The Riverine System includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and (2) habitats with water containing ocean-derived salts of 0.5 ppt or greater. A channel is an open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water.

Subsystem **Intermittent (4)** : This Subsystem includes channels that contain flowing water only part of the year. When the water is not flowing, it may remain in isolated pools or surface water may be absent.

Class **Streambed (SB)** : Includes all wetlands contained within the Intermittent Subsystem of the Riverine System and all channels of the Estuarine System or of the Tidal Subsystem of the Riverine System that are completely dewatered at low tide.

Water Regime **Seasonally Flooded (C)** : Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface.

For more information on wetland classification codes click here.

Classification code: R4SBA

System **Riverine (R)** : The Riverine System includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and (2) habitats with water containing ocean-derived salts of 0.5 ppt or greater. A channel is an open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water.

Subsystem **Intermittent (4)** : This Subsystem includes channels that contain flowing water only part of the year. When the water is not flowing, it may remain in isolated pools or surface water may be absent.

Class **Streambed (SB)** : Includes all wetlands contained within the Intermittent Subsystem of the Riverine System and all channels of the Estuarine System or of the Tidal Subsystem of the Riverine System that are completely dewatered at low tide.

Water Regime **Temporary Flooded (A)** : Surface water is present for brief periods (from a few days to a few weeks) during the growing season, but the water table usually lies well below the ground surface for the most of the season.

For more information on wetland classification codes click here.

Classification code: PUSAh

System **Palustrine (P)** : The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 ppt. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 ha (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of basin less than 2.5 m (8.2 ft) at low water; and (4) salinity due to ocean-derived salts less than 0.5 ppt.

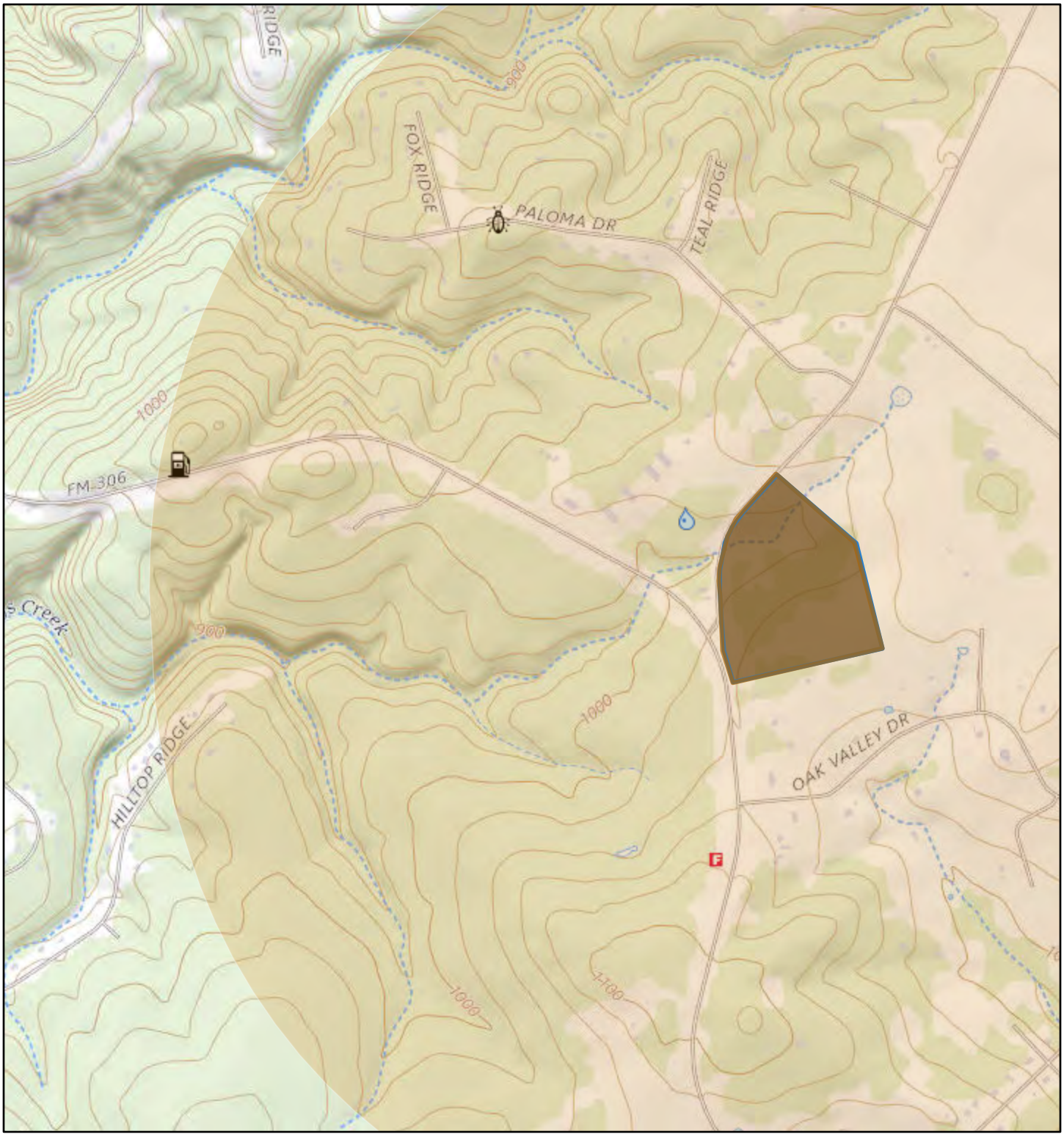
Class **Unconsolidated Shore (US)** : Includes all wetland habitats having two characteristics: (1) unconsolidated substrates with less than 75 percent areal cover of stones, boulders or bedrock and; (2) less than 30 percent areal cover of vegetation. Landforms such as beaches, bars, and flats are included in the Unconsolidated Shore class.

Water Regime **Temporary Flooded (A)** : Surface water is present for brief periods (from a few days to a few weeks) during the growing season, but the water table usually lies well below the ground surface for the most of the season.

Special Modifier **Diked/Impounded (h)** : These wetlands have been created or modified by a man-made barrier or dam that obstructs the inflow or outflow of water.

For more information on wetland classification codes click here.

TCEQ SWA Map - PSOC & Public Wells



8/15/2023, 5:25:16 PM

Counties

TCEQ Regions

Water Well

PSOC

1, 16

1, 13

1:18,056

0 0.13 0.25 0.5 mi

0 0.2 0.4 0.8 km

TCEQ, USGS, TWDB, RRC, TCEQ, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset;

Potential Source of Contamination Types and Subtypes: Detailed Listing, Descriptions, and Applied Contaminants

This dataset was developed for the Public Drinking Water Source Water Assessment Program.

TCEQ

7/23/2010

Psoc Type Code	*Psoc Type Name*
1	**BUSINESS**

Psoc Subtype Code	*Subtype Name*
13	**PESTICIDE MFG, SALE, APPLICATION**

Description:

This dataset contains businesses in Texas that perform pesticide manufacturing, sales, or application. Chemicals associated with pesticides are present. This data was primarily obtained through the Texas Comptroller of Public Accounts database on businesses in Texas. The businesses were extracted using SIC codes and string searches on key names. Most of the locations were obtained using address-matching software.

Required Information:

Site specific chemical use should be determined.

Contaminant Groups: Inorganics

Organics

Contaminants:

Contaminant Code	*Contaminant Name*	*CAS Number*
2	1,1,1-TRICHLOROETHANE	71-55-6
4	1,1,2-TRICHLOROETHANE	79-00-5
13	1,2-DICHLOROPROPANE	78-87-5
21	2,4,5-T	93-76-5
22	2,4,5-TP	93-72-1
24	2,4-D	94-75-7
29	2-CHLOROTOLUENE	95-49-8
32	3-HYDROXYCARBOFURAN	16655-82-6
38	ACETOCHLOR	34256-82-1
41	ALACHLOR	15972-60-8
42	ALDICARB	116-06-3
43	ALDICARB SULFONE	1646-88-4
44	ALDICARB SULFOXIDE	1646-87-3
45	ALDRIN	309-00-2
48	ANTHRACENE	120-12-7
50	AROCLOR	53469-21-9
51	ARSENIC	15584-04-0
53	ATRAZINE	1912-24-9
55	BENTAZON	25057-89-0
65	BROMACIL	314-40-9
72	BUTACHLOR	23184-66-9
74	CADMIUM	22537-48-0
76	CARBARYL	63-25-2
77	CARBOFURAN	1563-66-2
79	CARBON TETRACHLORIDE	56-23-5
81	CHLORDANE	57-74-9
82	CHLORDANE (ALPHA-CHLORDANE)	5103-71-9
83	CHLORDANE (GAMMA-CHLORDANE)	12789-03-6
84	CHLORDANE (TRANS-NONACHLOR)	39765-80-5
86	CHLOROBENZENE	108-90-7
87	CHLOROETHANE	75-00-3
88	CHLOROFORM	67-66-3
91	CHRYSENE	218-01-9
96	CYANAZINE	21725-46-2
98	DALAPON	75-99-0
99	DCPA DI-ACID DEGRADATE	2136-79-0
100	DCPA MONO-ACID DEGRADATE	887-54-7
101	DDE	72-55-9
102	DI-(2-ETHYLHEXYL)ADIPATE	103-23-1
103	DI-(2-ETHYLHEXYL)PHTHALATE	117-81-7
104	DIAZINON	333-41-5
109	DICAMBA	1918-00-9
110	DICHLORODIFLUOROMETHANE	75-71-8
112	DIELDRIN	60-57-1
113	DIETHYL PHTHALATE	84-66-2
114	DIMETHYL PHTHALATE	131-11-3
116	DINOSEB	88-85-7
117	DIQUAT	2764-72-9
118	DISULFOTON	298-04-4
119	DIURON	330-54-1
120	ENDOTHALL	145-73-3
121	ENDRIN	72-20-8
122	EPTC	759-94-4
125	ETHYLBENZENE	100-41-4
130	FONOFOS	944-22-9
132	GLYPHOSATE	1071-83-6
136	HEPTACHLOR	76-44-8
137	HEPTACHLOR EPOXIDE	1024-57-3
146	LAMBAST	845-52-3
147	LEAD	14701-27-0
148	LINDANE	58-89-9

149	LINURON	330-55-2
154	METHIOCARB	2032-65-7
155	METHOMYL	16752-77-5
156	METHOXYCHLOR	72-43-5
160	METOLACHLOR	51218-45-2
161	METRIBUZIN	21087-64-9
162	MOLINATE	2212-67-1
174	ORTHO-1,2-DICHLOROBENZENE	95-50-1
175	OXAMYL	23135-22-0
178	PARA-1,4-DICHLOROBENZENE	106-46-7
184	PICLORAM	1918-02-1
185	PROMETON	1610-18-0
186	PROPACHLOR	1918-16-7
187	PROPAZINE	139-40-2
197	SIMAZINE	122-34-9
206	TERBACIL	5902-51-2
207	TERBUFOS	13071-79-9
208	TETRACHLOROETHYLENE	127-18-4
211	TOLUENE	108-88-3
215	TOXAPHENE	8001-35-2
218	TRIAZINES	
219	TRICHLOROETHYLENE	79-01-6
220	TRICHLOROFLUOROMETHANE	75-69-4
221	TRIFLURALIN	1582-09-8
226	XYLENES (TOTAL)	

Potential Source of Contamination Types and Subtypes: Detailed Listing, Descriptions, and Applied Contaminants

This dataset was developed for the Public Drinking Water Source Water Assessment Program.

TCEQ

7/23/2010

Psoc Type Code	*Psoc Type Name*
1	**BUSINESS**

Psoc Subtype Code	*Subtype Name*
16	**PETROLEUM STORAGE TANK**

Description:

This dataset contains businesses in Texas that sell gasoline, diesel, jet fuel. Chemicals associated with petroleum products are present. This data was primarily obtained through the Texas Commission of Environmental Quality Petroleum Storage Tank database. Most of the locations were obtained using address-matching software or review of files and digitizing of topographic maps and GIS analysis using DOQQ aerial photos..

Required Information:

TCEQ PST Facility ID Number; TCEQ LPST ID Number, if applicable.

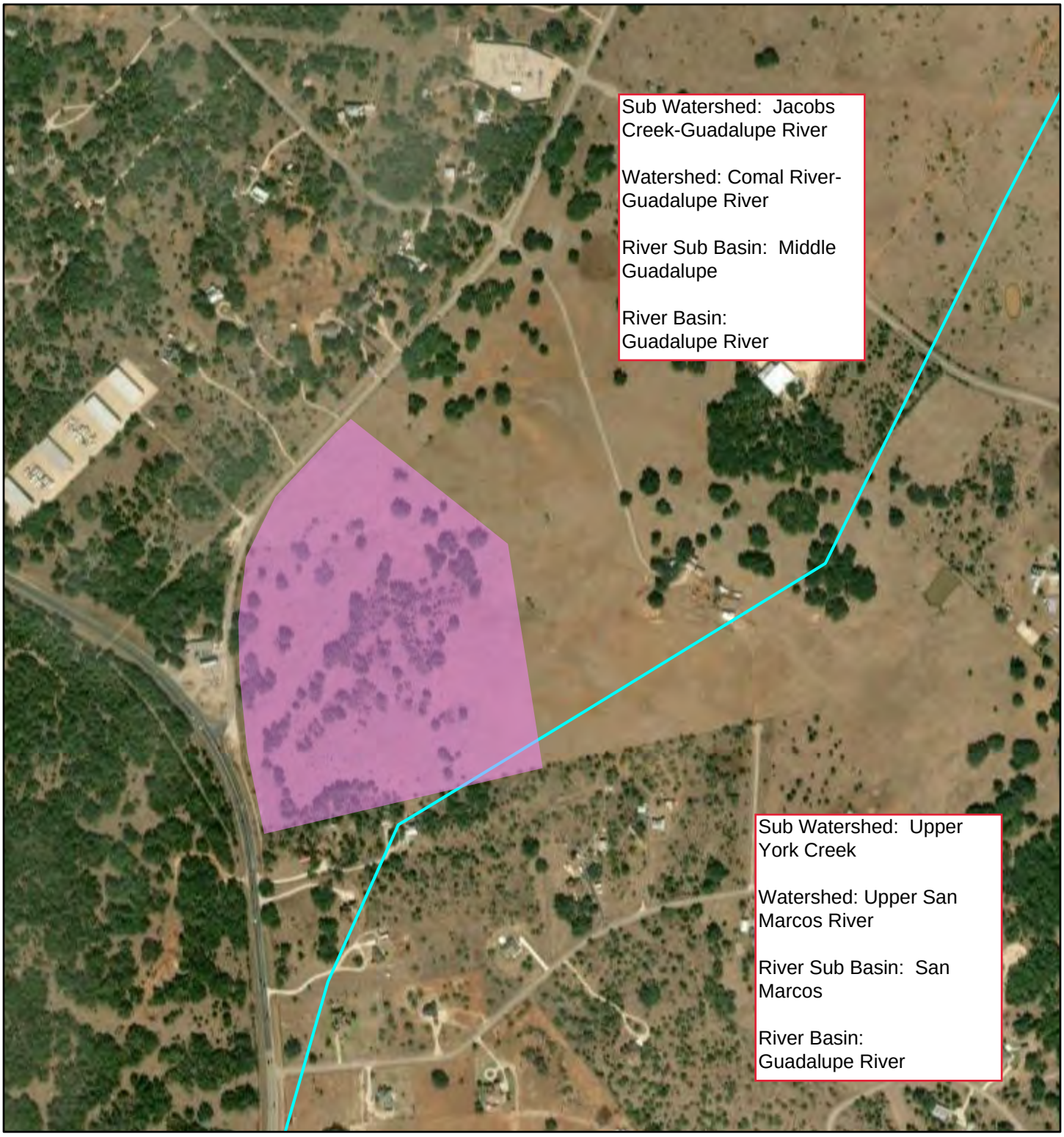
Contaminant Groups: Inorganics

Organics

Contaminants:

Contaminant Code	*Contaminant Name*	*CAS Number*
11	1,2,4-TRIMETHYLBENZENE	95-63-6
56	BENZENE	71-43-2
125	ETHYLBENZENE	100-41-4
147	LEAD	14701-27-0
150	M + P XYLENE	106-42-3
159	METHYL-T-BUTYL ETHER	1634-04-4
164	M-XYLENE	108-38-3
165	NAPHTHALENE	91-20-3
176	O-XYLENE	95-47-6
188	P-XYLENE	106-42-3
211	TOLUENE	108-88-3
226	XYLENES (TOTAL)	

360 Comal Storage



August 15, 2023

1:9,028

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

Texas River Basins

Texas River Sub Basins

Texas Watersheds

Texas Sub Watersheds

Esri, HERE, Garmin, iPC, Maxar

PART 3. CONSTRUCTION DRAWINGS

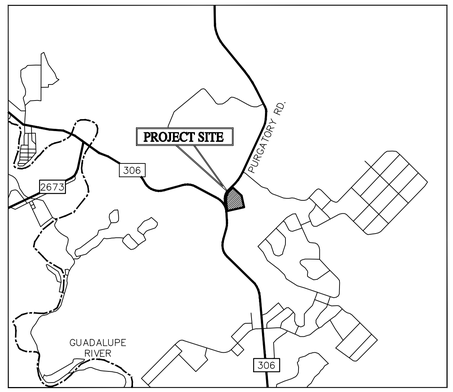
SHEET INDEX

SHEET		DESCRIPTION
1		COVER SHEET
2	C1.0	EROSION CONTROL PLAN
3	C1.1	TEMPORARY SEDIMENT BASIN
4	C1.2	STABILIZATION & RESTORATION PLAN
5	C1.3	EROSION CONTROL DETAILS
6	C2.0	DIMENSION CONTROL PLAN
7	C3.0	GRADING PLAN
8	C4.0	EXTENDED DETENTION BASIN PLAN
9	C5.0	PRE-DEVELOPMENT DRAINAGE AREA MAP
10	C5.1	POST-DEVELOPMENT DRAINAGE AREA MAP
11	C6.0	UTILITY PLAN
12	C7.0	DETAILS
13	C8.0	SPECIFICATIONS

PLANS FOR THE CONSTRUCTION OF

360 COMAL BOAT/RV STORAGE

HIGHWAY 306 AND PURGATORY ROAD
NEW BRAUNFELS, COMAL COUNTY, TX ZIP 78130



LOCATION MAP

NOT TO SCALE

SHEET INDEX		
SHEET		DESCRIPTION
1		COVER SHEET
2	C1.0	EROSION CONTROL PLAN
3	C1.1	TEMPORARY SEDIMENT BASIN
4	C1.2	STABILIZATION & RESTORATION PLAN
5	C1.3	EROSION CONTROL DETAILS
6	C2.0	DIMENSION CONTROL PLAN
7	C3.0	GRADING PLAN
8	C4.0	EXTENDED DETENTION BASIN PLAN
9	C5.0	PRE-DEVELOPMENT DRAINAGE AREA MAP
10	C5.1	POST-DEVELOPMENT DRAINAGE AREA MAP
11	C6.0	UTILITY PLAN
12	C7.0	DETAILS
13	C8.0	SPECIFICATIONS

REVISIONS

NO.	SHEET	DESCRIPTION	APPROVED BY	DATE

PLAN SUBMITTALS

NO.	DATE	COMMENTS

OWNER/ DEVELOPER:

J & F 45 CANYON LAKE, LLC
CONTACT: NEIL FRANCOIS
C/O CAPELLA CAPITAL PARTNERS
12600 HILL COUNTRY BOULEVARD, SUITE R-275
BEE CAVE, TX 78733
PHONE 512.997.7966

PREPARED BY:

"THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRAGGINS, P.E. 84823 ON 09/ 05/ 2023"

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
(830) 997-4744 Fax : (830) 997-6967
Texas Registration # F-165

DATE
09/ 05/ 2023

FILE NO.
22023

GENERAL NOTES:

1. STORM WATER POLLUTION PREVENTION PLAN INSPECTIONS ARE TO BE PERFORMED BY OTHERS.

2. INSTALL ALL PROPOSED EROSION CONTROL MEASURES IN ACCORDANCE WITH TCEQ STANDARDS.

3. SUBMITTAL OF TCEQ NOTICE OF INTENT (NOI) AND NOTICE OF TERMINATION (NOT) BY OTHERS.

4. IF A CONCRETE WASHOUT IS TO BE UTILIZED DURING CONSTRUCTION, THE LOCATION OF THE CONCRETE WASHOUT WILL BE DETERMINED ONCE CONSTRUCTION HAS BEGUN AND WILL BE PROPERLY NOTED ON THE SITE MAP AT THAT TIME.

5. ALL REQUIRED NOTICES AND PERMITS MUST BE PLACED IN A HIGHLY VISIBLE LOCATION ONSITE BEFORE THE COMMENCEMENT OF CONSTRUCTION.

6. ALL EROSION AND SEDIMENTATION CONTROLS (ESC) MUST BE INSTALLED PRIOR TO ANY DISTURBANCE TO THE PROJECT SITE.

7. INSTALL SILT FENCE ACCORDINGLY FOR RUN–ON DIVERSION OR OFFSITE SEDIMENT CONTROL DEPENDING ON UP OR DOWN SLOPE, FACING POST SIDE ON THE DOWN GRADIENT SIDE.

8. ALL ESC ONSITE MUST BE REGULARLY MONITORED AND MAINTAINED AS NEEDED.

9. MUD AND OR DIRT TRACKED INTO THE ROADWAY MUST BE IMMEDIATELY REMOVED UPON DISCOVERY.

10. EXCESS MATERIALS THAT WILL BE TRANSPORTED TO AN OFFSITE LOCATION MUST HAVE THAT LOCATION CLEARED BY COUNTY INSPECTOR.

11. LOOSE TRASH AND DEBRIS MUST BE DISPOSED OF PROPERLY ONSITE.

12. CONTRACTOR SHALL MAINTAIN AND UTILIZE DUST CONTROL FOR THE DURATION OF THE PROJECT.

13. THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT PREVENTS TRACKING ONTO THE PUBLIC ROADWAY ON AN ONGOING/ REGULAR BASIS.

14. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY UPON INLET INSTALLATION.

15. INITIATE TEMPORARY STABILIZATION WHEN CONSTRUCTION CEASE IN A DISTURBED AREA FOR 14 DAYS.

16. INITIATE PERMANENT STABILIZATION IMMEDIATELY ONCE WORK HAS CEASED AND FINAL GRADE HAS BEEN ACHIEVED.

17. ALL DISTURBED/ BARE AREAS WILL REQUIRE PERMANENT STABILIZATION BEFORE FINAL ACCEPTANCE CAN BE ACHIEVED. AVOID DISTURBING AREAS OF THE PROJECT THAT ARE NOT NECESSARY FOR CONSTRUCTION.

18. COUNTY INSPECTOR MAY REQUEST ADDITIONAL CONTROLS BE INSTALLED ONSITE AS NEEDED.

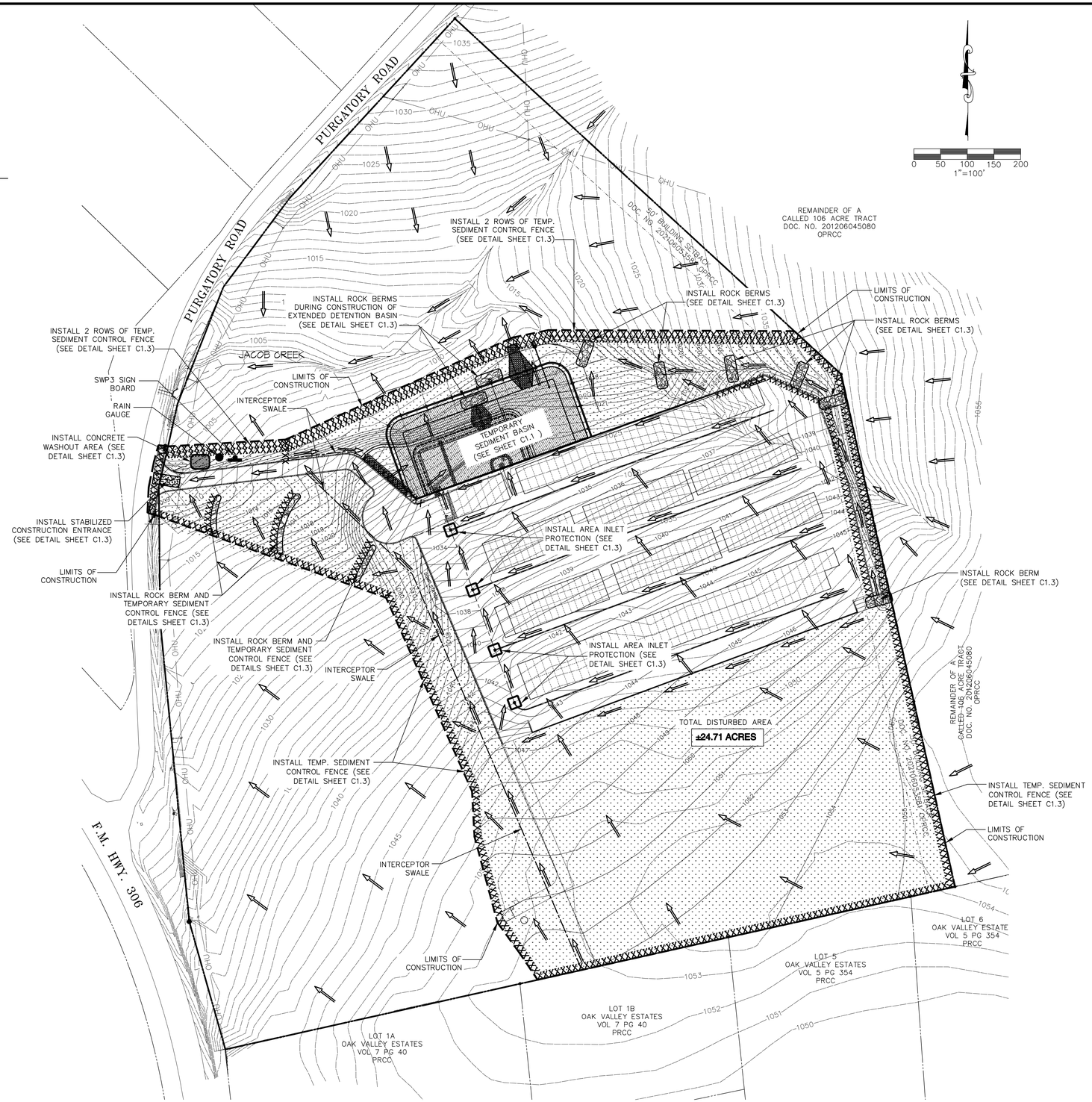
19. TEMPORARY ESC'S SHALL REMAIN IN–PLACE IN ALL DISTURBED AREAS UNTIL ADEQUATE STABILIZATION HAS BEEN ACHIEVED.

20. CONTRACTOR MUST REMOVE SEDIMENT FROM ALL STORM SEWER INLET BOXES, LINES, PIPES, AND CULVERTS BEFORE CONDITIONAL/ FINAL ACCEPTANCE CAN BE OBTAINED.

21. TCEQ REQUIRES CERTIFIED SWP3 INSPECTORS TO CONDUCT SWP3 INSPECTIONS AND REPORTING ON ALL PROJECTS WITH ONE ACRE OF DISTURBANCE OR LARGER.

22. PERMITTEE SHALL INSPECT ALL INLET PROTECTION DEVICES AS PART OF THE WEEKLY SWP3 REPORT, UPON RECEIVING A FORECAST CALLING FOR A RAIN EVENT FOR AN EXTENDED PERIOD. MODIFICATION OF INLET PROTECTION SHOULD BE MADE TO PREVENT FLOODING OR PONDING OF WATER IF TRAFFIC OR PROPERTY CONCERNS ARISE.

23. A DE–WATERING PLAN FOR THE POND(S) MUST BE APPROVED BY THE ENVIRONMENTAL INSPECTOR IF THE TEMPORARY SEDIMENTATION POND IS DE–WATERED AFTER RAINFALL EVENTS. THE DE–WATERING METHOD MUST MINIMIZE THE DISCHARGE OF THE SUSPENDED SEDIMENTS TO THE GREATEST EXTENT FEASIBLE BY DRAWING WATER FROM THE SURFACE OF IMPOUNDMENT.



NOTES:

1. STORM WATER POLLUTION PREVENTION PLAN INSPECTIONS ARE TO BE PERFORMED BY OTHERS.

2. INSTALL ALL PROPOSED EROSION CONTROL MEASURES IN ACCORDANCE WITH TCEQ STANDARDS.

3. SUBMITTAL OF TCEQ NOTICE OF INTENT (NOI) AND NOTICE OF TERMINATION (NOT) BY OTHERS.

LEGEND

. XXXXXXXXX	SILT FENCE
	PROPOSED INLET PROTECTION
	PROPOSED LIMITS OF CONSTRUCTION
	STABLIZED CONSTRUCTION ENTRANCE
	PROPOSED GRASS SEEDING
	PROPOSED ROCK BERM
	DRAINAGE AREA FLOW DIRECTION

STATE OF TEXAS
KEVIN W. SPRAGGINS
84823
REGISTERED
PROFESSIONAL ENGINEER

"THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRAGGINS, P.E. 84823 ON 09/ 05/ 2023"

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830 - 997-4744 FAX 830 - 997-6967
In Kerrville 830 - 895-4770 FAX 830 - 895-7441
TEXAS REGISTRATION # F-165

360 COMAL BOAT/RV STORAGE

EROSION CONTROL PLAN

HIGHWAY 306 AND PURGATORY ROAD

NEW BRAUNFELS TEXAS

DRAWN BY:	KS
DATE:	09/ 05/ 2023
CHK. BY (DWG)	
CHK. BY (ENGR)	
REVISION:	
JOB NO:	22023

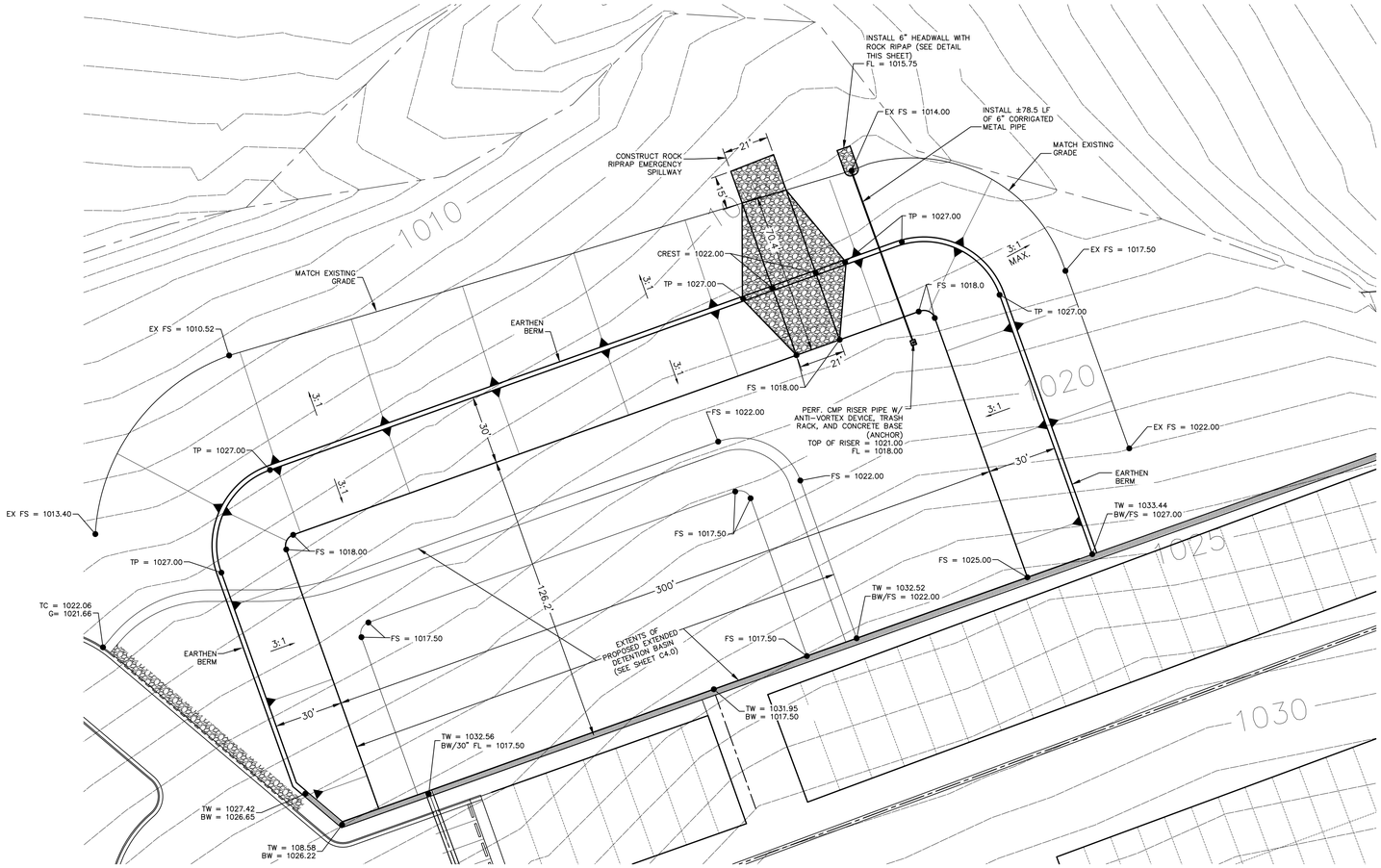
EROSION CONTROL PLAN

SHEET NUMBER

C1.0

2 OF 13

Start Date: 00/00/0000
File no.



TEMPORARY SEDIMENT BASIN PLAN

1" = 30'

0 15 30 45 60

1"=30'

SEDIMENT BASIN CALCULATIONS:

DRAINAGE AREA TO CONTROL	31.02 Ac.
DISTURBED AREA (AC)	24.71 Ac.
2-YR, 24 HR. RAINFALL DEPTH	3.70 in
REQUIRED SEDIMENT BASIN SIZING	333,674 cf
PROPOSED BASIN AREA	335,508 cf
10-YR, 3 HR RUNOFF VOLUME	96.48 cfs

WEIR EQUATION: $Q = C_w L H^{1.5}$

Q = DISCHARGE OVER WEIR (10yr, 3hr)
C_w= WEIR COEFFICIENT, 2.60
L = LENGTH OF WEIR CREST, 21.0 ft.
H = DISTANCE BETWEEN WATER SURFACE AND THE CREST, 1.5 ft.

$Q = 2.60 * 21.0 * 1.5^{1.5} = 100.31$ cfs

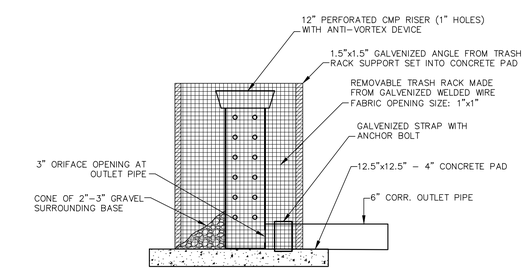
PROPOSED EMERGENCY SPILLWAY (WEIR) TO BE 21 FEET WIDE WITH A HEIGHT OF 1.5 FEET AND SIDE SLOPES OF 3:1

PROPOSED RISER DATA

REQUIRED PERFORATION SIZE: $Ao = \frac{As \times \sqrt{2h}}{Cd \times 980{,}000}$

Where:
Ao = Area of the de-watering hole, ft2
As = Surface area of the basin, ft2
Cd = Coefficient of contraction, approximately 0.6
h = head of water above the hole, ft

$Ao = \frac{51{,}405 \text{ sf} \times \sqrt{2(2)}}{0.60\ (980{,}000)} = \frac{145{,}373}{588{,}000} = 0.25 \sim 3"$ max.



NOTE: WRAP RISER PIPE WITH 4OZ./S.Y. NON-WOVEN FILTER FABRIC, MINIMUM OPENING = 0.15mm (U.S. SIEVE 100)

DEWATERING OUTLET DETAIL

NTS

LEGEND

EXISTING

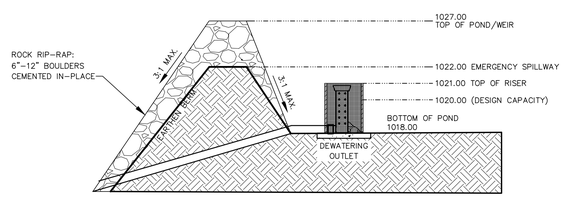
- *PROPERTY BOUNDARY*
- *ADJACENT PROPERTY BOUNDARY*
- *EXISTING CREEK/RIVER CENTERLINE*
- *EXISTING FENCE LINE*
- *EXISTING CONCRETE CURB*
- 1500 *EXISTING CONTOURS*

PROPOSED

- PROPOSED BUILDING
- PROPOSED PARKING STRIPE
- PROPOSED RIP-RAP
- PROPOSED FLOWLINE
- PROPOSED FENCE LINE
- PROPOSED RETAINING WALL
- PROPOSED CONCRETE CURB
- 1500 PROPOSED CONTOURS
- XX.XX TC / XX.XX G PROPOSED SPOT ELEVATIONS
- ±2.00% PROPOSED SLOPE AND FLOW DIRECTION
- G GUTTER
- TC TOP OF CURB
- TI TOP OF INLET
- TW TOP OF WALL
- BW BOTTOM OF WALL
- FF FINISH FLOOR
- FS FINISH SURFACE
- FL FLOWLINE
- PROPOSED SWALE
- BERM (FILL)
- PROPOSED 3FT GRATE INLET

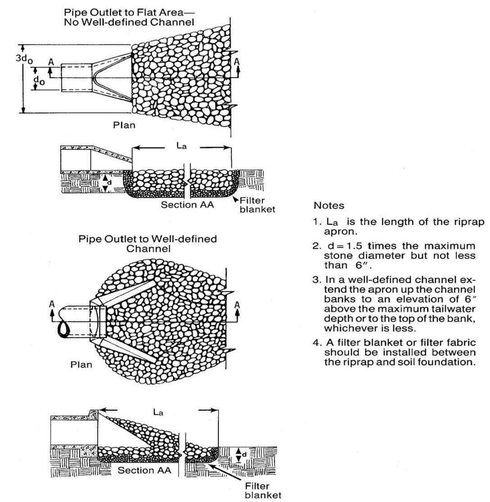
EXTENDED DETENTION BASIN NOTES:

1. A FIXED VERTICAL SEDIMENT DEPTH MARKER SHOULD BE INSTALLED IN THE BOTTOM OF SEDIMENTATION AREAS TO DETERMINE WHEN SEDIMENT ACCUMULATION HAS EXCEEDED LIMITS SET IN THE MAINTENANCE PLAN.
2. INSPECTION AND MAINTENANCE GUIDELINES:
   - INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. CHECK THE EMBANKMENT, SPILLWAYS, AND OUTLET FOR EROSION DAMAGE, AND INSPECT THE EMBANKMENT FOR PIPING AND SETTLEMENT. REPAIR SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
   - TRASH AND OTHER DEBRIS SHOULD BE REMOVED AFTER EACH RAINFALL TO PREVENT CLOGGING OF THE OUTLET STRUCTURE.
   - ACCUMULATED SILT SHOULD BE REMOVED AND THE BASIN SHOULD BE RE-GRADED TO ITS ORIGINAL DIMENSIONS AT SUCH POINT THAT THE CAPACITY OF THE IMPOUNDMENT HAS BEEN REDUCED TO 75% OF ITS ORIGINAL STORAGE CAPACITY.
   - THE REMOVED SEDIMENT SHOULD BE STOCKPILED OR REDISTRIBUTED IN AREAS THAT ARE PROTECTED FROM EROSION.



EMERGENCY SPILLWAY

NTS



Notes

1. L_a is the length of the riprap apron.
2. d = 1.5 times the maximum stone diameter but not less than 6".
3. In a well-defined channel extend the apron up the channel banks to an elevation of 6" above the maximum tailwater depth or to the top of the bank, whichever is less.
4. A filter blanket or filter fabric should be installed between the riprap and soil foundation.

Figure 3-5 Riprap Outlet Design

ROCK RIP-RAP OUTLET DETAIL

NTS

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830 - 997-4744 FAX 830 - 997-6967
In Kerrville 830 - 895-4770 FAX 830 - 895-7441
TEXAS REGISTRATION # F-165

STATE OF TEXAS
KEVIN W. SPRAGGINS
84823
REGISTERED
PROFESSIONAL ENGINEER

"THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRAGGINS, P.E. 84823 ON 09/ 05/ 2023"

TEMPORARY SEDIMENT BASIN
360 COMAL BOAT/RV STORAGE
HIGHWAY 306 AND PURGATORY ROAD
NEW BRAUNFELS TEXAS

DRAWN BY: KS
DATE: 09/ 05/ 2023
CHK. BY (ENG)
CHK. BY (ENGR)
REVISION:
JOB NO: 22023

TEMPORARY SEDIMENT BASIN
SHEET NUMBER
C1.1
3 OF 13

Start Date: 00/00/0000
File no.

12.6 HYDROMULCHING OR SODDING

12.6.1 Interim or final grading must be complete prior to seeding, minimizing all steep slopes. In addition, all necessary erosion structures such as dikes, swales, diversions, should also be installed.

12.6.1.1 Seedbed should be well pulverized, loose and uniform.

12.6.1.2 A soil analysis is recommended to determine the amount of fertilization required. Compost can be used instead of fertilizer and applied at the same time as the seed.

12.6.2 SEEDING RATES

TEMPORARY SEEDING FOR BURNET, TRAVIS AND LLANO COUNTIES

Dates	Climate	Species (lb/ac)	
Sept 1 to Nov 30	Temp. cool season	Oats (Avena sativa)	21.0
		Wheat (Red, winter) (Triticum aestivum)	30.0
		TOTAL	51.0
Oct 1 to Mar 30	Temp Cool Season	Cereal Rye (Secale cereale)	70.0
May 15 to Aug 31	Temp warm season	Foxtail Millet (Setaris italica)	30.0

PERMANENT SEEDING FOR BURNET, TRAVIS AND LLANO COUNTIES

Dates	Climate	Species (lb/ac)	
Year Round	Perm. cool/warm season	Purple Three-Awn (Aristida purpurea)	1.4
		Sideoats Gramma (Bouteloua curtipendula)	2.0
		Silver Bluestem (Bothriochloa laguroides)	6.0
		Buffalograss (Buchloe dactyloides)	1.4
		Canadian Wild Rye (Elymus Canadensis)	1.4
		Engleman's Daisy (Engellmannia pinnatifida)	0.6
		Green Spangletop (Leptochloa dubia)	2.6
		Mexican Hat (Ratibida columnifera)	1.0
		Little Bluestem (Schizachyrium scoparium)	1.8
		Indiangrass (Sorghastrum nutans)	1.8
		Texas Wintergrass (Nassella leucotricha)	15.0
		TOTAL	35.0
Mar 30 to Oct 1	Perm. warm season	Bermuda (Cynodon dactylon) (hulled)	45.0
Oct 1 to Mar 30	Perm. cool/warm season	Bermuda (Cynodon dactylon) (unhulled)	70.0
		Cereal Rye (Secale cereale)	90.0
		TOTAL	160.0

12.6.2.1 The seed should be applied uniformly with a cyclone seeder, drill, cultipacker seeder or hydroseeder (slurry includes seed, fertilizer and binder). Seed may also be combined with hydraulic mulch (See Section 3.2.13 of LCRA's Water Quality Management Technical Manual) and applied simultaneously.

12.6.3 Protect the seedbed with a mulch layer to conserve soil moisture. Compost, hay, or straw are recommended. Hay or straw mulch should be applied at a rate of approximately 2 tons per acre. Organic compost mulch application is covered in Section 3.2.12 of LCRA's Water Quality Management Technical Manual. Hay or straw mulch should be anchored by crimping or application of an organic tackifier.

12.6.4 Protect slopes that are steeper than 3H:1V with appropriate erosion blankets/matting as described in Section 3.2.11 of LCRA's Water Quality Management Technical Manual to prevent loss of soil and seed.

12.6.5 Evaluate velocity and sheer stress for drainage channels, diversion dikes and swales and protect with erosion blankets/matting as described in Section 3.2.11 of LCRA's Water Quality Management Technical Manual.

12.7 IRRIGATION

12.7.1 Temporary irrigation should be provided according to the schedule described below, or to replace moisture loss to evapotranspiration (ET), whichever is greater. Significant rainfall (on-site rainfall of ½" or greater) may allow watering to be postponed until the next schedule irrigation. All automatic irrigation systems should have dual sensor rain shut off switch that automatically shuts off the irrigation system when rain begins to fall and turns on the system if less than ½" of rain occurs.

Time Period	Irrigation Amount and Frequency
Within 2 hours of installation	Irrigate entire root depth, or to germinate seed
During the next 10 business days	Irrigate entire root depth every Monday, Wednesday and Friday
During the next 30 business days, or until Substantial Completion	Irrigate entire root depth a minimum of once per week, or as necessary to ensure vigorous growth
During the next 4 months or until Final Acceptance of the Project	Irrigate entire root depth once every two weeks, or as necessary to ensure vigorous growth

NOTE: If cool weather induces plant dormancy, water only as necessary to maintain plant health. Irrigate in a manner that will not erode the topsoil but will sufficiently soak the entire depth of the roots.

LEGEND

- SOIL RETENTION BLANKET (SRB)
- PROPOSED NATURAL GRASS SEEDING/ LANDSCAPING
- MULCH SOCK

GENERAL NOTES:

1. INITIATE PERMANENT STABILIZATION IMMEDIATELY ONCE WORK HAS CEASED AND FINAL GRADE HAS BEEN ACHIEVED IN ANY GIVEN AREA.
2. THE FINAL STABILIZATION/ REVEGETATION EFFORTS SHALL BE IN ACCORDANCE WITH THE APPROVED RESTORATION PLAN DETAILS AND SPECIFICATIONS.
3. ALL 3:1 SLOPES OR STEEPER REQUIRE SOIL RETENTION BLANKETS (SRB).
4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE WATERING/ IRRIGATION TO ACHIEVE THE PERMANENT STABILIZATION REQUIREMENTS IN ALL DISTURBED/ REVEGETATED AREAS BEFORE FINAL ACCEPTANCE FOR THIS PROJECT CAN BE OBTAINED.
5. ALL DISTURBED/ BARE AREAS WILL REQUIRE PERMANENT STABILIZATION BEFORE FINAL ACCEPTANCE CAN BE ACHIEVED. AVOID DISTURBING AREAS OF THE PROJECT THAT ARE NOT NECESSARY FOR CONSTRUCTION.
6. ANY DISTURBED AREA(S) NOT INDICATED TO BE RESTORED ON THE RESTORATION PLAN REQUIRES THE SAME EFFORTS AS THOSE INDICATED.
7. ALL DISTURBED AREAS MUST MEET THE REQUIREMENT FOR PERMANENT STABILIZATION.
8. THE NOTICE OF TERMINATION (NOT) FOR THIS PROJECT SHALL NOT BE SUBMITTED UNTIL THE TRAVIS COUNTY ENVIRONMENTAL INSPECTOR APPROVES CLEARANCE.

STATE OF TEXAS
KEVIN W. SPRAGGINS
84823
REGISTERED
PROFESSIONAL ENGINEER

"THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRAGGINS, P.E. 84823 ON 09/ 05/ 2023"

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830 - 997-4744 FAX 830 - 997-6967
In Kerrville 830 - 895-4770 FAX 830 - 895-7441
TEXAS REGISTRATION # F-165

STABILIZATION & RESTORATION PLAN

360 COMAL BOAT/RV STORAGE

HIGHWAY 306 AND PURGATORY ROAD

NEW BRAUNFELS TEXAS

DRAWN BY:	KS
DATE:	09/ 05/ 2023
CHK. BY (DWG)	
CHK. BY (ENGR)	
REVISION:	
JOB NO:	22023

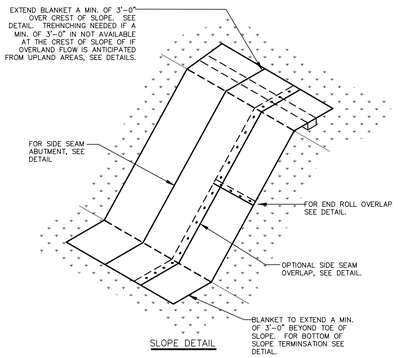
STABILIZATION & RESTORATION PLAN

SHEET NUMBER

C1.2

4 OF 13

Start Date: 00/00/0000
File No:



SLOPE DETAIL

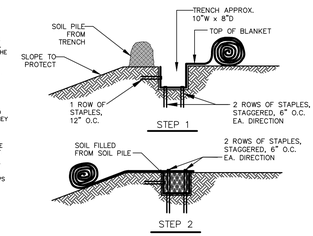
CURLEX EROSION CONTROL BLANKETS INSTALLATION GUIDELINES

BEFORE INSTALLING CURLEX BLANKETS, THE SEEDBED SHALL BE INSPECTED BY THE OWNER'S REPRESENTATIVE TO ENSURE IT HAS BEEN PROPERLY COMPACTED AND FINE GRADED TO REMOVE ANY EXISTING RILLS. IT SHALL BE FREE OF OBSTRUCTIONS, SUCH AS TREE ROOTS, PROJECTIONS SUCH AS STONES, AND OTHER FOREIGN OBJECTS. THE CONTRACTOR SHALL PROCEED WHEN SATISFACTORY CONDITIONS ARE PRESENT. AFTER THE AREA HAS BEEN PROPERLY SHAPED, SEEDED, FERTILIZED AND COMPACTED, CURLEX BLANKET'S OUTSIDE TAPE SHALL BE REMOVED. NEXT, LOCATE THE START OF THE ROLL, MAKING SURE THE ROLL IS FACING TOWARD THE PROPER DIRECTION OF WATER FLOW OVER THE BLANKET. THE BLANKET SHALL BE ROLLED OUT FLAT, EVEN AND SMOOTH WITHOUT STRETCHING THE MATERIAL THEN ANCHORED TO THE SUBGRADE.

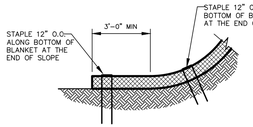
SLOPES. IT IS RECOMMENDED THE BLANKETS BE INSTALLED VERTICALLY ON THE SLOPE; HOWEVER, ON SHORT SLOPES IT MAY BE MORE PRACTICAL TO INSTALL HORIZONTALLY ACROSS THE WIDTH OF THE APPLICATION. IF MORE THAN ONE WIDTH IS REQUIRED, SIMPLY ABUT THE EDGES TOGETHER AND SECURE THE BLANKET WITH A COMMON ROW OF STAPLES. OVERLAPPING OF CURLEX BLANKETS IS NOT REQUIRED. CURLEX BLANKETS SHALL BE TRENCHED AT THE HEAD OF THE SLOPE IF THE BLANKET CANNOT BE EXTENDED THREE FEET OVER THE SLOPE CREST OR IF OVERLAND FLOW IS ANTICIPATED FROM UNSLOPE AREAS.

CHANNELS. CURLEX BLANKETS SHALL BE CENTERED TO OFFSET A SEAM IN THE MIDDLE OF THE WATERWAY. THEY SHALL BE INSTALLED AWAY FROM THE CENTER OF CONCENTRATED OVERLAND FLOW AS NECESSARY. INSTALLATIONS SHOULD CONSIST OF THE SIDE SLOPES AND THREE FEET OVER THE CREST TO THE FLAT OF THE FINAL GRADE. FLANKS EXPOSED TO RUNOFF, OR SHEET FLOW, MUST BE PROTECTED BY A CHECK SLOT OR TRENCHED. CURLEX BLANKETS SHALL BE TRENCHED AT THE START OF THE CHANNEL AND ANCHORED USING A STAGGERED STAPLE PATTERN AT END OF ROLL OVERLAPS AND END OF ROLL TERMINATION'S.

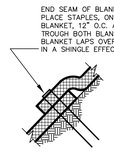
SLOPE CREST ANCHOR METHOD "A" (NO TRENCH)



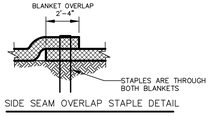
SLOPE TRENCHING METHOD "B"



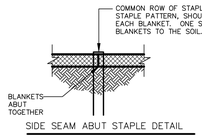
BOTTOM OF SLOPE TERMINATION DETAIL



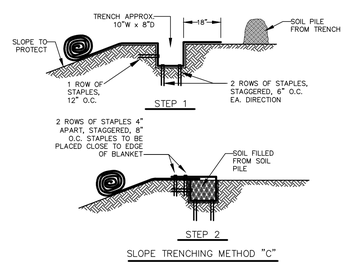
END ROLL OVERLAP DETAIL



SIDE SEAM OVERLAP STAPLE DETAIL



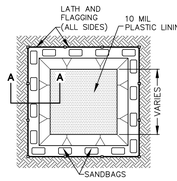
SIDE SEAM ABUT STAPLE DETAIL



SLOPE TRENCHING METHOD "C"

SOIL RETENTION BLANKET INSTALLATION

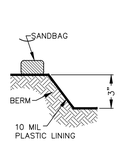
NTS



PLAN

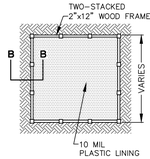
NTS

TYPE "BELOW GRADE"



SECTION A-A

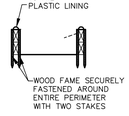
NTS



PLAN

NTS

TYPE "ABOVE GRADE"



SECTION B-B

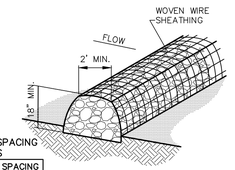
NTS

NOTES:

1. AVOID MIXING EXCESS AMOUNTS OF FRESH CONCRETE.
2. PERFORM WASHOUT OF CONCRETE TRUCKS IN DESIGNATED AREAS ONLY.
3. CONSTRUCT WASHOUT AREA USING 10 MIL PLASTIC LINING AND ANCHOR THE LINING WITH SANDBAGS OR ROCKS.
4. LOCATE WASHOUT AREA AT LEAST 50 FEET FROM SENSITIVE FEATURES, STORM DRAINS, OPEN DITCHES OR WATER BODIES. **DO NOT ALLOW RUNOFF FROM THIS AREA – CONSTRUCT A TEMPORARY PIT OR BERMED AREA LARGE ENOUGH TO CONTAIN BOTH LIQUID AND SOLID WASTE.**
5. WASH OUT WASTES INTO THE TEMPORARY PIT WHERE THE CONCRETE CAN SET, BE BROKEN UP AND THEN DISPOSED OF PROPERLY, ALONG WITH THE LINING.
6. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE BACKFILLED, REPAIRED AND RE-VEGETATED OR OTHERWISE STABILIZED.

CONCRETE WASHOUT AREA DETAIL

NTS

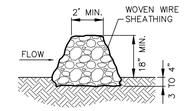


ISOMETRIC PLAN VIEW

ROCK BERM SPACING ON CHANNELS

DITCH SLOPE	SPACING
30%	10 ft.
20%	15 ft.
15%	20 ft.
10%	35 ft.
5%	55 ft.
3%	100 ft.
2%	150 ft.
1%	300 ft.
0.5%	600 ft.

(APPLIES FOR ROCK BERMS, BRUSH BERMS AND FIBER ROLLS)



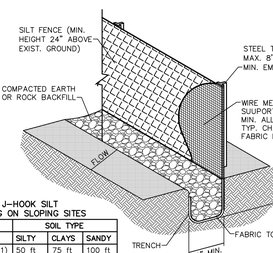
CROSS SECTION

NOTES:

1. USE CLEAN, OPEN GRADED 3 TO 5 INCH DIAMETER ROCK (MAY USE ROCK NATIVE TO SITE).
2. USE A WOVEN WIRE SHEATHING (MAX. OPENING OF 1 INCH AND A MIN. WIRE DIAMETER OF 20 GA. GALVANIZED), AND SECURE WITH SHOAT RINGS.
3. THE HEIGHT SHOULD BE AT LEAST 18" AND THE TOP WIDTH OF AT LEAST 2 FEET.
4. INSTALL BERM ALONG A CONSTANT CONTOUR AND PERPENDICULAR TO THE FLOW PATH TO PREVENT RUNOFF FROM ESCAPING AROUND THE SIDES.
5. INSPECT WEEKLY AND AFTER EACH RAIN EVENT (0.5 INCH OR MORE) TO LOCATE AND REPAIR ANY DAMAGE.
6. REMOVE SEDIMENT WHEN BUILD-UP REACHES 6 INCHES. DISPOSE OF SEDIMENT IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION.
7. WHEN CONSTRUCTION IS COMPLETE, PROPERLY DISPOSE OF ANY SEDIMENT BUILD-UP. THE ROCK BERM SHOULD BE REMOVED WHEN THE SITE HAS BEEN RE-VEGETATED, BUT MAY BE LEFT IN-PLACE AS A PERMANENT BMP IN CERTAIN CASES (E.G. WHEN USED AS A CHECK DAM IN A CONSTRUCTED DITCH OR SWALE).

ROCK BERM

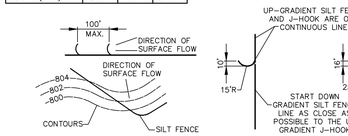
NTS



ISOMETRIC PLAN VIEW

RECOMMENDED J-HOOK SILT FENCE SPACING ON SLOPING SITES

	SOIL TYPE		
SOIL ANGLE	SILTY	CLAYS	SANDY
VERY STEEP (1:1)	50 ft	75 ft	100 ft
STEEP (2:1)	75 ft	100 ft	125 ft
MODERATE (4:1)	100 ft	125 ft	150 ft
SLIGHT (10:1)	125 ft	150 ft	200 ft



I. SPACING REQUIREMENTS

II. SIZING REQUIREMENTS

FOR CATCHMENT AREA <0.25 ACRES

FOR CATCHMENT AREA ->0.25 ACRES

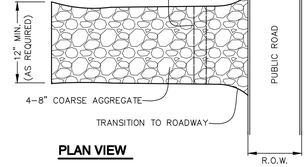
J-HOOK PLACEMENT DETAILS

NOTES:

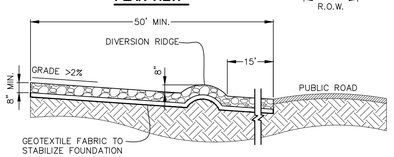
1. USE POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN OR NON-WOVEN FABRIC (36 INCHES WIDE, WEIGHING 4 OZ/YD) AND 2"x4", 12 GAUGE MINIMUM WOVEN WIRE BACKING.
2. USE STEEL FENCE POSTS, AT LEAST 4 FEET LONG, EMBEDDED 1 FOOT (MIN.) DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER.
3. TOE IN THE SILT FENCE SO THAT THE DOWN-SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW (6"x6" TRENCH). WHERE FENCE CANNOT BE TRENCHED IN (E.G. PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.
4. USE J-HOOKS AS NEEDED WHEN SILT FENCES CROSS CONTOURS LINES TO CREATE CATCHMENT AREAS AND SLOW FLOW VELOCITY. USE J-HOOKS AT DOWNHILL FENCE ENDS TO PREVENT RUNOFF FROM ESCAPING AROUND SIDES. REFER TO J-HOOK PLACEMENT DETAIL.
5. INSPECT SILT FENCES WEEKLY AND AFTER EACH RAIN EVENT (0.5 INCHES OR MORE) TO LOCATE AND REPAIR ANY DAMAGE. REPLACE ANY TORN FABRIC AND REPAIR ANY SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY.
6. REMOVE SEDIMENT WHEN BUILD-UP REACHES 6 INCHES. DISPOSE OF SEDIMENT IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION.
7. WHEN CONSTRUCTION IS COMPLETE, PROPERLY DISPOSE OF ANY SEDIMENT BUILD-UP AND RESTORE THE PRIOR LOCATION OF THE SILT FENCE. THE FENCE MATERIALS SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL OR REUSED IF IN SERVICEABLE CONDITION.

TEMPORARY SEDIMENT CONTROL FENCE

NTS



PLAN VIEW



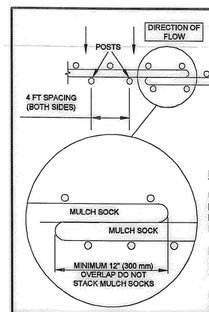
CROSS SECTION

NOTES:

1. USE A 4 TO 8 INCH WASHED STONE AND PLACE WITH A MINIMUM THICKNESS OF 8 INCHES.
2. USE GEOTEXTILE FABRIC WITH AN APPROXIMATE WEIGHT OF 4 OZ/YD2 AS NEEDED TO IMPROVE STABILITY.
3. THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OF THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.
4. THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.
5. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN IF NECESSARY.
6. INSPECT ENTRANCE/EXIT AFTER EACH RAIN EVENT (0.5 INCH OR MORE). REPAIR ANY DAMAGE BY ADDING STONE AND/OR CLEANING ANY MEASURES USED TO TRAP SEDIMENT.
7. PROMPTLY REMOVE ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY. DISPOSE OF SEDIMENT IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION.
8. WHEN CONSTRUCTION IS COMPLETE, PROPERLY DISPOSE OF ANY SEDIMENT BUILDUP AND RESTORE THE PRIOR LOCATION OF THE ENTRANCE/EXIT.

STABLIZED CONSTRUCTION ENTRANCE

NTS



MULCH SOCK MATERIAL

USE UNTREATED WOOD CHIPS PRODUCED FROM A 3 (THREE) INCH MINUS SCREENING PROCESS (EQUIVALENT TO TXDOT ITEM 161, COMPOST, SECTION 1.6.2.B, WOOD CHIP REQUIREMENTS).

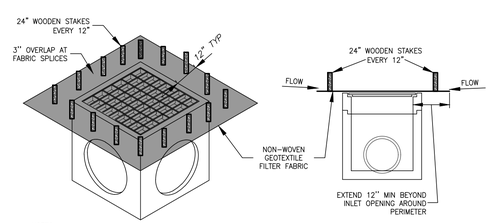
MULCH CONSISTS PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, OR COMPOSTED BARK.

LARGE PORTIONS OF SILT, CLAYS, OR FINE SANDS ARE NOT ACCEPTABLE IN THE MULCH.

NOTES:

1. STEEL OR WOOD POSTS WHICH SUPPORT THE MULCH SOCK SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 600mm (24 inches). IF WOOD POSTS CANNOT ACHIEVE 600mm (24 inches) DEPTH, USE STEEL POSTS. EARTH ANCHORS ARE ALSO ACCEPTABLE.
2. THE TOE OF THE MULCH SOCK SHALL BE PLACED SO THAT THE MULCH SOCK IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. IN ORDER TO PREVENT WATER FROM FLOWING BETWEEN THE JOINTS OF ADJACENT ENDS OFMULCH SOCKS, LAP THE ENDS OF ADJACENT MULCH SOCKS A MINIMUM OF 300mm (12 inches).
3. MULCH MATERIAL MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH; IT IS NOT ACCEPTABLE FOR THE MULCH MATERIAL TO CONTAIN GROUND CONSTRUCTION DEBRIS, BIOSOLIDS, OR MANURE.
4. SOCK MATERIAL WILL BE 100% BIODEGRADABLE, PHOTODEGRADABLE, OR RECYCLABLE SUCH AS BURLAP, TWINE, UV PHOTOBIODEGRADABLE PLASTIC, POLYESTER, OR ANY OTHER ACCEPTABLE MATERIAL.
5. MULCH SOCKS SHOULD BE USED AT THE BASE OF SLOPES NO STEEPER THAN 2:1 AND SHOULD NOT EXCEED THE MAXIMUM SPACING CRITERIA PROVIDED IN CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL TABLE 1.4.5.F.1 FOR A GIVEN SLOPE CATEGORY.
6. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150mm (6 Inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	MULCH SOCK	
Meyna S. Key, P.E. 08/24/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 648S-1

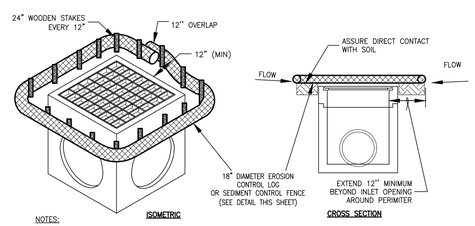


ISOMETRIC

CROSS SECTION

NOTES:

1. DAILY INSPECTION SHALL BE MADE BY THE CONTRACTOR AND SILT ACCUMULATION MUST BE REMOVED WHEN DEPTH REACHES 2".
2. CONTRACTOR SHALL MONITOR THE PERFORMANCE OF INLET PROTECTION DURING EACH RAINFALL EVENT AND IMMEDIATELY CLEAN THE INLET PROTECTION IF EXCESSIVE PONDING OCCURS.
3. INLET PROTECTIONS SHALL BE REMOVED AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.



ISOMETRIC

CROSS SECTION

NOTES:

1. EROSION CONTROL LOG CONTAINMENT MESH SHALL BE 100% BIODEGRADABLE, PHOTODEGRADABLE OR RECYCLABLE; AND FILL MATERIAL SHALL CONSIST OF MULCH, ASPEN EXCELSIOR FIBERS, CHIPPED SITE VEGETATION, COCONUT FIBERS, 100% RECYCLABLE FIBERS, OR ANY OTHER ACCEPTABLE MATERIAL EXCLUDING STRAW AND HAY.
2. DAILY INSPECTION SHALL BE MADE BY THE CONTRACTOR AND SILT ACCUMULATION MUST BE REMOVED WHEN DEPTH REACHES 6".
3. CONTRACTOR SHALL MONITOR THE PERFORMANCE OF INLET PROTECTION DURING EACH RAINFALL EVENT AND IMMEDIATELY CLEAN THE INLET PROTECTION IF EXCESSIVE PONDING OCCURS.
4. INLET PROTECTIONS SHALL BE REMOVED AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.

AREA INLET PROTECTION DETAIL

NTS

STATE OF TEXAS
KEVIN W. SPRAGGINS
84823
REGISTERED PROFESSIONAL ENGINEER
"THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRAGGINS, P.E. 84823 ON 09/ 05/ 2023"

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830 - 997-4744 FAX 830 - 997-6967
In Kerrville 830 - 895-4770 FAX 830 - 895-7441
TEXAS REGISTRATION # F-165

EROSION CONTROL DETAILS

360 COMAL BOAT/RV STORAGE

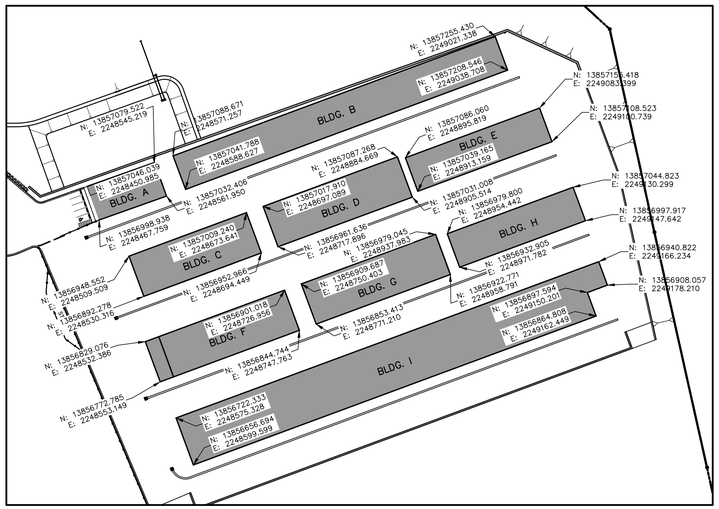
HIGHWAY 306 AND PURGATORY ROAD

NEW BRAUNFELS TEXAS

DRAWN BY: KS
DATE: 09/ 05/ 2023
CHK. BY (DWG)
CHK. BY (ENGR)
REVISION:
JOB NO: 22023

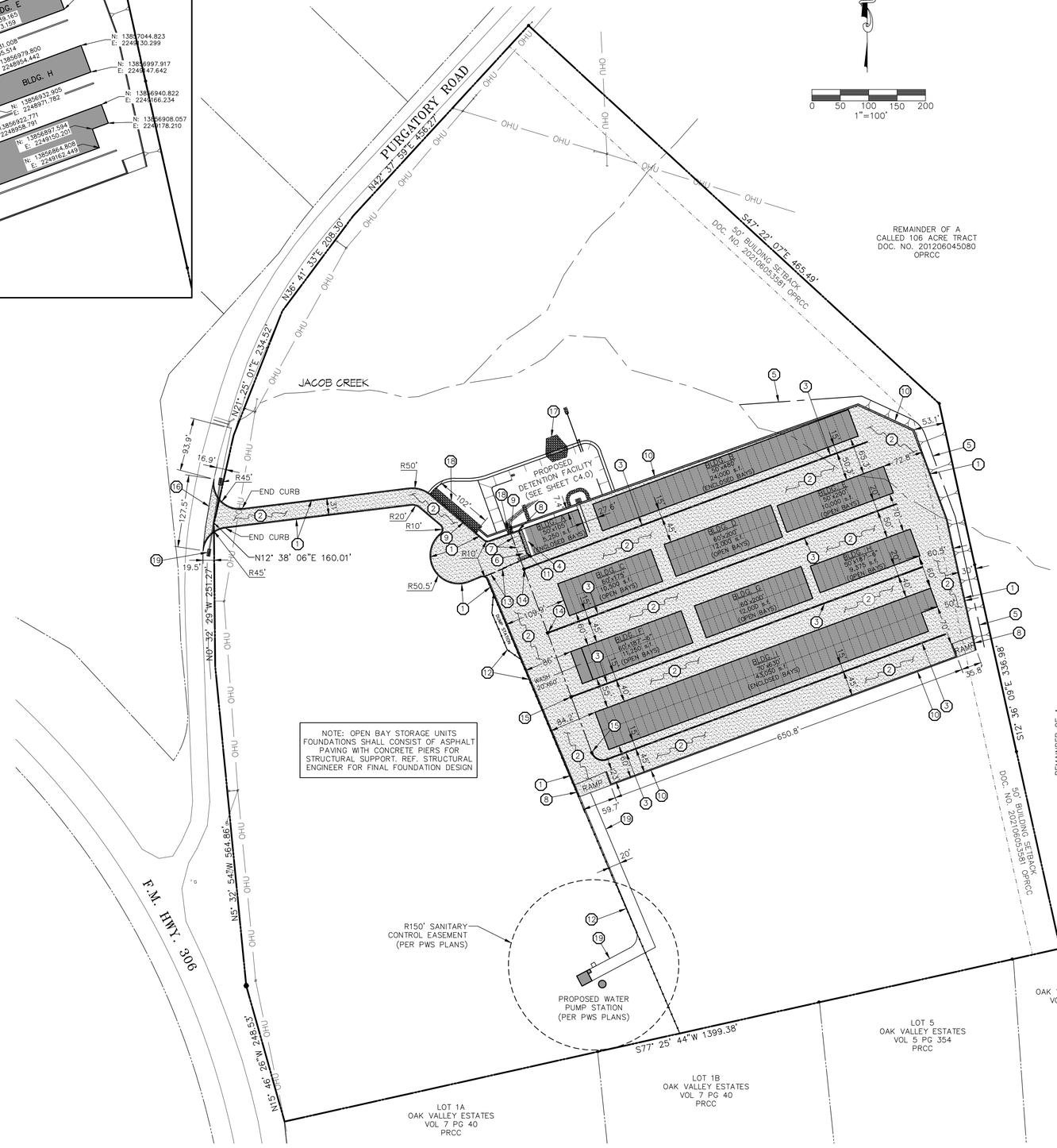
EROSION CONTROL DETAILS
SHEET NUMBER
C1.3
5 OF 13

Start Date: 00/00/0000
File no.



PROPOSED BUILDING COORDINATES

SCALE: 1" = 100'



NOTES:

1. CONTRACTOR TO VERIFY LOCATION OF EXISTING UTILITIES.
2. THIS DRAWING AND SERVICES BY VEI DO NOT INCLUDE SUBMISSION TO ARCHITECTURAL BARRIERS FOR ADA REVIEW. REVIEW, IF REQUIRED, IS BY OTHERS.
3. SIDEWALK FROM HANDICAP PARKING AREA TO BUILDING ENTRANCES MUST COMPLY WITH ALL ADA GUIDELINES.
4. THE DRAWING AND SERVICES BY VEI DO NOT INCLUDE "AS-BUILT" INSPECTIONS NOR SERVICES PAST DELIVERY OF THIS DRAWING.
5. ALL DIMENSIONS ARE MEASURED BACK TO BACK OF CURB UNLESS OTHERWISE NOTED.
6. ALL BUILDING DIMENSIONS DERIVED FROM ARCHITECTURAL DRAWINGS. DUE TO THE INHERENT INACCURACY OF REPRODUCTION, DO NOT SCALE FROM THESE DRAWINGS.
7. CONTRACTOR SHALL VERIFY ALL DIMENSIONS WITH ARCHITECT AND OWNER PRIOR TO START OF CONSTRUCTION.
8. REFER TO LANDSCAPE ARCHITECT PLANS FOR LANDSCAPE AND POOL AREAS.
9. THE LOCATION OF EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE BASED ON AVAILABLE RECORDS. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY OCCUR DURING CONSTRUCTION.
10. REFERENCE GEOTECHNICAL REPORT BY ROCK ENGINEERING & TESTING LABORATORY, INC., PROJECT NO. 221383 DATED FEBRUARY 9, 2022 FOR ALL PAVEMENT THICKNESSES, SUBGRADE PREPARATION AND DESIGN ALTERNATIVES.

SUMMARY TABLE

LOT AREA	1,960,073 sq. ft. / 45.00 Ac.
PROPOSED BUILDINGS AREA	141,630 sq. ft. / 3.25 Ac.
PARKING SPACES REQUIRED (1 PER 300 s.f. of RETAIL AREA – MIN. 4 SPACES)	2
PARKING SPACES PROVIDED	5
HANDICAP PARKING SPACES REQUIRED	1
HANDICAP PARKING SPACES PROVIDED	1
PERVIOUS AREA	1,564,963 sq. ft. / 35.93 Ac.
IMPERVIOUS AREA	395,110 sq. ft. / 9.07 Ac.
PROPOSED IMPERVIOUS PERCENTAGE	20%

CONSTRUCTION LEGEND

1. CONSTRUCT CONCRETE CURB AND GUTTER PER DETAIL (SEE SHEET C7.0)
2. CONSTRUCT ASPHALT PAVEMENT PER DETAIL (SEE SHEET C7.0)
3. CONSTRUCT 2-FT WIDE RIBBON CURB PER DETAIL (SEE SHEET C7.0)
4. CONSTRUCT CONCRETE SIDEWALK PER DETAIL (SEE SHEET C7.0)
5. CONSTRUCT EARTHEN DRAINAGE CHANNEL (SEE SHEET C3.0)
6. INSTALL ACCESSIBLE SPACES PER DETAIL (SEE SHEET C7.0)
7. INSTALL PAVEMENT STRIPING PER NOTES (SEE SHEET C8.0)
8. TRANSITION 6" CURB TO 0" HEIGHT PER DETAIL (SEE SHEET C7.0)
9. INSTALL SAW-TOOTH CURB OPENING PER DETAIL (SEE SHEET C7.0)
10. CONSTRUCT RETAINING WALL (PER OWNER/ ARCH)
11. INSTALL CONCRETE WHEEL STOPS PER DETAIL (SEE SHEET C7.0)
12. INSTALL NEW FENCE (PER OWNER/ ARCH)
13. INSTALL NEW GATE (PER OWNER/ ARCH)
14. INSTALL 4'X4' GRATE INLET PER DETAIL (SEE SHEET C8.0)
15. INSTALL 3'X3' GRATE INLET PER DETAIL (SEE SHEET C8.0)
16. CONSTRUCT COMMERCIAL DRIVEWAY PER COMAL COUNTY STANDARDS & REGULATIONS (SEE COMAL COUNRT ROAD DEPARTMENT FOR DETAILS)
17. CONSTRUCT POND OVERFLOW STRUCTURE PER DETAILS (SEE SHEET C4.0)
18. INSTALL CONCRETE RIPRAP PER DETAIL (SEE SHEET C7.0)
19. INSTALL 18" RCP CULVERT WITH SAFETY-END TREATEMENTS PER DETAIL (SEE SHEET C7.0)
19. INSTALL GRAVEL ALL-WEATHER ACCESS ROAD (PER PUBLIC WATER SYSTEM PLANS)

LEGEND

EXISTING

- *PROPERTY BOUNDARY*
- *ADJACENT PROPERTY BOUNDARY*
- *EXISTING OVERHEAD UTILITY LINE*
- *EXISTING CREEK/RIVER CENTERLINE*
- *EXISTING FENCE LINE*
- *BUILDING SETBACK LINE*
- *EXISTING CONCRETE CURB*
- *IRON ROD FOUND*
- *IRON ROD SET*

PROPOSED

- PROPOSED BUILDING
- PROPOSED CONCRETE PAVING
- PROPOSED ASPHALT PAVING
- PROPOSED PARKING STRIPE
- PROPOSED RIP-RAP
- PROPOSED FLOWLINE
- PROPOSED FENCE LINE
- PROPOSED RETAINING WALL
- PROPOSED CONCRETE CURB
- PROPOSED PHASE LINE
- PROPOSED HANDICAP SPACE
- PROPOSED WHEEL STOP
- SEE CONSTRUCTION LEGEND
- PROPOSED NUMBER OF PARKING SPACES
- PROPOSED SWALE
- BERM (FILL)
- PROPOSED 3FT GRATE INLET

STATE OF TEXAS
KEVIN W. SPRAGGINS
84823
REGISTERED
PROFESSIONAL ENGINEER
"THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRAGGINS, P.E. 84823 ON 09/ 05/ 2023"

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830 - 997-4744 FAX 830 - 997-6967
In Kerrville 830 - 895-4770 FAX 830 - 895-7441
TEXAS REGISTRATION # F-165

360 COMAL BOAT/RV STORAGE

DIMENSION CONTROL PLAN

HIGHWAY 306 AND PURGATORY ROAD

NEW BRAUNFELS TEXAS

DRAWN BY:	KS
DATE:	09/ 05/ 2023
CHK. BY (DWG)	
CHK. BY (ENGR)	
REVISION:	
JOB NO:	22023

DIMENSION CONTROL PLAN

SHEET NUMBER

C2.0

6 OF 13

Start Date: 06/01/2022
File no. 22023 Civil Master.dwg

NOTES:

1. CONTRACTOR TO VERIFY LOCATION OF EXISTING UTILITIES.

2. THIS DRAWING AND SERVICES BY VEI DO NOT INCLUDE SUBMISSION TO ARCHITECTURAL BARRIERS FOR ADA REVIEW. REVIEW, IF REQUIRED, IS BY OTHERS.

3. SIDEWALK FROM HANDICAP PARKING AREA TO BUILDING ENTRANCES MUST COMPLY WITH ALL ADA GUIDELINES.

4. THE DRAWING AND SERVICES BY VEI DO NOT INCLUDE "AS-BUILT" INSPECTIONS NOR SERVICES PAST DELIVERY OF THIS DRAWING.

5. ALL DIMENSIONS ARE MEASURED BACK TO BACK OF CURB.

6. ALL BUILDING DIMENSIONS DERIVED FROM ARCHITECTURAL DRAWINGS. DUE TO THE INHERENT INACCURACY OF REPRODUCTION, DO NOT SCALE FROM THESE DRAWINGS. CONTRACTOR SHALL VERIFY ALL DIMENSIONS WITH ARCHITECT AND OWNER PRIOR TO START OF CONSTRUCTION.

7. REFER TO LANDSCAPE ARCHITECT PLANS FOR LANDSCAPE AREAS.

8. PLANS DO NOT INCLUDE DEMOLITION OF EXISTING IMPROVEMENTS.

9. THE LOCATION OF EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE BASED ON AVAILABLE RECORDS. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY OCCUR DURING CONSTRUCTION.

10. ALL CURBS ARE 6" IN HEIGHT UNLESS OTHERWISE NOTED.

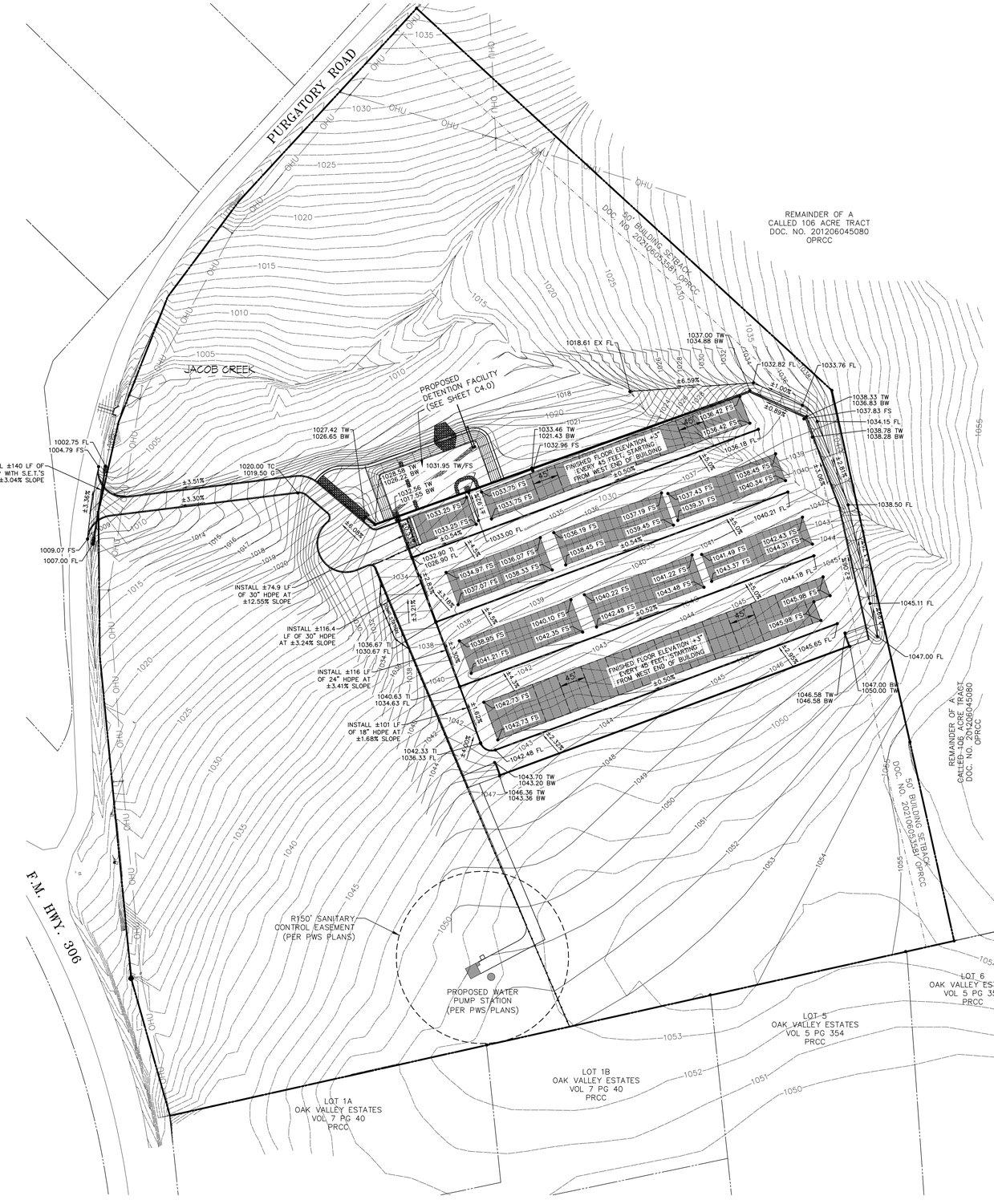
11. ALL SLOPES ARE MAXIMUM 3:1.

12. CONTRACTOR TO MATCH EXISTING GRADES AT ALL PROPERTY LINES.

13. ALL RIP-RAP INSTALLED TO ROUGHLY CONSIST OF 6" – 12" BOULDERS CEMENTED IN PLACE.

14. RETAIN WALL DESIGN NOT INCLUDED. CONSULT WITH SOILS AND STRUCTURAL ENGINEER ON REQUIRED WALL DESIGN.

15. ANY DESIGN PHILOSOPHIES DISCREPANCIES, CHANGES OR CONFLICTS WITH OTHER DOCUMENTS OR SPECIFICATIONS OR WITH ANY ITEMS ON THESE CONSTRUCTION DOCUMENTS ARE TO BE REPORTED TO OUR ENGINEERING FIRM AND THE ENGINEER OF RECORD IN WRITING IMMEDIATELY UPON DISCOVERY (24 HRS). IF ITEMS ARE NOT REPORTED IMMEDIATELY, CHANGES OR CONFLICT CORRECTIONS MADE BY OTHERS ARE DEEMED APPROVED BY THE OWNER AND THEIR CONSTRUCTION MANAGER AND ARE NOT THE RESPONSIBILITY OF THE ENGINEER OF RECORD OR THE ENGINEERING FIRM OF WHICH HE IS EMPLOYED. BOTH, THE ENGINEER OF RECORD AND THE ENGINEERING FIRM ARE INDEMNIFIED FROM ANY ISSUES, PROBLEMS, OR GRIEVANCES FROM THESE NON DISCLOSED ITEMS.



0 50 100 150 200
1"=100'

LEGEND

EXISTING

- PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- EXISTING OVERHEAD UTILITY LINE
- EXISTING EASEMENT
- EXISTING CREEK/RIVER CENTERLINE
- 1500 EXISTING CONTOURS
- EXISTING FENCE LINE
- EXISTING CONCRETE CURB
- IRON ROD FOUND
- IRON ROD SET
- EXISTING UTILITY POLE

PROPOSED

- PROPOSED BUILDING
- PROPOSED PARKING STRIPE
- PROPOSED RIP-RAP
- PROPOSED FLOWLINE
- 1500 PROPOSED CONTOURS
- PROPOSED FENCE LINE
- PROPOSED RETAINING WALL
- PROPOSED CONCRETE CURB
- PROPOSED CABLE TV LINE
- PROPOSED 3FT GRATE INLET
- PROPOSED HANDICAP SPACE
- XX.XX TC / XX.XX G PROPOSED SPOT ELEVATIONS
- ±2.00% PROPOSED SLOPE AND FLOW DIRECTION
- G GUTTER
- TC TOP OF CURB
- TI TOP OF INLET
- TW TOP OF WALL
- BW BOTTOM OF WALL
- FF FINISH FLOOR
- FS FINISH SURFACE
- FL FLOWLINE
- PROPOSED SWALE
- BERM (FILL)

STATE OF TEXAS
KEVIN W. SPRAGGINS
84823
REGISTERED
PROFESSIONAL ENGINEER

"THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRAGGINS, P.E. 84823 ON 09/05/2023"

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830 - 997-4744 FAX 830 - 997-6967
In Kerrville 830 - 895-4770 FAX 830 - 895-7441
TEXAS REGISTRATION # F-165

GRADING PLAN

360 COMAL BOAT/RV STORAGE

HIGHWAY 306 AND PURGATORY ROAD

NEW BRAUNFELS TEXAS

DRAWN BY:	KS
DATE:	09/05/2023
CHK. BY (ENG)	
CHK. BY (ENGR)	
REVISION:	
JOB NO:	22023

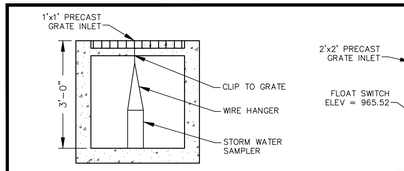
GRADING PLAN

SHEET NUMBER

C3.0

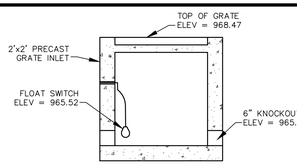
7 OF 13

Start Date: 06/01/2022
File no: 22023 Civil Master.dwg



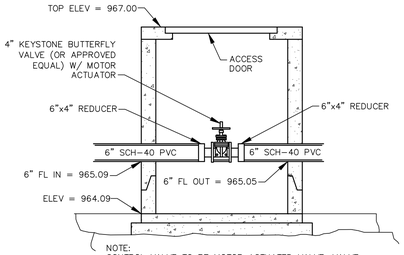
1'x1' DRAINAGE INLET SAMPLE VAULT

NTS



2'x2' PRECAST GRATE INLET WITH FLOAT SWITCH

NTS



NOTE:
CONTROL VALVE TO BE MOTOR ACTUATED VALVE. VALVE SHALL BE WIRED TO A CONTROLLER THAT OPENS VALVE 12 HOURS AFTER RAINFALL EVENT AND CLOSES VALVE ONCE POND HAS DRAINED DRY. CONTROLLER SHALL INCLUDE PROVISIONS FOR A MANUAL OVERRIDE SWITCH

2'x3' JUNCTION BOX WITH VALVE

NTS

LOGIC CONTROLLER CYLCE:

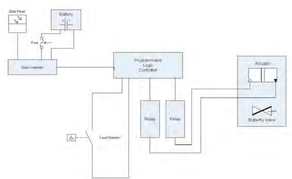
1. A 12-HOUR DETENTION TIME IS REQUIRED FOR ALL DETENTION BASINS. AFTER A SINGLE RAINFALL EVENT IN WHICH THE LEVEL SENSOR IS TRIPPED, A SIGNAL WILL BE SENT TO THE CONTROLLER TO OPEN THE VALVE AFTER A 12-HOUR DELAY TO ALLOW THE BASIN TO DRAIN. ONCE THE BASIN IS EMPTY (WATER LEVEL BELOW THE TRIP POINT OF THE LEVEL SENSOR) A DELAY OF 2-HOURS IS STARTED TO ALLOW THE BASIN TO DRAIN COMPLETELY, AFTER WHICH A SIGNAL WILL BENT SENT TO THE ACTUATOR TO CLOSE THE VALVE.

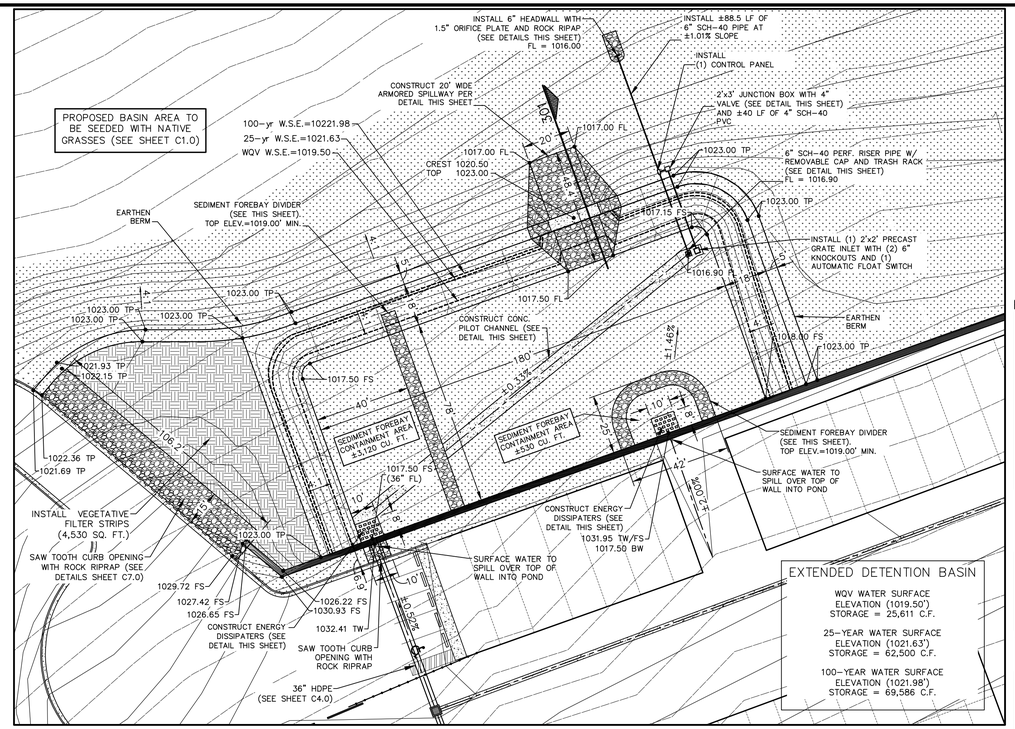
2. IF ONE OR MORE ADDITIONAL RAINFALL EVENTS OCCUR DURING THE DRAWDOWN PERIOD, THE VALVE SHALL REMAIN OPEN UNTIL THE BASIN IS EMPTIED, THEN A 2-HOUR DELAY IS STARTED, FOLLOWED BY A SIGNAL TO CLOSE THE VALVE.

3. DURING A SINGLE RAINFALL EVENT IN WHICH THE WATER LEVEL REMAINS BELOW THE TRIP POINT OF THE LEVEL SENSOR, THE CAPTURED WATER IS HELD UNTIL IT INFILTRATES/EVAPORATES OR IS JOINED BY STORM WATER FROM A SUBSEQUENT STORM.

4. INTERMITTENT NUISANCE WATER: THE CONTROLLER WILL OPEN THE VALVE ONCE A WEEK FOR TO DRAIN ANY NUISANCE WATER, WHETHER FROM AN INSIGNIFICANT RAINFALL EVENT OR FROM IRRIGATION. ONCE THE BASIN IS EMPTY (WATER LEVEL BELOW THE TRIP POINT OF THE LEVEL SENSOR) A DELAY OF 2-HOURS IS STARTED TO ALLOW THE BASIN TO DRAIN COMPLETELY, AFTER WHICH A SIGNAL WILL BENT SENT TO THE ACTUATOR TO CLOSE THE VALVE.

5. THE SYSTEM SHOULD PROVIDE THE FOLLOWING: A TEST SEQUENCE, BE ABLE TO DEAL WITH LOW BATTERY/POWER OUTAGES, AN ON/OFF/RESET SWITCH, MANUAL OPEN/CLOSE SWITCHES (MAINTENANCE/SPILL), CLEARLY VISIBLE EXTERNAL INDICATOR TO INDICATE A CYCLE IS IN PROGRESS WITHOUT OPENING THE BOX, AND ABILITY TO EXERCISE THE VALVE TO PREVENT SEIZING.





DENTENTION POND PLAN 300

1" = 30'

WATER QUALITY CALCULATIONS:

DRAINAGE AREA TO CONTROL (LIMITS OF DISTURBED AREA)	24.96 Ac.	
DRAINAGE AREA IMPEVIOUS COVER (%)	37%	
DRAINAGE AREA IMPERVIOUS COVER (AC)	9.34 Ac.	
RAINFALL DEPTH	0.33 in	
POST-DEVELOPMENT RUNOFF COEFFICIENT	0.68 (WEIGHTED FACTOR USED)	
	REQUIRED	PROVIDED
WATER QUALITY VOLUME (WQV)	15,959 cf	
REQUIRED WQV FOR EXT. DETENTION BASIN (WQV x 1.20)	19,150 cf	25,611 cf
SEDIMENT FOREBAY AREA (WQV x 0.2)	3,192 cf	3,650 cf
VEGETATIVE FILTER STRIPS	–	4,530 sf

PROPOSED AVAILABLE DETENTION STORAGE

Stage (ft)	Elevation (ft)	Total Storage (cu ft)
0.00	1017.50	00
0.50	1018.00	5643
1.00	1018.50	11781
1.50	1019.00	18432
2.00	1019.50 (WQV)	25611
2.50	1020.00	33333
3.00	1020.50	41616
3.50	1021.00	50475
4.00	1021.50	59925
4.13	1021.63 (25-yr)	62500
4.48	1021.98 (100-yr)	69586
4.50	1022.00	69984
5.00	1022.50	80667
5.50	1023.00	91989

NOTE: PROPOSED POND VOLUME CALCULATED USING HYDROFLOW HYDROGRAPHS 2022 (CONIC METHOD).

PROPOSED POND DATA

REQUIRED ORIFICE SIZE: $Ao = \frac{0.001\ BMP\_Vol.}{C\sqrt{2gHavg}}$

BMP_Vol. = required basin volume (cu ft)
C = orifice coefficient (0.62)
g = acceleration of gravity (32.2 ft/s²)
Havg = $H_T/2$, avg. hydraulic head (ft)
H_T = total hydraulic head

$$\frac{0.001\ (19150)}{0.62\sqrt{2(32.2)(1.75)}} = \frac{19.15}{0.62\sqrt{112.7}} = 2.91 \sim 3"\ \text{max. orifice}$$

Havg = 3.50 / 2 = 1.73

TOP OF POND (MIN)	= 1023.00 ft
TOP OF WEIR	= 1020.50 ft
25 yr. W.S.E.	= 1021.63 ft
100 yr. W.S.E.	= 1021.98 ft

25yr AVAILABLE FREEBOARD (ft.)= TOP OF POND – W.S.E.
1023.0 – 1021.63 = 1.37 ft FREEBOARD

100yr AVAILABLE FREEBOARD (ft.)= TOP OF POND – W.S.E.
1023.0 – 1021.98 = 1.02 ft FREEBOARD

IMPERVIOUS COVERAGE SUMMARY PER DRAINAGE AREA

DRAINAGE BASIN	AREA (acres)	IMPERVIOUS COVER (acres)	BMP	ANNUAL TSS GENERATED (lbs)	TSS REMOVED (lbs)
DA1 (UNCAPTURED)	14.00	0.31	NATURAL VFS	278	508
DISTURBED AREA TO BASIN	24.96	9.34	ENGINEERED VFS & EXT. DETENTION BASIN	8,384	8,384
DA3 (UNCAPTURED)	9.66	0.00	NATURAL VFS	0.00	146*
OVERALL SITE	45.02	9.65		8,662	9,038

* MAXIMUM POSSIBLE TSS LOAD REMOVED FROM UNDEVELOPED BASIN.

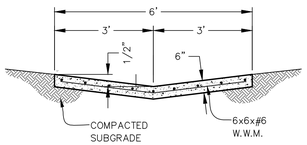
WATER QUALITY BASIN SUMMARY

DRAINAGE BASIN	AREA (acres)	IMPERVIOUS COVER (acres)	IMPERVIOUS COVER OVER-TREATED IN BASIN (acres)	REQUIRED WATER QUALITY VOLUME (CF)	DESIGNED WATER QUALITY VOLUME (CF)
BASIN 1 (TOTAL DISTURBED AREA WHICH INCLUDES DA1 AND PARTS OF DA2 & DA3)	24.96	9.34	3.60	19,150	25,611

POST-DEVELOPMENT DRAINAGE DATA

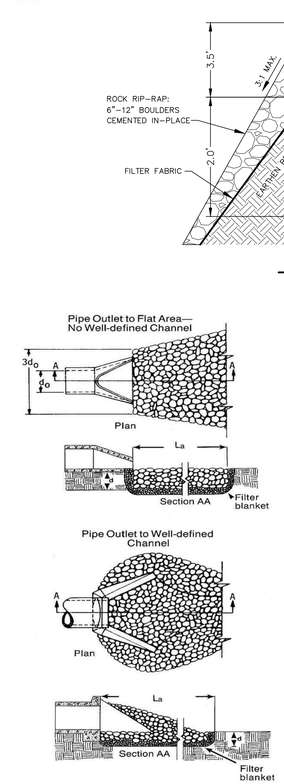
DRAINAGE AREA	C	AREA (acres)	Tc (min.)	I_2 (in/hr.)	Q_2 cfs	I_5 (in/hr.)	Q_5 cfs	I_{10} (in/hr.)	Q_{10} cfs	I_{25} (in/hr.)	Q_{25} cfs	I_{50} (in/hr.)	Q_{50} cfs	I_{100} (in/hr.)	Q_{100} cfs
DA1	0.51	14.00	10.0	5.06	35.47	6.33	44.34	7.43	51.98	8.92	62.43	10.10	70.73	11.37	79.57
DA2	0.68	21.36	10.0	5.06	68.97	6.33	86.23	7.43	101.09	8.92	121.42	10.10	137.55	11.37	154.75
TOTAL DISTURBED AREA (INCLUDES DA2 AND PARTS OF DA1 & DA3)	0.68	24.96	10.0	5.06	85.99	6.33	107.51	7.43	126.03	8.92	151.38	10.10	171.49	11.37	192.94
TOTAL DISTURBED AREA ROUTED THRU POND	–	24.96	–	–	0.030	–	0.033	–	0.034	–	93.19	–	111.68	–	132.88
DA3*	0.50	9.66	10.0	5.06	24.47	6.33	30.59	7.43	35.87	8.92	43.08	10.10	48.80	11.37	54.90
TOTAL FLOWS LEAVING THE SITE					59.97		74.96		87.88		198.70		231.21		267.35

* NO CHANGE IN IMPERVIOUS COVERAGE FROM PRE-DEVELOPMENT CONDITIONS TO POST-DEVELOPMENT CONDITIONS



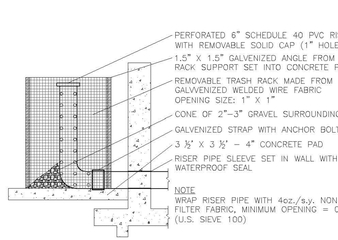
CONCRETE PILOT CHANNEL

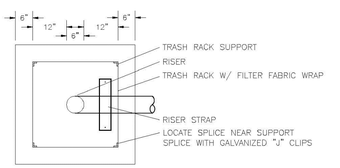
NTS



ARMORED SPILLWAY WITH ROCK RIP-RAP

NTS





RISER PIPE DETAIL

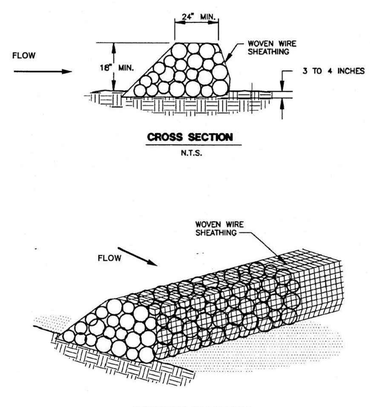
NTS

Notes
1. La is the length of the riprap apron.
2. d = 1.5 times the maximum stone diameter but not less than 6".
3. In a well-defined channel extend the apron up the channel banks to an elevation of 6" above the maximum tailwater depth or to the top of the bank, whichever is less.
4. A filter blanket or filter fabric should be installed between the riprap and soil foundation.

Figure 3-5 Riprap Outlet Design

ROCK RIP-RAP OUTLET DETAIL

NTS



SEDIMENT FOREBAY (ROCK BERM) DETAIL

NTS

EXTENDED DETENTION BASIN NOTES:

1. BASIN SOILS: TO ENHANCE INFILTRATION AND WATER STORAGE WITHIN THE BASIN, TOPSOIL MUST BE PLACED ON THE BASIN FLOOR AFTER EXCAVATED BOTTOM IS SCARIFIED TO A DEPTH OF 2 TO 3 INCHES TO IMPROVE DRAINAGE. THE TOPSOIL MUST BE 6 TO 8 INCHES DEEP AND A SOIL MIXTURE OF 30-40% SAND OR GRANITE SAND, AND 60-70% TOPSOIL, AND SUGGEST 5-10% COMPOST OR PEAT TO AID WATER RETENTION AND PROMOTE VEGETATION GROWTH. SOIL BLEND MUST HAVE CLAY CONTENT LESS THAN 20% AND BE FREE OF STONES, STUMPS, ROOTS, OR OTHER SIMILAR OBJECTS LARGER THEN ONE (1) INCH. IF ON-SITE SOILS DO NOT MEET THESE SPECIFICATIONS, TOPSOIL PER THE ABOVE SPECS MUST BE ADDED. SANDY LOAM IS NOT AN APPROVED SOIL AND CALICHE IS NOT CONSIDERED SOIL.

2. ALL GABIONS AND REVETMENT MATTRESSES USED FOR WATER QUALITY BEST MANAGEMENT PRACTICES (BMPS), EROSION CONTROL OR SLOPE SUPPORT /STABILIZATION MUST BE METALLICCOATED OR PVC-COATED STEEL MEETING EITHER TXDOT SPECIFICATION 459 OR CITY OF AUSTIN SPECIFICATION 594S.
   A. USE MINIMUM 11 GAUGE (0.120 INCH OR 3.05 MM) WIRE FOR METALLIC-COATED GABIONS.
   B. USE MINIMUM 12 GAUGE (0.106 INCH OR 2.7 MM) WIRE FOR PVC-COATED GABIONS.
   C. USE MINIMUM 13.5 GAUGE (0.087 INCH OR 2.2 MM) WIRE FOR REVETMENT MATTRESSES.

3. BATCH EXTENDED DETENTION BASIN STRUCTURES AND EQUIPMENT SHALL ADHERE TO DETAILS AND SPECIFICATIONS AS NOTED IN TECHNICAL GUIDANCE ON BEST MANAGEMENT PRACTICES, ADDENDUM RG-348.

4. A FIXED VERTICAL SEDIMENT DEPTH MARKER SHOULD BE INSTALLED IN THE BOTTOM OF SEDIMENTATION AREAS TO DETERMINE WHEN SEDIMENT ACCUMULATION HAS EXCEEDED LIMITS SET IN THE MAINTENANCE PLAN.

5. IMPERMEABLE LINERS SHOULD BE USED FOR WATER QUALITY BASINS (RETENTION, EXTENDED DETENTION, SAND FILTERS, WET PONDS AND CONSTRUCTED WETLANDS) LOCATED OVER THE RECHARGE ZONE AND IN AREAS WITH THE POTENTIAL FOR GROUNDWATER CONTAMINATION. IMPERMEABLE LINERS MAY BE CLAY, CONCRETE OR GEOMEMBRANE. IF GEOMEMBRANE IS USED, SUITABLE GEOTEXTILE FABRIC SHOULD BE PLACED ON THE TOP AND BOTTOM OF THE MEMBRANE FOR PUNCTURE PROTECTION AND THE LINERS COVERED WITH A MINIMUM OF 6 INCHES OF COMPACTED TOPSOIL. THE TOPSOIL SHOULD BE STABILIZED WITH APPROPRIATE VEGETATION. CLAY LINERS SHOULD HAVE A MINIMUM THICKNESS OF 13 INCHES.

CLAY LINER SPECIFICATIONS (TABLE 3-6 EDWARDS AQUIFER GUIDANCE MANUAL):

PROPERTY	TEST METHOD	UNIT	SPECIFICATION
PERMEABILITY	ASTM D-2434	CM/SEC	1 X 10-6
PLASTICITY INDEX OF CLAY	ASTM D-423 & D-424	%	NOT LESS THAN 15
LIQUID LIMIT OF CLAY	ASTM D-2216	%	NOT LESS THAN 30
CLAY PARTICLES PASSING	ASTM D-422	%	NOT LESS THAN 30
CLAY COMPACTION	ASTM D-2216	%	95% OF STANDARD PROCTOR DENSITY

IF A GEOMEMBRANE LINER IS USED IT SHOULD HAVE A MINIMUM THICKNESS OF 30 MILS AND BE ULTRAVIOLET RESISTANT. THE GEOTEXTILE FABRIC (FOR PROTECTION OF GEOMEMBRANE) SHOULD BE NONWOVEN GEOTEXTILE FABRIC.

GEOTEXTILE FABRIC SPECIFICATIONS (TABLE 3-7 EDWARDS AQUIFER GUIDANCE MANUAL):

PROPERTY	TEST METHOD	UNIT SPECIFICATION (MIN)	
UNIT WEIGHT		OZ/YD2	8
FILTRATION RATE		IN/SEC	0.08
PUNCTURE STRENGTH	ASTM D-751*	LB	125
MULLEN BURST STRENGTH	ASTM D-751	PSI	400
TENSILE STRENGTH	ASTM D-1682	LB	200
EQUIV. OPENING SIZE	US STANDARD SIEVE	NO.	80
*MODIFIED			

6. CLAY AND GEOMEMBRANE LINERS TO EXTEND TO THE WATER QUALITY VOLUME WATER SURFACE ELEVATION.

LEGEND

EXISTING

- PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- EXISTING CREEK/RIVER CENTERLINE
- EXISTING FENCE LINE
- EXISTING CONCRETE CURB
- 1500 EXISTING CONTOURS

PROPOSED

- PROPOSED GRASS SEEDING
- PROPOSED VEGETATIVE FILTER STRIPS
- PROPOSED PARKING STRIPE
- PROPOSED RIP-RAP
- PROPOSED WATER SURFACE ELEVATION BY STORM EVENT
- PROPOSED FLOWLINE
- PROPOSED FENCE LINE
- PROPOSED RETAINING WALL
- PROPOSED CONCRETE CURB
- 1500 PROPOSED CONTOURS
- XX.XX TC / XX.XX G — PROPOSED SPOT ELEVATIONS
- ±2.00% — PROPOSED SLOPE AND FLOW DIRECTION
- G — GUTTER
- TC — TOP OF CURB
- TI — TOP OF INLET
- TW — TOP OF WALL
- BW — BOTTOM OF WALL
- FF — FINISH FLOOR
- FS — FINISH SURFACE
- FL — FLOWLINE
- PROPOSED SWALE
- BERM (FILL)

STATE OF TEXAS
KEVIN W. SPRINGMAN
84823
REGISTERED PROFESSIONAL ENGINEER
"THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRAGGINS, P.E. 84823 ON 09/05/2023"

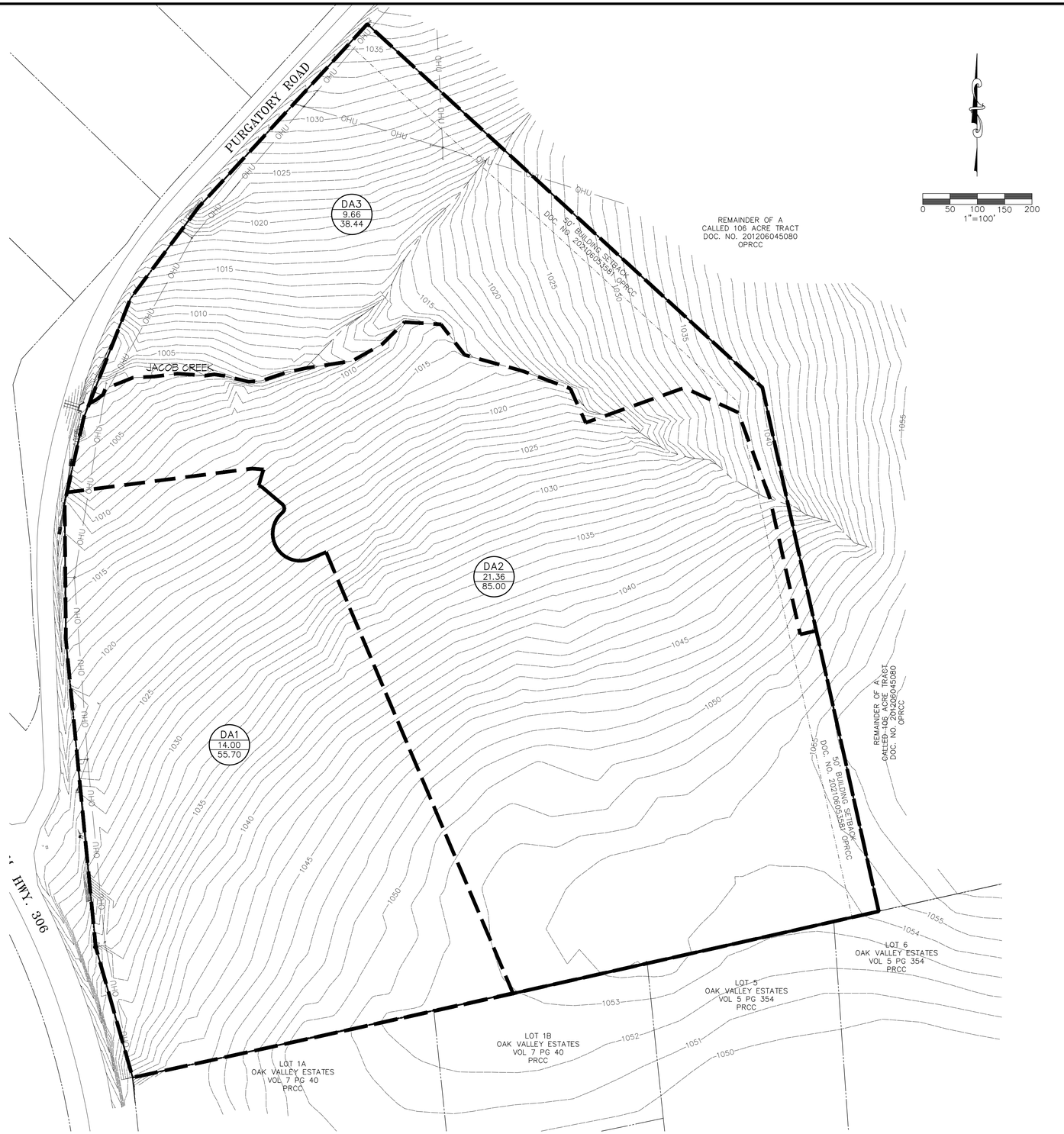
VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830 - 997-4744 FAX 830 - 997-6967
In Kerrville 830 - 895-4770 FAX 830 - 895-7441
TEXAS REGISTRATION # F-165

EXTENDED DETENTION BASIN PLAN
360 COMAL BOAT/RV STORAGE
HIGHWAY 306 AND PURGATORY ROAD
NEW BRAUNFELS TEXAS

DRAWN BY: KS
DATE: 09/ 05/ 2023
CHK. BY (DWG)
CHK. BY (ENGR)
REVISION:
JOB NO: 22023

EXTENDED DETENTION BASIN PLAN
SHEET NUMBER
C4.0
8 OF 13

Start Date: 00/00/0000
File No.



LEGEND

- 5 / 0.000 / 0.00 — AREA LABEL, DRAINAGE AREA ACRES, FLOW RATE (cfs)
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA FLOW DIRECTION

PRE–DEVELOPMENT DRAINAGE DATA

DRAINAGE AREA	C	AREA (acres)	Tc (min.)	I_2 (in/hr.)	Q_2 cfs	I_5 (in/hr.)	Q_5 cfs	I_{10} (in/hr.)	Q_{10} cfs	I_{25} (in/hr.)	Q_{25} cfs	I_{50} (in/hr.)	Q_{50} cfs	I_{100} (in/hr.)	Q_{100} cfs
DA1	0.35	14.00	10.0	5.06	24.83	6.33	31.04	7.43	36.39	8.92	43.70	10.10	49.51	11.37	55.70
DA2	0.35	21.36	10.0	5.06	37.83	6.33	47.32	7.43	55.55	8.92	66.69	10.10	75.51	11.37	85.00
DA3	0.35	9.66	10.0	5.06	17.11	6.33	21.40	7.43	25.12	8.92	30.16	10.10	34.15	11.37	38.44

"THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRAGGINS, P.E. 84823 ON 09/ 05/ 2023"

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830 - 997-4744 FAX 830 - 997-6967
In Kerrville 830 - 895-4770 FAX 830 - 895-7441
TEXAS REGISTRATION # F-165

PRE-DEVELOPMENT DRAINAGE AREA MAP

360 COMAL BOAT/RV STORAGE

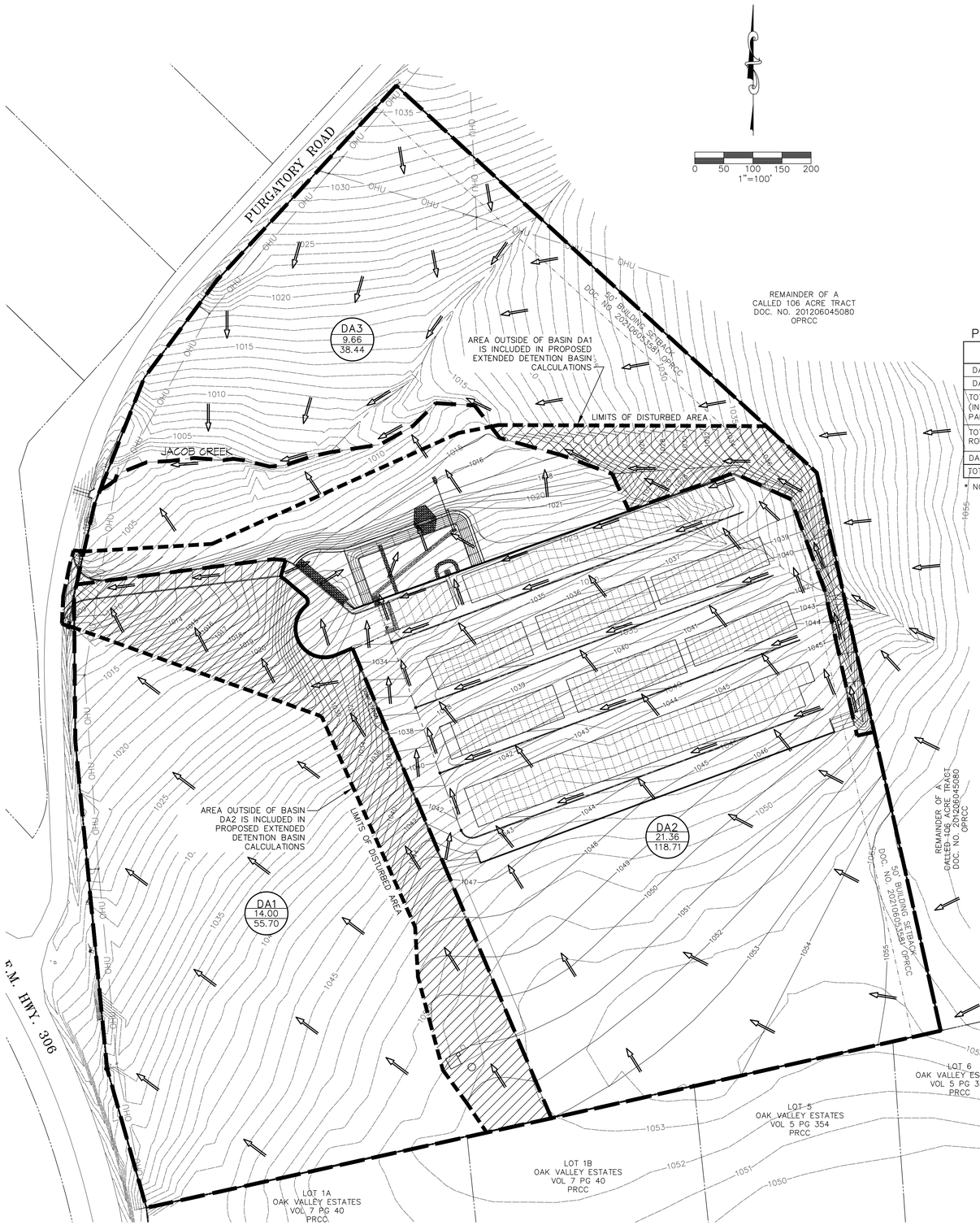
HIGHWAY 306 AND PURGATORY ROAD

NEW BRAUNFELS TEXAS

DRAWN BY: KS
DATE: 09/ 05/ 2023
CHK. BY (ENG)
CHK. BY (ENGR)
REVISION:
JOB NO: 22023

PRE–DEVELOPMENT DRAINAGE AREA MAP
SHEET NUMBER
C5.0
9 OF 13

Start Date: 00/00/0000
File no.



LEGEND

- 5 / 0.000 / 0.00 — AREA LABEL, DRAINAGE AREA ACRES, FLOW RATE (cfs)
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA FLOW DIRECTION

PRE–DEVELOPMENT DRAINAGE DATA

DRAINAGE AREA	C	AREA (acres)	Tc (min.)	I_2 (in/hr.)	Q_2 cfs	I_5 (in/hr.)	Q_5 cfs	I_{10} (in/hr.)	Q_{10} cfs	I_{25} (in/hr.)	Q_{25} cfs	I_{50} (in/hr.)	Q_{50} cfs	I_{100} (in/hr.)	Q_{100} cfs
DA1	0.50	14.00	10.0	5.06	35.47	6.33	44.34	7.43	51.98	8.92	62.43	10.10	70.73	11.37	79.57
DA2	0.50	21.36	10.0	5.06	63.23	6.33	79.05	7.43	92.67	8.92	111.31	10.10	126.10	11.37	141.87
DA3	0.50	9.66	10.0	5.06	24.47	6.33	30.59	7.43	35.87	8.92	43.08	10.10	48.80	11.37	54.90
TOTAL					123.17		153.98		180.52		216.82		245.63		276.34

POST–DEVELOPMENT DRAINAGE DATA

DRAINAGE AREA	C	AREA (acres)	Tc (min.)	I_2 (in/hr.)	Q_2 cfs	I_5 (in/hr.)	Q_5 cfs	I_{10} (in/hr.)	Q_{10} cfs	I_{25} (in/hr.)	Q_{25} cfs	I_{50} (in/hr.)	Q_{50} cfs	I_{100} (in/hr.)	Q_{100} cfs
DA1	0.51	14.00	10.0	5.06	35.47	6.33	44.34	7.43	51.98	8.92	62.43	10.10	70.73	11.37	79.57
DA2	0.68	21.36	10.0	5.06	68.97	6.33	86.23	7.43	101.09	8.92	121.42	10.10	137.55	11.37	154.75
TOTAL DISTURBED AREA (INCLUDES DA2 AND PARTS OF DA1 & DA3)	0.68	24.96	10.0	5.06	85.99	6.33	107.51	7.43	126.03	8.92	151.38	10.10	171.49	11.37	192.94
TOTAL DISTURBED AREA ROUTED THRU POND	–	24.96	–	–	0.030	–	0.033	–	0.034	–	93.19	–	111.68	–	132.88
DA3*	0.50	9.66	10.0	5.06	24.47	6.33	30.59	7.43	35.87	8.92	43.08	10.10	48.80	11.37	54.90
TOTAL FLOWS LEAVING THE SITE					59.97		74.96		87.88		198.70		231.21		267.35

* NO CHANGE IN IMPERVIOUS COVERAGE FROM PRE–DEVELOPMENT CONDITIONS TO POST–DEVELOPMENT CONDITIONS

IMPERVIOUS COVERAGE SUMMARY PER DRAINAGE AREA

DRAINAGE BASIN	AREA (acres)	IMPERVIOUS COVER (acres)	BMP	ANNUAL TSS GENERATED (lbs)	TSS REMOVED (lbs)
DA1 (UNCAPTURED)	14.00	0.31	15' ENGINEERED VFS	278	508
DISTURBED AREA TO BASIN	24.96	9.34	15' ENG. VFS & EXT. DETENTION BASIN	8,384	8,384
DA3 (UNCAPTURED)	9.66	0.00	15' ENGINEERED VFS	0.00	146*
OVERALL SITE	45.02	9.65		8,662	9,038

* MAXIMUM POSSIBLE TSS LOAD REMOVED FROM UNDEVELOPED BASIN.

WATER QUALITY BASIN SUMMARY

DRAINAGE BASIN	AREA (acres)	IMPERVIOUS COVER (acres)	IMPERVIOUS COVER OVER–TREATED IN BASIN (acres)	REQUIRED WATER QUALITY VOLUME (CF)	DESIGNED WATER QUALITY VOLUME (CF)
BASIN 1 (TOTAL DISTURBED AREA WHICH INCLUDES DA1 AND PARTS OF DA2 & DA3)	24.96	9.34	3.60	19,150	25,611

STATE OF TEXAS
KEVIN W. SPRAGGINS
84823
REGISTERED
PROFESSIONAL ENGINEER
"THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRAGGINS, P.E. 84823 ON 09/05/2023"

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830 - 997-4744 FAX 830 - 997-6967
In Kerrville 830 - 895-4770 FAX 830 - 895-7441
TEXAS REGISTRATION # F-165

POST-DEVELOPMENT DRAINAGE AREA MAP

360 COMAL BOAT/RV STORAGE

HIGHWAY 306 AND PURGATORY ROAD

NEW BRAUNFELS TEXAS

DRAWN BY: KS
DATE: 09/ 05/ 2023
CHK. BY (ENG)
CHK. BY (ENGR)
REVISION:
JOB NO: 22023

POST–DEVELOPMENT DRAINAGE AREA MAP
SHEET NUMBER
C5.1
10 OF 13

Start Date: 00/00/0000
File no.

WATER AND WASTEWATER UTILITY CONSTRUCTION NOTES:

1. COMAL COUNTY RULES AND REGULATIONS SHALL GOVERN MATERIAL AND METHODS USED TO DO THIS WORK.

2. THE CONTRACTOR SHALL CONTACT THE COMAL COUNTY AREA UTILITY COMPANIES FOR EXISTING UTILITY LOCATIONS PRIOR TO ANY EXCAVATION. IN ADVANCE OF CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UTILITIES TO BE EXTENDED, TIED TO, OR ALTERED, OR SUBJECT TO DAMAGE/INCONVENIENCE BY THE CONSTRUCTION OPERATIONS.

3. CONTRACT DOCUMENTS MUST INCLUDE A TRENCH SAFETY PLAN AND A PAY ITEM FOR TRENCH SAFETY MEASURES, IN COMPLIANCE WITH TEXAS HOUSE BILL 1569.

4. ALL MATERIALS TESTS, INCLUDING SOIL DENSITY TESTS AND RELATED SOIL ANALYSIS, SHALL BE ACCOMPLISHED BY AN INDEPENDENT LABORATORY FUNDED BY THE DEVELOPER.

5. THRUST RESTRAINT SHALL BE IN ACCORDANCE WITH COMAL COUNTY AND TCEQ STANDARD SPECIFICATIONS.

6. WATER LINE TESTING AND STERILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH COMAL COUNTY AND TCEQ STANDARD SPECIFICATIONS.

7. SEE MEP PLANS FOR ALL UTILITY CONNECTIONS TO BUILDING.

8. WATER AND SANITARY SEWER CONSTRUCTION TO CONFORM TO TCEQ GUIDELINES.

9. SANITARY SEWER PIPE SHALL BE SDR 26.

10. WATER LINE SHALL BE CLASS 200 PVC AWWAC 900 DR18.

SITE UTILITY NOTES:

1. WHERE WATER LINES AND NEW SEWER LINES ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET, THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC 217: SUBCHAPTER C: CONVENTIONAL COLLECTION SYSTEMS OR 30 TAC 290.44(e) (WATER HYGIENE), AND SHALL MEET THE REQUIREMENTS OF ASTM D 2241 WITH ONE JOINT CENTERED AT WATER MAIN.

2. IF THE GIVEN TOP OF MANHOLE ELEVATION DOES NOT AGREE WITH FINISH GROUND SURFACE OR FINISH PAVEMENT, THE CONTRACTOR SHALL ADJUST ELEVATIONS SUCH THAT THE TOP OF MANHOLE SHALL BE 0.5' ABOVE FINISHED GROUND IN UNPAVED AREAS, OR FLUSH TO FINISHED ASPHALT PAVEMENT IN PAVED AREAS. CONTRACTOR SHALL REFER TO MOST CURRENT ON SITE GRADING PLAN.

3. CONTRACTOR SHALL VERIFY INVERT ELEVATION OF EXISTING SANITARY SEWER LINE PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY VORDENBAUM ENGINEERING, INC. OF ANY DISCREPANCIES WITH INVERT ELEVATIONS.

4. THE CONTRACTOR SHALL FURNISH THE ENGINEER WITH ALL THE FINAL AS BUILT MEASUREMENTS, TOPS AND LENGTHS OF SERVICE CONNECTIONS UPON COMPLETION OF PROJECT.

5. CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON PLANS OR NOT, PRIOR TO THE START OF CONSTRUCTION.

6. CONTRACTOR SHALL NOTIFY AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION:

A) GUADALUPE VALLEY TELEPHONE COMPANY	(830) 885-4411
B) PEDERNALES ELECTRIC	(830) 964-3346
C) CHARTER/ SPECTRUM (TV, TELE., INTERNET)	(888) 406-7063
D) DIG TESS	(800) DIG-TESS

7. ALL GARBAGE OR SPOIL MATERIAL FROM THIS WORK SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AT HIS EXPENSE.

8. THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC AND PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE, IRRIGATION, FIBER OPTIC LINES, SITE LIGHTING, ELECTRIC, SECONDARY ELECTRIC, AND GAS LINES ANY UTILITY CONFLICTS THAT MAY ARISE SHOULD BE COMMUNICATED TO VORDENBAUM ENGINEERING, INC. IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE AT CONTRACTORS SOLE EXPENSE WEATHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATION ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

0 50 100 150 200
1"=100'

LEGEND

EXISTING

- *PROPERTY BOUNDARY*
- *ADJACENT PROPERTY BOUNDARY*
- *EXISTING CREEK/RIVER CENTERLINE*
- *EXISTING FENCE LINE*
- *EXISTING CONCRETE CURB*
- *EXISTING CONTOURS*

PROPOSED

- PROPOSED BUILDING
- PROPOSED PARKING STRIPE
- PROPOSED RIP-RAP
- PROPOSED FLOWLINE
- PROPOSED FENCE LINE
- PROPOSED RETAINING WALL
- PROPOSED CONCRETE CURB
- PROPOSED CONTOURS
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER LINE
- PROPOSED GATE VALVE (G.V.)
- PROPOSED CLEANOUT
- PROPOSED SWALE
- BERM (FILL)
- PROPOSED 3FT GRATE INLET

STATE OF TEXAS
KEVIN W. SPRAGGINS
84823
REGISTERED
PROFESSIONAL ENGINEER
"THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRAGGINS, P.E. 84823 ON 09/05/2023"

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830 - 997-4744 FAX 830 - 997-6967
In Kerrville 830 - 895-4770 FAX 830 - 895-7441
TEXAS REGISTRATION # F-165

UTILITY PLAN

360 COMAL BOAT/RV STORAGE

HIGHWAY 306 AND PURGATORY ROAD

NEW BRAUNFELS TEXAS

DRAWN BY:	KS
DATE:	09/ 05/ 2023
CHK. BY (DWG)	
CHK. BY (ENGR)	
REVISION:	
JOB NO:	22023

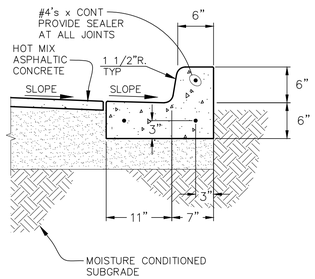
UTILITY PLAN

SHEET NUMBER

C6.0

11 OF 13

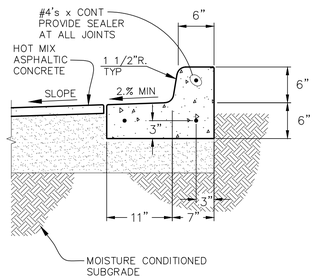
Start Date: 00/00/0000
File No.



CONCRETE CURB & GUTTER (CATCH)

NTS

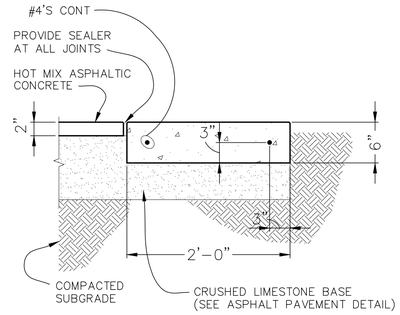
SEE SOILS REPORT BY ROCK ENGINEERING & TESTING LABORATORY, INC., PROJECT NO. 221383, DATED FEBRUARY 9, 2022 FOR ALL SUBGRADE, PREP. AND DESIGN ALTERNATIVES.



CONCRETE CURB & GUTTER (SPILL)

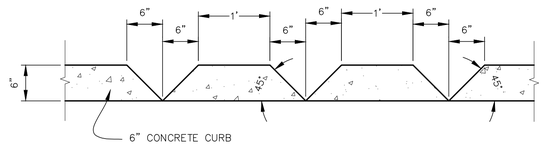
NTS

SEE SOILS REPORT BY ROCK ENGINEERING & TESTING LABORATORY, INC., PROJECT NO. 221383, DATED FEBRUARY 9, 2022 FOR ALL SUBGRADE, PREP. AND DESIGN ALTERNATIVES.



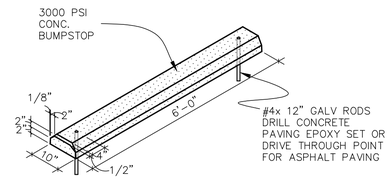
CONCRETE RIBBON CURB

NTS



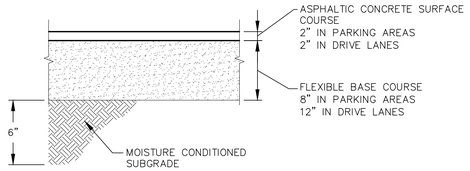
SAW-TOOTH CURB DETAIL

1" = 1'-0"



TYPICAL WHEEL STOP

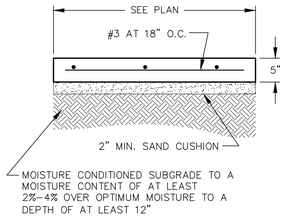
1" = 1'-0" ISOMETRIC



FLEXIBLE HOT ASPHALTIC MIX CONCRETE

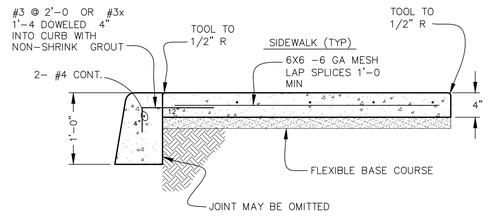
NTS

SEE SOILS REPORT BY ROCK ENGINEERING & TESTING LABORATORY, INC., PROJECT NO. 221383, DATED FEBRUARY 9, 2022 FOR ALL SUBGRADE, PREP. AND DESIGN ALTERNATIVES.



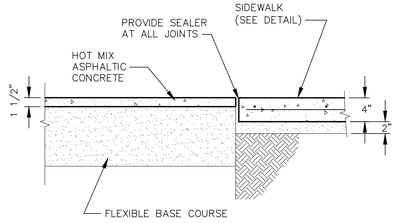
SIDEWALK

NTS



SIDEWALK TO CURB

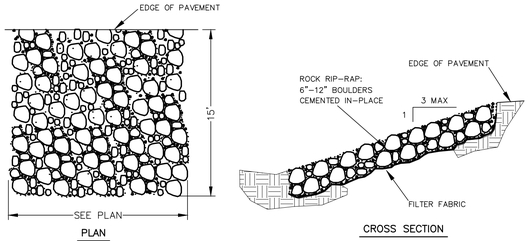
1" = 1'-0"



FLUSH PARKING & SIDEWALK

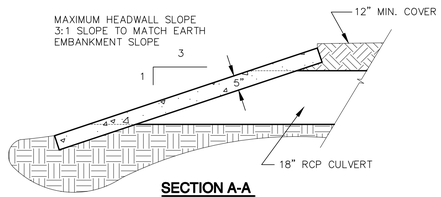
NTS

SEE CURB EXPANSION & CONTROL JOINT DETAIL

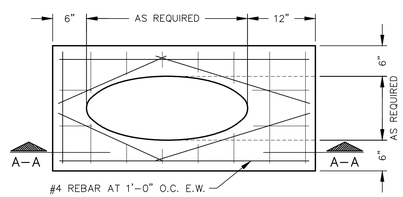


ROCK RIP-RAP DETAIL

NTS

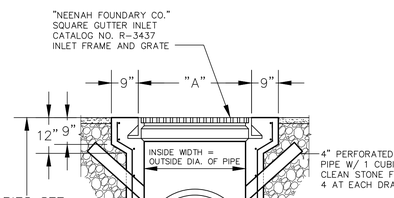


SECTION A-A



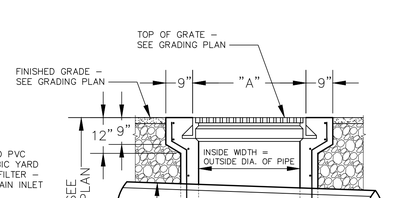
SAFETY-END TREATMENT DETAIL

NOT TO SCALE



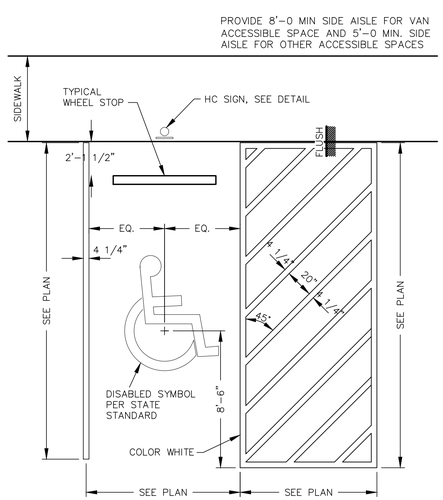
GRATE INLET

1/2" = 1'-0"



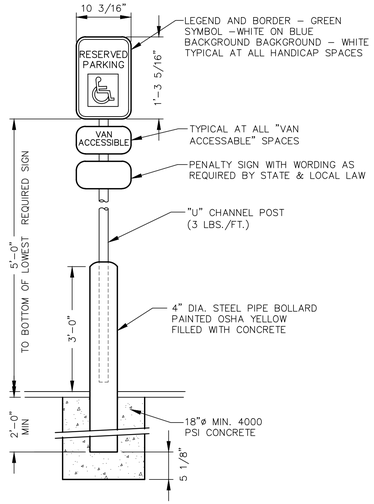
GRATE INLET

1/2" = 1'-0"



HANDICAP PARKING SPACE

NTS

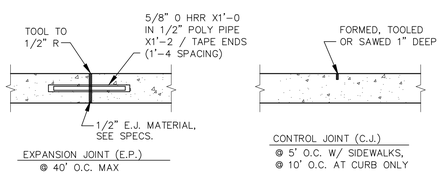


TYPICAL H/C SIGN

NTS

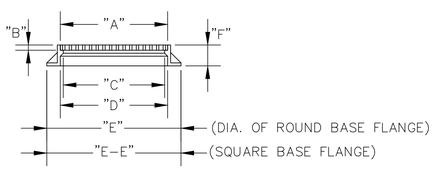
NOTES:
1. THE CONTRACTOR SHALL SUBMIT ALTERNATE C.J. OR E.J. FOR APPROVAL BY ENGINEER.

2. THE CONTRACTOR SHALL SUBMIT A C.J. & E.J. LAYOUT FOR APPROVAL BY ENGINEER.



EXPANSION & CONTROL JOINTS

NTS



CAT. NO.	A	B	C	D	E	E-E	F	G	H	WEIGHT (LBS)
R-3429-A	18X18	1 1/2"	16 3/4 X 16 3/4	18 1/2 X 18 1/2	30" DIA.	30 X 30	6	2 1/4 X 4 1/4	1	270
R-3430	20X20	1 3/4"	18 X 18	22 1/2 X 22 1/2	36" DIA.	31 X 31	5	1 3/8 X 3 1/2	1 1/4	300
R-3433	24X24	2"	22 X 22	22 X 22	38" DIA.	35 X 35	6	1 3/4 X 6	1 3/8	400
R-3435	27X27	2"	25 X 25	27 1/2 X 27 1/2	42" DIA.	36 X 36	6	2 1/2 X 7 1/2	1	450
R-3436	32X32	1 3/4"	30 X 30	32 1/2 X 32 1/2	---	42 X 42	6	1 X 8	1	570
R-3437	36X36	1 3/4"	34 X 34	36 X 36	55" DIA.	45 X 45	7	2 X 4	1 1/2	**855
R-3438-A	49 3/4 X 49 3/4	1 3/4"	48 X 48	52 X 52	---	59 X 59	8	1 1/2 X 6 1/4	1 1/8	**1690

STATE OF TEXAS
KEVIN W. SPRAGGINS
84823
REGISTERED
PROFESSIONAL ENGINEER
"THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRAGGINS, P.E. 84823 ON 09/ 05/ 2023"

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830 - 997-4744 FAX 830 - 997-6967
In Kerrville 830 - 895-4770 FAX 830 - 895-7441
TEXAS REGISTRATION # F-165

DETAILS

360 COMAL BOAT/RV STORAGE

HIGHWAY 306 AND PURGATORY ROAD

NEW BRAUNFELS TEXAS

DRAWN BY:	KS
DATE:	09/ 05/ 2023
CHK. BY (DWG)	
CHK. BY (ENGR)	
REVISION:	
JOB NO:	22023

DETAILS

SHEET NUMBER

C7.0

12 OF 13

Start Date: 00/00/0000
File No.

1.0. GENERAL REQUIREMENTS:

1.1. SCOPE:

1.1.1. BASIC BID: The contract work to be performed under these specifications consists of furnishing all the required labor, materials, equipment, implements, parts, services and supplies necessary for the project. The project work involves a commercial project.

1.1.2. BIDDING: The owner and owner's representative will solicit bids, evaluate bids and award bids.

1.1.3. INSURANCE AND BONDING: The owner and owner's representative will set forth insurance and bonding requirements.

1.2 STANDARDS: The work shall be done in a workmanlike manner and conform to the standards REFERENCE in these specifications.

1.3 LAYOUT WORK AND FIELD SURVEYING: The contractor shall provide all necessary construction field surveying and survey control. The contractor shall include the cost of all necessary field surveying and survey control in the bid. Some elevation and grade data is available in electronic format from the project engineer.

1.3.1 The contractor shall locate benchmarks, monuments and other REFERENCE points for elevation and location of improvements. The contractor shall notify the Engineer of apparent discrepancies in indicated locations.

1.3.2 The contractor shall protect REFERENCE points from dislocation or damage. Replace or repair immediately any points damaged, destroyed or dislocated. The contractor shall pay the owner's surveyor or the Engineer $500.00 per REFERENCE or control point requiring resetting due to dislocation or damage by the contractor.

1.3.3 The minimum number of grade points set shall be three (3) per station per cross-section lift and/or at finish grade elevations shown on the drawings.

1.4 All trees, and existing structures shall be protected from damage during construction. Any repairs necessary from construction damage shall be at the contractor's expense. Any repairs shall be performed by professionals.

1.5 The work site shall be maintained in a safe and clean manner during construction. The general contractor shall coordinate construction with local government officials, all involved subcontractors, and the owner.

1.5.1 The contractor shall maintain access to normal traffic by the adjacent property owners. Roadway closures and access plans shall be approved by officials of the City, County or other agencies having jurisdiction. The contractor shall submit roadway closures and access plans in writing a minimum of seven (7) days prior to closure for approval. The contractor shall coordinate closures and access with the adjacent property owners. The contractor shall make every effort to sequence work to minimize the time that access to the adjacent private property is impeded.

1.5.2 The owner will occupy and conduct business in this building during construction. The contractor shall, coordinate with owner as to that days business activities. Construction shall be done so as not to disturb the owners business operations and as per coordinated plans.

1.6 All necessary permits shall be obtained and paid for by the contractor.

1.7 Any rework or replacement of materials necessary due to weather damage during construction shall be the contractor's responsibility.

1.8 Burning is not permitted on the Owner's property. Waste materials shall be removed from the Owner's property unless otherwise instructed by the OWNER.

1.9 EXISTING UTILITIES: Existing utilities shall be located by the contractor in the area of work. The contractor shall provide adequate means of protection during site work. Repairs of construction damaged utilities shall be made by licensed professionals at the contractor's expense.

1.9.1 The contractor shall maintain the utilities in service during construction and will be responsible for any damage he may inflict on a utility. All damages resulting from the contractor's operations shall be repaired by the contractor at the contractor's expense to the satisfaction of the owner of such utility.

1.9.2 The contractor shall at all times take precautions to keep all utilities within the area of construction operational. The contractor shall notify the utility owner of existing utilities at least 24 hours before crossing existing underground utilities.

1.9.3 Whenever existing utilities are encountered whose present grade would conflict with the new construction, the contractor shall notify the owner and engineer so that revisions may be made.

1.9.4 The location of existing utilities shown on the drawings does not necessarily indicate all of or the exact location of the utilities that may be encountered during construction. The contractor shall be responsible for locating all existing underground utilities and customer service taps and proceed with work in accordance with the information found.

1.10 The contractor shall protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

1.11 Specifications referred to in this specification as TxDOT 2014, Standard Specifications refer to Texas Department of Transportation, Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, Adopted by the Texas Department of Transportation, November 1, 2014. The exception to these cited specifications are those sections of the various items which specify measurements and payments as the work covered by this specification is to be bid on a lump sum basis. The contractor shall have a copy of this specification at the jobsite for REFERENCE at all times during construction and shall review the applicable items of the specification before undertaking the work.

1.11.1 The contractor shall also REFERENCE any City, County and State Standards. The City, County and State specifications shall control if there is any conflict between it and this specification.

1.12 LAWS AND REGULATIONS:

1.12.1 The contractor shall barricade open excavations occurring as part of this work and post with warning lights to be operated as recommended by authorities having jurisdiction.

1.12.2 The contractor shall comply with all laws, statutes, ordinances, rules, orders, and regulations relating to the performance of the work, the protection of adjacent property, and the maintenance of passageways, guard fences or other protective facilities.

1.12.3 Compliance with job safety requirements and health standards as published under Public Law 91-596 by the Occupational Safety and Health Administration, United States Department of Labor, shall be provided by the contractor without additional expense to the owner.

1.12.4 To protect persons from injury and to avoid property damage, barricades, signs, lanterns or lights and guards as required shall be placed and maintained by the contractor during the progress of the construction. Traffic control devices shall be installed accordance with the Texas Manual of Uniform Traffic Control Devices (TMUTCD), Part VI, Temporary Traffic Control.

1.12.5 The contractor shall comply with the current provisions of the Texas Health and Safety Code, Chapter 752 (High Voltage Overhead Lines), said act relating to safety to persons engaged in activities in the proximity of high voltage lines.

1.12.6 Rules and regulations governing "Occupational Safety and Health Standards: National Consensus Standards and Established Federal Standards" as published by the Occupational Safety and Health Administration, Department of Labor, including trench safety, shall be observed by the contractor for all operations and all work performed under the contract.

1.12.7 The contractor shall provide any protective measures required by the Environmental Protection Agency, Office of Water, in the publication "Storm Water Management for Construction Activities, Publication EPA 833-B-92-001 dated October 1992.

1.12.8 All costs involved in complying with the above requirements and regulations shall be included in the bid by the contractor and paid by the contractor.

1.13 EMPLOYEE FACILITIES (TOILET FACILITIES):

1.13.1 Contractor/Subcontractor shall not use toilet facilities in existing building unless prior arrangements are made with the owner.

1.13.2 Contractor shall provide at least one (1) temporary commercially available "self-contained" toilet facility.

1.13.2.1 Clean and maintain toilet facilities.

1.14 BARRICADES: The contractor shall at his own expense furnish, erect, and maintain such barricades, fences, lights and danger signals to keep pedestrians away from and vehicles from being driven on or into any work or construction area and shall take all such other precautionary measures necessary for the protection of persons or property along the work or construction area. Streets must be open to through traffic at night.

2.0 CLEARING AND GRUBBING:

2.1 The area of constructed facilities shall be cleared of trees, stumps, brush, fences and shrubs, except such fences, trees and shrubs designated by the owner for preservation.

2.2 Roots and stumps shall be removed to a depth of 2 feet below the lower elevation of excavation in the area of the constructed facilities. All holes remaining after clearing and grubbing shall be backfilled and tamped as directed by the engineer. The area shall be graded to prevent PONDING of water and provide drainage.

2.3 The trees, stump, brush, fences and shrubs shall be removed from the jobsite unless otherwise directed by the owner.

3.0 GRADING:

3.1 MATERIALS TO BE REMOVED, STOCKPILED AND REUSED; OR REMOVED FROM THE SITE:

3.1.1 Topsoil

3.1.1.1 Areas of constructed facilities in fill areas: The topsoil in the area of constructed facilities and for a distance of a least two (2) feet past construction lines shall be removed to a depth of at least 6 inches. It is intended that stripping this one foot of material remove grass and other vegetative matter. This topsoil shall be stockpiled by the contractor for use in final grading of the project. A minimum of 4 inches topsoil is to be placed on areas worked.

3.1.1.2 Cut Areas: The topsoil shall be stripped to a depth of at least 6 inches to a distance of at least two (2) feet past construction lines. If suitable this material shall be stockpiled by the contractor for use in final grading of the project.

3.1.1.3 Topsoil shall be fertile soil, free from objectionable material and be readily able to support growth of planting. Soil excavation in 3.1.1.1 and 3.1.1.2 above containing vegetative or other objectionable material not suitable for topsoil shall be removed from the site by the contractor.

3.1.1.4 Excess topsoil shall be removed from the job site or placed on the project as directed by the owner/engineer.

3.1.2 Rocks and stones excavated shall be removed from the site or as directed by the owner.

3.1.3 The sub grade shall be excavated to allow for placement of the base material and paving. Suitable material shall be utilized in fill areas.

3.2 SUB GRADE

3.2.1 Sub grade in fill areas shall be scarified to a depth of at least 6 inches then watered, bladed, and compacted. This may be waived if, in the opinion of the engineer or by acceptable test, the sub grade is dense. The remaining sub grade shall be placed in 6 inch compacted depths watered, bladed and compacted utilizing material from 3.1.1.2 above.

3.2.2 Sub grade in cut areas shall be scarified to a depth of at least 6 inches in preparation for adding material as required. Then the sub grade shall be watered, bladed and compacted to grade. This may be waived if, in the opinion of the engineer or by acceptable test, the sub grade is dense.

3.2.3 Compaction of the sub grade shall be verified by proof rolling the entire area with approved compaction equipment. Unstable areas, including sand pockets, shall be reworked, removed, or replaced. It is intended that the compaction of the sub grade be 95% of the maximum dry density determined using TxDOT Test Method TEX 113-E with a compactive effort as recommended in the test method. If the sub grade compaction is questionable, in the opinion of the engineer, then the contractor shall obtain the services of an approved testing laboratory and verify the compaction by testing. The cost of testing shall be paid by the contractor.

3.2.4 INSPECTION: Prior to installation of the base material, the compacted sub grade shall be inspected and approved by the Engineer and the CITY. The contractor shall provide notice 24 hours prior to the time when the inspection is needed.

3.3 SUB BASE MATERIAL

3.3.1 The sub base material shall be placed on the prepared sub grade sprinkled, bladed and compacted.

3.3.2 Sub base compaction: The compaction required for the sub base shall be the same as compaction for sub grade, see item 3.2.3 above.

3.4 BASE MATERIAL

3.4.1 Base material shall conform to TxDOT, 2014 "Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges", Item 247, Type A, Grade 2, Flexible Base.

Base Material Thickness:

Item 247, Type A, Grade 2:
Parking Areas: 0.66 feet (8 inches)
Drive Areas: 1.00 feet (12 inches)

3.4.2 The base material shall be sprinkled, mixed and compacted utilizing approved compaction equipment.

3.4.3 Base Material Compaction: The flexible base should be moistened to within 2% of optimum moisture content and compacted to at least 100% of the maximum dry density as determined by TEX-113E.

3.4.4 Base Material Compaction Quality Control: The contractor shall retain the services of an approved engineering testing laboratory for the purpose of quality control during base construction. The contractor shall include the cost of this testing in the contract and pay for same. In place density tests shall be performed for each 500 sq. yd of surface area of the compacted base material, minimum of 3 locations. The contractor shall furnish the engineer, the CITY, and the owner with copies of the test reports of density testing.

3.4.5 Base Material Finish

3.4.5.1 It is the intent of this specification to obtain a complete course, or courses, of flexible base of uniform moisture and density with a closely knit surface free from laminations, cracks, ridges or loose material and to the surface requirements specified.

3.4.5.2 Upon completion of the base work, the surface shall be smooth and in conformity with the typical sections and to the established lines, grades and suitable for application of surface paving. Deviations in excess of 1/4 inch in 10 feet shall be corrected. All irregularities, depressions, or weak spots which develop shall be corrected.

3.4.6 INSPECTION: Prior to the installation of the paving, the compacted base material shall be inspected and approved by the Engineer and the CITY. The contractor shall provide notice 24 hours prior to the time when the inspection is needed.

4.0 CONCRETE

4.1 EXCAVATION: The excavation for the concrete work shall be to dense undisturbed soil. If loose material is encountered the subgrade shall be compacted.

4.2 FORMWORK:

4.2.1 Formwork shall be placed such that plumb and level structures will be obtained.

4.2.2 Formwork shall be constructed, tied and braced in order to prevent leakage and remain straight and true.

4.3 REINFORCING STEEL:

4.3.1 All reinforcing bars shall be ASTM A615 Grade 60, new billet bars.

4.3.2 Reinforcing bar splices not shown on the drawings shall be at least 40 bar diameters in length.

4.3.3 All reinforcing bars shall be positioned by commercially available chairs or approved concrete blocks. Concrete cover as shown on the drawings is minimum. Slab steel shall be chaired at 3'-0 o.c. both directions maximum. The beam steel shall be supported at 4'-0 o.c. maximum.

4.3.4 All reinforcing bar bends shall be a minimum of 4 bar diameters inside radius. Bars shall not be hot bent.

4.4 CONCRETE

4.4.1 The reinforcing steel shall be inspected and approved by the Engineer and the CITY the day prior to concrete placement.

4.4.2 All concrete shall be minimum compressive strength f'c = 3,000 psi at 28 days. No less than 5 sacks cement per cubic yard.

4.4.3 Quality Control. The contractor shall retain the services of an approved Engineering testing laboratory for the purpose of quality control during concreting operations. The contractor shall include the cost of this testing in the contract and pay for same. Sets of three compressive test specimens shall be made for each 75 cu. yd. of concrete placed and/or each time concrete is placed. All three compressive test specimens shall be tested at 28 days. The contractor shall furnish the Engineer and Owner with copies of the test reports.

4.4.4 All concrete placements shall be mechanically vibrated sufficiently to insure consolidation and minimize surface voids.

4.4.5 Concrete materials shall conform to the following: Portland Cement ASTM C150, Concrete Aggregates ASTM C33, Air-Entraining Admixtures for Concrete ASTM C260 & Chemical Admixtures for Concrete 494 and potable water.

4.4.6 Concrete mix design shall be approved by the Engineer and control slump established prior to placing concrete.

4.4.7 The water-cement ratio shall not exceed 0.53 by weight.

4.4.8 The maximum time between addition of cement to the batch and placing shall not exceed 1.5 hours.

4.4.9 Concrete shall not be placed if temperatures are predicted which would cause freezing of the concrete during 72 hours after placing.

4.4.10 Concrete shall be wood float finished in a manner which minimizes surface working of the concrete.

4.4.11 Concrete Curing:

4.4.11.1 An approved curing compound and application equipment shall be at the jobsite the day prior to concrete placement for inspection.

4.4.11.2 The curing compound shall be applied in two coats 90 degrees to one another at the manufacturers recommended rate as soon as finishing is completed on flatwork and as soon as forms are stripped on formed surfaces.

4.5 REFERENCE "TYPICAL CONCRETE CURB" in the drawings: The contractor shall prepare a 20 foot section of curb as a mock-up which includes finishes and shape representative of the remaining curbs. This mock-up shall be approved before proceeding with the remaining curbs. If acceptable, the mock-up may become part of the project. This mock-up shall serve as a standard both for dimensions and aesthetic finishes for the remainder of the curbs.

5.0 DRAINAGE PIPING SYSTEMS (Storm Sewer and Culverts)

5.1 The drainage piping shall conform to TxDOT 2014 Standard Specifications Item 464 Reinforced Concrete Pipe Culverts, except Items 464.4 and 464.5.

5.1.1 The drainage piping shall conform to TxDOT 2014 Standard Specifications Item 460, Corrugated Metal Pipe (not under streets), except items 460.9 and 460.10.

5.1.2 The drainage piping shall conform to TxDOT Statewide 2018 Special Specification Item 4122 Thermoplastic Pipe, which includes High Density Polyethylene (HDPE) pipes.

5.1.3 HDPE pipe and fittings shall meet AASHTO M294.

5.2 The class of piping shall be Class C.

5.3 The pipe bedding shall be Class C bedding.

5.4 BACKFILL AND COMPACTION:

5.4.1 As soon as possible all excavation shall be backfilled. Backfill material shall be free from large lumps, wood or other extraneous material.

5.4.2 The backfill shall be placed in uniform layers not to exceed 8 inches in depth. Each layer shall be compacted to a density comparable with the adjacent undisturbed soil.

5.4.3 Each layer of backfill material, if dry, shall be wetted uniformly to the moisture content required to obtain the specified density and shall be compacted to that density by means of mechanical tamps or rammers.

5.4.4 Hand tamping, puddling, or water jetting will not be accepted as an alternate for mechanical compaction. As a rule materials used for backfilling the portions described in this item shall be free of any appreciable amount of gravel or stone particles more than four inches in greatest dimension and shall be of a gradation that permits thorough compaction. When in the opinion of the engineer, such material is not readily available, the use of rock or gravel mixed with soil will be permitted, provided that no particles larger than 4 inches dimension are used. The percentage of fines shall be sufficient to fill all voids and insure a uniform and thoroughly compacted mass of proper density.

5.4.5 For backfill of drainage piping in the area of street traffic, it is intended that the compaction of the backfill be to 95% of the maximum dry density determined using TxDOT Test Method TEX 113-E with a compactive effort as recommended in the test method. If the backfill compaction is questionable, in the opinion of the engineer, then the contractor shall obtain the services of an approved testing laboratory and verify the compaction by testing. The cost of testing shall be paid by the contractor.

5.5 INLET GRATES (Confirm if site has any inlet grates):

5.5.1 Grates shall be fabricated of ASTM A36 carbon structural steel and be of welded construction.

5.5.2 Grates shall be solvent and steel brush cleaned for painting.

5.5.3 Painting shall be one (1) coat "35-147 Red Coronado Rust Scat Alkyd Metal Primer" or equal and two (2) coats "Rust Scat Polyurethane High Gloss Enamel" or equal, color black.

5.6 CURB INLETS:

5.6.1 Curb inlets shall conform to Item 465, Manholes and Inlets of TxDOT, 2014 "Standard Specifications for Construction of Highways, Streets and Bridges"

5.6.2 Concrete: Furnish Class A concrete for cast-in-place manholes and inlets unless otherwise shown on the plans. Furnish Class A concrete or concrete meeting ASTM C 478 for precast manholes and inlets. Air-entrained concrete will not be required in precast concrete members.

5.7 SAFETY END TREATMENTS

5.7.1 Materials. All materials shall conform to the pertinent requirements of the following items:
Item 420, "Concrete Structures"
Item 421, "Portland Cement Concrete"
Item 432, "Riprap"
Item 440, "Reinforcing Steel"
Item 445, "Galvanizing"
Item 460, "Corrugated Metal Pipe"
Item 464, "Reinforced Concrete Pipe"

5.7.2 Concrete for cast-in-place SET units and precast SET units shall be Class A, unless otherwise shown on the plans.

5.7.3 When required, concrete riprap aprons and concrete collars shall be Class B, unless otherwise shown on the plans.

5.7.4 Galvanized steel for Prefabricated Metal End Sections shall conform to the requirements of Item 460, "Corrugated Metal Pipe".

5.7.5 When pipe runners are required, they shall conform to the requirements of ASTM A53 (Type E or S, Gr. B), ASTM A500 (Gr. B) or API5LX52, unless otherwise shown on the plans. When plates and angles are required, they shall conform to the requirements of ASTM A36. When bolts and nuts are required, they shall conform to the requirements of ASTM A307. All pipe, plates, angles, nuts and bolts shall be galvanized in accordance with Item 445, "Galvanizing".

5.7.6 SAFETY END TREATMENT TYPES

Type I. SET (Type I) shall consist of reinforced concrete wingwalls and pipe runners, when required. These installations are intended for small and intermediate size box culverts, large size pipe culverts and suitable multiple box or multiple (intermediate or large size) pipe culverts as shown on the plans.

Type II. SET (Type II) shall consist of one of the following:

A. Corrugated Metal Pipe (CMP) or Reinforced Concrete Pipe (RCP) mitered to the proper slope, as shown on the plans, concrete riprap aprons and pipe runners, when required.

B. Prefabricated Metal End Sections, concrete riprap aprons and pipe runners, when required.

C. Precast SET units, concrete riprap aprons, if required, and pipe runners, when required.

5.7.7 Construction Methods. Safety end treatments shall be constructed in accordance with the details shown on the plans and in accordance with the construction methods required by the pertinent items.

5.7.8 Cast-in-place SET units and job site precast SET units shall be constructed in accordance with Item 420, "Concrete Structures". Plant precast SET units shall conform to Item 424, "Precast Concrete Structures (Fabrication)".

5.7.9 Damaged galvanizing shall be repaired by the Contractor in accordance with Item 445, "Galvanizing".

5.7.10 Any required structural excavation shall be in accordance with Item 400, "Excavation and Backfill for Structures."

5.7.11 Removal of portions of existing structures, when required, shall be in accordance with Item 496, "Removing Old Structures". The extension of concrete structures, when required, shall be in accordance with Item 430, "Extending Concrete Structures" or Item 462, "Concrete Box Culverts and Sewers". The extension of pipe culverts, when required, shall be in accordance with Item 460, "Corrugated Metal Pipe" or Item 464, "Reinforced Concrete Pipe", whichever is pertinent. Concrete aprons for end treatments to pipe shall be in accordance with "Concrete Riprap" of Item 432, "Riprap".

5.7.12 All drilling, doweling and grouting needed to complete the work shall be in accordance with Item 420, "Concrete Structures".

6.0 PAVING - HOT MIX ASPHALTIC CONCRETE (HMAC)

6.1 This item shall consist of a wearing surface composed of HMAC constructed on the primed and prepared base material.

6.2 Materials.

6.2.1 Prime coat shall be in accordance with Item 314, of TxDOT, 2014 "Standard Specifications for Construction of Highways, Streets and Bridges". The prime coat should consist of an emulsified asphalt conforming to TxDOT Item 300.2 (4) and be applied at a minimum application rate of 0.35 gal per sq. yard.

6.2.2 HMAC. The asphalt concrete surface course for parking lots and driveways should be plant mixed, hot laid Type D (Fine Graded Surface Course) meeting the specification requirements of Item 340, of TxDOT, 2014 "Standard Specifications for Construction of Highways, Streets and Bridges".

6.3 Construction Methods

6.3.1 The finished base material shall be primed with MC30 or equivalent. The prime coat shall be applied so that a uniform and complete coverage is obtained. The contractor shall take care to avoid spraying concrete curbs and other structures during priming. Prime coat asphalt on exposed concrete surfaces shall be removed by the contractor.

6.3.2 The asphaltic concrete shall be finished without depressions, ridges or high spots. The finished compacted thickness of the asphaltic concrete shall be not less than 2 inches.

6.3.2.1 Manholes and Valve Covers. All manhole and valve covers shall be covered with thin plywood or other suitable material before paving to prevent them from being paved over. These covers will then be uncovered after paving operations and the exposed asphalt edges tamped to achieve a smooth durable transition between the cover and the asphalt surface. .

6.3.3 Asphalt on concrete curbs shall be removed.

6.3.4 Protect newly finished pavement from all traffic until cleared by the engineer.

6.4 Quality Control

6.4.1 The owner may elect to employ the services of a testing laboratory to evaluate in-place density.

6.4.1.1 Density. It is intended that the HMAC be applied and compacted to achieve a minimum of 95% of theoretical density.

6.4.2 Smoothness. Finished surface must be smooth to within 1/4 inch in 10 feet.

7.0 WATER LINE CONSTRUCTION (PER COUNTY AND TCEQ RULES & REGULATIONS)

8.0 SANITARY SEWER CONSTRUCTION (PER COUNTY AND TCEQ RULES & REGULATIONS)

9.0 FENCING (PER OWNER)

10.0 PAVEMENT MARKING

10.1 Signs shall comply with TXDOT material specifications D-9-7110 (aluminum sign blanks) and D-9-8300 (reflectorized covering and symbols).

10.2 Sign posts and mounting hardware shall be galvanized steel. Posts shall be in compliance with TXDOT standards, item 646.

10.3 Reflectorized pavement markings shall comply with, and be applied in accordance with, TXDOT standards, item 666 , Type I or Type II Marking Materials. See drawings for sizes and locations of pavement markings.

10.4 Pavement Marking Paint: Coronado Super Kote 5000 Acrylic Traffic Paint, or equal.

10.5 Surface to be marked must be clean, free of dust, oil, grease, or other surface contamination that could be detrimental to good adhesion.

10.6 Apply paint to produce pavement markings as indicated on the drawings with uniform, straight edges. Apply at manufacturer's recommended rate.

10.7 White on asphalt, yellow on concrete. Paint shall be applied in two (2) coats to a clean, dry surface using template or a striping machine. Stripes shall be a uniform width of four inches (4") wide with 24" spacing. Other markings shall be shown on the drawing.

11.0 GUARDRAIL

11.1 The contractor shall install guardrail according to TxDOT 2014 Standard Specifications, Item 540, except that the work covered by this specification is to be bid on a lump sum basis.

12.0 RETAINING WALL

12.1 Retain wall design not included. consult with soils and structural engineer on required wall design.

12.2 Any design philosophies discrepancies, changes or conflicts with other documents or specifications or with any items on these construction documents are to be reported to our engineering firm and the engineer of record in writing immediately upon discovery (24 hrs). If items are not reported immediately, changes or conflict corrections made by others are deemed approved by the owner and their construction manager and are not the responsibility of the engineer of record or the engineering firm of which he is employed. both, the engineer of record and the engineering firm are indemnified from any issues, problems, or grievances from these non disclosed items.

GENERAL NOTES:

1. ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH APPLICABLE REGULATIONS OF THE U.S. OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION. COPIES OF OSHA STANDARDS MAY BE PURCHASED FROM THE U.S. GOVERNMENT PRINTING OFFICE. INFORMATION AND RELATED REFERENCE MATERIALS MAY BE PURCHASED FROM OSHA, 611 EAST 6TH STREET, AUSTIN, TEXAS.

2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, APPLICABLE PROVISIONS OF THE BUILDING CODE, AND CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS FOR CONSTRUCTION.

3. ALL CONCRETE PAVEMENT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,500 PSI AT 28 DAYS. ALL CONCRETE SIDEWALKS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS.

4. ALL REINFORCING STEEL SHALL BE 6X6 6 GAUGE WWM UNLESS OTHERWISE NOTED.

5. LAP ALL BAR SPLICES 40 BAR DIAMETERS OR 24 INCHES, WHICHEVER IS GREATER.

6. ALL CONCRETE SURFACES SHALL RECEIVE A BROOM FINISH.

7. PROVIDE A MINIMUM CLEARANCE OF 2" BETWEEN OUTSIDE OF STEEL AND FACE OF CONCRETE.

8. ALL CONCRETE WORK SHALL CONFORM TO ALL APPLICABLE REQUIREMENTS OF ACI 301-72.

9. ALL EXPOSED CORNERS FOR CONCRETE WORK SHALL BE CHAMFERED 1".

10. THE INFORMATION CONTAINED ON THESE DRAWINGS IN REGARDS TO EXISTING UTILITIES, TOPOGRAPHY, CONTOURS, HYDROGRAPHY, OR SUBSURFACE CONDITIONS IS FURNISHED SOLELY AS THE BEST INFORMATION AVAILABLE AT THIS TIME. ITS ACCURACY IS NOT GUARANTEED AND ITS USE IN NO WAY RELIEVES THE CONTRACTOR OF ANY RESPONSIBILITY FOR LOSSES DUE TO ANY INACCURACIES.

11. ALL REQUIRED RELOCATIONS OR ALTERATIONS OF TELEPHONE POLES, UNDERGROUND CONDUIT, POWER POLES, AND ANY OTHER FACILITIES SHALL BE COORDINATED BY THE CONTRACTOR. CONTRACTOR SHALL SCHEDULE AND COORDINATE HIS WORK WITH THAT OF OTHER CONTRACTORS AND UTILITY COMPANIES SO AS NOT TO DELAY THE PROJECT.

12. THE CONTRACTOR SHALL NOTIFY THE CITY BUILDING INSPECTOR BEFORE BEGINNING ANY UTILITY CONSTRUCTION IN PUBLIC R.O.W. OR PUBLIC EASEMENT. NO PIPE SHALL BE LAID UNTIL THE ASSIGNED INSPECTOR HAS MET WITH THE CONTRACTOR OR HIS REPRESENTATIVE AT THE PROJECT SITE.

13. THE CONTRACTOR IS RESPONSIBLE FOR JOBSITE CONDITIONS AT ALL TIMES DURING CONSTRUCTION AND SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS THE OWNER, HIS AGENTS AND THE ENGINEER AGAINST ANY CLAIMS RESULTING FROM SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION. THE JOBSITE SHALL BE MAINTAINED IN A SAFE CONDITION DURING AND AFTER WORK HOURS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.

14. SIDEWALKS AND OTHER FLATWORK SHOULD BE PLACED ON A MINIMUM OF 4" OF CLEAN SAND COMPACTED TO AT LEAST 90% OF STANDARD PROCTOR (A.S.T.M. D698) MAXIMUM LABORATORY DRY DENSITY.

15. REFERENCE GEOTECHNICAL REPORT BY ROCK ENGINEERING & TESTING LABORATORY, INC., PROJECT NO. 221383 DATED FEBRUARY 9, 2022 FOR ALL PAVEMENT THICKNESS, SUBGRADE PREPARATION AND DESIGN ALTERNATIVES.

16. RETAIN WALL DESIGN NOT INCLUDED. CONSULT WITH SOILS AND STRUCTURAL ENGINEER ON REQUIRED WALL DESIGN.

17. ANY DESIGN PHILOSOPHIES DISCREPANCIES, CHANGES OR CONFLICTS WITH OTHER DOCUMENTS OR SPECIFICATIONS OR WITH ANY ITEMS ON THESE CONSTRUCTION DOCUMENTS ARE TO BE REPORTED TO OUR ENGINEERING FIRM AND THE ENGINEER OF RECORD IN WRITING IMMEDIATELY UPON DISCOVERY (24 HRS). IF ITEMS ARE NOT REPORTED IMMEDIATELY, CHANGES OR CONFLICT CORRECTIONS MADE BY OTHERS ARE DEEMED APPROVED BY THE OWNER AND THEIR CONSTRUCTION MANAGER AND ARE NOT THE RESPONSIBILITY OF THE ENGINEER OF RECORD OR THE ENGINEERING FIRM OF WHICH HE IS EMPLOYED. BOTH, THE ENGINEER OF RECORD AND THE ENGINEERING FIRM ARE INDEMNIFIED FROM ANY ISSUES, PROBLEMS, OR GRIEVANCES FROM THESE NON DISCLOSED ITEMS.

STATE OF TEXAS
KEVIN W. SPRAGGINS
84823
REGISTERED
PROFESSIONAL ENGINEER

"THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN W. SPRAGGINS, P.E. 84823 ON 09/05/2023"

VEI CONSULTING ENGINEERS
507 EAST HIGHWAY STREET, SUITE D
FREDERICKSBURG, TEXAS 78624
830 - 997-4744 FAX 830 - 997-6967
In Kerrville 830 - 895-4770 FAX 830 - 895-7441
TEXAS REGISTRATION # F-165

360 COMAL BOAT/RV STORAGE

SPECIFICATIONS

HIGHWAY 306 AND PURGATORY ROAD

NEW BRAUNFELS TEXAS

DRAWN BY: KS
DATE: 09/ 05/ 2023
CHK. BY (DWG)
CHK. BY (ENGR)
REVISION:
JOB NO: 22023

SPECIFICATIONS
SHEET NUMBER
C8.0
13 OF 13

Start Date: 00/00/0000
File No.