

Water Pollution Abatement Plan Modification

NBISD Elementary School 11

Word Pkwy, Veramendi Master Planned Development, New Braunfels, TX 78130

Prepared For: *Texas Commission on Environmental Quality (TCEQ)*

Applicant: Richard Underwood, P.E.

Kimley»Horn

10101 Reunion Place, Suite 400
San Antonio, TX 78216
(210) 541-9166



**Texas Commission on Environmental Quality
Water Pollution Abatement Plan
General Construction Notes**

Edwards Aquifer Protection Program Construction Notes – Legal Disclaimer

The following/listed “construction notes” are intended to be advisory in nature only and do not constitute an approval or conditional approval by the Executive Director (ED), nor do they constitute a comprehensive listing of rules or conditions to be followed during construction. Further actions may be required to achieve compliance with TCEQ regulations found in Title 30, Texas Administrative Code (TAC), Chapters 213 and 217, as well as local ordinances and regulations providing for the protection of water quality. Additionally, nothing contained in the following/listed “construction notes” restricts the powers of the ED, the commission or any other governmental entity to prevent, correct, or curtail activities that result or may result in pollution of the Edwards Aquifer or hydrologically connected surface waters. The holder of any Edwards Aquifer Protection Plan containing “construction notes” is still responsible for compliance with Title 30, TAC, Chapters 213 or any other applicable TCEQ regulation, as well as all conditions of an Edwards Aquifer Protection Plan through all phases of plan implementation. Failure to comply with any condition of the ED’s approval, whether or not in contradiction of any “construction notes,” is a violation of TCEQ regulations and any violation is subject to administrative rules, orders, and penalties as provided under Title 30, TAC § 213.10 (relating to Enforcement). Such violations may also be subject to civil penalties and injunction. The following/listed “construction notes” in no way represent an approved exception by the ED to any part of Title 30 TAC, Chapters 213 and 217, or any other TCEQ applicable regulation

1. A written notice of construction must be submitted to the TCEQ regional office at least 48 hours prior to the start of any regulated activities. This notice must include:
 - the name of the approved project;
 - the activity start date; and
 - the contact information of the prime contractor.
2. All contractors conducting regulated activities associated with this project must be provided with complete copies of the approved Water Pollution Abatement Plan (WPAP) and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractors are required to keep on-site copies of the approved plan and approval letter.
3. If any sensitive feature(s) (caves, solution cavity, sink hole, etc.) is discovered during construction, all regulated activities near the sensitive feature must be suspended immediately. The appropriate TCEQ regional office must be immediately notified of any sensitive features encountered during construction. Construction activities may not be resumed until the TCEQ has reviewed and approved the appropriate protective measures in order to protect any sensitive feature and the Edwards Aquifer from potentially adverse impacts to water quality.
4. No temporary or permanent hazardous substance storage tank shall be installed within 150 feet of a water supply source, distribution system, well, or sensitive feature.
5. Prior to beginning any construction activity, all temporary erosion and sedimentation (E&S) control measures must be properly installed and maintained in accordance with the approved plans and manufacturers specifications. If inspections indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations. These controls must remain in place until the disturbed areas have been permanently stabilized.
6. Any sediment that escapes the construction site must be collected and properly disposed of before the next rain event to ensure it is not washed into surface streams, sensitive features, etc.
7. Sediment must be removed from the sediment traps or sedimentation basins not later than

when it occupies 50% of the basin's design capacity.

8. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from being discharged offsite.
9. All spoils (excavated material) generated from the project site must be stored on-site with proper E&S controls. For storage or disposal of spoils at another site on the Edwards Aquifer Recharge Zone, the owner of the site must receive approval of a water pollution abatement plan for the placement of fill material or mass grading prior to the placement of spoils at the other site.
10. If portions of the site will have a temporary or permanent cease in construction activity lasting longer than 14 days, soil stabilization in those areas shall be initiated as soon as possible prior to the 14th day of inactivity. If activity will resume prior to the 21st day, stabilization measures are not required. If drought conditions or inclement weather prevent action by the 14th day, stabilization measures shall be initiated as soon as possible.
11. The following records shall be maintained and made available to the TCEQ upon request:
 - 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.
12. The holder of any approved Edward Aquifer protection plan must notify the appropriate regional office in writing and obtain approval from the executive director prior to initiating any of the following:
 - A. any physical or operational modification of any water pollution abatement structure(s), including but not limited to ponds, dams, berms, sewage treatment plants, and diversionary structures;
 - B. any change in the nature or character of the regulated activity from that which was originally approved or a change which would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;
 - C. any development of land previously identified as undeveloped in the original water pollution abatement plan.

Austin Regional Office 12100 Park 35 Circle, Building A Austin, Texas 78753-1808 Phone (512) 339-2929 Fax (512) 339-3795	San Antonio Regional Office 14250 Judson Road San Antonio, Texas 78233-4480 Phone (210) 490-3096 Fax (210) 545-4329
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THESE GENERAL CONSTRUCTION NOTES MUST BE INCLUDED ON THE CONSTRUCTION PLANS PROVIDED TO THE CONTRACTOR AND ALL SUBCONTRACTORS.

Modification of a Previously Approved 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)
- ✗ **Modification of a Previously Approved Plan (TCEQ-0590)**
 - Attachment A - Original Approval Letter and Approved Modification Letters
 - Attachment B - Narrative of Proposed Modification
 - Attachment C - Current Site Plan of the Approved Project
- ✗ **Application Form (include any applicable to the proposed modification):**
 - Aboveground Storage Tank Facility Plan (TCEQ-0575)
 - Organized Sewage Collection System Application (TCEQ-0582)
 - Underground Storage Tank Facility Plan (TCEQ-0583)
 - Water Pollution Abatement Plan Application (TCEQ-0584)
 - Lift Station / Force Main System Application (TCEQ-0624)
- ✗ **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), if necessary**
 - Attachment A - 20% or Less Impervious Cover Declaration (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 requested)

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)

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: NBISD - Elementary School 11					2. Regulated Entity No.:				
3. Customer Name: New Braunfels Independent School District					4. Customer No.: CN600397814				
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):			11.53	
9. Application Fee:	\$6,500	10. Permanent BMP(s):				Batch Detention Basin			
11. SCS (Linear Ft.):	985.26	12. AST/UST (No. Tanks):				N/A			
13. County:	Comal	14. Watershed:				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.

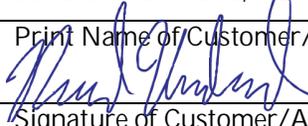
Austin Region			
County:	Hays	Travis	Williamson
Original (1 req.)	—	—	—
Region (1 req.)	—	—	—
County(ies)	—	—	—
Groundwater Conservation District(s)	<input type="checkbox"/> Edwards Aquifer Authority <input type="checkbox"/> Barton Springs/ Edwards Aquifer <input type="checkbox"/> Hays Trinity <input type="checkbox"/> Plum Creek	<input type="checkbox"/> Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	<input type="checkbox"/> Austin <input type="checkbox"/> Buda <input type="checkbox"/> Dripping Springs <input type="checkbox"/> Kyle <input type="checkbox"/> Mountain City <input type="checkbox"/> San Marcos <input type="checkbox"/> Wimberley <input type="checkbox"/> Woodcreek	<input type="checkbox"/> Austin <input type="checkbox"/> Bee Cave <input type="checkbox"/> Pflugerville <input type="checkbox"/> Rollingwood <input type="checkbox"/> Round Rock <input type="checkbox"/> Sunset Valley <input type="checkbox"/> West Lake Hills	<input type="checkbox"/> Austin <input type="checkbox"/> Cedar Park <input type="checkbox"/> Florence <input type="checkbox"/> Georgetown <input type="checkbox"/> Jerrell <input type="checkbox"/> Leander <input type="checkbox"/> Liberty Hill <input type="checkbox"/> Pflugerville <input type="checkbox"/> Round Rock

San Antonio Region					
County:	Bexar	Comal	Kinney	Medina	Uvalde
Original (1 req.)	—	<u>X</u>	—	—	—
Region (1 req.)	—	<u>X</u>	—	—	—
County(ies)	—	<u>X</u>	—	—	—
Groundwater Conservation District(s)	<input type="checkbox"/> Edwards Aquifer Authority <input type="checkbox"/> Trinity-Glen Rose	<input checked="" type="checkbox"/> Edwards Aquifer Authority	<input type="checkbox"/> Kinney	<input type="checkbox"/> EAA <input type="checkbox"/> Medina	<input type="checkbox"/> EAA <input type="checkbox"/> Uvalde
City(ies) Jurisdiction	<input type="checkbox"/> Castle Hills <input type="checkbox"/> Fair Oaks Ranch <input type="checkbox"/> Helotes <input type="checkbox"/> Hill Country Village <input type="checkbox"/> Hollywood Park <input type="checkbox"/> San Antonio (SAWS) <input type="checkbox"/> Shavano Park	<input type="checkbox"/> Bulverde <input type="checkbox"/> Fair Oaks Ranch <input type="checkbox"/> Garden Ridge <input checked="" type="checkbox"/> New Braunfels <input type="checkbox"/> Schertz	NA	<input type="checkbox"/> 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.

Richard Underwood, P.E.

Print Name of Customer/Authorized Agent



9/8/2023

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):

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: Richard Underwood, P.E.

Date: 09/08/2023

Signature of Customer/Agent:

Project Information

1. Regulated Entity Name: NBISD - Elementary School 11
2. County: Comal
3. Stream Basin: Guadalupe River Basin
4. Groundwater Conservation District (If applicable): Edwards Aquifer
5. Edwards Aquifer Zone:
 - Recharge Zone
 - Transition Zone
6. Plan Type:
 - WPAP
 - SCS
 - Modification
 - AST
 - UST
 - Exception Request

7. Customer (Applicant):

Contact Person: Clint McLain

Entity: New Braunfels ISD

Mailing Address: 1000 N Walnut

City, State: New Braunfels, TX

Zip: 78130

Telephone: 8406435700

FAX: _____

Email Address: _____

8. Agent/Representative (If any):

Contact Person: Richard Underwood, P.E.

Entity: Kimley-Horn & Associates Inc.

Mailing Address: 10101 Reunion Place, Suite 400

City, State: San Antonio, TX

Zip: 78216

Telephone: 2103213415

FAX: _____

Email Address: richard.underwood@kimley-horn.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 New Braunfels.
- 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.

From the TCEQ regional office, turn left and proceed approximately 1.5 miles to IH-35 North and turn left. Travel approximately 14.5 miles to exit 184 toward TX-337 and turn left. Proceed approximately 4.8 miles to Word Pkwy on the left. The project site is located approximately 0.15 mi northeast of the Word Pkwy and TX-337 intersection.

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: once advised by TCEQ staff of site inspection.

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:

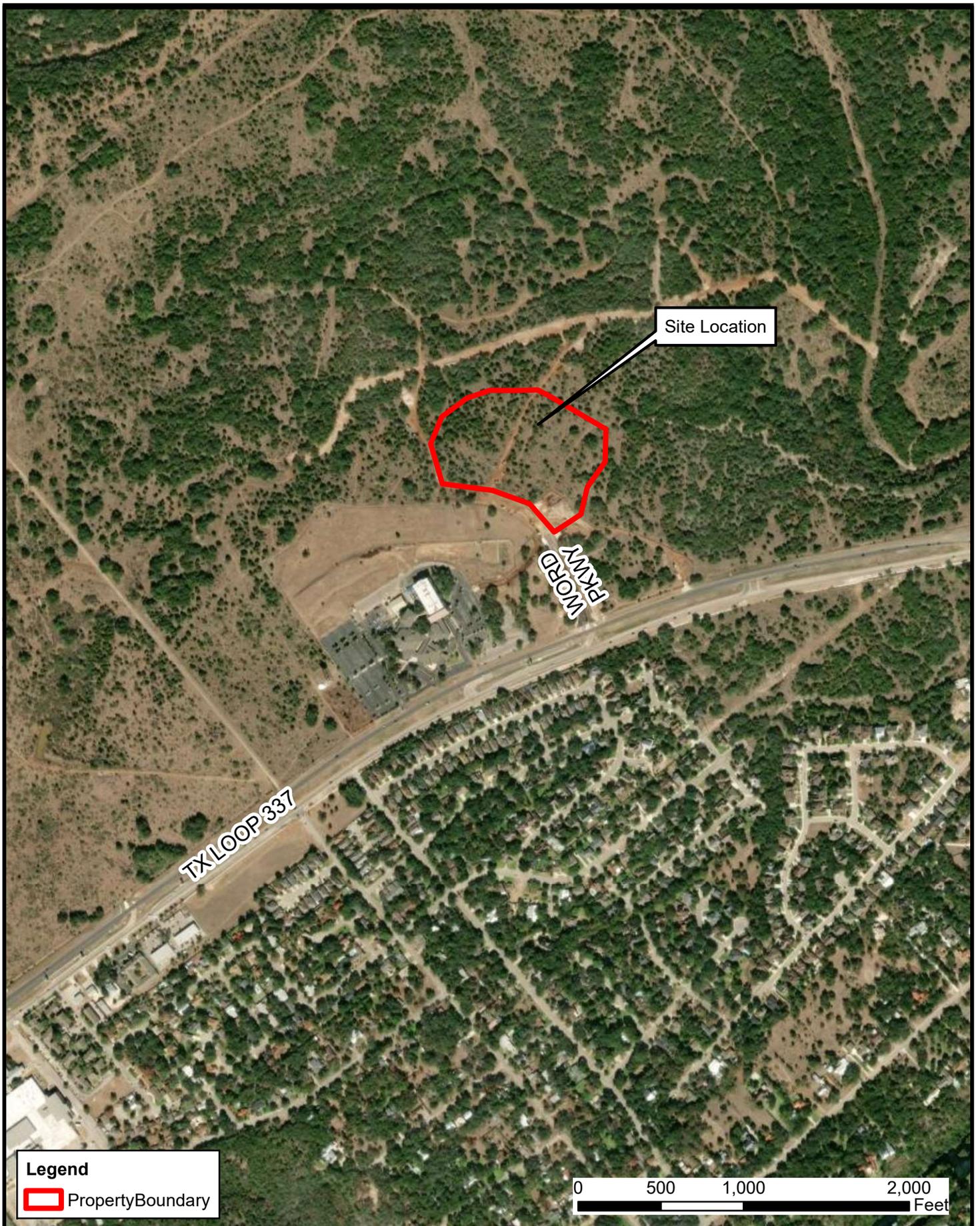
- (1) Waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);
- (2) New feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;
- (3) Land disposal of Class I wastes, as defined in 30 TAC §335.1;
- (4) The use of sewage holding 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

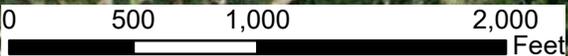
18. The fee for the plan(s) is based on:
- For a Water Pollution Abatement Plan or Modification, the total acreage of the site where regulated activities will occur.
 - For an Organized Sewage Collection System Plan or Modification, the total linear footage of all collection system lines.
 - For a UST 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.

Attachment A



Legend

 Property Boundary



SHEET	DATE:	08/22/2023
1	DESIGN:	ME
	DRAWN:	ME
	CHECKED:	BE
OF 1 SHEET	KHA NO.:	066017070

Aerial Map

Aerial Map
 New Braunfels
 Elementary School #11
 Veramendi Development
 New Braunfels, TX 78130

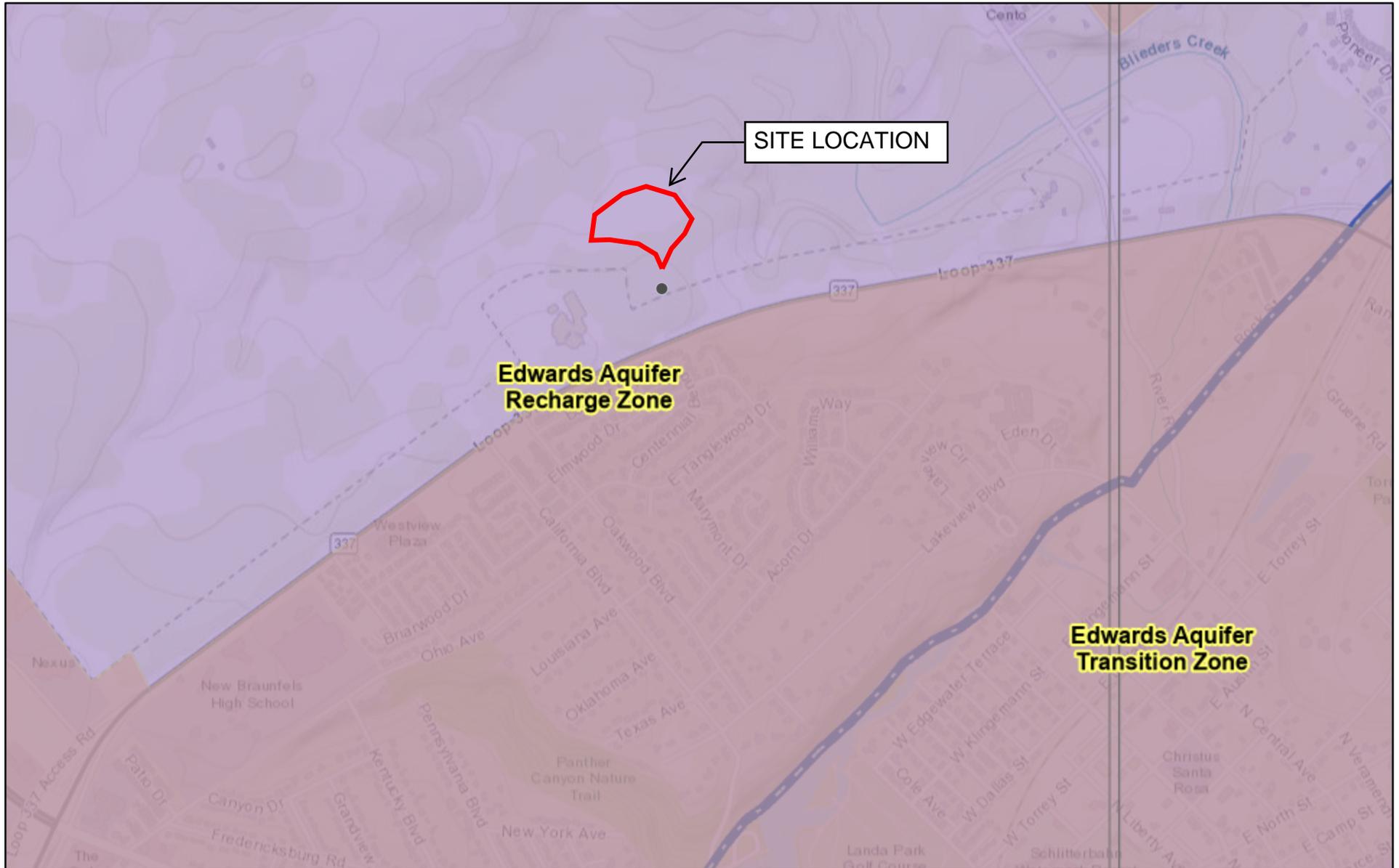


Kimley»Horn

This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.

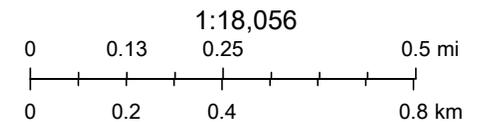
Attachment B

Attachment B: USGS/Edwards Aquifer Recharge Zone Map



8/22/2023, 8:33:41 AM

- City/Place
- Edwards Aquifer Authority
- Edwards Aquifer Label
- Groundwater Conservation Districts
- TX Counties
- Comal Trinity GCD
- Edwards Aquifer Boundary
- 7.5 Minute Quad Grid
- Edwards Aquifer Boundary central line



City of New Braunfels, BCAD, Comal County, Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA, TCEQ

Web AppBuilder for ArcGIS

Attachment C

*NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment C*

Project Description

New Braunfels – Elementary School 11 is a modification of the Veramendi – Work Pkwy Phase 2 Water Pollution Abatement Plan (WPAP) previously approved by the Texas Commission on Environmental Quality (TCEQ) on December 22, 2021 (EAPP ID No. 13001429). This 11.53-acre project site is located approximately 0.15 mi northeast of Work Pkwy and TX-337 intersection within the Extra-Territorial Jurisdiction of the City of New Braunfels in Comal County, Texas and is entirely over the Edwards Aquifer Recharge Zone. For the calculations associated with this WPAP modification, Kimley-Horn also took into account the adjacent Veramendi Apartments WPAP modification previously approved by TCEQ on April 29, 2022 (EAPP ID No. 13001494-13001495).

Stormwater runoff previously sheet flowed across the site. This modification proposes to capture onsite stormwater through an on-site storm sewer system that will discharge to the existing detention pond already designed for the proposed flows from the elementary school development proposed in this application. The approved basin has been sized to account for the watershed and impervious cover from the proposed improvements. Refer to the included TSS Summary Table and Calculations for details.

Additional Regulated activities include clearing, grading, excavation, installation of utilities and drainage improvements, construction of an elementary school with associated parking and drives, hardscapes, landscape, and site clean-up. Approximately 7.12 acres of impervious cover, or 61.75% of the 11.53-acre project limits, are proposed for construction in this WPAP. The previously approved batch detention basin has been sized for future development of the watershed which will be routed through proposed storm drain for treatment. All PBMPs have been designed in accordance with the TCEQ's Technical Guidance manual (TGM) RG-348 (2005) to remove 80% of the increase in TSS from the site.

***Geologic Site Assessment (SCS)
for Regulated Activities / Development
on the Edwards Aquifer Recharge / Transition Zone***

***Veramendi
Word Parkway, Pricinct 20
Modification
New Braunfels, Texas***

FROST GEOSCIENCES CONTROL # FGS-E21272

October 13, 2021

Prepared exclusively for

***ASA Properties
P.O. Box 310699
New Braunfels, Texas 78131***

Frost GeoSciences

***Geotechnical ▪ Construction Materials
Forensics ▪ Environmental***

13406 Western Oak Helotes, Texas 78023 Phone: (210) 372-1315 Fax: (210) 372-1318

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Geotechnical • Construction Materials
Testing • Environmental

13406 Western Oak
Helotes, Texas 78023
Phone (210) 372-1315
Fax (210) 372-1318
www.frostgeosciences.com
TBPE Firm Registration # F-9227
TBPG Firm Registration # 50040

October 13, 2021

ASA Properties
P.O. Box 310699
San Antonio, Texas 78216

Attn: Mr. Garrett Mechler, P.E.

Re: Geologic Site Assessment (SCS)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Veramendi, Word Parkway, Pricinct 20 Modification
New Braunfels, Texas

Frost GeoSciences, Inc. Control # FGS-E21272

Dear Sir:

Attached is a copy of the Geologic Assessment Report completed for the above referenced project site as it relates to 30 TAC §213.5(b)(3), effective June 1, 1999. Our investigation was conducted and this report was prepared in general accordance with the "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04). The results of our investigation, along with any recommendations for Best Management Practices (BMP's), are provided in the following report.

If you have any questions regarding this report, or if Frost GeoSciences, Inc. may be of additional assistance to you on this project, please feel free to call our office. It has been a pleasure to work with you and we wish to thank you for the opportunity to be of service to you on this project. We look forward to being of continued service.



Sincerely,
Frost GeoSciences, Inc.

A handwritten signature in cursive script that reads "Steve Frost".

Steve Frost, C.P.G., P.G.
President, Senior Geologist

Distribution: (1) ASA Properties
(5) Pape Dawson Engineering

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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

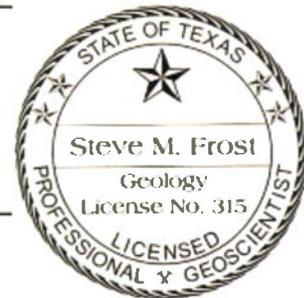
To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Print Name of Geologist: Steve Frost, C.P.G., P.G. Telephone: (210) 372-1315

Date: October 13, 2021 Fax: (210) 372-1318

Representing: Frost GeoSciences, Inc.

Signature of Geologist:



Regulated Entity Name: Veramendi Word Parkway, Pricinct 20 Modifica-
tion

Project Information

1. Date(s) Geologic Assessment was performed: March 29, 2021 & October 11, 2021

2. Type of Project:

WPAP

SCS

AST

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)
'CrD	C/D	1 to 2
'RUD	D	1 to 2

- * 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 thicknesses 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" = 50 '
 Site Geologic Map Scale: 1" = 50 '
 Site Soils Map Scale (if more than 1 soil type): 1" = 500 '
- 9. Method of collecting positional data:
 - Global Positioning System (GPS) technology.
 - Other method(s). Please describe method of data collection: 2020 Aerial Photograph
- 10. The project site and 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 _____ (#) 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 Chapter 76.
- There are no wells or test holes of any kind known to exist on the project site.

Administrative Information

15. 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.

Stratigraphic Column

[Hydrogeologic subdivisions modified from Maclay and Small (1976); groups, formations, and members modified from Rose (1972); lithology modified from Dunham (1962); and porosity type modified from Choquette and Pray (1970). CU, confining unit; AQ, aquifer]

Hydrogeologic subdivision		Group, formation, or member	Hydro-logic function	Thickness (feet)	Lithology	Field identification	Cavern development	Porosity/permeability type		
Upper Cretaceous	Upper confining units	Eagle Ford Group	CU	30 – 50	Brown, flaggy shale and argillaceous limestone	Thin flagstones; petroliferous	None	Primary porosity lost/ low permeability		
		Buda Limestone	CU	40 – 50	Buff, light gray, dense mudstone	Porcelaneous limestone with calcite-filled veins	Minor surface karst	Low porosity/low permeability		
		Del Rio Clay	CU	40 – 50	Blue-green to yellow-brown clay	Fossiliferous; <i>Ilymatogyra arietina</i>	None	None/primary upper confining unit		
Lower Cretaceous	Edwards aquifer	Georgetown Formation	Karst AQ; not karst CU	2 – 20	Reddish-brown, gray to light tan marly limestone	Marker fossil; <i>Waconella wacoensis</i>	None	Low porosity/low permeability		
			Edwards Group	Person Formation	Cyclic and marine members, undivided	AQ	80 – 90	Mudstone to packstone; <i>miliolid</i> grainstone; chert	Thin graded cycles; massive beds to relatively thin beds; crossbeds	Many subsurface; might be associated with earlier karst development
		Leached and collapsed members, undivided			AQ	70 – 90	Crystalline limestone; mudstone to grainstone; chert; collapsed breccia	Bioturbated iron-stained beds separated by massive limestone beds; stromatolitic limestone	Extensive lateral development; large rooms	Majority not fabric/one of the most permeable
		Regional dense member			CU	20 – 24	Dense, argillaceous mudstone	Wispy iron-oxide stains	Very few; only vertical fracture enlargement	Not fabric/low permeability; vertical barrier
		Grainstone member			AQ	50 – 60	<i>Miliolid</i> grainstone; mudstone to wackestone; chert	White crossbedded grainstone	Few	Not fabric/recrystallization reduces permeability
		Kainer Formation		Kirschberg evaporite member	AQ	50 – 60	Highly altered crystalline limestone; chalky mudstone; chert	Boxwork voids, with neospar and travertine frame	Probably extensive cave development	Majority fabric/one of the most permeable
				Dolomitic member	AQ	110 – 130	Mudstone to grainstone; crystalline limestone; chert	Massively bedded light gray, <i>Toucasia</i> abundant	Caves related to structure or bedding planes	Mostly not fabric; some bedding plane-fabric/water-yielding
				Basal nodular member	Karst AQ; not karst CU	50 – 60	Shaly, nodular limestone; mudstone and <i>miliolid</i> grainstone	Massive, nodular and mottled, <i>Exogyra texana</i>	Large lateral caves at surface; a few caves near Cibolo Creek	Fabric; stratigraphically controlled/large conduit flow at surface; no permeability in subsurface
				Lower confining unit	Upper member of the Glen Rose Limestone	CU; evaporite beds AQ	350 – 500	Yellowish tan, thinly bedded limestone and marl	Stair-step topography; alternating limestone and marl	Some surface cave development

LOCATION

The project site consists of a proposed sewer line located near the future Word Parkway within the existing Veramendi Subdivision in New Braunfels, Texas. An overall view of the area is shown on copies of the site plan, a street map, the USGS Topographic Map, the Official Edwards Aquifer Recharge Zone Map, the Flood Insurance Rate Map (FIRM), a 1973 aerial photograph at a scale of 1"=500', a geologic map, a 2020 aerial photograph at a scale of 1"=500', and a 2020 aerial photograph at a scale of 1"=200'. Plates 1 through 9 in Appendix A.

METHODOLOGY

The Geologic Assessment was performed by Mr. Steve Frost, C.P.G., President and Senior Geologist with Frost GeoSciences, Inc. Mr. Frost is a Licensed Professional Geoscientist in the State of Texas (License # 315) and is a Certified Professional Geologist with the American Institute of Professional Geologist (Certification # 10176).

Frost GeoSciences, Inc. researched the geology of the area in the immediate vicinity of the project site. The research included, but was not limited to the Geologic Atlas of Texas, San Antonio Sheet, FIRM maps, Edwards Aquifer Recharge Zone Maps, USGS 7.5 Minute Quadrangle Maps, the Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle, the USGS Water-Resources Investigations Report 94-4117, and the USDA Soil Survey of Comal & Hays County, Texas.

After reviewing the available information, a field investigation was performed to identify any geologic or man-made potential recharge features. A transect spacing of approximately 50 feet or less, depending on vegetation thickness, was used to inspect the project site within a 50 ft boundary of the proposed sewer line. A 2020 aerial photograph, in conjunction with a hand held Global Positioning System with an Estimated Potential Error of 10 feet was used to navigate around the property and identify the locations of potential recharge features, as recommended

in the "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04). The locations of any potential recharge features noted in the field were identified with blue and white flagging. The flagging is numbered with the same potential recharge feature I.D. # that is used on the Site Geologic Map in Appendix C of this report. The Site Geologic Map indicating the limits of the project site is included in Appendix C. A copy of a 2020 aerial photograph at an approximate scale of 1"=200', indicating the locations of the potential recharge features, is included on Plate 9 in Appendix A. The Geologic Assessment Form (Rev. 2-11-15), Stratigraphic Column and the Geologic Assessment Table have been filled with the appropriate information for this project site and are included on pages 1-5 of this report.

RESEARCH & OBSERVATIONS

7.5 Minute Quadrangle Map Review

According to the USGS 7.5 Minute Quadrangle Map, New Braunfels West, Texas Sheet (1988), the elevation of the project site ranges from 720 feet in the northern limits of the project site to 750 feet in the southern limits of the project site. These elevations are calculated above mean sea level (AMSL). Overall, the surface runoff from the project site flows to the northeast into an unnamed tributary of Blieders Creek. A copy of the above referenced USGS 7.5 Minute Quadrangle Map indicating the location of the project site, is included in this report on Plate 3 in Appendix A.

Recharge / Transition Zone

According to the Official Edwards Aquifer Recharge Zone Map, New Braunfels West, Texas Sheet (2014), the project site is located within the Recharge Zone of the Edwards Aquifer. A copy of the Official Edwards Aquifer Recharge Zone Map, New Braunfels West, Texas Sheet (2014), indicating the location of the project site, is included on Plate 4 in Appendix A.

100-Year Floodplain

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for Comal County, Texas, Community Panel Number 48091C0435F (Revised 9/02/09) was reviewed to determine if the project site is located in areas prone to flooding. A review of the above-mentioned panel indicates that no portions of the project site are located within the 100 year floodplain. The project site is located within Zone X. According to the panel legend, Zone X represents areas determined to be outside the 0.2% annual chance floodplain. A copy of the Comal County, Texas, FIRM map, indicating the location of the project site, is included in this report on Plate 5 in Appendix A.

Soils

According to the United States Department of Agriculture, Soil Conservation Service, Soil Survey of Comal & Hays County, Texas (1982), the project site is located on the Comfort Rock Outcrop Complex (CrD) and the The Rumble-Comfort Association (RuD) . A copy of the 1973 aerial photograph (approximate scale: 1"=500') from the USDA Soil Survey of Comal & Hays County, Texas indicating the location of the project site and the soil types is included on Plate 6 in Appendix A.

The Comfort-Rock Outcrop Complex consists of shallow, clayey soils and Rock Outcrop on side slopes and on hilltops and ridgetops on uplands in the Edwards Plateau Land Resource Area. The Comfort Extremely Stony Clay makes up 49 to more than 95 percent of the complex, but on the average it makes up 70 percent. Rock Outcrop and areas of soil less than 4 inches deep make up 5 to 36 percent, but the average is 15 percent. Typically, the surface layer of the Comfort soil is dark brown extremely stony clay about 6 inches thick. Cobbles and stones as much as 4 feet across cover about 45 percent of the surface. The subsoil extends to a depth of 13 inches. It is dark reddish brown extremely stony clay. The underlying material is indurated fractured limestone. The soil is mildly alkaline and noncalcareous throughout. The Comfort Soil is well drained. Surface runoff is slow to medium. Permeability is slow, and the available water capacity is very low. Water erosion is a slight hazard. This soil has a USDA Texture

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Classification of extremely stony clay, stony clay, very stony clay, and weathered bedrock. The Unified Classification is CH, GC, CL, or SC. The AASHTO Classification is A-2-7, and A-7-6. This soil has an average permeability from 0.6 to 0.2 inches/hour.

The Rumble-Comfort Association (RuD) consists of shallow and moderately deep soils on uplands in the Edwards Plateau Land Resource Area. The surface layer of the Rumble Soil is dark reddish brown very cherty clay loam about 10 inches thick. Rounded chert and limestone cobbles and gravel cover about 20 percent of the surface. The subsoil to a depth of 14 inches is dark reddish-brown very cherty clay, and to a depth of 28 inches it is dark reddish-brown extremely stony clay. The underlying material is indurated fractured limestone. The Comfort Soil is dark brown, neutral, extremely stony clay about 7 inches thick. The subsoil to a depth of 12 inches is dark reddish-brown, mildly alkaline, extremely stony clay. The underlying material is indurated fractured limestone. The soil is noncalcareous throughout. The soils in this association are well drained. Surface runoff is medium, but varies due to the occurrence of caves, fracture zones, and sinks. Permeability is moderately slow. Water erosion is a moderate hazard.

Narrative Description of the Site Geology

The project site consists of a proposed sewer line located near the future Word Parkway within the existing Veramendi Subdivision in New Braunfels, Texas. An overall view of the area is shown on Plates 1 through 9 in Appendix A. No natural karst or manmade features were noted on the project site during the site inspection. Based on a visual inspection of the ground surface the overall potential for fluid flow from the project site into the Edwards Aquifer appears to be low.

The overall vegetative cover on the project site consists of live oak, mountain cedar, cedar elm, agarita, persimmon, cactus, and native grasses. The variations in the vegetative cover across the project site are visible in the 2020 aerial photographs on Plates 8 and 9 in Appendix A and in the site visit photographs included in Appendix B.

According to the USGS 7.5 Minute Topographic Quadrangle Map, New Braunfels, Texas Sheet (1988), the elevation of the project site ranges from 720 feet in the northern portion of the site to 750 feet in the southern portion of the site. These elevations are calculated above mean sea

level (AMSL). Overall, the surface runoff from the project site flows to the northeast into an unnamed tributary of Blieders Creek. According to topographic data obtained from Pape Dawson Engineers, the elevation on the project site ranges from 720 feet in the northern portion of the project site to 757 feet in the southeastern portion of the site. A copy of the site plan, indicating the boundary of the project site and the elevations, is included on Plate 1 in Appendix A and on the Site Geologic Map in Appendix C of this report.

According to the USGS, Hydrogeologic Subdivisions of the Edwards Aquifer Outcrop, Comal County, Texas (1994), the project site is located on the Cretaceous Edwards Person Limestone (Kep). Based on the site inspection, the project site is located on the Leached and Collapsed Member of the Cretaceous Edwards Person Limestone (Kep)

The Leached and Collapsed Member of the Edwards Person Limestone consists of crystalline limestone, mudstone to grainstone with chert, and collapsed breccia. This member is stromatolitic limestone. The Leached and Collapsed Member is characterized by bioturbated iron stained beds separated by massive limestone beds. This member is typically one of the most permeable and has extensive lateral development with large rooms. Overall thickness ranges from 70 to 90 feet thick.

A copy of the USGS, Hydrogeologic Subdivisions of the Edwards Aquifer Outcrop, Comal County, Texas (1994), indicating the location of the project site, is included on Plate 7 in Appendix A.

BEST MANAGEMENT PRACTICE (BMP)

Based on a visual inspection of the ground surface the overall potential for fluid flow from the project site into the Edwards Aquifer appears to be low. The potential always exists to encounter subsurface features that lack a surface expression. Frost GeoSciences, Inc. recommends that construction personnel be informed of the potential to encounter subsurface karst features during excavating activities. Construction personnel should also be informed of the proper protocol to follow in the event that a solution cavity and/or cave is encountered during the excavation and development of the property.

DISCLAIMER

This report has been prepared in general accordance with the "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04) by a Licensed Texas Professional Geoscientist. All areas of the project site were carefully inspected for features that could contribute to the recharge of the Edwards Aquifer, however, this survey cannot preclude the presence of subsurface karst features that lack surface expression. This report is not intended to be a definitive investigation of all possible geologic or karst features at this site. All conclusions, opinions and recommendations for Best Management Practices (BMP's) in this report are based on information obtained while researching the project and on the site conditions at the time of our field investigation.

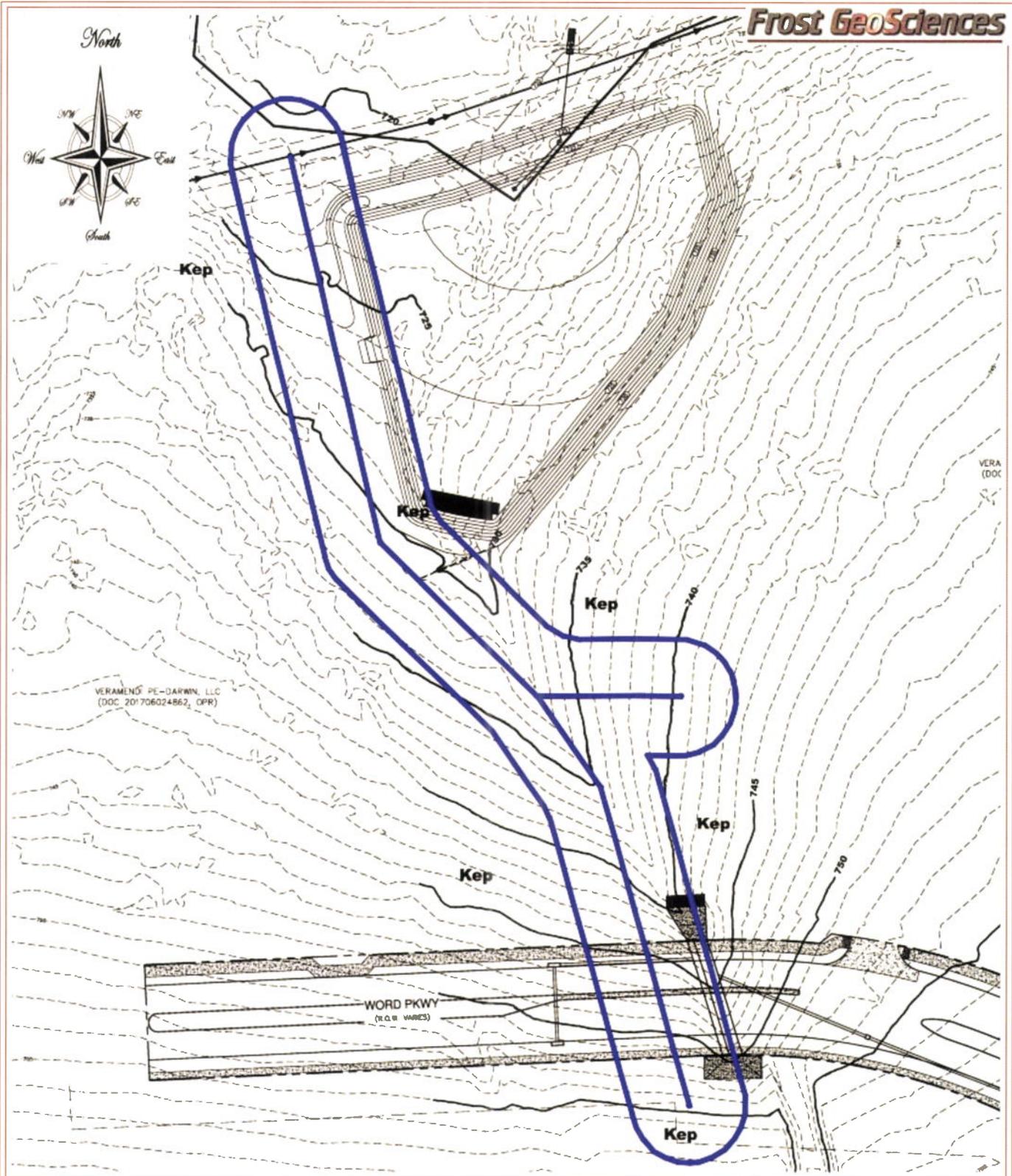
This report has been prepared for and may be relied upon by ASA Properties. This report is based on available known records, a visual inspection of the project site and the work generally accepted for a Geologic Assessment TAC §213.5(b)(3), effective June 1, 1999.

REFERENCES

- 1) USGS 7.5 Minute Quadrangle Map, New Braunfels West, Texas Sheet (1988),
- 2) Official Edwards Aquifer Recharge Zone Map, New Braunfels West, Texas Sheet (2014).
- 3) Small, T.A., and Hanson, J.A., 1994, Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Recharge Zone, Comal County, Texas. U.S. Geological Survey Water Resources Investigations 94-4117.
- 4) Collins, Edward, W., 2000, Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle.
- 5) Federal Emergency Management Agency (FEMA), Bexar County, Texas and Incorporated Areas, Flood Insurance Rate Map (FIRM), Panel 48091C0435F (9/02/09) FEMA, Washington D.C.
- 7) USDA Soil Conservation Service, Soil Survey of Comal & Hays Counties, Texas (1982).
- 8) TCEQ-0585-Instructions (Rev. 10-1-04). "Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zone".



Appendix A
Site Location Plates



PROJECT NAME:

Geologic Site Assessment (SCS)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Veramendi, Pricinct 20 Modification
New Braunfels, Texas

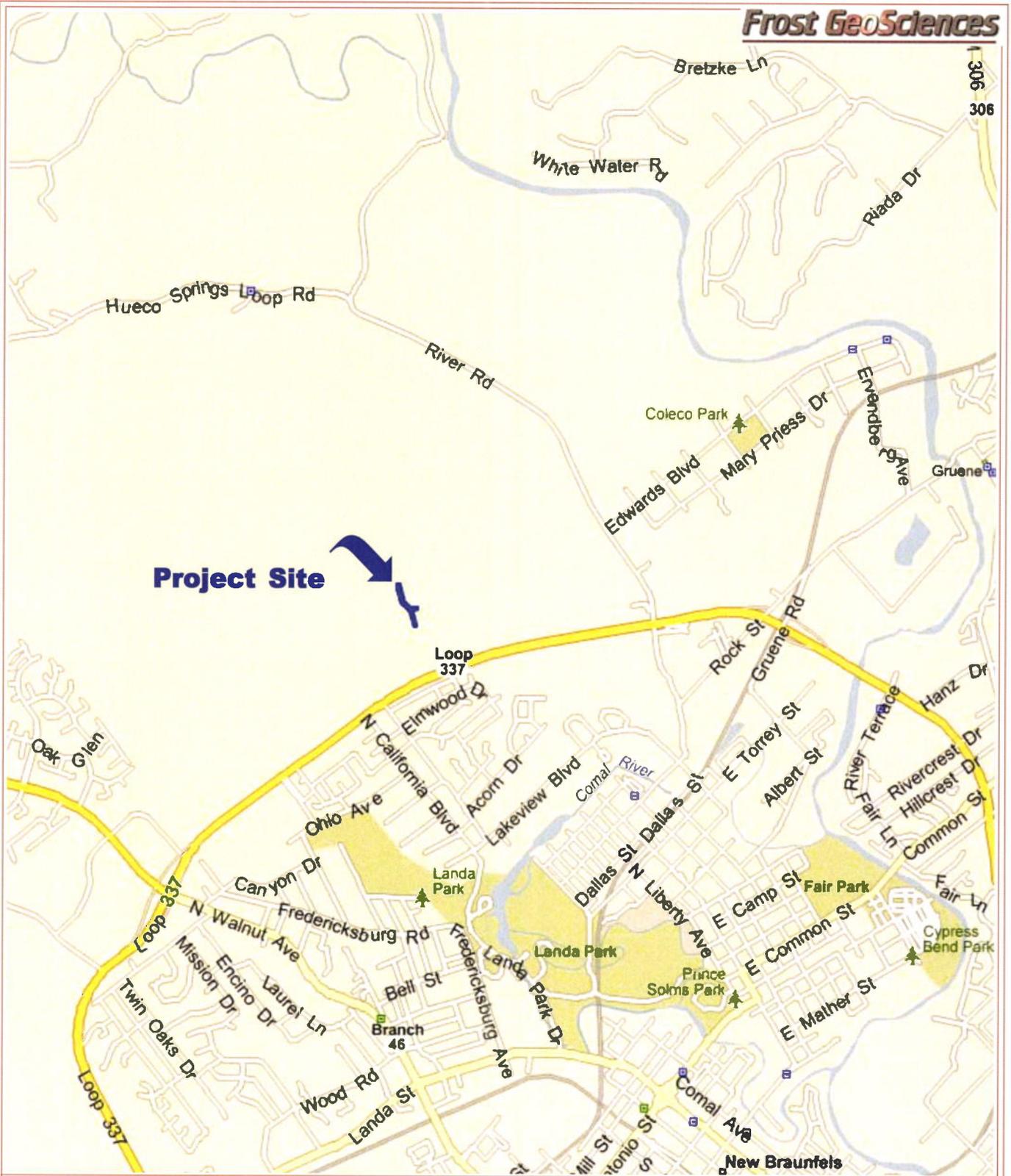
Site Plan

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Project Site

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Geologic Site Assessment (SCS)
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Edwards Aquifer Recharge / Transition Zone
Veramendi, Princt 20 Modification
New Braunfels, Texas

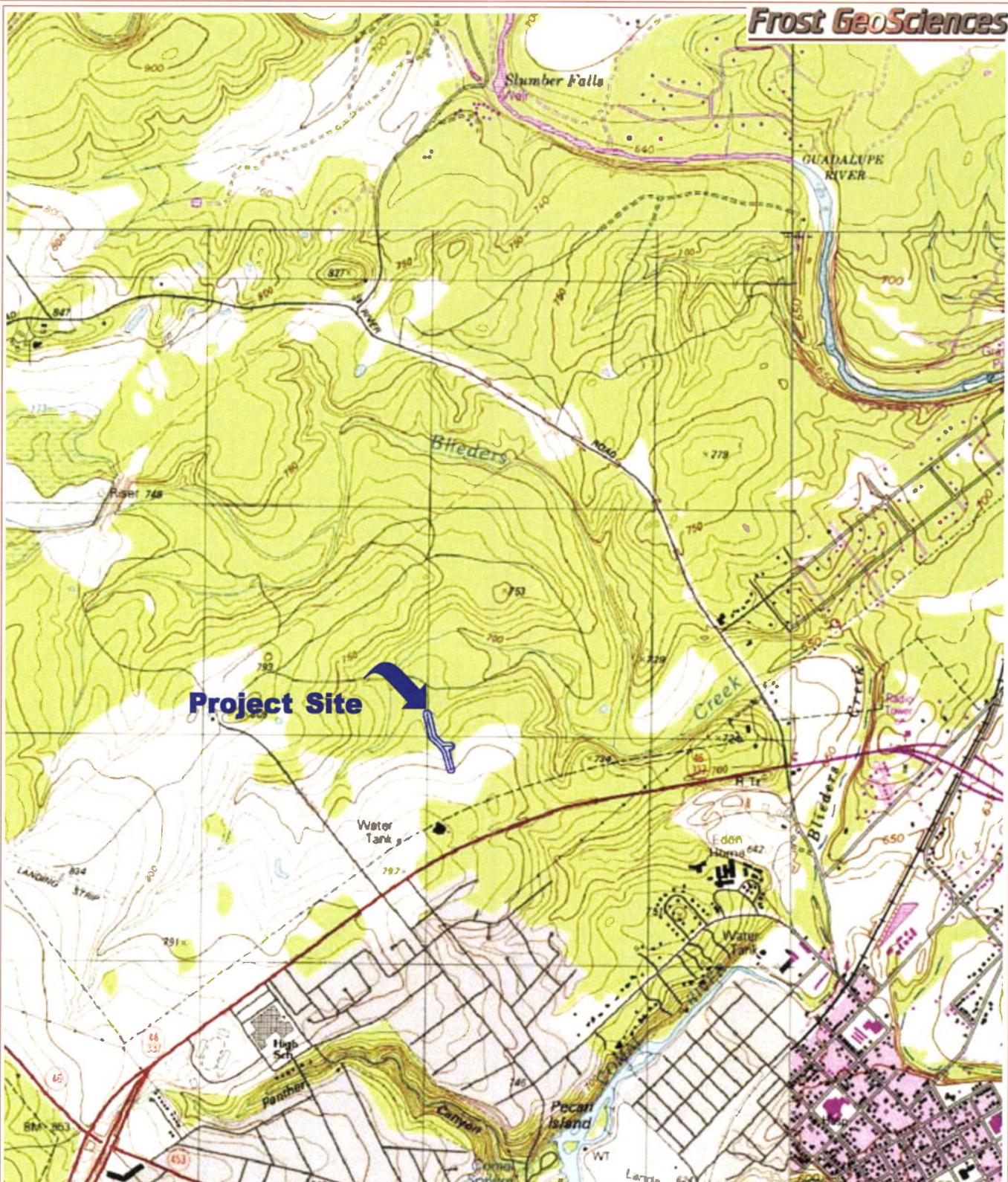
Street Map

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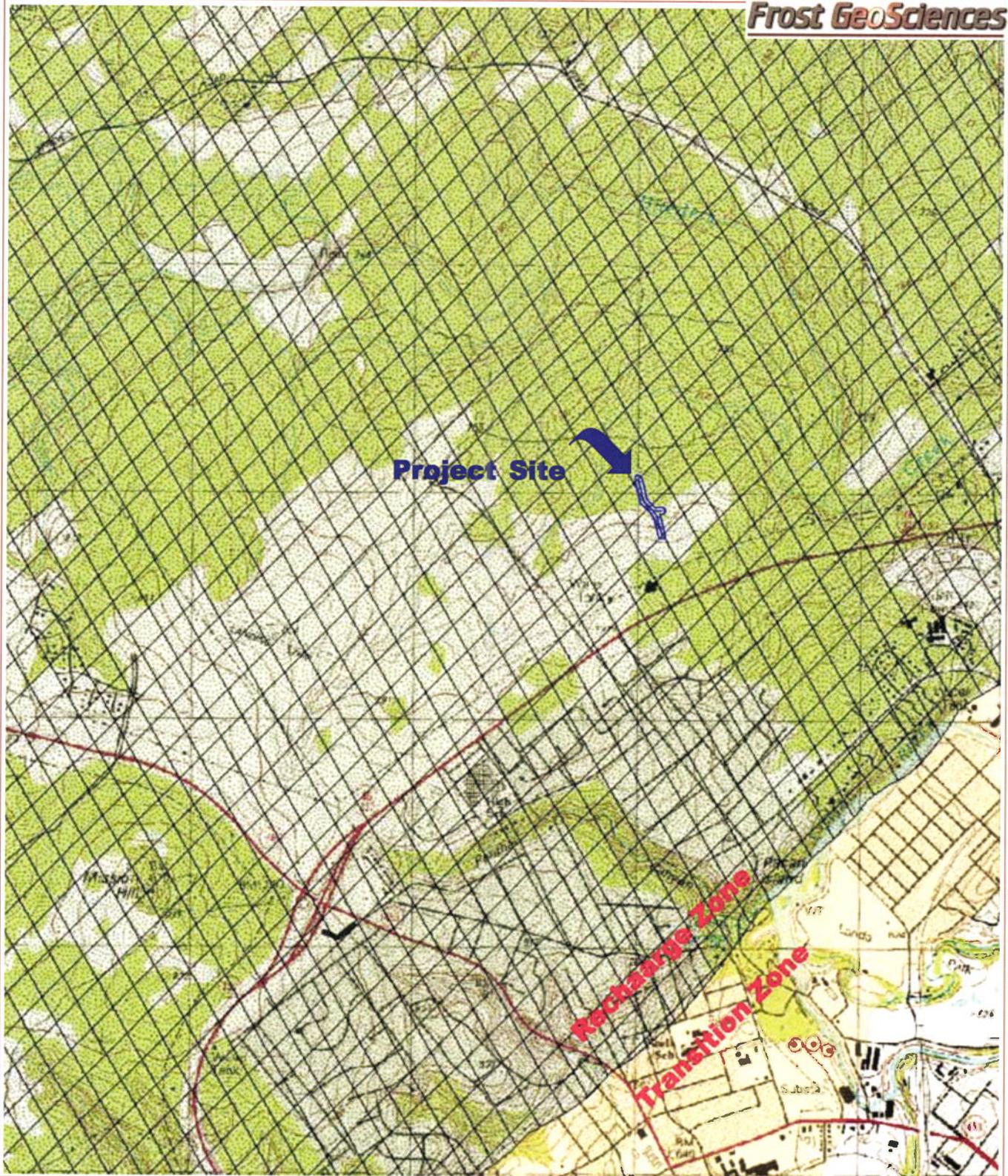


PROJECT NAME:
 Geologic Site Assessment (SCS)
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U.S.G.S. 7.5 Minute Quadrangle Map
 New Braunfels West, Texas Sheet (1988)

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Veramendi, Princt 20 Modification
New Braunfels, Texas

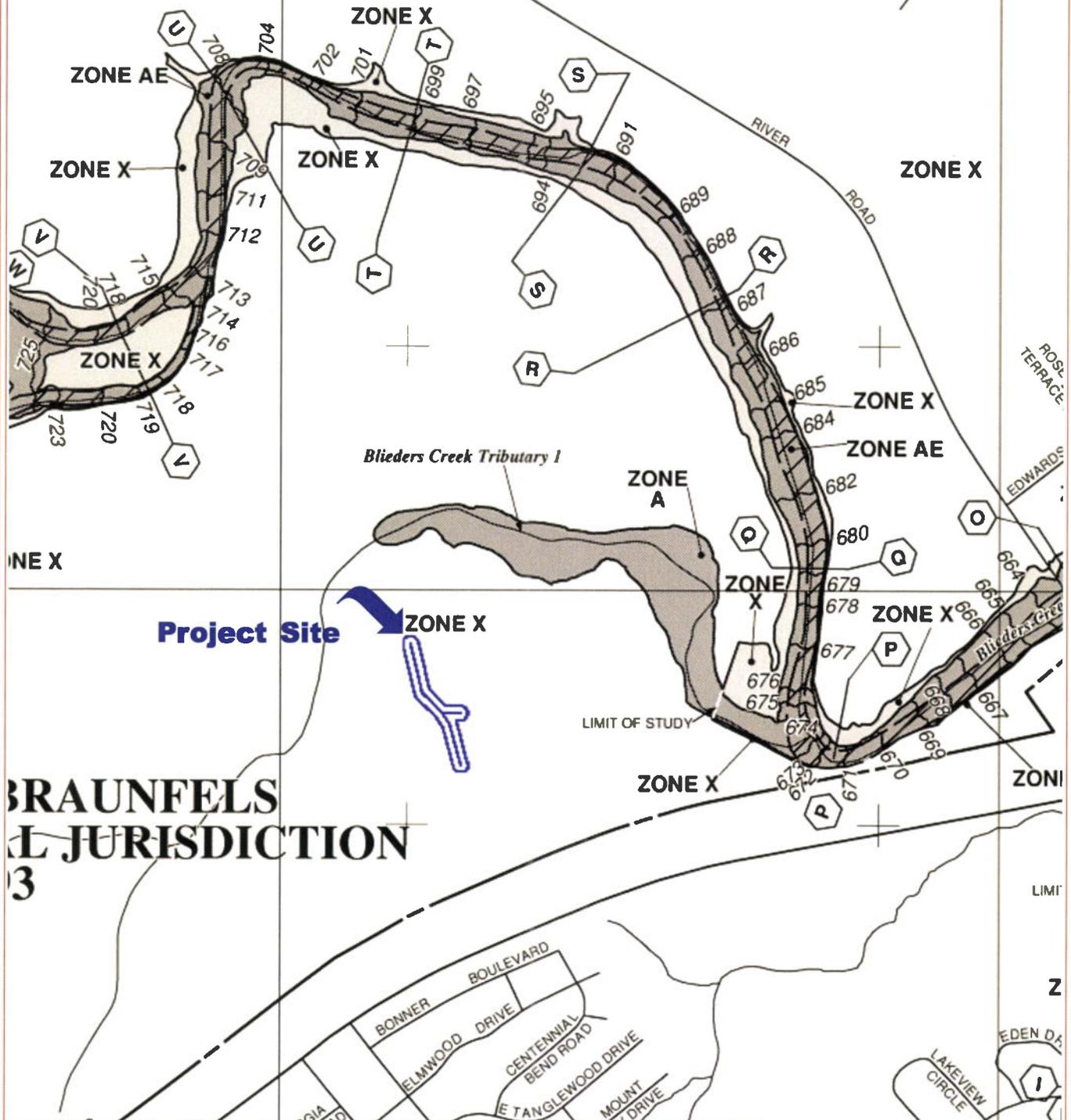
Official Edwards Aquifer Recharge Zone Map
New Braunfels West, Texas Sheet (2014)

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Flood Insurance Rate Map (FIRM)
Community Panel # 48091C0435F
(Revised 9/02/09)

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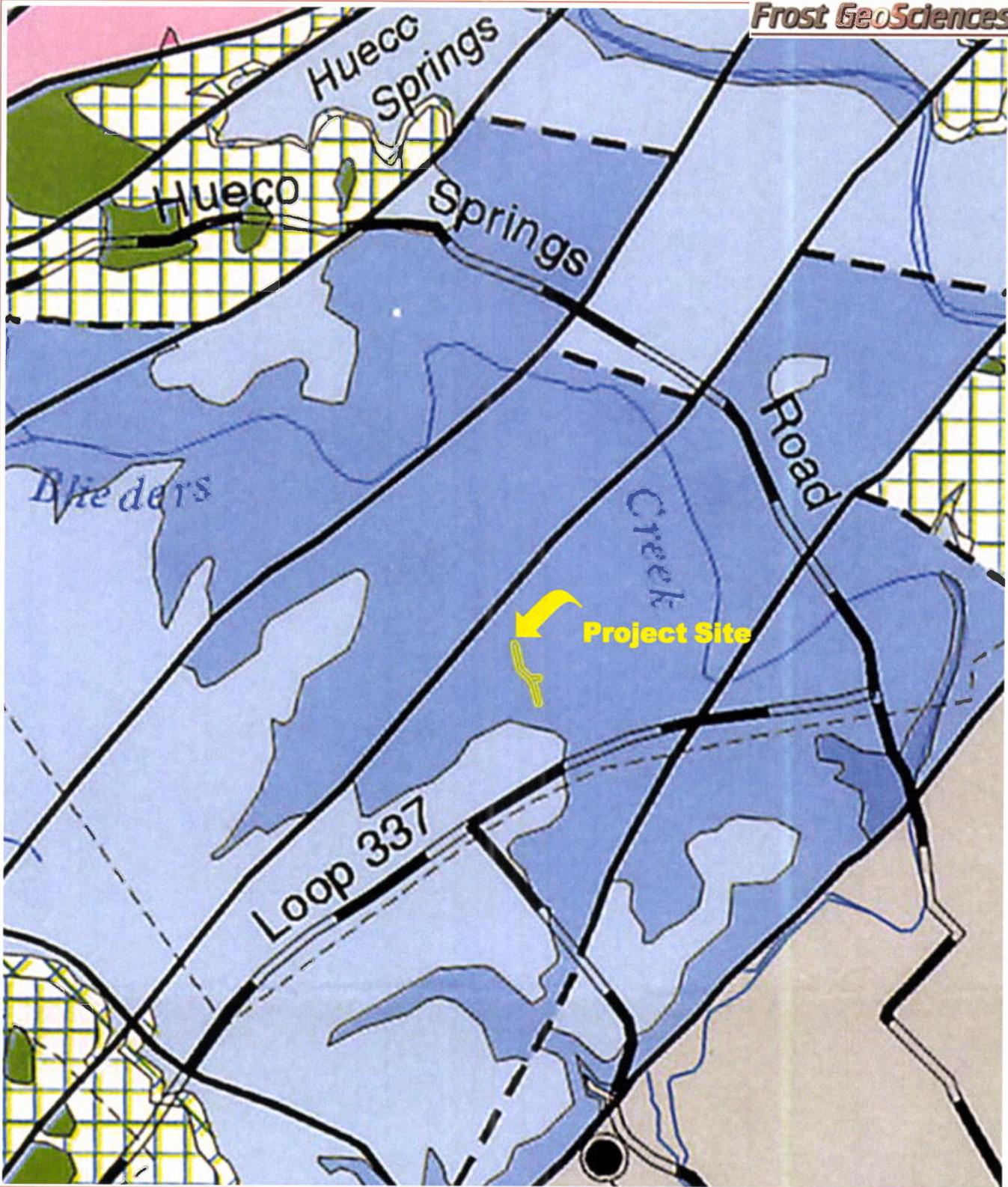
1973 Aerial Photograph
United States Department of Agriculture

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PROJECT NAME:

Geologic Site Assessment (SCS) for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone Veramendi, Pricinct 20 Modification New Braunfels, Texas

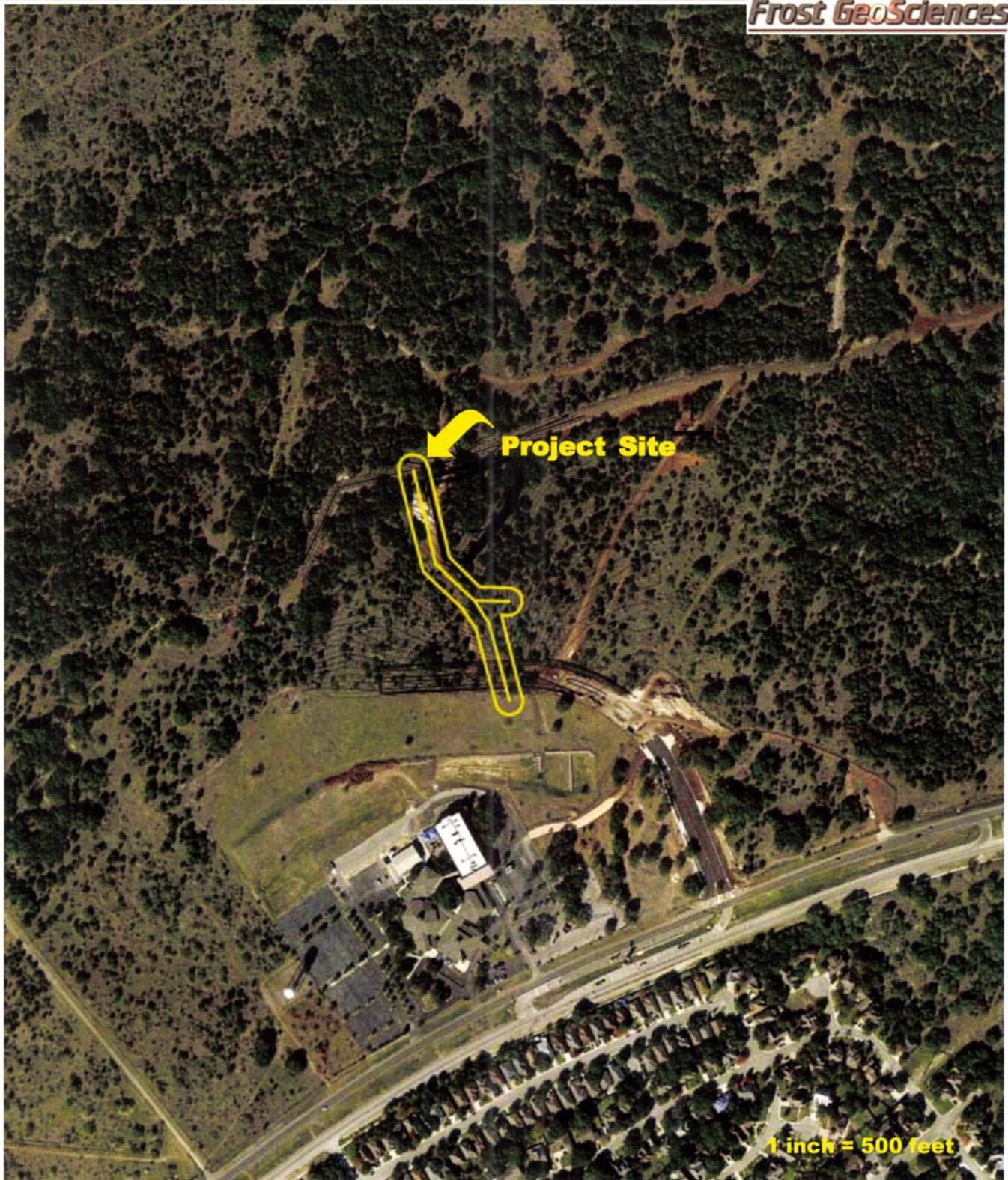
USGS Hydrogeologic Subdivisions of the Edwards Aquifer Recharge Zone, Comal County, Texas (1994)

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PROJECT NAME:

Geologic Site Assessment (SCS)
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New Braunfels, Texas

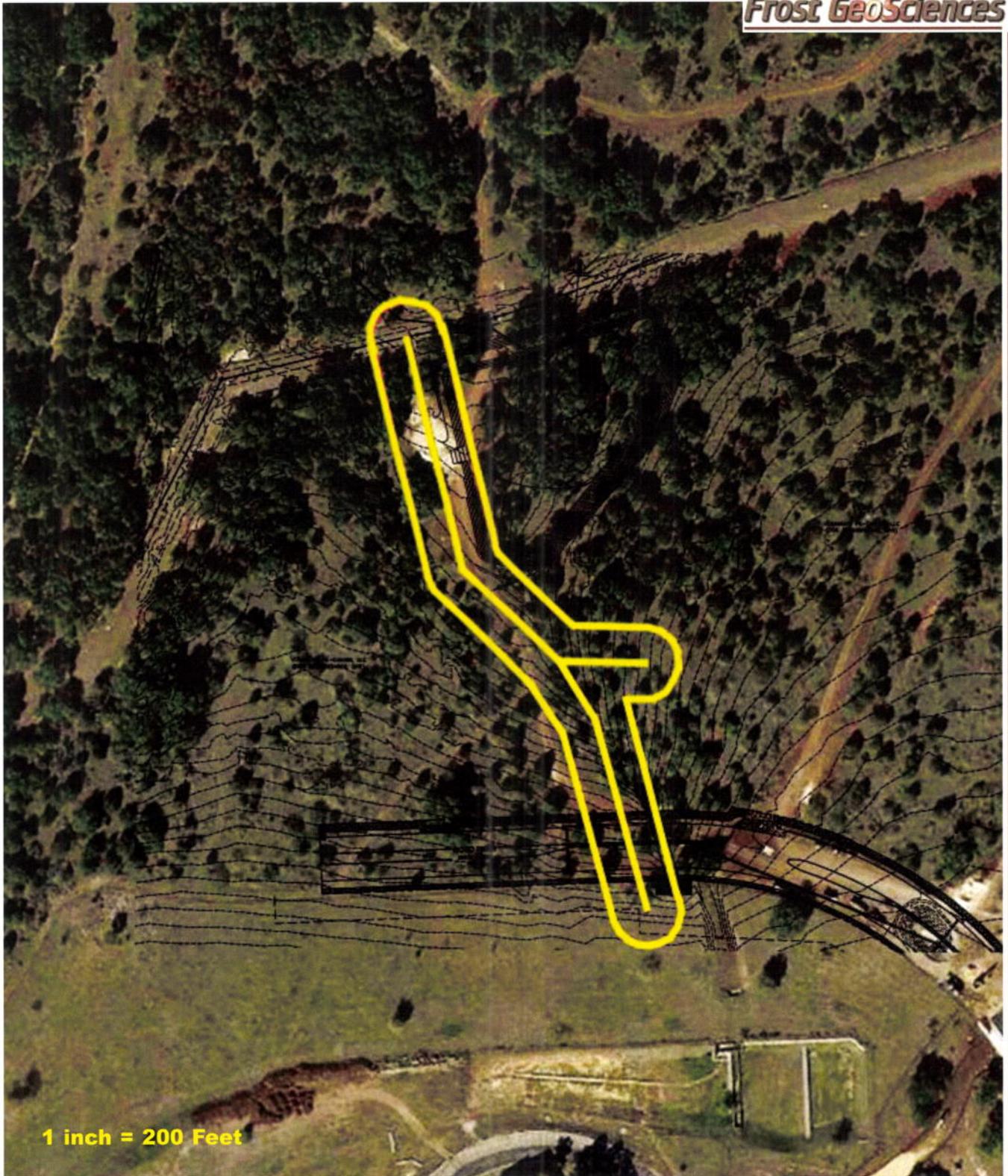
2020 Aerial Photograph
Google Earth

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1 inch = 200 Feet

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Geologic Site Assessment (SCS)
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Veramendi, Pricinct 20 Modification
New Braunfels, Texas

2020 Aerial Photograph with PRF's
Google Earth

PROJECT NO.:

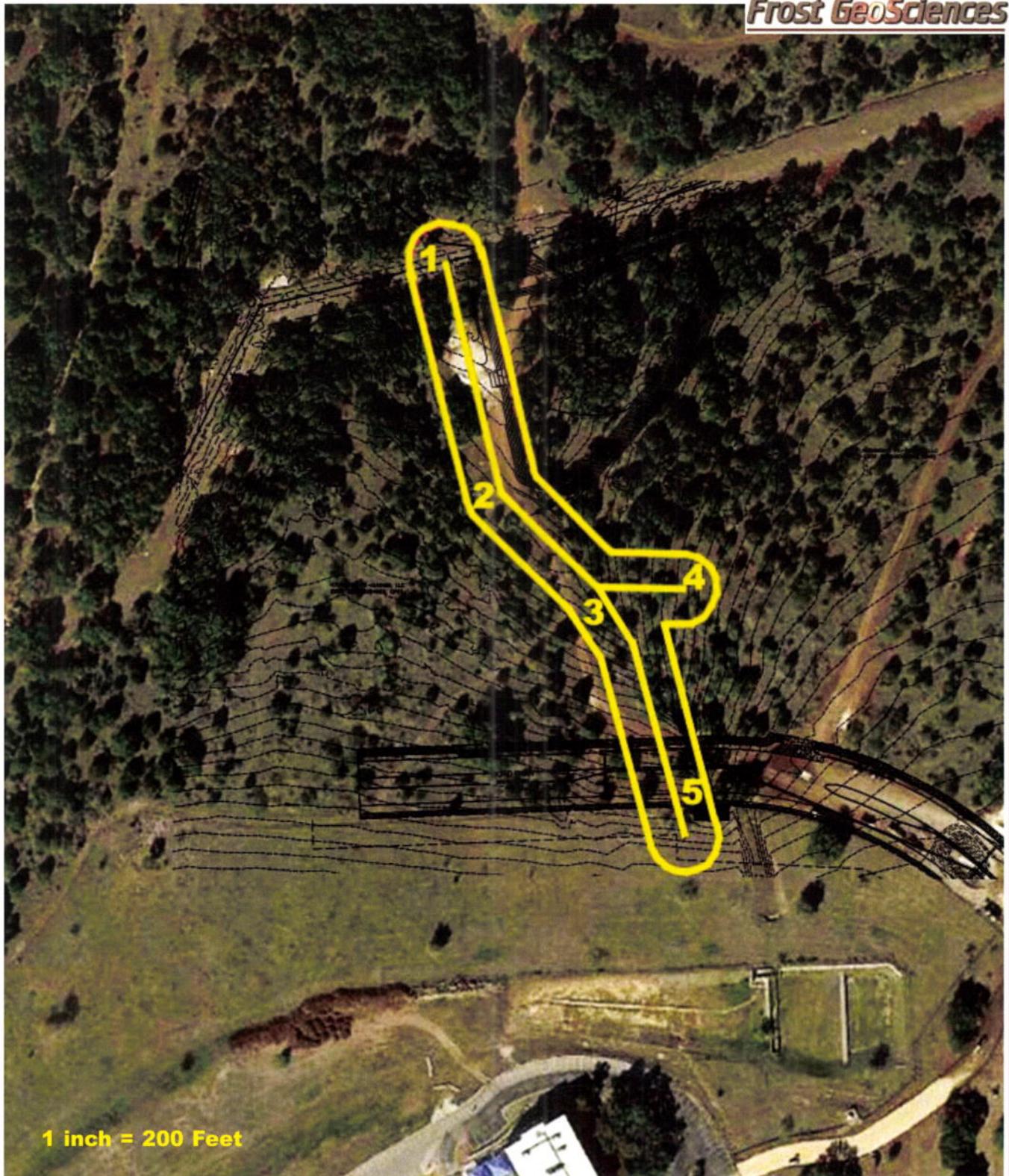
FGS-E21272

DATE:

October 13, 2021

Appendix B

Site Inspection Photographs



PROJECT NAME:

Geologic Site Assessment (SCS)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
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New Braunfels, Texas

2020 Aerial Photograph
with Numbered Areas
Google Earth

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View to the east, along the existing sewer line near Area 1.



View to the west, along the existing sewer line near Area 1.



View to the south, along the proposed sewer line near Area 1.



View to the north, along the proposed sewer line near Area 2.



View to the southeast, along the proposed sewer line near Area 2.



View to the northwest, along the proposed sewer line near Area 3.



View to the southeast, along the proposed sewer line near Area 3.



View to the northwest, along the proposed sewer line near Area 4.



View to the north, along the proposed sewer line near Area 5.



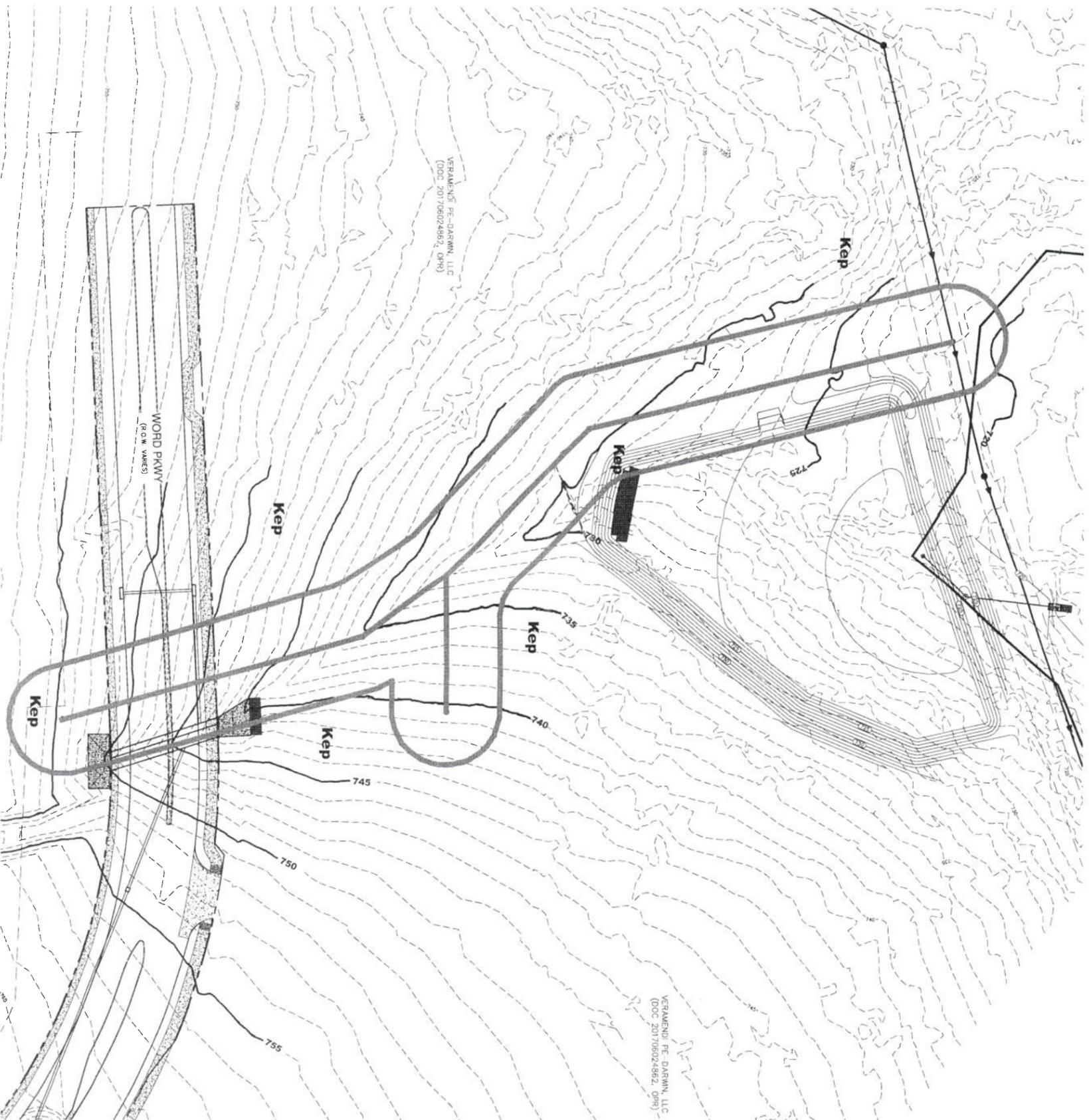
View to the north, along the proposed sewer line near Area 5.

Appendix C

Site Geologic Map



Location Map



Frost Geosciences
 Geotechnical • Construction Materials
 Geologic • Environmental
 13406 Western Oak • Helotes, Texas 78023
 Phone: (210) 372-1315 • Fax: (210) 372-1318

Site Geologic Map

Geologic Site Assessment (GSA) for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone for the
 Veramendi
 Ward Parkway, Precinct 20 Modification
 New Braunfels, Texas

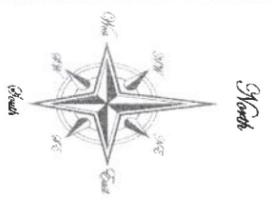
Frost Geosciences, Inc. Control # FGS-E21272

Legend

- Fill : Fill Material
- Qul : Alluvium
- kol : Alluvial Colluvium
- Rst : Eagle Ford Shale
- Rbu : Buckle Limestone
- Rdt : Dolitic Clay
- ks9 : Georgetown Limestone
- kt9 : Edwards Personal Limestone
- ks8 : Edwards Keller Limestone
- ks7 : Green House Formation
- S# : Potential Recharge Feature (PRF)
- : Potential Contact
- : 100-Year Floodplain, Zone A
- : 100-Year Floodplain, Zone AE
- : Other Flood Hazard Area, Zone X (shaded)

Photograph Information (Measured From) : 1:500
 Date : 1/20/11
 Control Points : Texas, Project # 2011010131P, Revised 01/20/11

North is approximately parallel to the boundary of Edwards Aquifer Recharge / Transition Zone. U.S. Geological Survey Water Resources Investigations Report 01-117 (09/01) is the source of the map. The New Braunfels, Texas, 30 x 60 Minute Quadrangle (25000)



Steve M. Frost
 License No. 11349
 State of Texas
 1/14/11

Signature of Steve M. Frost, Licensed Professional Engineer
 License No. 11349, State of Texas

1 inch = 20 feet
 Representative Fraction 1:480
 Control Interval - 1 foot

***Geologic Site Assessment (WPAP)
for Regulated Activities / Development
on the Edwards Aquifer Recharge / Transition Zone***

***The Veramendi Subdivision
+/- 2,400 Acres
New Braunfels, Texas***

FROST GEOSCIENCES CONTROL # FGS-E10139

May 9, 2017

Prepared exclusively for

***ASA Properties, LLC
2021 SH 46, Suite 101
New Braunfels, Texas 78132***

Frost GeoSciences

***Geotechnical ▪ Construction Materials
Forensics ▪ Environmental***

13402 Western Oak • Helotes, Texas 78023 • Phone: (210) 372-1315 • Fax: (210) 372-1318



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www.frostgeosciences.com
TBPE Firm Registration # F-9227
TBPG Firm Registration # 50040

May 9, 2017

ASA Properties, LLC
2021 SH 46, Suite 101
New Braunfels, Texas 78132

Attn: Mr. Max Hartford

Re: Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
The Veramendi Subdivision
+/- 2,400 Acres
New Braunfels, Texas

Frost GeoSciences, Inc. Control # FGS-EI0139

Dear Sir:

Attached is a copy of the Geologic Assessment Report completed for the above referenced project site as it relates to 30 TAC §213.5(b)(3), effective June 1, 1999. Our investigation was conducted and this report was prepared in general accordance with the "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04). The results of our investigation, along with any recommendations for Best Management Practices (BMP's), are provided in the following report.

If you have any questions regarding this report, or if Frost GeoSciences, Inc. may be of additional assistance to you on this project, please feel free to call our office. It has been a pleasure to work with you and we wish to thank you for the opportunity to be of service to you on this project. We look forward to being of continued service.



Sincerely,
Frost GeoSciences, Inc.



Steve Frost, C.P.G., P.G.
President, Senior Geologist

Distribution: (1) ASA Properties, LLC
(5) Pape Dawson Engineers

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APPENDIX

A: Plate 1: Site Plan

 Plate 2: Street Map

 Plate 3: USGS Topographic Map

 Plate 4: Official Edwards Aquifer Recharge Zone Map

 Plate 5: FEMA Flood Map

 Plate 6: 1973 Aerial Photograph, 1"=2000'

 Plate 7: Geologic Map

 Plate 8: 2010 Aerial Photograph, 1"=2000'

 Plate 9: 2010 Aerial Photograph with PRF's, 1"=500M

B: Site Photographs

C: Site Geologic Map

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

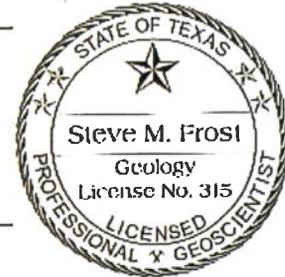
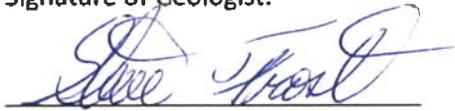
To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Print Name of Geologist: Steve Frost, C.P.G., P.G. Telephone: (210) 372-1315

Date: May 9, 2017 Fax: (210) 372-1318

Representing: Frost GeoSciences, Inc.

Signature of Geologist:



Regulated Entity Name: The Veramendi Subdivision

Project Information

1. Date(s) Geologic Assessment was performed: June 16 through November 23, 2010

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)
Rumple-Comfort Association Undulating (RUD)	C/D	1 to 2
Comfort Rock Outcrop Complex Undulating (CrD)	D/D	0 to 2
Brickett-Rock Outcrop Comfort Complex Undulating (R/D)	C/D/D	0 to 2
Levittsville Silty Clay, 1 to 3 Percent Slopes (LzB)	B	2+
Medley-Eckman Assoc. (MED/MEC)	D	1-2
Orin Soils	A	2+

Frequently Flooded (Or)

*** 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 thicknesses 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" = 400 '

Site Geologic Map Scale: 1" = 400 '

Site Soils Map Scale (if more than 1 soil type): 1" = 2000 '
9. Method of collecting positional data:
 - Global Positioning System (GPS) technology.
 - Other method(s). Please describe method of data collection: 2010 Aerial Photograph
10. The project site and 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 (#) 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 Chapter 76.
- There are no wells or test holes of any kind known to exist on the project site.

Administrative Information

15. 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.

Stratigraphic Column

[Hydrogeologic subdivisions modified from Maclay and Small (1976); groups, formations, and members modified from Rose (1972); lithology modified from Dunham (1962); and porosity type modified from Choquette and Pray (1970). CU, confining unit; AQ, aquifer]

Hydrogeologic subdivision		Group, formation, or member	Hydro-logic function	Thickness (feet)	Lithology	Field identification	Cavern development	Porosity/ permeability type		
Upper Cretaceous	Upper confining units	Eagle Ford Group	CU	30 – 50	Brown, flaggy shale and argillaceous limestone	Thin flagstones; petroliferous	None	Primary porosity lost/ low permeability		
		Buda Limestone	CU	40 – 50	Buff, light gray, dense mudstone	Porcelaneous limestone with calcite-filled veins	Minor surface karst	Low porosity/low permeability		
		Del Rio Clay	CU	40 – 50	Blue-green to yellow-brown clay	Fossiliferous; <i>Ilymatogyra arietina</i>	None	None/primary upper confining unit		
Lower Cretaceous	Edwards aquifer	Georgetown Formation	Karst AQ; not karst CU	2 – 20	Reddish-brown, gray to light tan marly limestone	Marker fossil; <i>Waconella wacoensis</i>	None	Low porosity/low permeability		
									Person Formation	Cyclic and marine members, undivided
		Leached and collapsed members, undivided	AQ	70 – 90	Crystalline limestone; mudstone to grainstone; chert; collapsed breccia	Bioturbated iron-stained beds separated by massive limestone beds; stromatolitic limestone	Extensive lateral development; large rooms	Majority not fabric/one of the most permeable		
		Regional dense member	CU	20 – 24	Dense, argillaceous mudstone	Wispy iron-oxide stains	Very few; only vertical fracture enlargement	Not fabric/low permeability; vertical barrier		
		Kaiser Formation	Grainstone member	AQ	50 – 60	<i>Millolid</i> grainstone; mudstone to wackestone; chert	White crossbedded grainstone	Few		Not fabric/ recrystallization reduces permeability
			Kirschberg evaporite member	AQ	50 – 60	Highly altered crystalline limestone; chalky mudstone; chert	Boxwork voids, with neopar and travertine frame	Probably extensive cave development		Majority fabric/one of the most permeable
			Dolomitic member	AQ	110 – 130	Mudstone to grainstone; crystalline limestone; chert	Massively bedded light gray, <i>Toucasia</i> abundant	Caves related to structure or bedding planes		Mostly not fabric; some bedding plane-fabric/water-yielding
			Basal nodular member	Karst AQ; not karst CU	50 – 60	Shaly, nodular limestone; mudstone and <i>millolid</i> grainstone	Massive, nodular and mottled, <i>Exogyra texana</i>	Large lateral caves at surface; a few caves near Cibolo Creek		Fabric; stratigraphically controlled/large conduit flow at surface; no permeability in subsurface
		Lower confining unit	Upper member of the Glen Rose Limestone	CU; evaporite beds AQ	350 – 500	Yellowish tan, thinly bedded limestone and marl	Stair-step topography; alternating limestone and marl	Some surface cave development		Some water production at evaporite beds/relatively impermeable

GEOLOGIC ASSESSMENT TABLE PROJECT NAME: The Veramendi Subdivision FGS-E10139

1	LOCATION		FEATURE CHARACTERISTICS										EVALUATION			PHYSICAL SETTING		
	2*	3*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10	11	12
	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NOFT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY	CATCHMENT AREA (ACRES)	TOPOGRAPHY
S-1	29° 43.144'	98° 09.282'	CD	5	Kcp	25	60	1.5	-	-	-	-	F	10	15	15	X	Hillside
S-2	29° 43.193'	98° 09.291'	CD	5	Kcp	20	20	1	-	-	-	-	F	10	15	15	X	Hillside
S-3	29° 43.218'	98° 09.362'	SC	20	Kep	2	3	2	-	-	-	-	F	12	32	32	X	Hillside
S-4	29° 43.253'	98° 09.412'	MB	30	Kep	3	3	7	-	-	-	-	X	7	37	37	X	Hillside
S-5	29° 43.035'	98° 08.837'	MB	30	Kep	3	3	7	-	-	-	-	X	7	37	37	X	Drainage
S-6	29° 43.050'	98° 08.902'	MB	30	Kep	3	3	7	-	-	-	-	X	7	37	37	X	Drainage
S-7	29° 43.060'	98° 08.978'	MB	30	Kep	3	3	7	-	-	-	-	X	7	37	37	X	Drainage
S-8	29° 43.000'	98° 09.153'	MB	30	Kep	3	3	7	-	-	-	-	X	7	37	37	X	Hillside
S-9	29° 43.497'	98° 08.917'	CD	5	Kep	65	200	6+	-	-	-	-	F	10	15	15	X	Hillside
S-10	29° 43.610'	98° 08.893'	CD	5	Kep	4	4	2	-	-	-	-	F	10	15	15	X	Hillside
S-11	29° 43.545'	98° 09.052'	MB	30	Kep	3	3	7	-	-	-	-	X	7	37	37	X	Hillside
S-12	29° 43.298'	98° 09.381'	SC	20	Kep	2	2.5	1.5	-	-	-	-	O/F	12	32	32	X	Hillside
S-13	29° 43.539'	98° 09.168'	SC	20	Kep	0.25	1	1.5	-	-	-	-	O/F	10	30	30	X	Hillside
S-14	29° 43.500'	98° 09.079'	CD	5	Kcp	4	4	2	-	-	-	-	X	10	15	15	X	Hillside
S-15	29° 43.497'	98° 09.096'	MB	30	Kcp	3	3	7	-	-	-	-	X	7	37	37	X	Hillside
S-16	29° 43.464'	98° 09.138'	MB	30	Kep	3	3	7	-	-	-	-	X	7	37	37	X	Hillside
S-17	29° 43.449'	98° 09.174'	MB	30	Kep	3	3	7	-	-	-	-	X	7	37	37	X	Hillside
S-18	29° 43.424'	98° 09.245'	MB	30	Kep	3	3	7	-	-	-	-	X	7	37	37	X	Hillside
S-19	29° 43.371'	98° 09.270'	MB	30	Kep	3	3	7	-	-	-	-	X	7	37	37	X	Hillside
S-20	29° 43.339'	98° 09.324'	MB	30	Kep	3	3	7	-	-	-	-	X	7	37	37	X	Hillside
S-21	29° 43.298'	98° 09.381'	MB	30	Kep	3	3	7	-	-	-	-	X	7	37	37	X	Hillside
S-22	29° 43.708'	98° 09.881'	CD	5	Kep	40	50	1.5	-	-	-	-	C/F	10	15	15	X	Hillside
S-23	29° 43.750'	98° 09.884'	SC	20	Kep	1.5	2	2	-	-	-	-	O/F	12	32	32	X	Hillside
S-24	29° 44.199'	98° 09.510'	MB	30	Kep	3	3	7	-	-	-	-	X	7	37	37	X	Floodplain
S-25	29° 44.247'	98° 09.560'	MB	30	Kep	3	3	7	-	-	-	-	X	7	37	37	X	Floodplain

* DATUM 1927 North American Datum (NAD27) Date May 9, 2017 Sheet 1 of 7

GEOLOGIC ASSESSMENT TABLE												PROJECT NAME: The Veramendi Subdivision												FGS-E10139					
LOCATION												FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1	2*	3*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10	11	12											
FEATURE	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							< 40	> 40	< 1.5	> 1.5											
S-26	29° 44.148'	98° 09.382'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37	X	Floodplain											
S-27	29° 43.909'	98° 09.970'	SC	20	KeD	0.5	1	3	-	-	-	-	O/F	12	32	32	X	Hillside											
S-28	29° 44.178'	98° 09.317'	MB	30	KeD	0.3	3	7	-	-	-	-	X	7	37	37	X	Floodplain											
S-29	29° 44.103'	98° 09.493'	MB	30	KeD	0.75	0.75	7	-	-	-	-	N	35	65	65	X	Hillside											
S-30	29° 44.160'	98° 09.483'	CD	5	KeD	55	55	4	-	-	-	-	O/F	10	15	15	X	Hillside											
S-31	29° 43.939'	98° 10.082'	SC	20	KeD	2	3	3.5	-	-	-	-	O/F	12	32	32	X	Hillside											
S-32	29° 44.000'	98° 10.049'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37	X	Hillside											
S-33	29° 44.056'	98° 09.963'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37	X	Hillside											
S-34	29° 44.107'	98° 09.888'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37	X	Hillside											
S-35	29° 44.147'	98° 09.825'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37	X	Hillside											
S-36	29° 44.184'	98° 09.671'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37	X	Hillside											
S-37	29° 44.118'	98° 09.782'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37	X	Floodplain											
S-38	29° 44.222'	98° 09.450'	SCZ	30	KeD	500	800	-	-	-	-	-	N/C	20	50	50	X	Floodplain											
S-39	29° 44.121'	98° 09.285'	MB	30	KeD	150	1225	-	-	-	-	-	N	4	34	34	X	Hillside											
S-40	29° 43.882'	98° 09.046'	MB	30	KeD	0.75	0.75	7	-	-	-	-	N	35	65	65	X	Hilltop											
S-41	29° 43.857'	98° 08.925'	MB	30	KeD	0.75	0.75	7	-	-	-	-	N	35	65	65	X	Hillside											
S-42	29° 43.845'	98° 08.907'	CD	5	KeD	100	140	5	-	-	-	-	F	10	15	15	X	Hillside											
S-43	29° 43.657'	98° 08.735'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37	X	Hillside											
S-44	29° 43.656'	98° 08.736'	SC	20	KeD	1	1	2	-	-	-	-	O/F	12	32	32	X	Hillside											
S-45	29° 43.680'	98° 08.719'	MB	30	KeD	30	75	-	-	-	-	-	C	7	37	37	X	Hillside											
S-46	29° 43.693'	98° 08.7138'	MB	30	KeD	20	20	-	-	-	-	-	F	7	37	37	X	Hillside											
S-47	29° 43.692'	98° 08.737'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37	X	Hillside											
S-48	29° 43.718'	98° 08.743'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37	X	Hillside											
S-49	29° 43.766'	98° 08.678'	OPR	5	KeD	10	20	-	N 40°	10	1/2	0.08	C/F	20	35	35	X	Drainage											
S-50	29° 43.770'	98° 08.672'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37	X	Drainage											

* DATUM 1927 North American Datum (NAD27) Date May 9, 2017 Sheet 2 of 7

GEOLOGIC ASSESSMENT TABLE PROJECT NAME: The Veramendi Subdivision FGS-EI0139

FEATURE	LOCATION		FEATURE CHARACTERISTICS										EVALUATION			PHYSICAL SETTING			
	2*	3*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10	11	12	
	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	
S-51	29° 43.771'	98° 08.654'	MB	30	KeD	3	20	3	-	-	-	-	C	25	55	55	<1.6	X	Drainage
S-52	29° 43.773'	98° 08.625'	O ^{PR}	5	KeD	10	15	-	N 115°	-	1 / 1.5	0.08	C/F	25	30	30	>1.6	X	Drainage
S-53	29° 43.775'	98° 08.617'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37		X	Drainage
S-54	29° 43.818'	98° 08.588'	SCZ	30	KeD	10	100	-	-	-	-	-	O/F	7	37	37	X	X	Hillside
S-55	29° 43.883'	98° 08.597'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37		X	Drainage
S-56	29° 43.937'	98° 08.605'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37		X	Drainage
S-57	29° 43.925'	98° 08.452'	CD	5	KeD	10	15	1.5	-	-	-	-	F	10	15	15	X	X	Hillside
S-58	29° 43.930'	98° 08.372'	CD	5	KeD	30	40	2	-	-	-	-	F	10	15	15	X	X	Hillside
S-59	29° 43.975'	98° 08.580'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37		X	Drainage
S-60	29° 44.029'	98° 08.493'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37		X	Streambed
S-61	29° 44.044'	98° 08.428'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37		X	Streambed
S-62	29° 44.005'	98° 08.297'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37		X	Streambed
S-63	29° 44.012'	98° 08.195'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37		X	Floodplain
S-64	29° 43.956'	98° 08.983'	C	30	KeD	2	3	5+	-	-	-	-	N	30	60	60	X	X	Hillside
S-65	29° 43.958'	98° 08.095'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37		X	Floodplain
S-66	29° 43.897'	98° 08.002'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37		X	Floodplain
S-67	29° 43.882'	98° 07.978'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37		X	Streambed
S-68	29° 43.818'	98° 07.985'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37		X	Streambed
S-69	29° 43.768'	98° 07.996'	SC	20	KeD	10+	20	0.75	-	-	-	-	N	9	29	29		X	Floodplain
S-70	29° 43.775'	98° 07.961'	O ^{VR}	5	KeD	3	15	2	-	-	3 / 1	0.06	N	9	14	14		X	Floodplain
S-71	29° 43.758'	98° 07.937'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37		X	Streambed
S-72	29° 43.782'	98° 07.870'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37		X	Streambed
S-73	29° 43.755'	98° 07.905'	SC	20	KeD	1	1.5	6+	-	-	-	-	N	9	29	29		X	Cliff
S-74	29° 43.782'	98° 07.855'	SCZ	30	KeD	30	600	-	-	-	-	-	N/O/F	9	39	39	X	X	Floodplain
S-75	29° 43.830'	98° 07.785'	MB	30	KeD	3	3	7	-	-	-	-	X	7	37	37		X	Streambed

* DATUM 1927 North American Datum (NAD27) Date May 9, 2017 Sheet 3 of 7

GEOLOGIC ASSESSMENT TABLE PROJECT NAME: The Veramendi Subdivision FGS-E10139

1	LOCATION		FEATURE CHARACTERISTICS										EVALUATION			PHYSICAL SETTING		
	2*	3*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10	11	12
	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NOFT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY	CATCHMENT AREA (ACRES)	TOPOGRAPHY
S-76	29° 43.882'	98° 07.978'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	< 40	< 1.5	Streambed
S-77	29° 43.748'	98° 08.053'	WZSHZ	30	KeP	100	100	-	-	-	-	-	O/F	35	65	65	X	Hilltop
S-78	29° 43.876'	98° 08.041'	MB	30	KeP	0.75	0.75	?	-	-	-	-	N	35	65	65	X	Hillside
S-79	29° 43.868'	98° 08.030'	CD	5	KeP	100	100	4	-	-	-	-	F	10	15	15	X	Hillside
S-80	29° 44.001'	98° 07.965'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Floodplain
S-81	29° 44.079'	98° 07.992'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Floodplain
S-82	29° 44.158'	98° 08.022'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Floodplain
S-83	29° 44.232'	98° 08.069'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Floodplain
S-84	29° 44.305'	98° 08.113'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Floodplain
S-85	29° 44.385'	98° 08.165'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Streambed
S-86	29° 44.434'	98° 08.303'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Floodplain
S-87	29° 43.614'	98° 08.322'	CD	5	KeP	5	8	1	-	-	-	-	F	10	15	15	X	Hillside
S-88	29° 43.943'	98° 08.271'	SC	20	KeP	2	2.5	1	-	-	-	-	F	12	32	32	X	Hillside
S-89	29° 43.984'	98° 08.235'	SCZ	20	KeP	30	120	-	-	-	-	-	N/O	10	30	30	X	Hillside
S-90	29° 44.169'	98° 08.185'	CD	5	KeP	4	6	1	-	-	-	-	F	10	15	15	X	Hillside
S-91	29° 44.009'	98° 08.301'	O/F	5	KeP	12	150	-	N 140°	-	1 / 2	0.08	C/F	25	30	30	X	Floodplain
S-92	29° 44.060'	98° 08.378'	SH	20	KeP	30	60	3	-	-	-	-	F	19	39	39	X	Hillside
S-93	29° 44.217'	98° 07.989'	CD	5	KeP	2	2.5	0.5	-	-	-	-	F	10	15	15	X	Hillside
S-94	29° 44.051'	98° 07.985'	CD	5	KeP	50	150	5	-	-	-	-	N/F	10	15	15	X	Floodplain
S-95	29° 44.456'	98° 08.434'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Floodplain
S-96	29° 44.476'	98° 08.503'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Floodplain
S-97	29° 44.538'	98° 08.649'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Streambed
S-98	29° 44.540'	98° 08.710'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Streambed
S-99	29° 44.506'	98° 08.731'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Streambed
S-100	29° 44.416'	98° 08.732'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Streambed

* DATUM 1927 North American Datum (NAD27) Date May 9, 2017 Sheet 4 of 7

GEOLOGIC ASSESSMENT TABLE PROJECT NAME: The Veramendi Subdivision FGS-E10139

LOCATION		FEATURE CHARACTERISTICS										EVALUATION			PHYSICAL SETTING			
1	2*	3*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10	11	12
FEATURE	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								< 40	< 1.6	
S-101	29° 44.416'	98° 08.732'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Streambed
S-102	29° 44.230'	98° 08.773'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Streambed
S-103	29° 44.188'	98° 08.802'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Streambed
S-104	29° 44.167'	98° 08.857'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Streambed
S-105	29° 44.162'	98° 08.946'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Streambed
S-106	29° 44.156'	98° 09.033'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Streambed
S-107	29° 44.152'	98° 09.118'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Streambed
S-108	29° 44.185'	98° 09.217'	MB	30	KeP	3	3	?	-	-	-	-	X	7	37	37	X	Streambed
S-109	29° 44.449'	98° 09.285'	SH	20	KeP	5	10	1	-	-	-	-	F	12	32	32	X	Hillside
S-110	29° 44.393'	98° 09.229'	OP	5	KeP	20	40	-	N 45°	10	1 / 1	0.08	N/C	25	40	40	X	Streambed
S-111	29° 44.391'	98° 09.183'	OP	5	KeP	20	150	-	N 40°	10	1 / 1	0.08	N/C	25	40	40	X	Streambed
S-112	29° 44.388'	98° 09.129'	OP	5	KeP	4	300	-	-	-	3 / 1	0.06	N/C	20	25	25	X	Floodplain
S-113	29° 44.425'	98° 09.202'	SC	20	KeP	0.75	1	2.5	-	-	-	-	O/F	15	35	35	X	Hillside
S-114	29° 44.409'	98° 08.986'	SH	20	KeP	10	12	1	-	-	-	-	F	12	32	32	X	Hillside
S-115	29° 44.570'	98° 09.098'	MB	30	KeP	0.75	0.75	?	-	-	-	-	N	35	65	65	X	Hillside
S-116	29° 44.270'	98° 09.232'	SC	20	KeP	1	1	3	-	-	-	-	F	12	32	32	X	Hillside
S-117	29° 44.351'	98° 09.339'	MB	30	KeP	30	50	6	-	-	-	-	N	15	45	45	X	Streambed
S-118	29° 44.265'	98° 09.030'	CDZ	5	KeP	300	1000	-	-	-	-	-	F	10	15	15	X	Floodplain
S-119	29° 44.168'	98° 09.619'	MB	30	KeP	3	75	3	-	-	-	-	C	15	45	45	X	Streambed
S-120	29° 44.242'	98° 08.913'	OP	5	KeP	40	350	-	N 50°	10	1 / 2	0.08	C	25	40	40	X	Streambed
S-121	29° 44.629'	98° 09.090'	SC	20	KeP	2	2	1.5	-	-	-	-	F	12	32	32	X	Hillside
S-122	29° 44.743'	98° 08.887'	CD	5	KeP	30	70	4	-	-	-	-	F	10	15	15	X	Drainage
S-123	29° 44.660'	98° 08.712'	OP	5	KeP	50	150	-	N 70°	-	1 / 2	0.08	F	20	25	25	X	Streambed
S-124	29° 44.675'	98° 08.695'	CD	5	KeP	80	170	8	-	-	-	-	F	10	15	15	X	Hillside
S-125	29° 44.127'	98° 09.046'	SC	20	KeP	2	3	1	-	-	-	-	F	12	32	32	X	Floodplain

* DATUM 1927 North American Datum (NAD27) Date May 9, 2017 Sheet 5 of 7

GEOLOGIC ASSESSMENT TABLE PROJECT NAME: The Veramendi Subdivision FGS-E10139

LOCATION		FEATURE CHARACTERISTICS										EVALUATION			PHYSICAL SETTING			
1	2*	3*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10	11	12
FEATURE	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								< 40	< 1.6	
S-126	29° 44.557'	98° 08.645'	SCZ	20	KeP	30	600	-	-	-	-	-	C/N	15	35	35	X	Floodplain
S-127	29° 44.821'	98° 08.588'	MB	30	KeP	0.75	0.75	7	-	-	-	-	N	35	65	65	X	Hilltop
S-128	29° 44.670'	98° 08.013'	CD	5	KeP	60	65	4	-	-	-	-	F	10	15	15	X	Hillside
S-129	29° 44.659'	98° 07.990'	MB	30	KeP	0.75	0.75	7	-	-	-	-	N	35	65	65	X	Hilltop
S-130	29° 44.656'	98° 07.991'	MB	30	KeP	0.75	0.75	7	-	-	-	-	N	35	65	65	X	Hilltop
S-131	29° 44.338'	98° 07.805'	CD	5	KeP	70	90	3	-	-	-	-	F	10	15	15	X	Hillside
S-132	29° 44.382'	98° 07.502'	CD	5	KeP	20	70	3	-	-	-	-	F	10	15	15	X	Hillside
S-133	29° 45.186'	98° 08.255'	OPR	5	KeP	40	100	-	N 65°	-	1/2	0.08	N	20	25	25	X	Drainage
S-134	29° 44.881'	98° 07.761'	OPR	5	KeP	30	100	-	N 40°	10	1/2	0.08	N	20	35	35	X	Drainage
S-135	29° 44.916'	98° 07.704'	OPR	5	KeP	40	60	-	N 140°	-	1/2	0.08	N	20	25	25	X	Drainage
S-136	29° 44.580'	98° 07.125'	OPR	5	KeP	15	20	-	N 7°	-	1/2	0.08	N	20	25	25	X	Drainage
S-137	29° 44.336'	98° 07.793'	MB	30	KeP	0.75	0.75	7	-	-	-	-	N	35	65	65	X	Hillside

* DATUM 1927 North American Datum (NAD27)

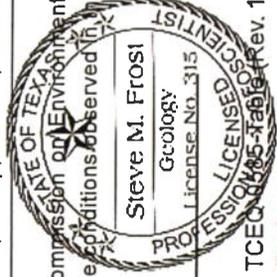
2A TYPE	2B POINTS
C	30
SC	20
SF	20
F	20
O	5
MB	30
SW	30
SH	20
CD	5
Z	30

8A INFILLING
 None, exposed bedrock
 Coarse - cobbles, breakdown, sand, gravel
 Loose or soft mud or soil, organics, leaves, sticks, dark colors
 Fines, compacted clay-rich sediment, soil profile, gray or red colors
 Vegetation. Give details in narrative description
 Flowstone, cements, cave deposits
 Other materials

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

I have read, I understood and I have followed the Texas Commission on Environmental Quality'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.

Signature *Steve M. Frost* Date May 9, 2017 Sheet 6 of 7



GEOLOGIC ASSESSMENT TABLE PROJECT NAME: The Veramendi Subdivision FGS-EI0139

LOCATION		FEATURE CHARACTERISTICS										EVALUATION			PHYSICAL SETTING			
1	2*	3*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10	11	12
FEATURE	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								< 40	< 1.6	
S-138	29° 44.382'	98° 07.687'	SH	20	Kep	30	40	2	-	-	-	-	F	15	35	35	X	Hillside
S-139	29° 44.661'	98° 07.779'	O ^{PH}	5	Kep	8	10	-	N 70°	-	1 / 2	0.08	C/F	15	20	20	X	Hillside
S-140	29° 45.001'	98° 08.094'	SC	20	Kep	2	4	2	-	-	-	-	O/F	12	32	32	X	Hillside
S-141	29° 45.176'	98° 08.164'	SC	20	Kep	0.25	2.5	2	-	-	-	-	O/F	12	32	32	X	Hillside
S-142	29° 43.319'	98° 09.171'	SH	20	Kep	100	150	4	-	-	-	-	F	15	35	35	X	Hillside
S-143	29° 44.622'	98° 07.369'	SCZ	20	Kep	30	2,800	-	-	-	-	-	N/O	12	32	32	X	Cliff
S-144	29° 45.163'	98° 08.014'	SCZ	20	Kep	30	3,600	-	-	-	-	-	N/O	12	32	32	X	Cliff
S-145	29° 44.287'	98° 09.495'	CDZ	30	Kep	600	1,000	-	-	-	-	-	O/F	30	60	60	X	Streambed
S-146	29° 44.969'	98° 08.534'	F	20	Kep	-	-	-	N 55°	-	-	-	-	15	35	35	X	Hillside
S-147	29° 45.017'	98° 08.031'	F	20	Kep	-	-	-	N 45°	-	-	-	-	15	35	35	X	Hillside
S-148	29° 43.175'	98° 09.430'	MB	30	Kep	3	3	7	-	-	-	-	X	7	37	37	X	Hillside

* DATUM 1927 North American Datum (NAD27)

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

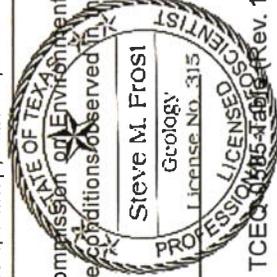
N None, exposed bedrock
 C Coarse - cobbles, breakdown, sand, gravel
 O Loose or soft mud or soil, organics, leaves, sticks, dark colors
 F Fines, compacted clay-rich sediment, soil profile, gray or red colors
 V Vegetation. Give details in narrative description
 FS Flowstone, cements, cave deposits
 X Other materials

12 TOPOGRAPHY

Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

I have read, I understand and I have followed the Texas Commission on Environmental Quality'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.

Steve M. Frosi



Signature Steve M. Frosi Date May 9, 2017 Sheet 7 of 7

LOCATION

The project site consists of approximately 2,400 acres of land located along and north of Loop 337 and east and west of River Road in New Braunfels, Texas. An overall view of the area is shown on copies of the site plan, a street map, the USGS Topographic Map, the Edwards Aquifer Recharge Zone Map, the Flood Insurance Rate Map (FIRM), a 1973 aerial photograph from the USDA at a scale of 1"=2000', a geologic map, a 2010 aerial photograph at a scale of 1"=2000', and a 2010 aerial photograph at a scale of 1"=500M, Plates 1 through 9 in Appendix A.

METHODOLOGY

The Geologic Assessment was performed by Mr. Steve Frost, C.P.G., President and Senior Geologist with Frost GeoSciences, Inc and several employees of Frost GeoSciences, Inc. including Ms. TG Bey, Biologist, Mr. Reza Eshmal, Geologist, James Akers, and Spencer Templen. Mr. Frost is a Licensed Professional Geoscientist in the State of Texas (License # 315) and is a Certified Professional Geologist with the American Institute of Professional Geologist (Certification # 10176).

Frost GeoSciences, Inc. researched the geology of the area in the immediate vicinity of the project site. The research included, but was not limited to, the Geologic Atlas of Texas, San Antonio Sheet, FIRM maps, Edwards Aquifer Recharge Zone Maps, USGS 7.5 Minute Quadrangle Maps, the Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle, the USGS Water-Resources Investigations Report 94-4117, and the USDA Soil Survey of Comal & Hays County, Texas.

After reviewing the available information, a field investigation was performed to identify any geologic or man-made potential recharge features. A transect spacing of approximately 50 feet or less, depending on vegetation thickness, was used to inspect the project site. A 2010 aerial photograph, in conjunction with a hand held Garmin eTrex Summit Global Positioning System with an Estimated Potential Error ranging from 7 to 12 feet, was used to navigate around the property and identify the locations of potential recharge features, as recommended in the "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04). The locations of any potential

recharge features noted in the field were identified on the Site Geologic Map in Appendix C of this report. A copy of a 2010 aerial photograph at an approximate scale of 1"=500M, indicating the locations of the potential recharge features, is included on Plate 9 in Appendix A. The Geologic Assessment Form (Rev. 2-11-15), Stratigraphic Column, and the Geologic Assessment Table have been filled with the appropriate information for this project site and are included on pages 1-11 of this report.

RESEARCH & OBSERVATIONS

7.5 Minute Quadrangle Map Review

According to the USGS 7.5 Minute Quadrangle Maps, New Braunfels West, Texas Sheet (1988), New Braunfels East, Texas Sheet (1994), Sattler, Texas Sheet (1994), and Hunter, Texas Sheet (1994), the elevation of the project site ranges from 630 feet at the eastern corner of the project site within the River Pasture along the Guadalupe River to 845 feet along the western property lines of Pastures 1 and 3. These elevations are calculated above mean sea level (AMSL). A landing strip and a stock pond are noted within Pasture 1. A residential structure and several associated barns and sheds are visible near the northern limits of Pasture 1. Two stock ponds were noted within Pasture 2. One stock pond and a spillway for a flood control dam was noted within Pasture 3. The surface runoff from the project site flows into unnamed tributaries of Blieders Creek, Blieders Creek, unnamed tributaries of the Guadalupe River, and the Guadalupe River. State Highway 46 (Loop 337) is located immediately south of the project site. River Road separates Pastures 2 and 4 to the west from the River Pasture to the east. A copy of the above referenced USGS 7.5 Minute Quadrangle Map, indicating the location of the project site, is included in this report on Plate 3 in Appendix A.

Recharge / Transition Zone

According to Official Edwards Aquifer Recharge Zone Map, New Braunfels West, Texas Sheet, New Braunfels East, Texas Sheet, Sattler, Texas Sheet, and Hunter, Texas Sheet, (1996),

the project site is located within the Recharge Zone of the Edwards Aquifer. A copy of the Official Edwards Aquifer Recharge Zone Map, indicating the location of the project site, is included on Plate 4 in Appendix A.

100-Year Floodplain

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for Comal County, Texas, Community Panel Numbers 48091C0270F, 48091C0290F, 48091C0435F, & 48029C0455F (Revised 9/02/09) were reviewed to determine if the project site is located in areas prone to flooding. A review of the above-mentioned panels indicate that portions of the project site is located within the 100 year floodplain. The project site is located within Zone AE, Zone A, Zone X Shaded, and Zone X.

According to the panel legend, Zone AE represents areas within the 100 year floodplain where base flood elevations have been determined. The areas of the property within Zone AE are generally located along Blieders Creek and the Guadalupe River.

Zone A represents areas within the 100 year floodplain where base flood elevations have not been determined. The areas of the property within Zone A are generally areas along tributaries immediately upgradient of areas determined to be within Zone AE.

Zone X shaded represents areas of 0.2% annual chance of flooding, areas of 1% annual chance of flooding with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 1% annual chance of flooding. The areas of the property with Zone X Shaded are generally narrow bands located immediately adjacent to areas determined to be within Zone AE.

Zone X represents areas determined to be outside the 0.2% annual chance floodplain. A copy of the Comal County, Texas, FIRM maps, indicating the location of the project site, is included in this report on Plate 5 in Appendix A.

Soils

According to the United States Department of Agriculture, Soil Conservation Service, Soil Survey of Comal & Hays County, Texas (1982), the project site is located on the Rumble-Comfort Association (RUD), the Comfort - Rock Outcrop Complex, Undulating (CrD), the Brackett - Rock Outcrop - Comfort Complex, Undulating (BID), the Lewisville Silty Clay, 1 to 3 percent slopes (LeB), the Medlin-Eckrant Association (MEC/MED), and the Orif Soils, Frequently Flooded (Or). A copy of the 1973 aerial photograph (approximate scale: 1"=2000') from the USDA Soil Survey of Comal & Hays County, Texas (1982) indicating the location of the project site and the soil types is included on Plate 6 In Appendix A.

The Rumble-Comfort Association (RuD) consists of shallow and moderately deep soils on uplands in the Edwards Plateau Land Resource Area. The surface layer of the Rumble Soil is dark reddish brown very cherty clay loam about 10 inches thick. Rounded chert and limestone cobbles and gravel cover about 20 percent of the surface. The subsoil to a depth of 14 inches is dark reddish-brown very cherty clay, and to a depth of 28 inches it is dark reddish-brown extremely stony clay. The underlying material is indurated fractured limestone. The Comfort Soil is dark brown, neutral, extremely stony clay about 7 inches thick. The subsoil to a depth of 12 inches is dark reddish-brown, mildly alkaline, extremely stony clay. The underlying material is indurated fractured limestone. The soil is noncalcareous throughout. The soils in this association are well drained. Surface runoff is medium, but varies due to the occurrence of caves, fracture zones, and sinks. Permeability is moderately slow. Water erosion is a moderate hazard.

The Comfort-Rock Outcrop Complex consists of shallow, clayey soils and Rock Outcrop on side slopes and on hilltops and ridgetops on uplands in the Edwards Plateau Land Resource Area. The Comfort Extremely Stony Clay makes up 49 to more than 95 percent of the complex, but on the average it makes up 70 percent. Rock Outcrop and areas of soil less than 4 inches deep make up 5 to 36 percent, but the average is 15 percent. Typically, the surface layer of the Comfort soil is dark brown extremely stony clay about 6 inches thick. Cobbles and stones as much as 4 feet across cover about 45 percent of the surface. The subsoil extends to a depth of 13

inches. It is dark reddish brown extremely stony clay. The underlying material is indurated fractured limestone. The soil is mildly alkaline and noncalcareous throughout. The Comfort Soil is well drained. Surface runoff is slow to medium. Permeability is slow, and the available water capacity is very low. Water erosion is a slight hazard. This soil has a USDA Texture Classification of extremely stony clay, stony clay, very stony clay, and weathered bedrock. The Unified Classification is CH, GC, CL, or SC. The AASHTO Classification is A-2-7, and A-7-6. This soil has an average permeability from 0.6 to 0.2 inches/hour.

The Brackett-Rock Outcrop-Comfort Complex consists of shallow, loamy and clayey soils and rock outcrops on uplands in the Edwards Plateau Land Resource Area. The Brackett Soil makes up 30 to 60 percent of the complex, but on the average it makes up 50 percent. Rock Outcrops make up 10 to 40 percent of the complex, but the average is 20 percent. The Comfort Soil makes up 10 to 20 percent, but the average is 15 percent. Typically, the surface layer of the Brackett Soil is grayish brown gravelly clay loam about 6 inches thick. The subsoil extends to a depth of 17 inches. It is very pale brown and pale yellow gravelly clay loam. The underlying material is weakly cemented limestone interbedded with thin layers of indurated limestone. The soil is moderately alkaline and calcareous throughout. Typically, the areas of Rock Outcrop consist of exposures of limestone bedrock. There is some soil material in the narrow fractures in the rock. In some areas, however, the rock is flat and is covered by soil material as much as 3 inches thick. Typically, the surface layer of the Comfort Soil is dark brown extremely stony clay about 4 inches thick. The subsoil extends to a depth of 11 inches. It is dark reddish brown extremely stony clay. The underlying material is indurated fractured limestone. The soil is moderately alkaline and noncalcareous throughout. The soils in this complex are well drained. Surface runoff is medium to rapid. Permeability is moderately slow in the Brackett Soil and slow in the Comfort Soil. The available water capacity is very low. Water erosion is a severe hazard.

The Lewisville Silty Clay consists of deep, gently sloping soil on stream terraces. Typically, the surface layer is dark grayish brown silty clay about 15 inches thick. The subsoil to a depth of 33 inches

is light brown silty clay, and to a depth of 63 inches is reddish yellow silty clay. The soil is moderately alkaline and calcareous throughout. This soil is well drained, surface runoff is medium, and permeability is moderate.

The Medlin-Eckrant Association consists of very shallow to shallow and deep soils on uplands in the Edwards Plateau Land Resource Area. There are narrow limestone ledges at the top of some slopes. The Medlin and Eckrant soils each make up 20 to 80 of a mapped area. Together, on the average, they make up about 95 percent of the mapped area. A typical area is 50 percent Medlin soil and 45 percent Eckrant soil. Typically, the Medlin soil has a grayish brown surface layer about 11 inches thick that is stony clay in the upper part and clay in the lower part. The subsoil, from 11 to 50 inches, is light yellowish brown clay that has yellowish brown and olive yellow mottles. The underlying material to a depth of 80 inches is light gray shaly clay that has yellow and olive yellow mottles. The soil is moderately alkaline and calcareous throughout. The Medlin soils is well drained. Surface runoff is rapid. Permeability is very slow. Water enters rapidly when the soil is dry and cracked and very slow when it is wet. Water erosion is a severe hazard. Typically, the surface layer of the Eckrant soil is very dark gray extremely stony clay about 16 inches thick. The underlying material is fractured limestone bedrock. The soil is moderately alkaline and noncalcareous throughout. The Eckrant soil is well drained. Surface runoff is rapid. Permeability is moderately slow. Water erosion is a severe hazard.

The Orif Soils, Frequently Flooded consist of deep nearly level soils on flood plains of large creeks and rivers. These soils are adjacent to the stream channels. Typically, the surface layer is grayish brown moderately alkaline gravelly loamy sand about 20 inches thick. The underlying layer to a depth of 60 inches is very gravelly loamy sand stratified with very gravelly sand, very gravelly sandy loam, and loam. These soils are well drained. Flooding occurs several times in most years and is of very brief duration. Floodwaters are swift and destructive. Surface runoff is slow, permeability is rapid.

Narrative Description of the Site Geology

The project site consists of approximately 2,400 acres of land located along and north of Loop 337 and east and west of River Road in New Braunfels, Texas. An overall view of the area is shown on Plates 1 through 9 in Appendix A. The project site exists as ranch land used to graze cattle and is the main ranching operation for the Word-Borchers Ranch. The project site has a very well developed soil layer on the property giving way to relatively few rock outcrops and dense stands of native grasses. Frost GeoSciences, Inc. after finding large piles of bulldozed rubble within 40 year old stands of trees, researched historic aerial photography and made note that the property appears to have undergone numerous episodes of land clearing dating back at least 40 to 50 years. These historic land clearing operations appear to have culled much of the rock rubble from the surface. The majority (80+%) of the 2,400 acre ranch appears to have been bulldozed at some point with many areas having been cleared repeatedly. This clearing process has produced many small non karst closed depressions resulting from pulling trees out and plucking boulders. There are so many of these across the property that it is not practical to itemize them within this report. The areas that have not been cleared historically appear to be along steep slopes and cliffs, and within major drainage areas. The majority of the site appears to support a thick soil cover and as a result very few potential recharge features were encountered when compared to the size of the property.

The variations in the vegetative cover across the project site are visible in the 2010 aerial photographs on Plates 8 and 9 in Appendix A and in the site visit photographs included in Appendix B. One hundred and forty eight Potential Recharge Features (PRF's) were identified during our site inspection. Nineteen of these are considered sensitive by Frost GeoSciences, Inc. The sensitive features are highlighted on the Geologic Assessment Tables on pages 4 through 10.

Non-Karst Closed Depressions (CD)

Potential Recharge Features S-1, S-2, S-10, S-14, S-22, S-57, S-58, S-87, S-90, S-93, and S-118, consist of notable non-karst closed depressions created by historic bulldozing on the property. These

features are typical of the thousands of similar features and appear to have been created by either the removal of trees or the plucking of boulders. Typically these feature are relatively small (less than 10 feet in any dimension and usually only a foot or two deep). Potential Recharge Features S-9, S-30, S-42, S-79, S-122, S-124, S-128, S-131, and S-132 are non-karst closed depressions consisting of excavated stock ponds used to water livestock. These features vary greatly in both size and shape, however, all of these features show evidence of ponding water for prolonged periods of time. PRF's S-9 and S-124 were holding water at the time of our site inspections. Potential Recharge Feature S-94 is a non-karst closed depression consisting of a stream scour adjacent to Blieders Creek. The bottoms of all of these features are lined with clay and show evidence of holding water. These 22 features are not considered sensitive by FGS. These features score a 15 on the Geologic Assessment Table.

Potential Recharge Feature S-145 consists of large non-karst closed depression created behind the Flood Control Dam within Pasture 3. This non-karst closed depression showed evidence of rapid infiltration into the subsurface after several heavy rainfall events during June and September. Due to the overall size of this feature and the rate that the feature drains into the subsurface, additional points were added for a ZONE rating. This feature is considered sensitive by FGS. This feature scores a 60 on the Geologic Assessment Table.

Manmade Features in Bedrock (MB)

Potential Recharge Features S-4 through S-8, S-11, S-15 through S-21, S-24 through S-26, S-28, S-32 through S-37, S-43, S-47, S-48, S-50, S-53, S-55, S-56, S-59 through S-63, S-65 through S-68, S-71, S-72, S-75, S-76, S-80 through S-86, S-95 through S-108, and S-148 are manmade features in bedrock consisting of sanitary sewer manholes along two sewer outfall lines. The two sewer outfall lines combine within Blieders Creek at Potential Recharge Feature S-67. These 64 features are not considered sensitive by FGS. These features score a 37 on the Geologic Assessment Table.

Potential Recharge Features S-29, S-40, S-41, S-78, S-115, S-127, S-129, S-130, and S-137

consist of existing or recently drilled water wells. PRF's S-40 and S-127 are operational and in use at this time. PRF's S-29, S-78, and S-129 are wells associated with old windmills and do not appear to be operational at this time. The remaining PRF's are recently drilled wells consisting of open holes with no casing. These appear to be associated with either testing the groundwater availability or are planned as future water supply wells for livestock. These 9 features are considered sensitive by FGS. These features score a 65 on the Geologic Assessment Table.

Potential Recharge Feature S-39 consists of an area that had been excavated down to bedrock and used as quarry materials for roads on the ranch. This feature is not considered sensitive by FGS. This feature scores a 34 on the Geologic Assessment Table.

Potential Recharge Feature S-45 consists of an area of limestone cobbles and boulders. It is believed that the cobbles and boulders were the left over spoils from the excavation of a nearby sanitary sewer lift station. This feature is not considered sensitive by FGS. This feature scores a 37 on the Geologic Assessment Table.

Potential Recharge Feature S-46 consists of an old abandoned sanitary sewer lift station. The lift station was abandoned after the remaining sewer outfall line was constructed. This feature is not considered sensitive by FGS. This feature scores a 37 on the Geologic Assessment Table.

Potential Recharge Features S-51 and S-119 consist of areas along existing sewer lines that occur within stream channels where the scour of the stream has eroded compacted material out of the sewer trench. The scour at PRF S-51 also occurs in conjunction with an area of highly weathered and altered limestone increasing the probability of rapid infiltration into the subsurface. These 2 features are considered sensitive by FGS. These features score a 45 and 55 respectively on the Geologic Assessment Table.

Potential Recharge Feature S-117 consists of a large erosion scour located at the discharge pipe for the flood control dam along Blieders Creek. This feature was inspected after heavy rains in September and did not show evidence of standing water. This feature is considered sensitive by FGS. This feature scores a 45 on the Geologic Assessment Table.

Cave (C)

Potential Recharge Feature S-64 consists of a relatively small cave located near a hilltop in Pasture 2. The cave opening is approximately 2 feet wide and 3 feet long and has an initial drop of approximately 5 feet. An area of stressed vegetation around the cave opening indicated that the air inside the cave may not be suitable for long term or even short term occupation so no attempt was made to investigate the interior of the cave beyond what could be seen from the surface. A deflated area approximately 30 feet wide, 50 feet long and 3 feet deep was noted around the cave entrance. This is likely the result of soil erosion into the cave. This feature is considered sensitive by FGS. This feature scores a 60 on the Geologic Assessment Table.

Solution Cavity (SC)

Potential Recharge Features S-3, S-12, S-13, S-23, S-27, S-31, S-44, S-69, S-73, S-74, S-88, S-113, S-116, S-121, S-125, S-140, and S-141 consist of solution cavities of various dimensions. A machete was used to probe the depth of the features and determine the nature of the infilling. These cavities all contained a hard clay plug preventing rapid infiltration of water into the subsurface. This was somewhat expected given the extensive soil development across the property. These 17 features are not considered sensitive by FGS. These features score a 29 to 35 on the Geologic Assessment Table.

Potential Recharge Feature S-38 consists of an area of dissolved and scoured limestone outcrop associated with the spillway for the flood control dam. Some of the scours and dissolved limestone extended 3 to 4 feet down and none were noted holding water, even after periods of heavy rains, indicating rapid infiltration into the subsurface. This feature is considered sensitive by FGS. This feature scores a 50 on the Geologic Assessment Table.

Potential Recharge Features S-54, S-126, S-143, and S-144 consists of zones of solution cavities within cliff faces. These represent horizontal features that trend upgradient as they extend into the bedrock cliff. FGS is of the opinion that these features represent discharge features associated with the outlets of subsurface bedding plain features. These 4 features are not considered sensitive by FGS. These features score between a 32 and 37 on the Geologic Assessment Table.

Sinkhole (SH)

Potential Recharge Features S-77 consists of three small closed depressions (sinkholes) likely resulting from soil deflation within a 100 X 100 foot area and two caves approximately 100 feet apart within the same area. The depressions were infilled with loose soil and leaves, rock rubble and some hard packed clay in areas. Evidence of rapid infiltration into the subsurface was noted in some areas. These features are considered sensitive by FGS. These features score a 65 on the Geologic Assessment Table.

Potential Recharge Features S-92, S-109, S-114, S-138, and S-142 consists of areas believed to be the result of soil deflation into the subsurface creating karst formed closed depressions or sinkholes. For these purposes, it is not believed by FGS that these are sinkholes in the classic sense that a collapse has occurred creating a depression. Rather, FGS believes these features are purely the result of erosion of surface soils into subsurface features. These features all contained small areas in the bottoms with no grasses indicating that water ponds for prolonged periods of time. As a result, it did not appear that these features provide rapid infiltration into the subsurface. These 5 features are not considered sensitive by FGS. These features score a 32 to 39 on the Geologic Assessment Table.

Fault (F)

Potential Recharge Features S-146 and S-147 consist of faults noted on the Bureau of Economic Geology, Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle (2000). Evidence of PRF S-146 was somewhat confirmed in the field with fractures noted at PRF S-133, however, the bearings of the fractures were not the same as the strike of the proposed fault. No fractures or other field evidence associated with PRF S-147 were noted in the field at the time of the on-site inspection. These 2 features are not considered sensitive by FGS. These features score a 35 on the Geologic Assessment Table.

Other Natural Bedrock Feature (O)

Potential Recharge Features S-49, S-52, S-70, S-91, S-112, S-123, S-133, S-134, S-135, S-136, and S-139 consist of natural rock outcrops with either vuggy limestone (O^{VR}) or fractured bedrock (O^{FR}). The

sizes of these outcrops and the strike of the fractures varied greatly. These 11 features are not considered sensitive by FGS. These features score a 14 to 35 on the Geologic Assessment Table.

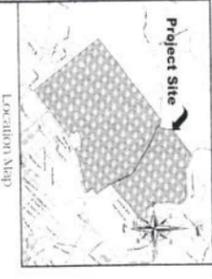
Potential Recharge Features S-110, S-111, and S-120 consist of natural rock outcrops with fractured bedrock (O^{FR}). The sizes of these outcrops and the strike of the fractures varied greatly. These 3 features are considered sensitive by FGS. These features score a 40 on the Geologic Assessment Table.

According to the USGS 7.5 Minute Quadrangle Maps, New Braunfels West, Texas Sheet (1988), New Braunfels East, Texas Sheet (1994), Sattler, Texas Sheet (1994), and Hunter, Texas Sheet (1994), the elevation of the project site ranges from 630 feet at the eastern corner of the project site within the River Pasture along the Guadalupe River to 845 feet along the western property lines of Pastures 1 and 3. These elevations are calculated above mean sea level (AMSL). According to topographic data obtained from Pape Dawson Engineers, the elevations on the project site range from 625 feet at the eastern corner of the project site to 845 feet along the western property lines of Pastures 1 and 3. A copy of the site plan, indicating the boundary of the project site and the elevations, is included on Plate I in Appendix A and on the Site Geologic Map in Appendix C of this report.

According to the Bureau of Economic Geology, Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle (2000), the project site is covered by the Cretaceous Edwards Person Limestone.

The Cyclic and Marine Member of the Cretaceous Edwards Person Limestone consists of mudstone to packstone and milliolid grainstone with chert. The member is characterized by massive beds of limestone to relatively thin beds of limestone with some crossbedding. The Cyclic and Marine Member forms a few caves some that are laterally extensive. Overall thickness ranges from 80 to 90 feet thick.

The Leached and Collapsed Member of the Edwards Person Limestone consists of crystalline limestone, mudstone to grainstone with chert, and collapsed breccia. This member



Site Geologic Map

Geologic Site Assessment (GSA) for Residential Activities Development on the Edwards Aquifer Recharge Enhancement Zone for the The Granddahl Subdivision +/- 2,400 Acres New Braunfels, Texas

Frost Geosciences, Inc. Contract # FGS101039

Legend

- Fill - Fill Material
- Qal - Alluvium
- Km - Alluvial Channel
- Kst - Large Trench Sludge
- KSD - Small Trench Sludge
- KLR - Rock Lenses
- KLR - Dirt Road Fill
- KSR - Carport/Driveway Lenses
- KST - Edwards Aquifer Lenses
- KLN - Edwards Aquifer Lenses
- NSP - (See Below Footnote)
- NA - Vertical Recycled Product (RPR)
- - Foundation Grout
- - Gas/Vapor Flow/Leak Zone A
- - Other Flow Hazard Area Zone A/Sloped

Footnote: The Edwards Aquifer is a karst aquifer. It is a highly permeable, fractured limestone aquifer. The aquifer is recharged by precipitation that infiltrates the ground surface. The aquifer is a source of drinking water for the City of New Braunfels, Texas. The aquifer is also a source of water for irrigation and other uses. The aquifer is a highly sensitive resource and should be protected from contamination. The aquifer is a highly sensitive resource and should be protected from contamination.



Surveyor General
State of Texas
Surveyor General
Surveyor General
Surveyor General



Graphic Scale
1 inch = 100 feet
Representative Fraction 1:8000
GARDNER BROWN 2/19/11

Modification of a Previously Approved Plan

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Transition Zone and Relating to 30 TAC 213.4(j), 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 request for a Modification of a Previously Approved Plan is hereby submitted for TCEQ review and executive director approval. The request was prepared by:

Print Name of Customer/Agent: Richard Underwood, P.E.

Date: 09/08/2023

Signature of Customer/Agent:



Project Information

1. Current Regulated Entity Name: NBISD - Elementary School 11
Original Regulated Entity Name: Veramendi - Word Pkwy Phase 2
Regulated Entity Number(s) (RN): 110566643
Edwards Aquifer Protection Program ID Number(s): _____
 The applicant has not changed and the Customer Number (CN) is: _____
 The applicant or Regulated Entity has changed. A new Core Data Form has been provided.
2. Attachment A: Original Approval Letter and Approved Modification Letters. A copy of the original approval letter and copies of any modification approval letters are attached.

3. A modification of a previously approved plan is requested for (check all that apply):
- Physical or operational modification of any water pollution abatement structure(s) including but not limited to ponds, dams, berms, sewage treatment plants, and diversionary structures;
 - Change in the nature or character of the regulated activity from that which was originally approved or a change which would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;
 - Development of land previously identified as undeveloped in the original water pollution abatement plan;
 - Physical modification of the approved organized sewage collection system;
 - Physical modification of the approved underground storage tank system;
 - Physical modification of the approved aboveground storage tank system.
4. Summary of Proposed Modifications (select plan type being modified). If the approved plan has been modified more than once, copy the appropriate table below, as necessary, and complete the information for each additional modification.

<i>WPAP Modification</i>	<i>Approved Project</i>	<i>Proposed Modification</i>
<i>Summary</i>	Veramendi Apartments Mod	<small>*Please note that 11.53 Acre School Lot is adjacent to the 13.84 Acre Multi-Family within the Veramendi Word Parkway Ph 2 WPAP.</small>
Acres	<u>13.84</u>	<u>11.53*</u>
Type of Development	<u>Multi Family</u>	<u>Commercial</u>
Number of Residential Lots	_____	_____
Impervious Cover (acres)	<u>9.31</u>	<u>7.12</u>
Impervious Cover (%)	<u>67.3</u>	<u>61.75</u>
Permanent BMPs	<u>2- Batch Detention</u>	_____
Other	_____	_____

<i>SCS Modification</i>	<i>Approved Project</i>	<i>Proposed Modification</i>
<i>Summary</i>		
Linear Feet	_____	_____
Pipe Diameter	_____	_____
Other	_____	_____

<i>AST Modification</i>	<i>Approved Project</i>	<i>Proposed Modification</i>
<i>Summary</i>		
Number of ASTs	_____	_____
Volume of ASTs	_____	_____
Other	_____	_____

<i>UST Modification</i>	<i>Approved Project</i>	<i>Proposed Modification</i>
<i>Summary</i>		
Number of USTs	_____	_____
Volume of USTs	_____	_____
Other	_____	_____

5. Attachment B: Narrative of Proposed Modification. A detailed narrative description of the nature of the proposed modification is attached. It discusses what was approved, including any previous modifications, and how this proposed modification will change the approved plan.

6. Attachment C: Current Site Plan of the Approved Project. A current site plan showing the existing site development (i.e., current site layout) at the time this application for modification is attached. A site plan detailing the changes proposed in the submitted modification is required elsewhere.
 - The approved construction has not commenced. The original approval letter and any subsequent modification approval letters are included as Attachment A to document that the approval has not expired.
 - The approved construction has commenced and has been completed. Attachment C illustrates that the site was constructed as approved.
 - The approved construction has commenced and has been completed. Attachment C illustrates that the site was not constructed as approved.
 - The approved construction has commenced and has not been completed. Attachment C illustrates that, thus far, the site was constructed as approved.
 - The approved construction has commenced and has not been completed. Attachment C illustrates that, thus far, the site was not constructed as approved.

7. The acreage of the approved plan has increased. A Geologic Assessment has been provided for the new acreage.
 - Acreage has not been added to or removed from the approved plan.

8. 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.

Attachment A

Jon Niermann, *Chairman*
Emily Lindley, *Commissioner*
Bobby Janecka, *Commissioner*
Toby Baker, *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 29, 2022

Mr. Charlie Nicholas
CN NB Veramendi, LP
865 N Cowan Ave
Lewisville, Texas 75057-3025

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: Veramendi Apartments; Located approximately 25 mi northeast of Word Pkwy and TX 337 Loop intersection; New Braunfels, Texas

TYPE OF PLAN: Request for Modification of an Approved Water Pollution Abatement Plan (WPAP) and Organized Sewage Collection System (SCS); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Regulated Entity No. RN110566643; Additional ID No. 13001494-13001495

Dear Mr. Nicholas:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP Modification and SCS applications for the above-referenced project submitted to the San Antonio Regional Office by Pape-Dawson Engineers, Inc. on behalf of CN NB Veramendi, LP on February 28, 2022. Final review of the WPAP and SCS was completed after additional material was received on April 26, 2022. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213 and Chapter 217. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

The previously approved WPAP Modification for Veramendi Work Pkwy Phase 2 (13001429) was approved by letter dated December 22, 2021 and had a project area of 11.92 acres. The project included demolition of a previously approved batch detention basin (13000811), clearing, grading, excavation, installation of utilities and drainage improvements, one road section with curbs and sidewalks, one secondary access drive, and one private secondary drive. The impervious cover was approved to be 3.71 acres. One new batch detention basin (Basin 1), one engineered vegetative filter strip (VFS), one natural VFS, and one interim VFS were approved to treat stormwater generated by the project.

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PROJECT DESCRIPTION

The proposed commercial project will have an area of approximately 13.84 acres. It will include clearing, grading, excavation, installation of utilities and drainage improvements, construction of a 324-unit multi-family residential development with associated parking, drives, hardscapes, landscape, and site clean-up. The impervious cover will be 9.31 acres (67.3 percent). The project also includes modification to the inlet structure of the previously approved Basin 1 and removal of the previously approved interim VFS. The interim VFS was designed to treat 0.77 acres of impervious cover, which will now be routed to the approved Basin 1.

The proposed sewage collection system will consist of 1,776.03 linear feet of 8-inch diameter PVC SDR 26 (ASTM D-3034, ASTM D-3212) gravity sewer pipe, 152 linear feet of 8-inch diameter PVC SDR 26 (ASTM D-2241, Class 160, ASTM D-3139) pressure rated sewer pipe, manholes, and appropriate appurtenances. The system will be connected to an existing City of New Braunfels wastewater line for conveyance to the Gruene Water Recycling Center for treatment and disposal. The project is located within the City of New Braunfels and will conform to all applicable codes, ordinances, and requirements of the City of New Braunfels and New Braunfels Utilities.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, the previously approved batch detention basin (Basin 1, 13001429) and one new batch detention basin, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be utilized and constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 8,357 pounds of TSS generated from the 9.31 acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

GEOLOGY

According to the geologic assessment for the overall Veramendi development included with the application, the site lies on the Person Formation. None of the features identified by the project geologist are located within the current project's boundaries. The site assessment conducted on April 6, 2022, revealed the site was generally as described in the geologic assessment.

SPECIAL CONDITIONS

- I. This modification is subject to all Special and Standard Conditions listed in the approval letter dated December 22, 2021.
- II. All permanent pollution abatement measures shall be operational prior to first occupancy of the facilities within their drainage area.
- III. All sediment and/or media removed from the water quality basins during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.
- IV. By the responsible engineer's dated signature and seal on the Engineering Design Report attached to the submitted application, all information therein accurately reflects the information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer in accordance with the requirements of 30 TAC 213.5 (c) and Chapter 217.

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.
2. The holder of the approved Edwards Aquifer protection plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits, registrations and/or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, UIC) can be required depending on the specifics of the plan.
3. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.

Prior to Commencement of Construction:

4. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the San Antonio Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested form (Deed Recordation Affidavit, TCEQ-0625) that you may use to deed record the approved WPAP is enclosed.
5. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved WPAP and SCS plans and this notice of approval shall be maintained at the project location until all regulated activities are completed.
6. Modification to the activities described in the referenced WPAP Modification and SCS application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
7. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person. The executive director will use the notification to determine if the approved plan is eligible for an extension.
8. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved applications, must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.
9. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation. Voids may be filled with gravel.

During Construction:

10. During the course of regulated activities related to this project, the applicant or agent shall comply with all applicable provisions of 30 TAC Chapter 213 and Chapter 217. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity, upon which that

person or entity shall assume responsibility for all provisions and conditions of this approval.

11. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 6, above.
12. If any sensitive feature (caves, solution cavities, sink holes, etc.) is discovered during construction, all regulated activities near the feature must be suspended immediately. The applicant or his agent must immediately notify the San Antonio Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.
13. No wells exist on site. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.
14. If sediment escapes the construction site, the 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). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
15. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
16. The following records shall be maintained and made available to the executive director upon request: 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.
17. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.
18. No part of the system shall be used as a holding tank for a pump-and-haul operation.

After Completion of Construction:

19. 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 San Antonio Regional Office within 30 days of site completion.
20. The applicant shall be 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. The regulated entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.
21. Certification by a Texas Licensed Professional Engineer of the testing of sewage collection systems required by 30 TAC Chapter 213 and Chapter 217 shall be submitted to the San Antonio Regional Office within 30 days of test completion and prior to the new sewage

collection system being put into service. The certification should include the project name as it appeared on the approved application, the program ID number, and two copies of a site plan sheet(s) indicating the wastewater lines and manholes that were tested and are being certified as complying with the appropriate regulations. The engineer must certify in writing that all wastewater lines have passed all required testing to the appropriate regional office within 30 days of test completion and prior to use of the new collection system. Should any test result fail to meet passing test criteria and then subsequently pass testing, the result(s) and an explanation of what repair, adjustment, or other means were taken to facilitate a subsequent passing result shall be provided.

22. Every five years after the initial certification, the sewage collection system shall be retested. Any lines that fail the test must be repaired and retested. Certification that the system continues to meet the requirements of 30 TAC Chapter 213 and Chapter 217 shall be submitted to the San Antonio Regional Office. The certification should include the project name as it appeared on the approved application, the program ID number and two copies of a site plan sheet(s) indicating the wastewater lines and manholes that were tested and are being certified as complying with the appropriate regulations. Should any test result fail to meet passing test criteria, and then subsequently pass testing, the result(s) and an explanation of what repair, adjustment, or other means were taken to facilitate a subsequent passing result shall be provided.
23. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
24. An Edwards Aquifer protection plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Edwards Aquifer protection plan must be submitted to the San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.
25. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Mr. Joshua Vacek of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210-403-4028.

Sincerely,



Lillian Butler, Section Manager
Edwards Aquifer Protection Program
Texas Commission on Environmental Quality

LIB/jv

Enclosures: Deed Recordation Affidavit, Form TCEQ-0625
Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

cc: Mr. Thomas M. Carter, P.E., Pape-Dawson Engineers, Inc.

Attachment B

*NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment B*

Narrative of Proposed Modification

NBISD – Elementary School 11 is a modification of the Veramendi Apartment Water Pollution Abatement Plan (WPAP) previously approved by the Texas Commission on Environmental Quality (TCEQ) on April 29, 2022 (EAPP ID No. 13001494). This 13.84-acre project site is located approximately 25 mi northeast of Work Pkwy and TX-337 intersection within the Extra-Territorial Jurisdiction of the City of New Braunfels in Comal County, Texas and is entirely over the Edwards Aquifer Recharge Zone. For the calculations associated with this WPAP modification, Kimley-Horn also took into account the adjacent Veramendi Apartments WPAP modification previously approved by TCEQ on April 29, 2022 (EAPP ID No. 13001494-13001495).

Stormwater runoff previously sheet flowed across the site. This modification proposes to capture onsite stormwater through an on-site storm sewer system that will discharge to the existing detention pond already designed for the proposed flows from the elementary school development proposed in this application. The approved basin has been sized to account for the watershed and impervious cover from the proposed improvements. Refer to the included TSS Summary Table and Calculations for details.

Additional Regulated activities include clearing, grading, excavation, installation of utilities and drainage improvements, construction of an elementary school with associated parking and drives, hardscapes, landscape, and site clean-up. Approximately 7.12 acres of impervious cover, or 61.75% of the 11.53-acre project limits, are proposed for construction in this WPAP. One (1) existing batch detention basin is the PBMPs for this development. The previously approved batch detention basin has been sized for future development of the watershed which will be routed through proposed storm drain for treatment. All PBMPs have been designed in accordance with the TCEQ's Technical Guidance manual (TGM) RG-348 (2005) to remove 80% of the increase in TSS from the site.

Attachment C

TCEQ WATER POLLUTION ABATEMENT PLAN GENERAL CONSTRUCTION NOTES

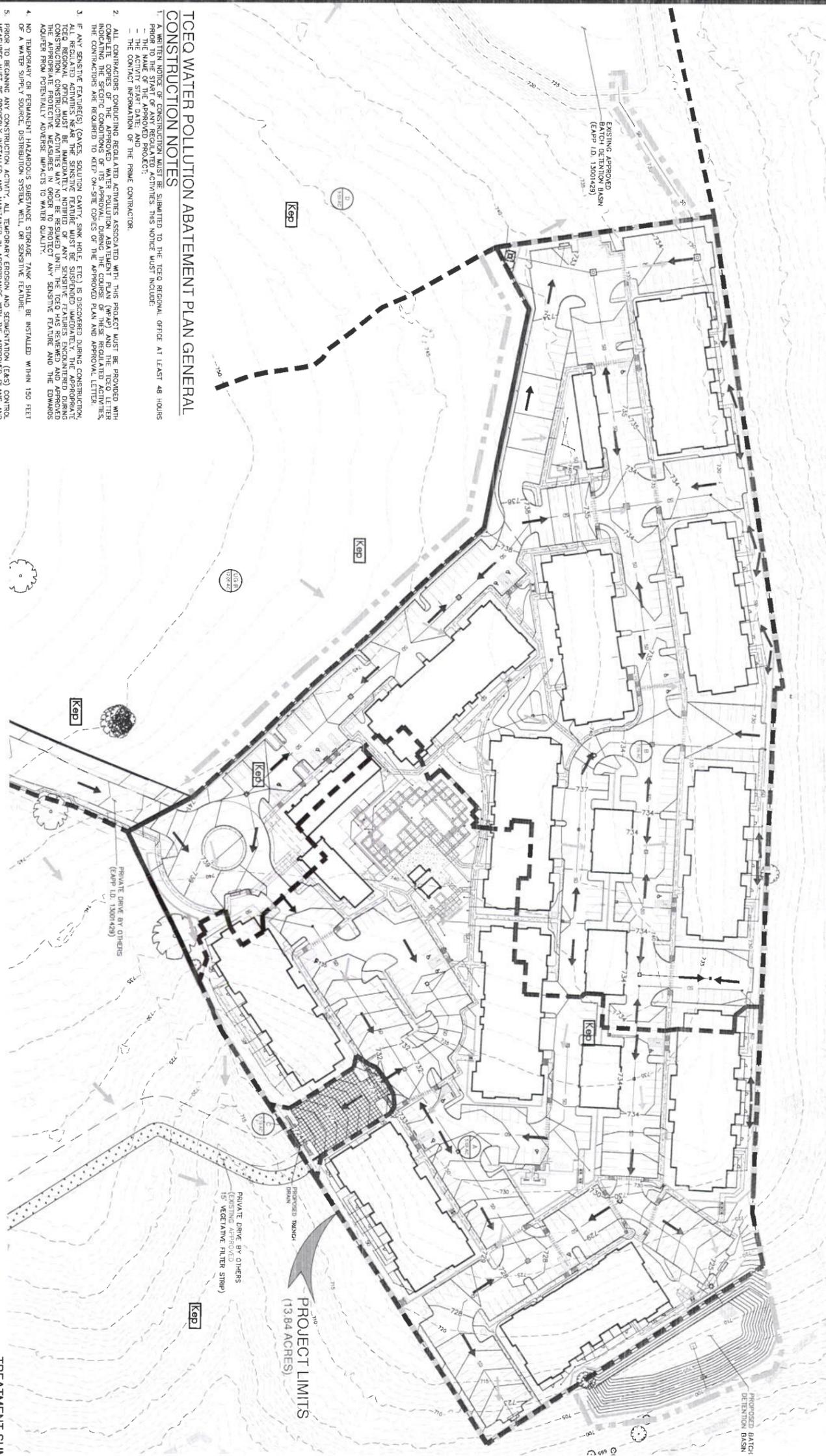
1. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START DATE OF ANY CONSTRUCTION ACTIVITIES. THIS NOTICE MUST INCLUDE:
 - THE NAME OF THE APPROVED PROJECT;
 - THE CONTRACT INFORMATION OF THE PRIME CONTRACTOR;
 - COMPLETE COPIES OF THE APPROVED WATER POLLUTION ABATEMENT PLAN (WPAP) AND THE TCEQ LETTER OF APPROVAL FOR THE WPAP; AND
 - THE TCEQ REGIONAL OFFICE MUST BE IMMEDIATELY NOTIFIED OF ANY SENSITIVE FEATURES ENCOUNTERED DURING CONSTRUCTION. CONSTRUCTION ACTIVITIES MUST BE IMMEDIATELY STOPPED UNTIL THE TCEQ HAS REVIEWED AND APPROVED THE SENSITIVE FEATURES NEAR THE SENSITIVE FEATURE. THE TCEQ HAS REVIEWED AND APPROVED THE SENSITIVE FEATURES NEAR THE SENSITIVE FEATURE. THE TCEQ HAS REVIEWED AND APPROVED THE SENSITIVE FEATURES NEAR THE SENSITIVE FEATURE.
2. ALL CONTRACTORS CONSULTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT MUST BE PROVIDED WITH THE TCEQ REGIONAL OFFICE MUST BE IMMEDIATELY NOTIFIED OF ANY SENSITIVE FEATURES ENCOUNTERED DURING CONSTRUCTION. CONSTRUCTION ACTIVITIES MUST BE IMMEDIATELY STOPPED UNTIL THE TCEQ HAS REVIEWED AND APPROVED THE SENSITIVE FEATURES NEAR THE SENSITIVE FEATURE. THE TCEQ HAS REVIEWED AND APPROVED THE SENSITIVE FEATURES NEAR THE SENSITIVE FEATURE.
3. IF ANY SENSITIVE FEATURES (CAVERS, SOLUTION CAVES, SINK HOLE, ETC.) IS DISCOVERED DURING CONSTRUCTION, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE IMMEDIATELY STOPPED UNTIL THE TCEQ HAS REVIEWED AND APPROVED THE SENSITIVE FEATURES NEAR THE SENSITIVE FEATURE. THE TCEQ HAS REVIEWED AND APPROVED THE SENSITIVE FEATURES NEAR THE SENSITIVE FEATURE.
4. NO TEMPORARY OR PERMANENT HAZARDOUS SUBSTANCE STORAGE TANK SHALL BE INSTALLED WITHIN 150 FEET OF A WATER SUPPLY SOURCE, DISTRIBUTION SYSTEM, WELL, OR SENSITIVE FEATURE.
5. BEFORE BEGINNING ANY CONSTRUCTION ACTIVITY, ALL TEMPORARY EROSION AND SEDIMENTATION (TEAS) CONTROL MEASURES MUST BE SPECIFICALLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS, AND MANUFACTURER'S SPECIFICATIONS. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR ADJUST THE CONTROL, OR SITE SITUATION. THESE CONTROLS MUST BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. THE TCEQ HAS REVIEWED AND APPROVED THE SENSITIVE FEATURES NEAR THE SENSITIVE FEATURE.
6. ANY SEDIMENT THAT ESCAPES THE CONSTRUCTION SITE MUST BE COLLECTED AND PROPERLY DISPOSED OF BEFORE THE NEXT RAIN EVENT TO ENSURE IT IS NOT WASHED INTO SURFACE STREAMS, SENSITIVE FEATURES, ETC.
7. SEDIMENT MUST BE REMOVED FROM THE SEDIMENT TRAPS OR SEDIMENTATION BASINS NOT LATER THAN WHEN IT FROM BEING DISCHARGED OFF-SITE.
8. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BEING DISCHARGED OFF-SITE.
9. ALL SPILLS (EXCAVATED MATERIAL) GENERATED FROM THE PROJECT SITE MUST BE STORED ON-SITE WITH PROPER TAGS CONTAINING THE NAME OF THE SPILLER, THE DATE OF THE SPILL, THE LOCATION OF THE SPILL, AND THE TYPE OF SPILL. SPILLS MUST BE CLEANED UP IMMEDIATELY AND THE LOCATION OF SPILLS AT THE OTHER SIDE OF THE SPILL MUST BE MARKED WITH FLAGGING OR SURVEYING TAPE. THE TCEQ HAS REVIEWED AND APPROVED THE SENSITIVE FEATURES NEAR THE SENSITIVE FEATURE.
10. IF LONGER THAN 14 DAYS, SOIL STABILIZATION IN THOSE AREAS SHALL BE INITIATED AS SOON AS POSSIBLE PRIOR TO THE 14th DAY OF INACTIVITY. IF ACTIVITY WILL RESUME PRIOR TO THE 14th DAY, STABILIZATION MEASURES SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. THE TCEQ HAS REVIEWED AND APPROVED THE SENSITIVE FEATURES NEAR THE SENSITIVE FEATURE.
11. THE FOLLOWING RECORDS SHALL BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST:
 - THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; AND
 - THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.
12. THE HOLDER OF ANY APPROVED EROSION CONTROL PLAN MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:
 - A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY WATER POLLUTION ABATEMENT STRUCTURE(S), INCLUDING STRUCTURES;
 - B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED; OR
 - C. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE ORIGINAL WATER POLLUTION ABATEMENT PLAN.

GENERAL NOTES

1. DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.
2. LOCATIONS OF CONSTRUCTION ENTRANCE/EXITS, CONCRETE WASHOUT PITS, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARDS TO BE DETERMINED IN THE FIELD.
3. STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMMODATE CHANGES IN THE FIELD. THE TCEQ HAS REVIEWED AND APPROVED THE SENSITIVE FEATURES NEAR THE SENSITIVE FEATURE.
4. RESTRICT ENTRY/EXIT TO THE PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADJACENT FENCING, IF NECESSARY.
5. ALL STORM WATER POLLUTION PREVENTION CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.
6. CONTRACTOR, TO THE EXTENT PRACTICAL, SHALL MINIMIZE THE AMOUNT OF AREA DISTURBED AS SOON AS PRACTICAL. ALL DISTURBED SOIL SHALL BE NOTED, AND EMBANKMENT SLOPES, ETC. WILL BE STABILIZED PER APPLICABLE PROJECT SPECIFICATIONS.
7. BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UPGRADING AREAS.
8. BEST MANAGEMENT PRACTICES MAY BE REMOVED IN STAGES ONCE THE WATERSHED FOR THAT PORTION CONTROLLED BY THE BEST MANAGEMENT PRACTICES HAS BEEN STABILIZED.
9. ALL TEMPORARY BMPs WILL BE REMOVED ONCE WATERBODIES ARE ESTABLISHED.
10. ALL ROAD OR DIRT MANAGEMENT Y TRACKED OFF-SITE AND ONTO EXISTING STREETS SHALL BE REMOVED IMMEDIATELY BY HAND OR MECHANICAL BROOM SWEEPING.
11. TEMPORARY BMPs SHALL BE TRACKED OFF-SITE AND ONTO EXISTING STREETS.
12. UPON COMPLETION OF THE PROJECT AND BEFORE FINAL PAYMENT IS ISSUED, CONTRACTOR SHALL REMOVE ALL SEDIMENT AND EROSION CONTROL MEASURES.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION SEQUENCING AND SITE IMPROVEMENTS SUCH AS LANDSCAPING AND FENCING SO AS TO PREVENT SEDIMENT FROM ESCAPING THE PROJECT SITE.

SUMMARY OF PERMANENT POLLUTION ABATEMENT MEASURES

1. SILT FENCING AND ROCK BERMS, WHERE APPROPRIATE, WILL BE MAINTAINED UNTIL ALL UTILITY AND DRAINAGE IMPROVEMENTS ARE COMPLETED.
2. ENERGY DISSIPATORS (TO HELP REDUCE EROSION) WILL BE PROVIDED AT POINTS OF CONCENTRATED DISCHARGE WHERE EXCESSIVE VELOCITIES MAY BE ENCOUNTERED.
3. THIS PROJECT DOES NOT INCLUDE THE INSTALLATION OF ABOVE GROUND STORAGE TANKS (AST) WITH VOLUMES GREATER THAN OR EQUAL TO 500 GALLONS.
4. DRAINAGE PATTERNS ARE ILLUSTRATED BY FLOW ARROWS. SLOPES VARY THROUGHOUT THE SITE. TYPICAL SLOPES IN THIS PROJECT WILL RANGE FROM 0.5% TO 24.1%.
5. PERMANENT BMPs FOR THIS SITE INCLUDE ONE (1) PROPOSED BATCH DETENTION BASIN, AND ONE (1) APPROVED BATCH DETENTION BASIN WHICH HAVE BEEN DESIGNED TO REMOVE AN EQUIVALENT OF BOX OF THE NON-POINT TOTAL SUSPENDED SOLIDS (TSS) FOR THE 13.84 ACRES IN ACCORDANCE WITH THE TCEQ'S TECHNICAL GUIDANCE MANUAL (TGM) RO-348 (2005).
6. FOR DISTURBED AREAS WHERE INSUFFICIENT SOIL EXISTS TO ESTABLISH VEGETATION, CONTRACTOR SHALL PLANT A MINIMUM OF 8" TOPSOIL PRIOR TO RE-VEGETATION.
7. TEMPORARY BMPs WILL BE MAINTAINED UNTIL THE SITE IMPROVEMENTS ARE COMPLETED IN ACCORDANCE WITH APPLICABLE PROJECT SPECIFICATIONS.
8. DURING CONSTRUCTION, TO THE EXTENT PRACTICABLE, CONTRACTOR SHALL MINIMIZE THE AREA OF SOIL DISTURBANCE AND SOIL EXPOSURE. SOIL SHALL BE RE-VEGETATED TO PREVENT EROSION AND SEDIMENTATION. CONTRACTOR SHALL MAINTAIN THE LANDSCAPE GUIDANCE MANUAL (TGM) RO-348 (2005) SOO SHOULD BE USED IN CHANNELS AND ON TESS AND THE STABILIZED BED SHOULD BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. VEGETATION IS ESTABLISHED, APPLICATIONS AND PRODUCTS SHALL BE CHOSE APPROVED BY TCEQ AS OF FEBRUARY 2001 AND IN COMPLIANCE WITH TCEQ'S TECHNICAL GUIDANCE MANUAL (TGM) RO-348 (2005) GUIDELINES. IRRIGATION MAY BE REQUIRED IN ORDER TO ESTABLISH SUFFICIENT VEGETATION.
9. ALL PERMANENT BMPs MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.



Watershed	Total Watershed Area (Ac.)	Previously Approved Impervious Cover (Ac.)	Proposed Impervious Cover (Ac.)	Total Impervious Cover (Ac.)	PdM#	Required TSS Removal Annually (lbs)	TSS Removed Annually (lbs)
A	5.69	3.96	3.96	3.96	Proposed Batch Detention Basin	3,554	3,790
UNCAPTURED-C	0.19	0.14	0.14	0.14	Over-treatment Batch Detention Basin	126	0
ROAD	3.98	3.58	0.00	3.58	Proposed Batch Detention Basin	3,213	8,635
OFFSITE	30.62	0.00	0.00	0.00	Proposed Batch Detention Basin	0	0
UG-8	12.09	0.77	0.00	0.77	Proposed Batch Detention Basin	691	0
B	7.09	5.21	5.21	5.21	Proposed Batch Detention Basin	4,676	0
D	9.69	0.00	0.00	0.00	Proposed Batch Detention Basin	0	0
UNCAPTURED AREA	0.08	0.06	0.00	0.06	Over-treatment Batch Detention Basin	54	N/A
TOTAL	63.85	4.41	9.31	13.72		12,315	12,425

PERMIT SET

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE DESIGN AND TREATMENT REQUIREMENTS OF THE TCEQ'S COMMISSION ON ENVIRONMENTAL QUALITY'S EDWARDS AQUIFER TECHNICAL GUIDANCE MANUAL. THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF POLLUTION ABATEMENT ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE REFERENCED TO THE ORIGINAL SHEET IN THE CIVIL IMPROVEMENT PLANS.

EXHIBIT 3

DATE: JANUARY 28, 2022
 DESIGNED BY: MTR
 CHECKED BY: DIS
 DRAWN BY: JS
 SHEET: C7.00

VERAMENDI APARTMENTS
 NEW BRAUNFELS, TEXAS

PERMANENT WATER POLLUTION ABATEMENT PLAN
WATER POLLUTION ABATEMENT PLAN MODIFICATION

PAPE-DAWSON ENGINEERS

NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
 1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #102826800

4/25/2022
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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: Richard Underwood, P.E.

Date: 09/08/2023

Signature of Customer/Agent :



Regulated Entity Name: NBISD - Elementary School 11

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): 11.53

3. Estimated projected population: N/A

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	89,629	÷ 43,560 =	2.06
Parking	22,686	÷ 43,560 =	0.52
Other paved surfaces	197,744	÷ 43,560 =	4.54
Total Impervious Cover	310,059	÷ 43,560 =	7.12

Total Impervious Cover 7.12 ÷ Total Acreage 11.53 X 100 = 61.75% 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 = _____ Ft² ÷ 43,560 Ft²/Acre = _____ acres.

10. Length of pavement area: _____ feet.

Width of pavement area: _____ feet.

L x W = _____ Ft² ÷ 43,560 Ft²/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:

<u>100%</u> Domestic	<u>5,500</u> Gallons/day
<u> </u> % Industrial	<u> </u> Gallons/day
<u> </u> % Commingled	<u> </u> Gallons/day
TOTAL gallons/day <u> </u>	

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 Gruene WRC (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" = 40'.

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: 48091C0435F Dated: 9/2/2009

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 _____ (#) 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.

*NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment A*

Factors Affecting Surface Water Quality

Factors that could affect the quality of the water discharges for the ultimate land use are:

- Oil, grease, and fuel from vehicle drippings;
- Dirt from vehicles;
- Trash and litter;
- Hydrocarbons from asphalt paving operations.

Attachment B

*NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment B*

Volume and Character of Stormwater

While the impervious cover on the site increases, the existing detention pond was designed to accommodate the ultimate development of the site. The existing batch detention pond has adequate capacity to accept the proposed total runoff and required storage volume for the proposed improvements, based on the previously approved drainage reports.

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.

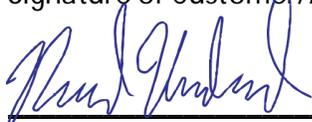
Signature

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: Richard Underwood, P.E.

Date: 09/08/2023

Signature of Customer/Agent:



Regulated Entity Name: NBISD Elementary School 11

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: Guadalupe River

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.

Attachment A

**NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment A**

Spill Report Actions

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of the materials and substances described above to storm water runoff.

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 danger 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 indoctrinate 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 stormwater run-on 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, cover, 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 BMPs 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:

(5) Contain the spread of the spill.

(6) Recover spilled materials.

(7) Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills – 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 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 1-800-832-8224. 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 on 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 City Police Department, County Sheriff Office, Fire Departments, etc.

Attachment B

**NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment B**

Potential Sources of Contamination

Sources of contamination during construction that could potentially affect surface and groundwater quality are as follows:

Potential Source	Preventative Measure
Asphalt Products Used on this Project	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 contain any 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 event.
Oil, Grease, Fuel, and Hydraulic Fluid Drippings	Vehicle maintenance when possible will be performed within the construction staging area.
Miscellaneous Trash and Litter	Trash containers will be placed throughout the site to encourage proper trash disposal.
Construction Debris	Construction debris will be monitored daily by the contractor. Debris will be collected weekly and placed in disposal bins. Situations requiring immediate attention will be addressed on a case-by-case basis.

Attachment C

NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment C

Sequence of Major Events

The installation of erosion and sedimentation controls shall occur prior to any excavation of materials or major disturbances of the site.

The sequence of major construction activities will be as follows. Approximate acreage to be disturbed is listed in parenthesis next to each activity.

1. Install all temporary erosion controls. (11.53 acres)
2. Clear and grub strip topsoil. (11.53 acres)
3. Grading (No additional area will be disturbed by this activity)
4. Rough Cut Drive Aisles and Building Pads. (No additional area will be disturbed by this activity)
5. Install Wet/Dry Utilities (No additional area will be disturbed by this activity)
6. Install paving improvements. (No additional area will be disturbed by this activity)
7. Complete Restoration of Site Vegetation. (No additional area will be disturbed by this activity)
8. Remove and dispose of temporary erosion controls when restoration has been accepted.

Maximum total construction time is not expected to exceed 18 months.

Attachment D

*NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment D*

Temporary Best Management Practices and Measures

Also refer to the TCEQ Site Plan for details of TBMP's.

Silt fencing will be installed prior to the commencement of construction to prohibit runoff of sediment. The silt fence shall be placed perpendicular to direction of flow, where feasible, to maximize efficiency. If there are any, potentially sensitive features, a silt fence will surround the site as specified by TCEQ Guidance Manual Chapter 5.

Bagged gravel inlet filters will be used and maintained in a condition to prevent runoff of sediment from flowing into drains during construction.

Stabilized construction entrance will be installed prior to the commencement of construction and will be used and maintained in a condition that will prevent tracking or flowing of sediment onto public roadway.

a.) Silt fence will not be placed on the upstream side of the site because there will be no stormwater that originates upgradient of the site. All upgradient stormwater is captured in onsite storm water system that discharges to an existing batch detention pond.

b.) Silt fencing and bagged gravel inlet filters will be used on-site to filter out pollutants and restrict sediment from leaving the site. Silt fencing will be placed in existing and proposed channels and downstream of flow on site. Bagged gravel inlet filters will be placed around proposed inlets to capture any suspended solids.

c.) Temporary measures are intended to provide a method of slowing the flow of runoff from the construction site in order to allow sediment and suspended solids to settle out of the runoff. Silt Fencing, bagged gravel inlet filters and construction entrance measures prevent sediment and pollution by filtering and routing water. These filtered pollutants are then removed and prevented from entering surface streams, sensitive features, or the aquifer.

d.) BMP measures utilized in this plan are intended to allow stormwater to continue downstream after passing through the BMP's. Silt fencing and bagged gravel inlet filters will be placed to intercept and detain water with sediment or pollution from entering or leaving the site to any unprotected areas. The BMP's will filter out sediment and pollution while allowing filtered water to flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.

e.) 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.

Attachment F

***NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment F***

Structural Practices

The structural practices that will be used to divert and store flows and limit runoff discharge or pollutants will be the use of silt fences, inlet protection, and construction entrance stabilization.

Attachment G

*NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment G*

Drainage Area Map

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. All TBMPs utilized are adequate for the drainage areas served. A Phase One Erosion Control Plan showing the proposed sediment traps and drainage areas has been provided as part of the Water Pollution Abatement Plan.

Attachment I

***NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment I***

Inspection and Maintenance for BMPs

The existing batch detention basin that the site will drain to is owned and maintained by the developer of the Veramendi Master Planned Development. In turn, the developer is responsible for all inspections and maintenance related to the detention basin.

Attachment J

**NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment J**

Schedule of Interim and Permanent Soil Stabilization Practices

Stabilization measures shall be initiated as soon as possible in portions of the site where construction activities have ceased, temporarily or permanently, but in no case more than 14 days after the construction activity in that portion of the site concluded. Where the initiation of stabilization measures by the 14th day after construction activity temporary 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. 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.

SOIL STABILIZATION PRACTICES:

- HYDROMULCHING
- TEMPORARY SEEDING
- PERMANENT PLANTING, SODDING, OR SEEDING
- MULCHING
- SOIL RETENTION BLANKET
- BUFFER ZONES
- PRESERVATION OF NATURAL RESOURCES

OTHER: Disturbed areas, in which construction activity has ceased temporarily or permanently, shall be stabilized within 14 days unless activities are scheduled to resume and done within 21 days.

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)(li), (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: Richard Underwood, P.E.

Date: 09/08/2023

Signature of Customer/Agent



Regulated Entity Name: NBISD Elementary School 11

Permanent Best Management Practices (BMPs)

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

- Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.
 N/A
- 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

Attachment B

***NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment B***

BMPs for Upgradient Stormwater

Due to the surrounding topography, upgradient water will cross the project limits from the undeveloped adjacent property.

One (1) existing batch detention basin is proposed as the Permanent Best Management Practice (PBMP) for this project. The PBMPs were designed in accordance with the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in TSS from the site.

Attachment C

*NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment C*

BMPs for On-Site Stormwater

One (1) existing batch detention basin will be utilized as the Permanent Best Management Practice (PBMP) for this project. The PBMPs were designed in accordance with the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in TSS from the site.

Attachment D

***NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment D***

BMPs for Surface Streams

There are no surface streams on, or near, the project site. One (1) existing batch detention basin is proposed as the Permanent Best Management Practice (PBMP) for this project. The PBMPs has been designed in accordance with the TCEQ'S Technical Guidance Manual (TGM) RG-348 (2005) to remove 80% of the increase in TSS from the site.

Attachment F

***NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment F***

Construction Plans

Please refer to the following section that includes the Water Pollution Abatement Plans from the Veramendi Work Parkway Phase 2 Mod and Veramendi Apartments Mod by Pape-Dawson.

SUMMARY OF PERMANENT POLLUTION ABATEMENT MEASURES:

- 1) TEMPORARY BMP'S WILL BE MAINTAINED UNTIL THE SITE IMPROVEMENTS ARE COMPLETED AND THE SITE HAS BEEN STABILIZED, INCLUDING SUFFICIENT VEGETATION BEING ESTABLISHED.
- 2) DURING CONSTRUCTION, TO THE EXTENT PRACTICAL, CONTRACTOR SHALL MINIMIZE THE AREA OF SOIL DISTURBANCE. AREAS OF DISTURBED SOIL SHALL BE REVEGETATED TO STABILIZE SOIL USING SOLID SOD IN A STAGGERED PATTERN. SEE DETAIL ON TEMPORARY POLLUTION ABATEMENT DETAIL SHEET AND REFER TO SECTION 1.3.11 IN TCEQ'S TECHNICAL GUIDANCE MANUAL RG-348 (2005). SOD SHOULD BE USED IN CHANNELS AND ON SLOPES > 15%. THE CONTRACTOR MAY SUBSTITUTE THE USE OF SOD WITH THE PLACEMENT OF TOP SOIL AND A FRIABLE SEED BED WITH A PROTECTIVE MATTING OR HYDRAULIC MULCH ALONG WITH WATERING UNTIL VEGETATION IS ESTABLISHED. APPLICATIONS AND PRODUCTS SHALL BE THOSE APPROVED BY T0001 AS OF FEBRUARY 2001 AND IN COMPLIANCE WITH THE TGM RG-348 (2005). SEED MIXTURE AND/OR GRASS TYPE TO BE DETERMINED BY OWNER AND SHOULD BE IN COMPLIANCE WITH TGM RG-348 (2005) GUIDELINES. IRRIGATION MAY BE REQUIRED IN ORDER TO ESTABLISH SUFFICIENT VEGETATION.
- 3) FOR DISTURBED AREAS WHERE INSUFFICIENT SOIL EXISTS TO ESTABLISH VEGETATION, CONTRACTOR SHALL PLACE A MINIMUM OF 6" OF TOPSOIL PRIOR TO REVEGETATION.
- 4) PERMANENT BMP'S FOR THIS SITE INCLUDE A BATCH DETENTION BASIN, AN ENGINEERED VEGETATIVE FILTER STRIP, ONE (1) 50' NATURAL VEGETATIVE FILTER STRIP AND ONE (1) INTERIM FILTER STRIP. THESE PERMANENT BMP'S HAVE BEEN DESIGNED TO REMOVE AT LEAST 80% OF THE INCREASED TOTAL SUSPENDED SOLIDS (TSS) FOR THE SITE IN ACCORDANCE WITH THE TCEQ'S TECHNICAL GUIDANCE MANUAL (TGM) RG-348 (2005).
- 5) TYPICAL SLOPES ON THIS PROJECT RANGE FROM APPROXIMATELY 2.7% TO 18.8%.

PERMANENT POLLUTION ABATEMENT MEASURES:

- 1) SILT FENCING AND ROCK BERMS, WHERE APPROPRIATE, WILL BE MAINTAINED UNTIL THE ROADWAY, UTILITY, DRAINAGE IMPROVEMENTS, AND BUILDING CONSTRUCTION ARE COMPLETED.
- 2) A BATCH DETENTION BASIN AND THE ENGINEERED VEGETATIVE FILTER STRIPS WILL SERVE AS THE PERMANENT BEST MANAGEMENT PRACTICE (BMP) FOR DRAINAGE AREAS.
- 3) ENERGY DISSIPATORS (TO HELP REDUCE EROSION) WILL BE PROVIDED AT POINTS OF CONCENTRATED DISCHARGE WHERE EXCESSIVE VELOCITIES MAY BE ENCOUNTERED.

NOTES:

- 1) CONTRACTOR SHALL INSTALL AND ESTABLISH VEGETATION FOR SOIL STABILIZATION PRIOR TO SITE CLOSEOUT.
- 2) ALL PERMANENT BMP'S MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.

PROJECT LIMITS
(8.93 AC.)

TOTAL
PROJECT LIMITS
11.92 ACRES

7.24 AC.

PROJECT LIMITS
(1.73 AC.)

PROPOSED INTERIM
VEGETATIVE FILTER
STRIP
(0.39 AC.)

INTERIM
WATERSHED
4.19 AC.

SECONDARY ACCESS
PROJECT LIMITS
(1.26 AC.)

9.69 AC.

12.09 AC.

3.98 AC.

OFFSITE
1.62 AC.

29.00 AC.



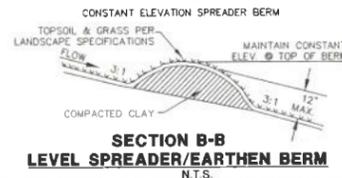
LOCATION MAP
NOT-TO-SCALE

LEGEND

- PROJECT LIMITS
- - - EXISTING GRADE
- 740 — PROPOSED GRADE
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- ▨ VEGETATIVE FILTER STRIP
- ▤ WATERSHED BOUNDARY
- (A) WATERSHED DESIGNATION
- [Kep] PERSON FORMATION

Treatment Summary by Watershed

Watershed	Total Watershed Area (Ac.)	Previously Approved Impervious Cover (Ac.)	Proposed Impervious Cover (Ac.)	Total Impervious Cover (Ac.)	PBMP	Required TSS Removal Annually (Tons)	TSS Removed Annually (Tons)
A - WORD	3.98	1.27	2.31	3.58	Batch Detention Basin	3,213	3,267
OFFSITE	30.62	0.00	0.00	0.00	Batch Detention Basin	0	0
B	12.09	0.00	0.00	0.00	Batch Detention Basin	0	0
C	7.24	0.00	0.00	0.00	Batch Detention Basin	0	0
D	9.69	0.00	0.00	0.00	Batch Detention Basin	0	0
Secondary Access	0.35	0.35	0.35	0.35	50' Natural VFS	494	494
Interim Watershed	4.19	0.77	0.77	0.77	Interim Filterstrip	691	691
Word Pkwy	0.08	0.08	0.08	0.08	50' Natural VFS	72	72
UNCAPTURED AREA	0.08	0.00	0.00	0.00	Over-treatment Batch Detention Basin	54	N/A
TOTAL	64.33	2.12	3.71	5.83		4,524	4,524



PROPERTY	TEST METHOD	SPECIFICATION
PERMEABILITY (CM/SEC)	ASTM D 2434	1 X 10 ⁻⁸
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

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE POLLUTION ABATEMENT SIZING AND TREATMENT REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S EDWARDS AQUIFER TECHNICAL GUIDANCE MANUAL.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF POLLUTION ABATEMENT ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

EXHIBIT 3

VERAMENDI - WORD PKWY PHASE 2
NEW BRAUNFELS, TEXAS

WATER POLLUTION ABATEMENT PLAN MODIFICATION
PERMANENT WATER POLLUTION ABATEMENT PLAN

PLAT NO. _____
JOB NO. 7620-83
DATE: OCTOBER 2021
DESIGNER: JA
CHECKED: JA DRAWN: RO
SHEET 1 OF 1



PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #73 | TEXAS SURVEYING FIRM #1002808

DRAINAGE & GRADING NOTES:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
2. ALL CONCRETE FOR TxDOT DRAINAGE STRUCTURES SHALL MEET TxDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
5. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF NEW BRAUNFELS WILL ACCEPT.
6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

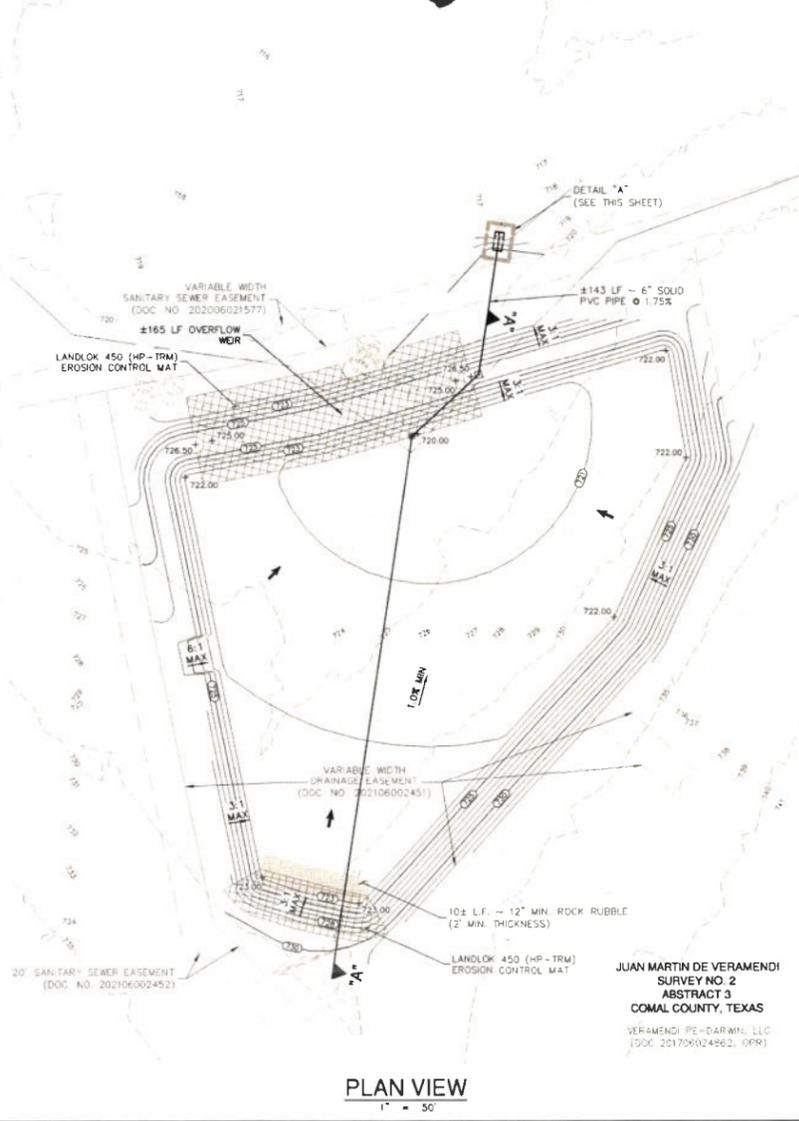
CAUTION!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING, ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL, DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TEST A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

NOTES

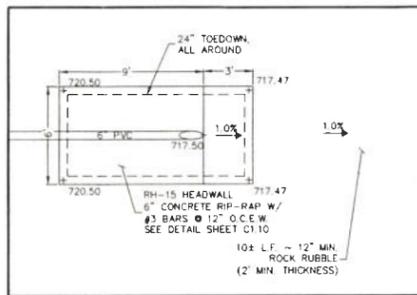
1. UPON COMPLETION OF CONSTRUCTION, AND IN ACCORDANCE WITH TCEQ REGULATIONS, ALL PERMANENT BMP'S MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.
2. ALL AREAS DISTURBED AS PART OF CONSTRUCTION OF BASIN SHALL BE REVEGETATED PRIOR TO COMPLETION.
3. BASIN HAS BEEN DESIGNED USING TSS REMOVAL AND BMP SIZING CALCULATIONS AS PER THE TCEQ TGM RG-34B (2005).
4. BASIN DRAWDOWN IS CONTROLLED BY THE PIPE. BASIN DRAWDOWN WILL OCCUR IN APPROXIMATELY 24 HOURS.

M.A.S. NOTE:
STAGING AREA REQUIREMENT (800 SQ.FT.) IS SATISFIED BY UTILIZING THE PRIVATE AREA ADJACENT TO THE BASIN AS DESIGNATED IN THE PLAN VIEW ABOVE.

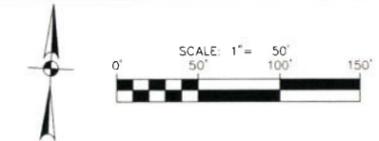


PLAN VIEW
1" = 50'

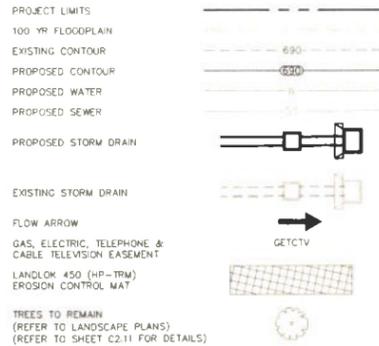
JUAN MARTIN DE VERAMENDI
SURVEY NO. 2
ABSTRACT 3
COMAL COUNTY, TEXAS
VERAMENDI PE-DARWIN, LLC
(DOC. 201706024962, OPR)



DETAIL "A"
1" = 5'



DRAINAGE LEGEND



OVERFLOW WEIR CALCULATIONS

$$Q_{we} = (C_w)(L)(h)^{3/2}$$

$$Q_{we} = 305.1 \text{ cfs}$$

$$C = 2.60$$

$$L = 165 \text{ ft}$$

$$305.1 = (2.60)(165)(h)^{3/2}$$

$$h = 0.80$$

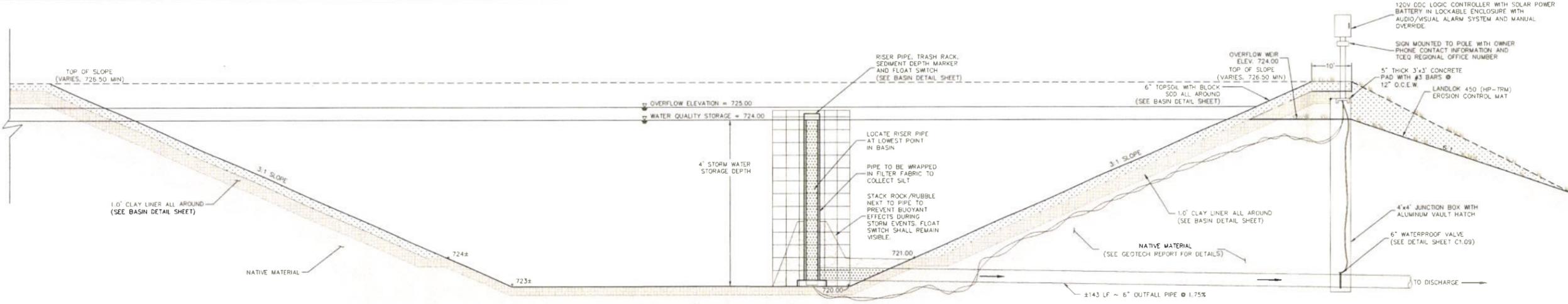
BASIN DESIGN DATA

BASIN WATERSHED AREA	= 1,508,047 SF (34.62 AC.)
RUN OFF DEPTH	= 33.0 IN
REQUIRED CAPTURE VOLUME	= 150,030 CF
BASIN STORM WATER DEPTH	= 4.0 FT
BASIN CAPTURE VOLUME	= 162,848 CF

PAPE-DAWSON ENGINEERS
 TODD W. BLACKMON
 LICENSED PROFESSIONAL ENGINEER
 STATE OF TEXAS
 8-26-2021
 NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FT WORTH | DALLAS
 1572 WILDFIRE DR, STE 102 | NEW BRAUNFELS, TX 78132 | TEL: 737.500.7800
 TEXAS ENGINE REGISTRATION #470 | TEPILS FROM REGISTRATION #142800

VERAMENDI - WORD PKWY PHASE 2
 NEW BRAUNFELS, TEXAS
BASIN PLAN

PLAT NO.	
JOB NO.	7620-83
DATE	AUGUST 2021
DESIGNER	JP
CHECKED	GL-DRAWN: BH
SHEET	C1.08



SECTION "A-A"

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE POLLUTION ABATEMENT SIZING AND TREATMENT REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S EDWARDS AQUIFER TECHNICAL GUIDANCE MANUAL.

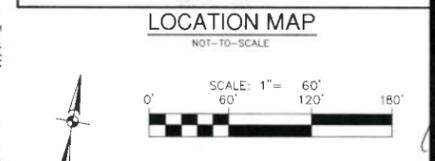
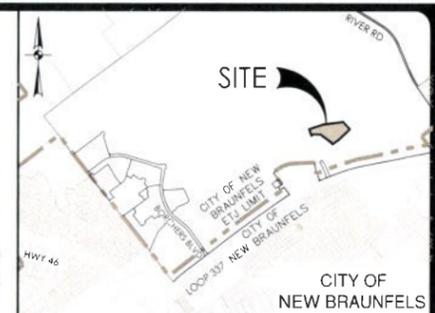
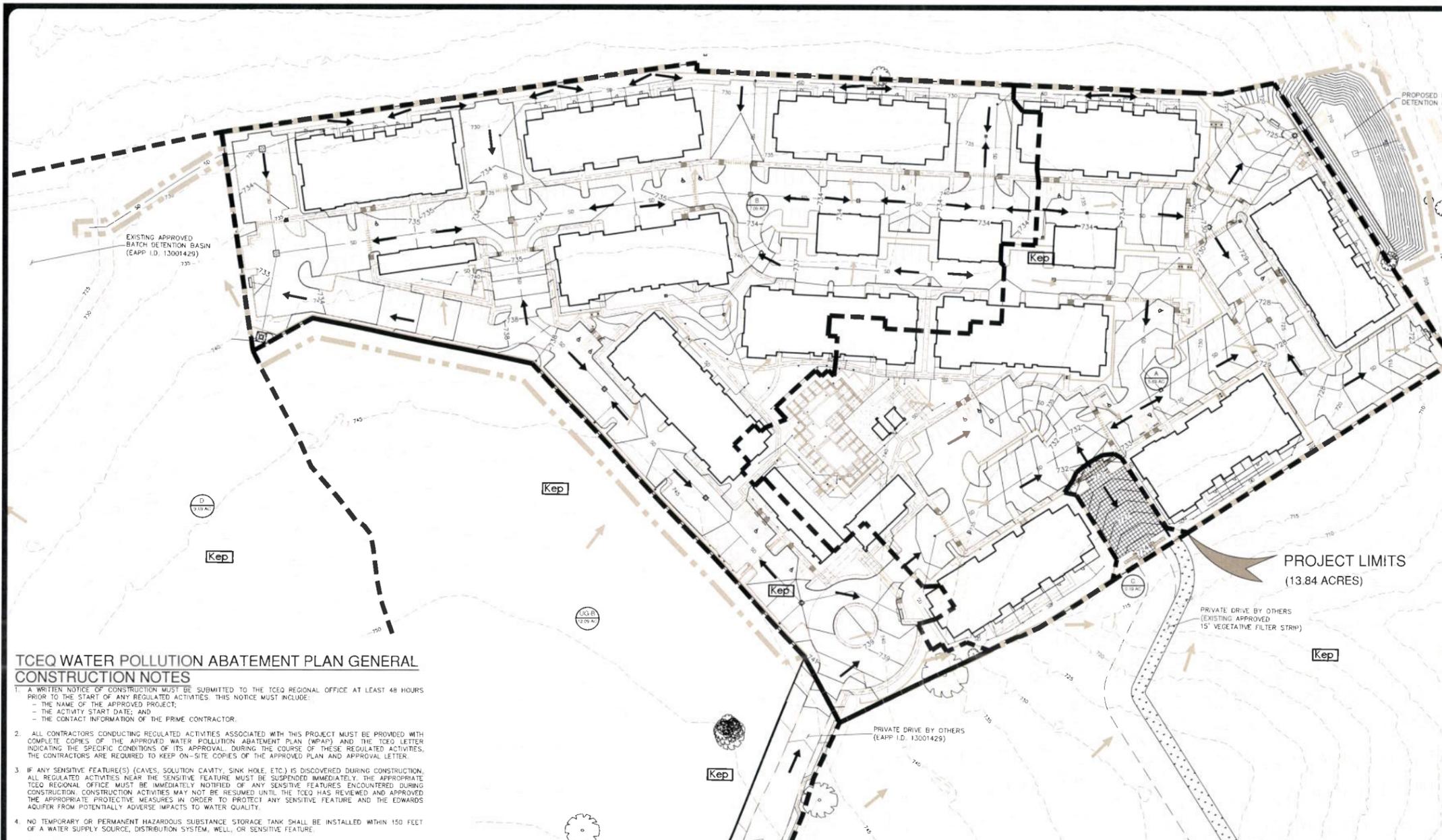
THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF POLLUTION ABATEMENT ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

EXHIBIT 4

FOR PERMIT

Date: Aug 25, 2021, 1:46pm User: J. Schaefer
 File: P:\7620_83\Design\Civil\11-762083-Phase2.dwg

THIS DOCUMENT HAS BEEN PROVIDED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INCOMPLETELY REPRODUCED. RELY ONLY ON FINAL HARD COPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL. AERIAL IMAGERY PROVIDED BY GOOGLE MAPS. SOURCE: GOOGLE MAPS. DATA SOURCE: TERRACONCEPTS. USA: FROM SOURCE: AERIAL



LEGEND

	PROJECT LIMITS
	EXISTING CONTOUR
	PROPOSED CONTOUR
	FLOW ARROW (EXISTING)
	FLOW ARROW (PROPOSED)
	WATERSHED BOUNDARY
	WATERSHED DESIGNATION
	UNCAPTURED AREA (OVERTREATMENT PROVIDED)
	PROPOSED STORM DRAIN
	PERSON FORMATION
	VEGETATIVE FILTER STRIP

TCEQ WATER POLLUTION ABATEMENT PLAN GENERAL CONSTRUCTION NOTES

- A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START OF ANY REGULATED ACTIVITIES. THIS NOTICE MUST INCLUDE:
 - THE NAME OF THE APPROVED PROJECT;
 - THE ACTIVITY START DATE; AND
 - THE CONTACT INFORMATION OF THE PRIME CONTRACTOR.
- ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT MUST BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED WATER POLLUTION ABATEMENT PLAN (WPAP) AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTORS ARE REQUIRED TO KEEP ON-SITE COPIES OF THE APPROVED PLAN AND APPROVAL LETTER.
- IF ANY SENSITIVE FEATURE(S) (CAVES, SOLUTION CAVITY, SINK HOLE, ETC.) IS DISCOVERED DURING CONSTRUCTION, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPROPRIATE TCEQ REGIONAL OFFICE MUST BE IMMEDIATELY NOTIFIED OF ANY SENSITIVE FEATURES ENCOUNTERED DURING CONSTRUCTION. CONSTRUCTION ACTIVITIES MAY NOT BE RESUMED UNTIL THE TCEQ HAS REVIEWED AND APPROVED THE APPROPRIATE PROTECTIVE MEASURES IN ORDER TO PROTECT ANY SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY.
- NO TEMPORARY OR PERMANENT HAZARDOUS SUBSTANCE STORAGE TANK SHALL BE INSTALLED WITHIN 150 FEET OF A WATER SUPPLY SOURCE, DISTRIBUTION SYSTEM, WELL, OR SENSITIVE FEATURE.
- PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND MANUFACTURERS SPECIFICATIONS. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THESE CONTROLS MUST REMAIN IN PLACE UNTIL THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.
- ANY SEDIMENT THAT ESCAPES THE CONSTRUCTION SITE MUST BE COLLECTED AND PROPERLY DISPOSED OF BEFORE THE NEXT RAIN EVENT TO ENSURE IT IS NOT WASHED INTO SURFACE STREAMS, SENSITIVE FEATURES, ETC.
- SEDIMENT MUST BE REMOVED FROM THE SEDIMENT TRAPS OR SEDIMENTATION BASINS NOT LATER THAN WHEN IT OCCUPIES 50% OF THE BASIN'S DESIGN CAPACITY.
- LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BEING DISCHARGED OFF-SITE.
- ALL SPOILS (EXCAVATED MATERIAL) GENERATED FROM THE PROJECT SITE MUST BE STORED ON-SITE WITH PROPER E&S CONTROLS. FOR STORAGE OR DISPOSAL OF SPOILS AT ANOTHER SITE ON THE EDWARDS AQUIFER RECHARGE ZONE, THE OWNER OF THE SITE MUST RECEIVE APPROVAL OF A WATER POLLUTION ABATEMENT PLAN FOR THE PLACEMENT OF FILL MATERIAL OR MASS GRADING PRIOR TO THE PLACEMENT OF SPOILS AT THE OTHER SITE.
- IF PORTIONS OF THE SITE WILL HAVE A TEMPORARY OR PERMANENT CEASE IN CONSTRUCTION ACTIVITY LASTING LONGER THAN 14 DAYS, SOIL STABILIZATION IN THOSE AREAS SHALL BE INITIATED AS SOON AS POSSIBLE PRIOR TO THE 14TH DAY OF INACTIVITY. IF ACTIVITY WILL RESUME PRIOR TO THE 21ST DAY, STABILIZATION MEASURES ARE NOT REQUIRED. IF DROUGHT CONDITIONS OR INCIDENT WEATHER PREVENT ACTION BY THE 14TH DAY, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS POSSIBLE.
- THE FOLLOWING RECORDS SHALL BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST:
 - 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.
- THE HOLDER OF ANY APPROVED EDWARDS AQUIFER PROTECTION PLAN MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE BY WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:
 - A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY WATER POLLUTION ABATEMENT STRUCTURE(S), INCLUDING BUT NOT LIMITED TO PONDS, DAMS, BERMS, SEWAGE TREATMENT PLANTS, AND DIVERSIONARY STRUCTURES;
 - B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FORM THAT WHICH WAS ORIGINALLY APPROVED OR A CHANGE WHICH WOULD SIGNIFICANTLY IMPACT THE ABILITY OF THE PLAN TO PREVENT POLLUTION OF THE EDWARDS AQUIFER;
 - C. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE ORIGINAL WATER POLLUTION ABATEMENT PLAN.

GENERAL NOTES

- DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.
- LOCATIONS OF CONSTRUCTION ENTRANCE/EXITS, CONCRETE WASHOUT PITS, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARDS TO BE DETERMINED IN THE FIELD.
- STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED EFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS EXHIBIT AND SIGNED AND DATED BY THE RESPONSIBLE PARTY.
- RESTRICT ENTRY/EXIT TO THE PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADEQUATE FENCING, IF NECESSARY.
- ALL STORM WATER POLLUTION PREVENTION CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.
- CONTRACTOR TO THE EXTENT PRACTICAL SHALL MINIMIZE THE AMOUNT OF AREA DISTURBED, AS SOON AS PRACTICAL, ALL DISTURBED SOIL THAT WILL NOT BE COVERED BY IMPROVED COVER SUCH AS PARKWAY AREAS, EASEMENT AREAS, EMBANKMENT SLOPES, ETC. WILL BE STABILIZED PER APPLICABLE PROJECT SPECIFICATIONS.
- BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UPGRADE AREAS.
- BEST MANAGEMENT PRACTICES MAY BE REMOVED IN STAGES ONCE THE WATERSHED FOR THAT PORTION CONTROLLED BY THE BEST MANAGEMENT PRACTICES HAS BEEN STABILIZED.
- ALL TEMPORARY BMPs WILL BE REMOVED ONCE WATERSHED IS STABILIZED.
- MUD OR DIRT INADVERTENTLY TRACKED OFF-SITE AND ONTO EXISTING STREETS SHALL BE REMOVED IMMEDIATELY BY HAND OR MECHANICAL BROOM SWEEPING.
- TEMPORARY BMPs SHOWN ON THIS SHEET ARE FOR GRAPHICAL PURPOSES AND MAY NOT BE TO SCALE. BMPs SHALL BE LOCATED WITHIN THE PROJECT LIMITS.
- UPON COMPLETION OF THE PROJECT AND BEFORE FINAL PAYMENT IS ISSUED, CONTRACTOR SHALL REMOVE ALL SEDIMENT AND EROSION CONTROL MEASURES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION SEQUENCING AND REMOVAL OF TEMPORARY POLLUTION ABATEMENT MEASURES THAT CONFLICT WITH SITE IMPROVEMENTS SUCH AS LANDSCAPING AND FENCES SO AS TO PREVENT SEDIMENT FROM ESCAPING THE PROJECT SITE.

SUMMARY OF PERMANENT POLLUTION ABATEMENT MEASURES

- SILT FENCING AND ROCK BERMS, WHERE APPROPRIATE, WILL BE MAINTAINED UNTIL ALL UTILITY AND DRAINAGE IMPROVEMENTS ARE COMPLETED.
- ENERGY DISSIPATORS (TO HELP REDUCE EROSION) WILL BE PROVIDED AT POINTS OF CONCENTRATED DISCHARGE WHERE EXCESSIVE VELOCITIES MAY BE ENCOUNTERED.
- THIS PROJECT DOES NOT INCLUDE THE INSTALLATION OF ABOVE GROUND STORAGE TANKS (AST) WITH VOLUME(S) GREATER THAN OR EQUAL TO 500 GALLONS.
- DRAINAGE PATTERNS ARE ILLUSTRATED BY FLOW ARROWS. SLOPES VARY THROUGHOUT THE SITE; TYPICAL SLOPES IN THIS PROJECT WILL RANGE FROM 0.5% TO 2%.
- PERMANENT BMPs FOR THIS SITE INCLUDE ONE (1) PROPOSED BATCH DETENTION BASIN, AND ONE (1) APPROVED BATCH DETENTION BASIN WHICH HAVE BEEN DESIGNED TO REMOVE AN EQUIVALENT OF 80% OF THE INCREASED TOTAL SUSPENDED SOLIDS (TSS) FOR THE 13.84 ACRES IN ACCORDANCE WITH THE TCEQ'S TECHNICAL GUIDANCE MANUAL (TGM) RG-348 (2005).
- FOR DISTURBED AREAS WHERE INSUFFICIENT SOIL EXISTS TO ESTABLISH VEGETATION, CONTRACTOR SHALL PLACE A MINIMUM OF 6" TOPSOIL PRIOR TO RE-VEGETATION.
- TEMPORARY BMPs WILL BE MAINTAINED UNTIL THE SITE IMPROVEMENTS ARE COMPLETED AND THE SITE HAS BEEN STABILIZED, INCLUDING SUFFICIENT VEGETATION BEING ESTABLISHED IN ACCORDANCE WITH APPLICABLE PROJECT SPECIFICATIONS.
- DURING CONSTRUCTION, TO THE EXTENT PRACTICABLE, CONTRACTOR SHALL MINIMIZE THE AREA OF SOIL DISTURBANCE. AREAS OF DISTURBED SOIL SHALL BE RE-VEGETATED TO STABILIZE SOIL USING SOLID SOD IN A STAGGERED PATTERN. SEE DETAIL ON TEMPORARY POLLUTION ABATEMENT DETAIL SHEET AND REFER TO SECTION 1.3.11 IN TCEQ'S TECHNICAL GUIDANCE MANUAL (TGM) RG-348 (2005). SOD SHOULD BE USED IN CHANNELS AND ON SLOPES > 15%. THE CONTRACTOR MAY SUBSTITUTE THE USE OF SOD WITH THE PLACEMENT OF TOPSOIL AND A FRIABLE SEED BED WITH A PROTECTIVE MATTING OR HYDRAULIC MULCH ALONG WITH WATERING UNTIL VEGETATION IS ESTABLISHED. APPLICATIONS AND PRODUCTS SHALL BE THOSE APPROVED BY TxDOT AS OF FEBRUARY 2001 AND IN COMPLIANCE WITH THE TGM RG-348 (2005). SEED MIXTURE AND/OR GRASS TYPE TO BE DETERMINED BY OWNER AND SHOULD BE IN COMPLIANCE WITH TGM RG-348 (2005) GUIDELINES. IRRIGATION MAY BE REQUIRED IN ORDER TO ESTABLISH SUFFICIENT VEGETATION.
- ALL PERMANENT BMPs MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.

TREATMENT SUMMARY

Treatment Summary by Watershed

Watershed	Total Watershed Area (ac.)	Previously Approved Impervious Cover (Ac)	Proposed Impervious Cover (ac.)	Total Impervious Cover (ac)	PBMP*	Required TSS Removal Annually (lbs)	TSS Removed Annually (lbs)
A	5.69		3.96	3.96	Proposed Batch Detention Basin	3,554	3,790
UNCAPTURED C	0.19		0.14	0.14	Overtreatment Proposed Batch Detention Basin	126	
ROAD	3.98	3.58	0.00	3.58	Approved Batch Detention Basin	3,213	8,635
OFFSITE	30.62	0.77	0.00	0.00	Approved Batch Detention Basin	0	0
UG-B	12.09	0.77	0.00	0.77	Approved Batch Detention Basin	691	
B	7.09		5.21	5.21	Approved Batch Detention Basin	4,676	
D	9.69		0.00	0.00	Approved Batch Detention Basin	0	
UNCAPTURED AREA	0.08	0.06	0.00	0.06	Overtreatment Approved Batch Detention Basin	54	N/A
TOTAL	63.55	4.41	9.31	13.72		12,315	12,425

* approved Batch Detention Basin from Veramendi Word Pkwy Phase 2 (EAPP ID # 13001429)

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE POLLUTION ABATEMENT SIZING AND TREATMENT REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S EDWARDS AQUIFER TECHNICAL GUIDANCE MANUAL.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF POLLUTION ABATEMENT ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

EXHIBIT 3

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DATE: 2022 FEB 28 AM 11

TCEQ REG 1

NO. REVISION

2/21/2022

THOMAS MATTHEW CARTER
79272
Professional Engineer

PAPE-DAWSON ENGINEERS

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VERAMENDI APARTMENTS
NEW BRAUNFELS, TEXAS

PERMANENT WATER POLLUTION ABATEMENT PLAN
WATER POLLUTION ABATEMENT PLAN MODIFICATION

PLAT NO. _____

JOB NO. 30001-28

DATE JANUARY 28, 2022

DESIGNER JV/JR

CHECKED DLS DRAWN JS

SHEET C7.00

Date: Feb 23, 2022, 9:41am User ID: rsk@pape-dawson.com
File: P:\30001\28\Design\Civil\Plan-3000128.dwg

SAN ANTONIO REGIONAL OFFICE
14250 JUDSON ROAD
SAN ANTONIO, TEXAS 78233-4480
PHONE (210) 490-3096
FAX (210) 545-4329

NOTES TO CONTRACTOR
(EACH PHASE OF BASIN CONSTRUCTION)

- CONTRACTOR IS ADVISED THAT TCEQ DOES NOT ALLOW CHANGES TO PERMANENT POLLUTION ABATEMENT MEASURES WITHOUT THEIR PRIOR APPROVAL.
- CONTRACTOR SHALL NOTIFY CERTIFYING ENGINEER WHEN BASIN CONSTRUCTION HAS PROCEEDED TO THE FOLLOWING MILESTONES:
 - REINFORCING STEEL FOR BASIN OVERFLOW WALL, CONCRETE HAS NOT BEEN PLACED AND DRAIN PIPE IS IN PLACE. CONTRACTOR SHALL PROVIDE ENGINEER WITH SURVEY DATA WHICH DEMONSTRATES THE RISER PIPE HAS BEEN SET AT PROPER ELEVATION AND GRADE.
 - BASIN HAS BEEN COMPLETELY FINISHED INCLUDING SOD OR SEED PLACEMENT ON SIDE SLOPES (WHERE APPLICABLE).
- WORK SHALL NOT CONTINUE ON THE BASIN UNTIL THE ENGINEER HAS HAD AN OPPORTUNITY TO OBSERVE THE STATUS OF CONSTRUCTION AT EACH STAGE. CONTRACTOR SHALL PROVIDE ENGINEER A MINIMUM OF 24 HOURS ADVANCE NOTICE PRIOR TO TIME THE BASIN WILL BE AT THE REQUIRED STAGE.
- UPON SUBSTANTIAL COMPLETION, OR AS REQUESTED BY ENGINEER, CONTRACTOR TO PROVIDE CERTIFYING ENGINEER WITH FIELD SHOTS VERIFYING ELEVATIONS OF THE FOLLOWING:
 - TOP OF BANK/WALL AT EACH CORNER OF BASIN
 - TOE OF SLOPE AT EACH CORNER OF BASIN (INSIDE BASIN TOE)
 - SPLASH PAD/INLET PIPES
 - OVERFLOW WEIRS
- BEFORE FINAL ACCEPTANCE OF CONSTRUCTION BY THE OWNER, THE CONTRACTOR WILL REMOVE ALL TRASH, DEBRIS, AND ACCUMULATED SILT FROM THE BASINS AND REESTABLISH THEM TO THE PROPER OPERATING CONDITION.

SEQUENCE OF OPERATION

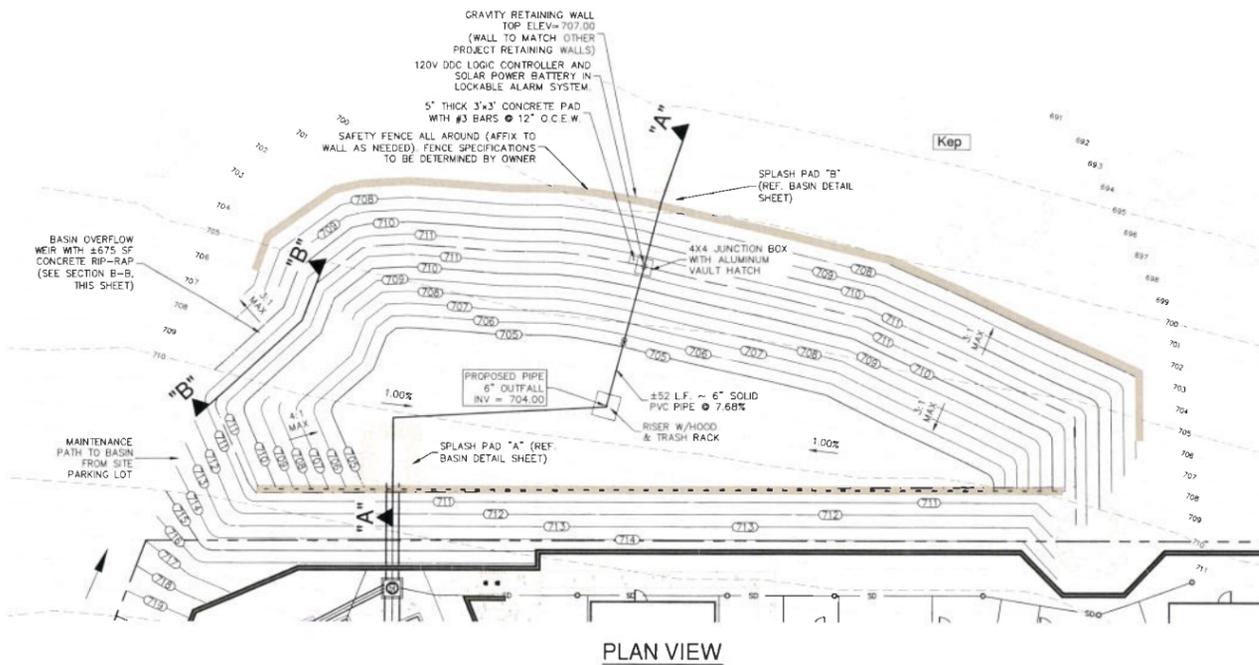
- UPON ACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO START DETENTION TIMER #1.
- DETENTION TIMER #1 TO BE MANUALLY SET TO 12 HOURS AND TO BE USER ADJUSTABLE.
- WHEN DETENTION TIMER #1 HAS ELAPSED, A 6" BUTTERFLY VALVE IS TO OPEN AND RELEASE DETAINED WATER BASIN.
- UPON DEACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO START DETENTION TIMER #2.
- DETENTION TIMER #2 TO BE MANUALLY SET TO 7 HOURS AND TO BE USER ADJUSTABLE.
- WHEN DETENTION TIMER #2 HAS ELAPSED, THE 6" BUTTERFLY VALVE IS TO CLOSE.
- VALVE TO BE ACTIVATED PERIODICALLY TO SHOW ACTIVE REGARDLESS OF FLOAT SWITCH OPERATION.

TRENCH EXCAVATION SAFETY PROTECTION:

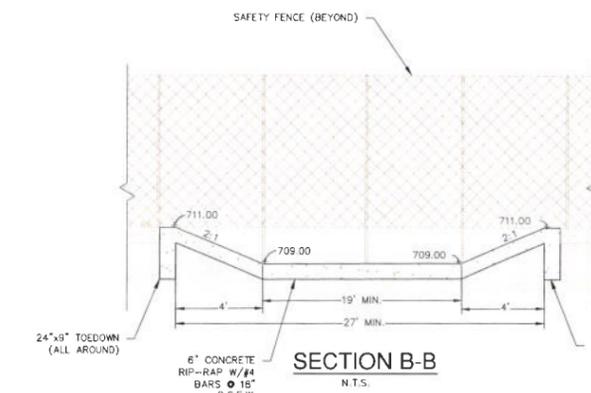
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL, DUCTBANKS, LANDSCAPE, IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER 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 THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.



PLAN VIEW
SCALE: 1"=20'



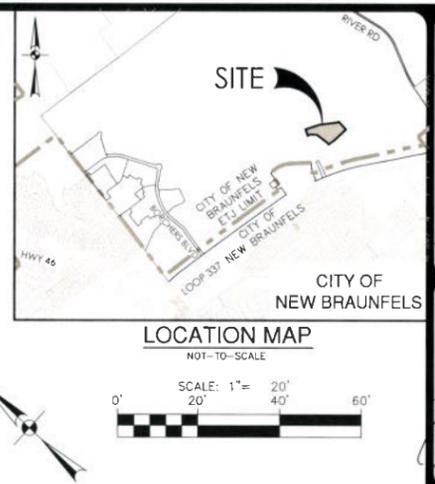
SECTION B-B
N.T.S.

BASIN DESIGN DATA	
BASIN WATERSHED AREA	= 2,798,294 SF (64.24 AC.)
RAINFALL DEPTH	= 1.25 IN
REQUIRED CAPTURE VOLUME	= 49,495 CF
BASIN STORM WATER DEPTH	= 4.0 FT
BASIN CAPTURE VOLUME	= 162,848 CF

OVERFLOW WEIR CALCULATIONS	
Q_{max}	= $(C_w)(L)(h)^{3/2}$
Q_{max}	= 49.42 cfs
C	= 2.60
L	= 19 ft
49.42	= $(2.60)(19)(h)^{3/2}$
h	= 1.00

LEGEND

- PROJECT LIMITS
- EXISTING GRADE
- PROPOSED GRADE
- WATERSHED BOUNDARY
- EXISTING FEMA 100-YEAR FLOODPLAIN
- ROCK GABION
- PROPOSED STORM DRAIN
- BATCH BASIN WATER QUALITY WEL
- FLOW ARROW (PROPOSED)
- FLOW ARROW (EXISTING)
- PERSON FORMATION



NOTES

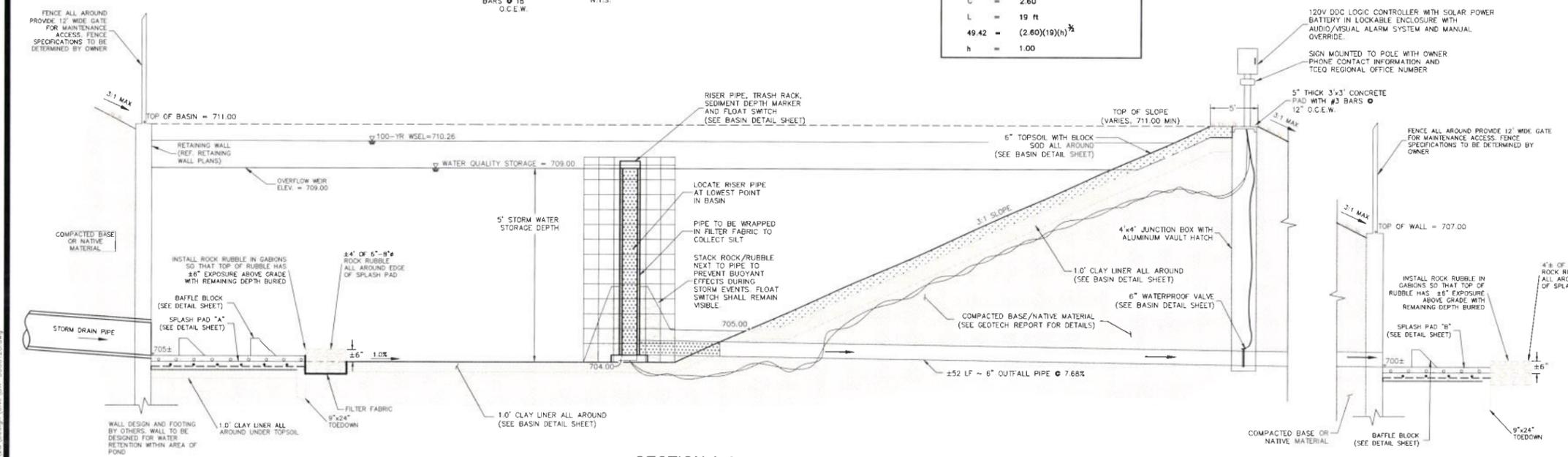
- PROJECT RETAINING WALL DESIGNER (TEXAS LICENSED STRUCTURAL ENGINEER) TO PROVIDE A SIGNED AND SEALED SET OF STRUCTURAL RETAINING WALL PLANS, DETAILS AND SPECIFICATION, INSPECT RETAINING WALL CONSTRUCTION DURING BASIN CONSTRUCTION AND PROVIDE RETAINING WALL CONSTRUCTION CERTIFICATION UPON COMPLETION OF THE BASIN.
- UPON COMPLETION OF CONSTRUCTION, AND IN ACCORDANCE WITH TCEQ REGULATIONS, ALL PERMANENT BMP'S MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.
- ALL AREAS DISTURBED AS PART OF CONSTRUCTION OF BASIN SHALL BE REVEGETATED PRIOR TO COMPLETION.
- BASIN HAS BEEN DESIGNED USING TSS REMOVAL AND BMP SIZING CALCULATIONS AS PER THE TCEQ TGM R0-348 (2005).
- BASIN PLAN DEPICTS MINIMUM INTERIOR DIMENSIONS (LENGTH, WIDTH & HEIGHT FOR TCEQ REVIEW & APPROVAL. ACTUAL STRUCTURAL PLANS FOR CONSTRUCTION TO BE DESIGNED BY STRUCTURAL ENGINEER AT A LATER DATE.
- BASIN DRAWDOWN IS CONTROLLED BY THE 6" PVC PIPE. BASIN DRAWDOWN WILL OCCUR IN APPROXIMATELY 5 HOURS.
- CONTRACTOR TO SET THE VALVE POSITION TO FULLY OPEN.
- CONTRACTOR SHALL INSTALL AND ESTABLISH VEGETATION IN BASIN PER BASIN DETAIL SHEET PRIOR TO SITE CLOSEOUT.
- UPON COMPLETION OF CONSTRUCTION, AND IN ACCORDANCE WITH TCEQ REGULATIONS, ALL PERMANENT BMP'S MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.
- ALL AREAS DISTURBED AS PART OF CONSTRUCTION OF BASIN SHALL BE REVEGETATED PRIOR TO COMPLETION.

SUMMARY OF PERMANENT POLLUTION ABATEMENT MEASURES

- SILT FENCING AND ROCK BERMS, WHERE APPROPRIATE, WILL BE MAINTAINED UNTIL ALL UTILITY AND DRAINAGE IMPROVEMENTS ARE COMPLETED.
- ENERGY DISSIPATORS (TO HELP REDUCE EROSION) WILL BE PROVIDED AT POINTS OF CONCENTRATED DISCHARGE WHERE EXCESSIVE VELOCITIES MAY BE ENCOUNTERED.
- THIS PROJECT DOES NOT INCLUDE THE INSTALLATION OF ABOVE GROUND STORAGE TANKS (AST) WITH VOLUME(S) GREATER THAN OR EQUAL TO 500 GALLONS.
- DRAINAGE PATTERNS ARE ILLUSTRATED BY FLOW ARROWS. SLOPES VARY THROUGHOUT THE SITE. TYPICAL SLOPES IN THIS PROJECT WILL RANGE FROM 0.5% TO 2%:1V.
- PERMANENT BMP'S FOR THIS SITE INCLUDE ONE (1) PROPOSED BATCH DETENTION BASIN, AND ONE (1) APPROVED BATCH DETENTION BASIN WHICH HAVE BEEN DESIGNED TO REMOVE AN EQUIVALENT OF 80% OF THE INCREASED TOTAL SUSPENDED SOLIDS (TSS) FOR THE 13.84 AC. IN ACCORDANCE WITH THE TCEQ'S TECHNICAL GUIDANCE MANUAL (TGM) R0-348 (2005).
- FOR DISTURBED AREAS WHERE INSUFFICIENT SOIL EXISTS TO ESTABLISH VEGETATION, CONTRACTOR SHALL PLACE A MINIMUM OF 6" TOPSOIL PRIOR TO RE-VEGETATION.
- TEMPORARY BMP'S WILL BE MAINTAINED UNTIL THE SITE IMPROVEMENTS ARE COMPLETED AND THE SITE HAS BEEN STABILIZED, INCLUDING SUFFICIENT VEGETATION BEING ESTABLISHED IN ACCORDANCE WITH APPLICABLE PROJECT SPECIFICATIONS.
- DURING CONSTRUCTION, TO THE EXTENT PRACTICABLE, CONTRACTOR SHALL MINIMIZE THE AREA OF SOIL DISTURBANCE. AREAS OF DISTURBED SOIL SHALL BE RE-VEGETATED TO STABILIZE SOIL USING SOLID SOD IN A STAGGERED PATTERN. SEE DETAIL ON TEMPORARY POLLUTION ABATEMENT DETAIL SHEET AND REFER TO SECTION 1.3.11 IN TCEQ'S TECHNICAL GUIDANCE MANUAL (TGM) R0-348 (2005). SOD SHOULD BE USED IN CHANNELS AND ON SLOPES > 15%. THE CONTRACTOR MAY SUBSTITUTE THE USE OF SOD WITH THE PLACEMENT OF TOPSOIL AND A FRABLE SEED BED WITH A PROTECTIVE MATTING OR HYDRAULIC MULCH ALONG WITH WATERING UNTIL VEGETATION IS ESTABLISHED. APPLICATIONS AND PRODUCTS SHALL BE THOSE APPROVED BY TXDOT AS OF FEBRUARY 2001 AND IN COMPLIANCE WITH THE TGM R0-348 (2005). SEED MIXTURE AND/OR GRASS TYPE TO BE DETERMINED BY OWNER AND SHOULD BE IN COMPLIANCE WITH TGM R0-348 (2005) GUIDELINES. IRRIGATION MAY BE REQUIRED IN ORDER TO ESTABLISH SUFFICIENT VEGETATION.
- ALL PERMANENT BMP'S MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.

GENERAL NOTES

- DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.
- LOCATIONS OF CONSTRUCTION ENTRANCE/EXITS, CONCRETE WASHOUT PITS, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARDS TO BE DETERMINED IN THE FIELD.
- STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED EFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS EXHIBIT AND SIGNED AND DATED BY THE RESPONSIBLE PARTY.
- RESTRICT ENTRY/EXIT TO THE PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADEQUATE FENCING, IF NECESSARY.
- ALL STORM WATER POLLUTION PREVENTION CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.
- CONTRACTOR, TO THE EXTENT PRACTICAL, SHALL MINIMIZE THE AMOUNT OF AREA DISTURBED. AS SOON AS PRACTICAL, ALL DISTURBED SOIL THAT WILL NOT BE COVERED BY IMPERVIOUS COVER SUCH AS PARKWAY AREAS, EMBANKMENT SLOPES, ETC. WILL BE STABILIZED PER APPLICABLE PROJECT SPECIFICATIONS.
- BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UPGRADENT AREAS.
- BEST MANAGEMENT PRACTICES MAY BE REMOVED IN STAGES ONCE THE WATERSHED FOR THAT PORTION CONTROLLED BY THE BEST MANAGEMENT PRACTICES HAS BEEN STABILIZED.
- ALL TEMPORARY BMP'S WILL BE REMOVED ONCE WATERSHED IS STABILIZED.
- MUD OR DIRT INADVERTENTLY TRACKED OFF-SITE AND ONTO EXISTING STREETS SHALL BE REMOVED IMMEDIATELY BY HAND OR MECHANICAL BROOM SWEEPING.
- TEMPORARY BMP'S SHOWN ON THIS SHEET ARE FOR GRAPHICAL PURPOSES AND MAY NOT BE TO SCALE. BMP'S SHALL BE LOCATED WITHIN THE PROJECT LIMITS.
- UPON COMPLETION OF THE PROJECT AND BEFORE FINAL PAYMENT IS ISSUED, CONTRACTOR SHALL REMOVE ALL SEDIMENT AND EROSION CONTROL MEASURES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION SEQUENCING AND REMOVAL OF TEMPORARY POLLUTION ABATEMENT MEASURES THAT CONFLICT WITH SITE IMPROVEMENTS SUCH AS LANDSCAPING AND FENCES SO AS TO PREVENT SEDIMENT FROM ESCAPING THE PROJECT SITE.



SECTION A-A
NOT-TO-SCALE

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE POLLUTION ABATEMENT SIZING AND TREATMENT REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S EDWARDS AQUIFER TECHNICAL GUIDANCE MANUAL.

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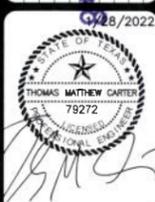
EXHIBIT 4A

PERMIT SET

RECEIVED
 2022 FEB 28 AM 11:28
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 NO. REVISION
 DATE
 1/28/2022
 THOMAS MATTHEW CARTER
 79272
 REGISTERED PROFESSIONAL ENGINEER
 CIVIL ENGINEERING
 STATE OF TEXAS
PAPE-DAWSON ENGINEERS
 NEW BRAUNFELS | SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 1572 ANDREWS BLVD, STE 102 | NEW BRAUNFELS, TX 78002-2023
 TEXAS ENGINEERING FIRM #47167
VERAMENDI APARTMENTS
 NEW BRAUNFELS, TEXAS
 BASIN PLAN
 WATER POLLUTION ABATEMENT PLAN MODIFICATION
 FLAT NO. _____
 JOB NO. 30001-28
 DATE NOVEMBER 2021
 DESIGNER JV/TR
 CHECKED DLS DRAWN JS
 SHEET C7.10

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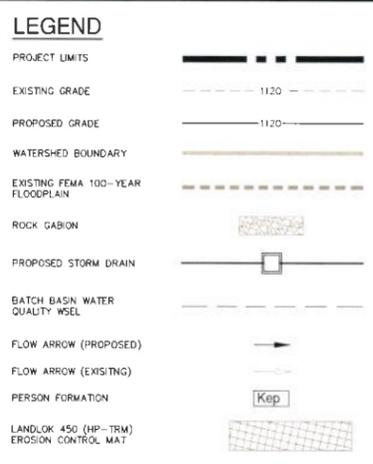
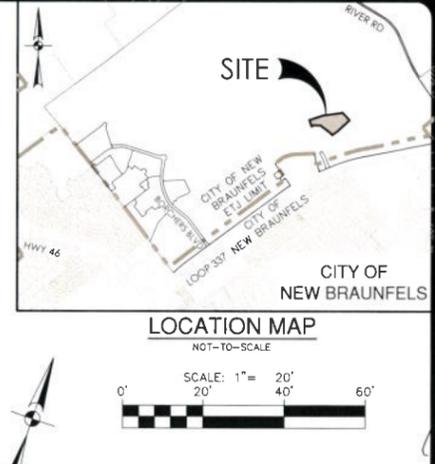
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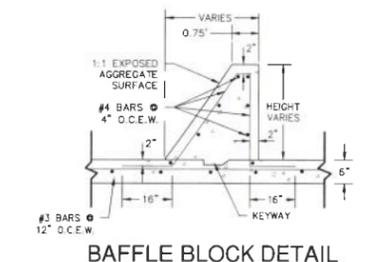
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VERAMENDI APARTMENTS
NEW BRAUNFELS, TEXAS
BASIN MODIFICATION PLAN
WATER POLLUTION ABATEMENT PLAN MODIFICATION

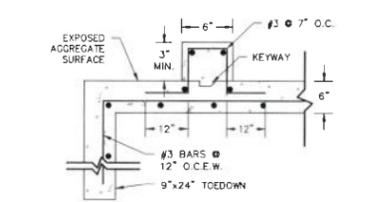
PLAT NO. -
JOB NO. 30001-28
DATE JANUARY 28, 2022
DESIGNER MC
CHECKED JP DRAWN MC
SHEET C7.11



M.A.S. NOTE:
STAGING AREA REQUIREMENT (800 SQ FT) IS SATISFIED BY UTILIZING THE PRIVATE AREA ADJACENT TO THE BASIN AS DESIGNATED IN THE PLAN VIEW ABOVE.



BAFFLE BLOCK DETAIL SECTION NOT-TO-SCALE



TYPICAL END SILL DETAIL SECTION NOT-TO-SCALE

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL, DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER 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 THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

SUMMARY OF PERMANENT POLLUTION ABATEMENT MEASURES

1. SILT FENCING AND ROCK BERMS, WHERE APPROPRIATE, WILL BE MAINTAINED UNTIL ALL UTILITY AND DRAINAGE IMPROVEMENTS ARE COMPLETED.
2. ENERGY DISSIPATERS (TO HELP REDUCE EROSION) WILL BE PROVIDED AT POINTS OF CONCENTRATED DISCHARGE WHERE EXCESSIVE VELOCITIES MAY BE ENCOUNTERED.
3. THIS PROJECT DOES NOT INCLUDE THE INSTALLATION OF ABOVE GROUND STORAGE TANKS (AST) WITH VOLUME(S) GREATER THAN OR EQUAL TO 500 GALLONS.
4. DRAINAGE PATTERNS ARE ILLUSTRATED BY FLOW ARROWS. SLOPES VARY THROUGHOUT THE SITE. TYPICAL SLOPES IN THIS PROJECT WILL RANGE FROM 0.5% TO 2%:1V.
5. PERMANENT BMP'S FOR THIS SITE INCLUDE ONE (1) PROPOSED BATCH DETENTION BASIN, AND ONE (1) APPROVED BATCH DETENTION BASIN WHICH HAVE BEEN DESIGNED TO REMOVE AN EQUIVALENT OF 80% OF THE INCREASED TOTAL SUSPENDED SOLIDS (TSS) FOR THE 13.84 ACRES IN ACCORDANCE WITH THE TCEQ'S TECHNICAL GUIDANCE MANUAL (TGM) RG-348 (2005).
6. FOR DISTURBED AREAS WHERE INSUFFICIENT SOIL EXISTS TO ESTABLISH VEGETATION, CONTRACTOR SHALL PLACE A MINIMUM OF 6" TOPSOIL PRIOR TO RE-VEGETATION.
7. TEMPORARY BMP'S WILL BE MAINTAINED UNTIL THE SITE IMPROVEMENTS ARE COMPLETED AND THE SITE HAS BEEN STABILIZED, INCLUDING SUFFICIENT VEGETATION BEING ESTABLISHED IN ACCORDANCE WITH APPLICABLE PROJECT SPECIFICATIONS.
8. DURING CONSTRUCTION, TO THE EXTENT PRACTICABLE, CONTRACTOR SHALL MINIMIZE THE AREA OF SOIL DISTURBANCE. AREAS OF DISTURBED SOIL SHALL BE RE-VEGETATED TO STABILIZE SOIL USING SOLID SOD IN A STAGGERED PATTERN. SEE DETAIL ON TEMPORARY POLLUTION ABATEMENT DETAIL SHEET AND REFER TO SECTION 1.3.11 IN TCEQ'S TECHNICAL GUIDANCE MANUAL (TGM) RG-348 (2005). SOD SHOULD BE USED IN CHANNELS AND ON SLOPES > 15%. THE CONTRACTOR MAY SUBSTITUTE THE USE OF SOD WITH THE PLACEMENT OF TOPSOIL AND A FERTILIZER SEED BED WITH A PROTECTIVE MATTING OR HYDRAULIC MULCH ALONG WITH WATERING UNTIL VEGETATION IS ESTABLISHED. APPLICATIONS AND PRODUCTS SHALL BE THOSE APPROVED BY TxDOT AS OF FEBRUARY 2001 AND IN COMPLIANCE WITH THE TGM RG-348 (2005). SEED MIXTURE AND/OR GRASS TYPE TO BE DETERMINED BY OWNER AND SHOULD BE IN COMPLIANCE WITH TGM RG-348 (2005) GUIDELINES. IRRIGATION MAY BE REQUIRED IN ORDER TO ESTABLISH SUFFICIENT VEGETATION.
9. ALL PERMANENT BMP'S MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.

GENERAL NOTES

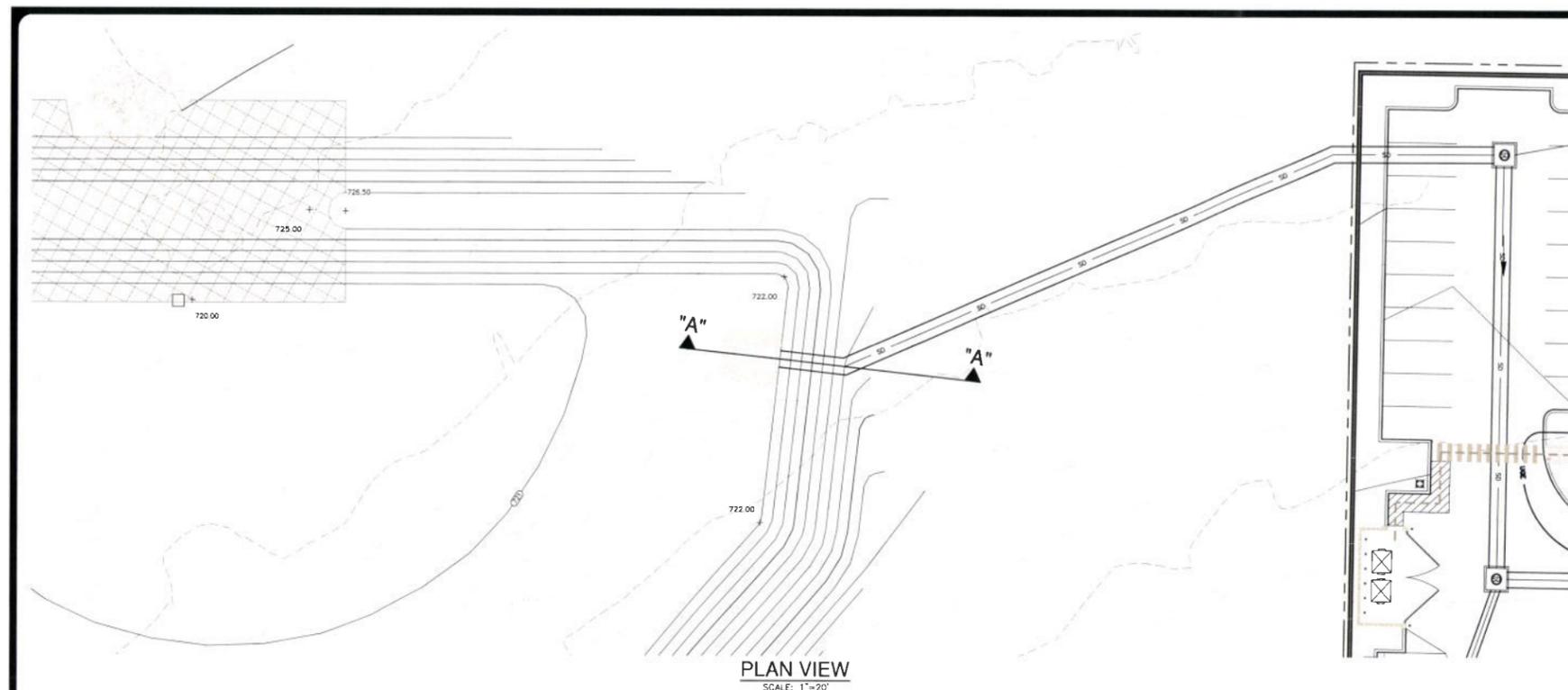
1. DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.
2. LOCATIONS OF CONSTRUCTION ENTRANCE/EXITS, CONCRETE WASHOUT PITS, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARDS TO BE DETERMINED IN THE FIELD.
3. STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED POLLUTION ABATEMENT. MODIFICATIONS ARE TO BE NOTED ON THIS EXHIBIT AND SIGNED AND DATED BY THE RESPONSIBLE PARTY.
4. RESTRICT ENTRY/EXIT TO THE PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADEQUATE FENCING, IF NECESSARY.
5. ALL STORM WATER POLLUTION PREVENTION CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.
6. CONTRACTOR, TO THE EXTENT PRACTICAL, SHALL MINIMIZE THE AMOUNT OF AREA DISTURBED, AS SOON AS PRACTICAL, ALL DISTURBED SOIL THAT WILL NOT BE COVERED BY IMPERVIOUS COVER SUCH AS PARKWAY AREAS, EASEMENT AREAS, EMBANKMENT SLOPES, ETC. WILL BE STABILIZED PER APPLICABLE PROJECT SPECIFICATIONS.
7. BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO CONDUCE WITH THE DISTURBANCE OF UPGRADIENT AREAS.
8. BEST MANAGEMENT PRACTICES MAY BE REMOVED IN STAGES ONCE THE WATERSHED FOR THAT PORTION CONTROLLED BY THE BEST MANAGEMENT PRACTICES HAS BEEN STABILIZED.
9. ALL TEMPORARY BMP'S WILL BE REMOVED ONCE WATERSHED IS STABILIZED.
10. MUD OR DIRT INADVERTENTLY TRACKED OFF-SITE AND ONTO EXISTING STREETS SHALL BE REMOVED IMMEDIATELY BY HAND OR MECHANICAL BROOM SWEEPING.
11. TEMPORARY BMP'S SHOWN ON THIS SHEET ARE FOR GRAPHICAL PURPOSES AND MAY NOT BE TO SCALE. BMP'S SHALL BE LOCATED WITHIN THE PROJECT LIMITS.
12. UPON COMPLETION OF THE PROJECT AND BEFORE FINAL PAYMENT IS ISSUED, CONTRACTOR SHALL REMOVE ALL SEDIMENT AND EROSION CONTROL MEASURES.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION SEQUENCING AND REMOVAL OF TEMPORARY POLLUTION ABATEMENT MEASURES THAT CONFLICT WITH SITE IMPROVEMENTS SUCH AS LANDSCAPING AND FENCES SO AS TO PREVENT SEDIMENT FROM ESCAPING THE PROJECT SITE.

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE POLLUTION ABATEMENT SIZING AND TREATMENT REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S EDWARDS AQUIFER TECHNICAL GUIDANCE MANUAL.

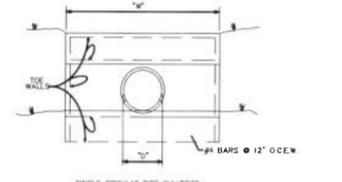
THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF POLLUTION ABATEMENT ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

EXHIBIT 4B

PERMIT SET

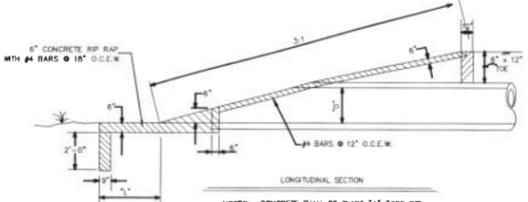


PLAN VIEW SCALE: 1"=20'

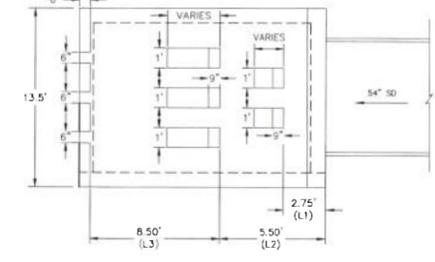


15" INCH DIA. OF PIPE	18" INCH DIA. OF PIPE	24" INCH DIA. OF PIPE	30" INCH DIA. OF PIPE	36" INCH DIA. OF PIPE	42" INCH DIA. OF PIPE	48" INCH DIA. OF PIPE	54" INCH DIA. OF PIPE
15"	18"	24"	30"	36"	42"	48"	54"
15"	18"	24"	30"	36"	42"	48"	54"
15"	18"	24"	30"	36"	42"	48"	54"
15"	18"	24"	30"	36"	42"	48"	54"
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15"	18"	24"	30"	36"	42"	48"	54"
15"	18"	24"	30"	36"	42"	48"	54"
15"	18"	24"	30"	36"	42"	48"	54"
15"	18"	24"	30"	36"	42"	48"	54"

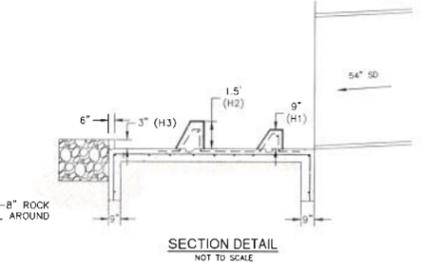
- NOTES:
- 1) FOR RIPRAP QUANTITIES AND SLOPES, SEE CULVERT LAYOUT SHEET.
 - 2) ALL METAL PIPES (CONCRETE ARCH) SHALL HAVE 2" MIN. 4" MIN. TOPS OF ANCHOR BOLTS SHALL BE 4" MIN. FROM THE RIPRAP HEADWALL. THIS WORK WILL BE SUBSIDIARY TO THE RIPRAP HEADWALL.
 - 3) FOR CONCRETE ARCH PIPES, THE ABOVE DIMENSIONS WILL HAVE TO BE ADJUSTED FOR THE PIPE WALL THICKNESS.
 - 4) IF THE SIZES OF THE HEAD WALL IS ADJACENT TO A RIPRAP SLOPE AND THE RIPRAP SLOPE IS TO BE MAINTAINED, THE RIPRAP SLOPE SHALL BE ELIMINATED IF APPROVED BY THE ENGINEER.



CONCRETE RIP-RAP END SECTION (RH-15 HEADWALL) NOT TO SCALE



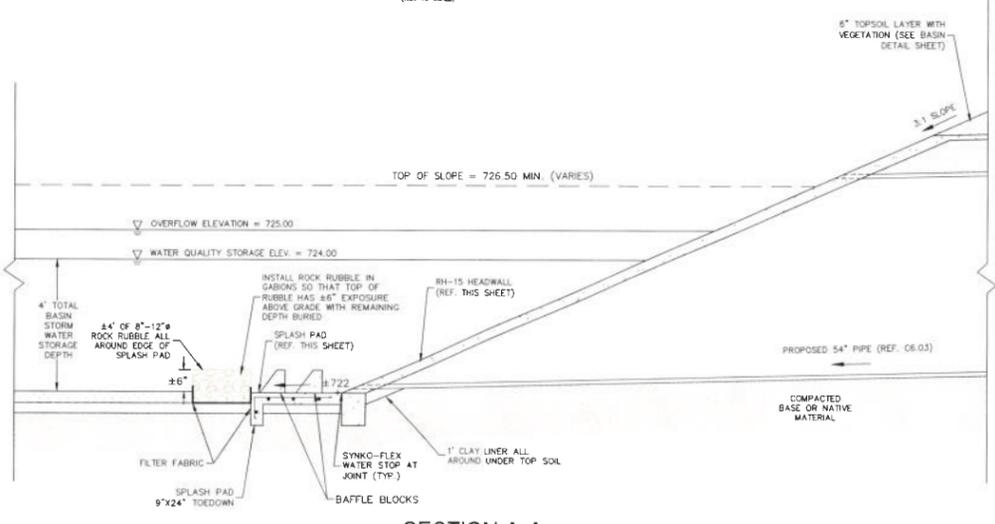
PLAN DETAIL NOT TO SCALE



SECTION DETAIL NOT TO SCALE



STORM DRAIN INLET SPLASH PAD DETAIL NOT TO SCALE



SECTION A-A NOT-TO-SCALE

Drawn: Jan 28, 2022, 6:16pm User: ID: dchase
File: P:\3000\01_28_Design\Civil\BA-3000128.dwg

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell. Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348. Characters shown in red are data entry fields.

Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where: L_M TOTAL PROJECT = Required TSS removal resulting from the proposed development = 80% of increased load
 A_N = Net increase in impervious area for the project
 P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project
County = **Comal**
Total project area included in plan = **11.53** acres
Predevelopment impervious area within the limits of the plan = **7.12** acres
Total post-development impervious area within the limits of the plan = **0.62** acres
Total post-development impervious cover fraction = **33** inches
 P = **33** inches

L_M TOTAL PROJECT = **6391** lbs.

* The values entered in these fields should be for the total project area.

Number of drainage basins / outfalls areas leaving the plan area = **1**

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = **Approved Basin**

Total drainage basin/outfall area = **64.24** acres
Predevelopment impervious area within drainage basin/outfall area = **7.12** acres
Post-development impervious area within drainage basin/outfall area = **0.11** acres
Post-development impervious fraction within drainage basin/outfall area = **0.11** acres
 L_M THIS BASIN = **6391** lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Extended Detention**
Removal efficiency = **91** percent

- Aquaglogic Cartridge Filter
- Bioretention
- Contech StormFilter
- Constructed Wetland
- Extended Detention
- Grassy Swale
- Retention / Irrigation
- Sand Filter
- Stormceptor
- Vegetated Filter Strips
- Vortechs
- Wet Basin
- Wet Vault



4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: $L_R = (\text{BMP efficiency}) \times P \times (A_i \times 34.6 + A_p \times 0.54)$

where: A_C = Total On-Site drainage area in the BMP catchment area
 A_i = Impervious area proposed in the BMP catchment area
 A_p = Pervious area remaining in the BMP catchment area
 L_R = TSS Load removed from this catchment area by the proposed BMP

A_C = **33.62** acres
 A_i = **7.12** acres
 A_p = **26.50** acres
 L_R = **7828** lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired L_M THIS BASIN = **6391** lbs.

F = **0.82**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth = **1.16** inches
Post Development Runoff Coefficient = **0.21**
On-site Water Quality Volume = **29512** cubic feet

Calculations from RG-348 Pages 3-36 to 3-37

Off-site area draining to BMP = **30.62** acres
Off-site Impervious cover draining to BMP = **0.00** acres
Impervious fraction of off-site area = **0.00**
Off-site Runoff Coefficient = **0.02**
Off-site Water Quality Volume = **2579** cubic feet

Storage for Sediment = **6418** cubic feet

Total Capture Volume (required water quality volume(s) x 1.20) = **38509** cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP. The values for BMP Types not selected in cell C45 will show NA.

7. Retention/Irrigation System Designed as Required in RG-348 Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = **NA** cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate = **0.1** in/hr Enter determined permeability rate or assumed value of 0.1
Irrigation area = **NA** square feet
Irrigation area = **NA** acres

8. Extended Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = **38509** cubic feet

9. Filter area for Sand Filters Designed as Required in RG-348 Pages 3-58 to 3-63

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin = **NA** cubic feet

Minimum filter basin area = **NA** square feet

Maximum sedimentation basin area = **NA** square feet For minimum water depth of 2 feet
Minimum sedimentation basin area = **NA** square feet For maximum water depth of 8 feet

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins =	NA	cubic feet	
Minimum filter basin area =	NA	square feet	
Maximum sedimentation basin area =	NA	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	NA	square feet	For maximum water depth of 8 feet

10. Bioretention System Designed as Required in RG-348 Pages 3-63 to 3-65

Required Water Quality Volume for Bioretention Basin =	NA	cubic feet
--	----	------------

11. Wet Basins Designed as Required in RG-348 Pages 3-66 to 3-71

Required capacity of Permanent Pool =	NA	cubic feet	Permanent Pool Capacity is 1.20 times the WQV Total Capacity should be the Permanent Pool Capacity plus a second WQV.
Required capacity at WQV Elevation =	NA	cubic feet	

12. Constructed Wetlands Designed as Required in RG-348 Pages 3-71 to 3-73

Required Water Quality Volume for Constructed Wetlands =	NA	cubic feet
--	----	------------

13. AquaLogic™ Cartridge System Designed as Required in RG-348 Pages 3-74 to 3-78

** 2005 Technical Guidance Manual (RG-348) does not exempt the required 20% increase with maintenance contract with AquaLogic™.

Required Sedimentation chamber capacity =	NA	cubic feet
Filter canisters (FCs) to treat WQV =	NA	cartridges
Filter basin area (RIA) =	NA	square feet

14. Stormwater Management StormFilter® by CONTECH

Required Water Quality Volume for Contech StormFilter System =	NA	cubic feet
--	----	------------

THE SIZING REQUIREMENTS FOR THE FOLLOWING BMPs / LOAD REMOVALS ARE BASED UPON FLOW RATES - NOT CALCULATED WATER QUALITY VOLUMES

15. Grassy Swales Designed as Required in RG-348 Pages 3-51 to 3-54

Design parameters for the swale:

Drainage Area to be Treated by the Swale = A =	acres
Impervious Cover in Drainage Area =	acres
Rainfall intensity = i =	1.1 in/hr
Swale Slope =	ft/ft
Side Slope (z) =	ft
Design Water Depth = y =	ft
Weighted Runoff Coefficient = C =	#DIV/0!
A_{CS} = cross-sectional area of flow in Swale =	#DIV/0! sf
P_w = Wetted Perimeter =	#DIV/0! feet
R_h = hydraulic radius of flow cross-section = A_{CS}/P_w =	#DIV/0! feet
n = Manning's roughness coefficient =	0.2

15A. Using the Method Described in the RG-348

Manning's Equation: $Q = \frac{1.49}{n} A_{CS} R_h^{2/3} S^{0.5}$

$b = \frac{0.134 \times Q}{y^{0.57} S^{0.5}}$ - zy = #DIV/0! feet

$Q = CIA$ = #DIV/0! cfs

To calculate the flow velocity in the swale:

V (Velocity of Flow in the swale) = Q/A_{CS} = #DIV/0! ft/sec

To calculate the resulting swale length:

L = Minimum Swale Length = V (ft/sec) * 300 (sec) = #DIV/0! feet

If any of the resulting values do not meet the design requirement set forth in RG-348, the design parameters must be modified and the solver rerun.

15B. Alternative Method using Excel Solver

Design Q = CIA =	#DIV/0!	cfs	
Manning's Equation Q =	0.00	cfs	Error 1 = #DIV/0!
Swale Width =	6.00	ft	

Instructions are provided to the right (green comments).

Flow Velocity	#DIV/0!	ft/s
Minimum Length =	#DIV/0!	ft

Instructions are provided to the right (blue comments).

Design Width =	6	ft	
Design Discharge =	0.00	cfs	Error 2 = #DIV/0!
Design Depth =	0.33	ft	
Flow Velocity =	0.00	cfs	
Minimum Length =	0.00	ft	

If any of the resulting values do not meet the design requirement set forth in RG-348, the design parameters may be modified and the solver rerun. If any of the resulting values still do not meet the design requirement set forth in RG-348, widening the swale bottom value may not be possible.

16. Vegetated Filter Strips Designed as Required in RG-348 Pages 3-55 to 3-57

There are no calculations required for determining the load or size of vegetative filter strips. The 80% removal is provided when the contributing drainage area does not exceed 72 feet (direction of flow) and the sheet flow leaving the impervious cover is directed across 15 feet of engineered filter strips with maximum slope of 20% or across 50 feet of natural vegetation with a maximum slope of 10%. There can be a break in grade as long as no slope exceeds 20%. If vegetative filter strips are proposed for an interim permanent BMP, they may be sized as described on Page 3-56 of RG-348.

17. Wet Vaults Designed as Required in RG-348 Pages 3-30 to 3-32 & 3-79

Required Load Removal Based upon Equation 3.3 =	NA	lbs
---	----	-----

First calculate the load removal at 1.1 in/hour

RG-348 Page 3-30 Equation 3.4: $Q = CiA$

C = runoff coefficient for the drainage area =	0.07	C = Runoff Coefficient = 0.546 (IC) ² + 0.328 (IC) + 0.03
i = design rainfall intensity =	1.1 in/hour	

To solve for bottom width of the trapezoidal swale (b) using the Excel solver: Excel can simultaneously solve the "Design Q" (C217) vs "Manning's Q" (C219) by varying the "Swale Width" (C220). The required "Swale Width" occurs when the "Design Q" = "Manning's Q"

First, highlight Cell F219 (Error 1 value). The equation showing in the fx screen for Cell F219 should be "=SC\$217-SC\$219". Then click on "Tools" and "Solver". The "Solver Parameters" screen pops up. The value in the "Set Target cell" should be \$F\$219 "Error 1 =". The value in the "By Changing Cells" should be \$C\$220 "Swale Width". Click on solve.

The resulting "Swale Width" must be less than 10 feet to meet the requirements of the TGM. If the resulting "Swale Width" exceeds 10 feet then the design parameters must be revised and the solver run again.

If there is not the option for "Solver" under "Tools" Click on "Tools" and "Add Ins" and then check "Solver Add-in" Then proceed as instructed above.

If you would like to increase the bottom width of the trapezoidal swale (b): Excel can simultaneously solve the "Design Q" (C217) vs "Design Discharge" (C232) by varying the "Design Depth" (C233). The required "Design Depth" for a 10-foot bottom width occurs when the "Design Q" (C217) = the "Design Discharge" (C232).

First set the desired bottom width in Cell C231. Highlight Cell F232. The equation showing in the fx screen for Cell F232 should be "=SC\$217-SC\$232"

Click on "Tools" and "Solver". The "Solver Parameters" screen pops up. The value in the "Set Target cell" should be \$F\$232 "Error 2". The value in the "By Changing Cells" should be \$C\$233 "Design Depth". Click on solve.

The resulting "Design Depth" must be equal to or less than 0.33 feet to meet the requirements of the TGM. If the resulting "Design Depth" exceeds 0.33 feet then the design parameters must be revised and the solver run again. First set the desired bottom width in Cell C231.

Highlight Cell F232. The equation showing in the fx screen for Cell F232 should be "=SC\$217-SC\$232". Click on "Tools" and "Solver". The "Solver Parameters" screen pops up. The value in the "Set Target cell" should be \$F\$232 "Error 2". The value in the "By Changing Cells" should be \$C\$233 "Design Depth". Click on solve.

The resulting "Design Depth" must be equal to or less than 0.33 feet to meet the requirements of the TGM. If the resulting "Design Depth" exceeds 0.33 feet then the design parameters must be revised and the solver run again.

A = drainage area in acres = 1 acres
 Q = flow rate in cubic feet per second = 0.08 cubic feet/sec
 RG-348 Page 3-31 Equation 3.5: $V_{OR} = Q/A$
 Q = Runoff rate calculated above = 0.08 cubic feet/sec
 A = Water surface area in the wet vault = square feet
 $V_{OR} = \text{Overflow Rate} = \#DIV/0!$ feet/sec
 Percent TSS Removal from Figure 3-1 (RG-348 Page 3-31) = percent
 Load removed by Wet Vault = #VALUE! lbs

If a bypass occurs at a rainfall intensity of less than 1.1 in/hours
 Calculate the efficiency reduction for the actual rainfall intensity rate

Actual Rainfall Intensity at which Wet Vault bypass Occurs = in/hour
 Fraction of rainfall treated from Figure 3-2 RG-348 Page 3-32 = percent
 Efficiency Reduction for Actual Rainfall Intensity = 0.00 percent
 Resultant TSS Load removed by Wet Vault = #VALUE! lbs

18. Permeable Concrete Designed as Required in RG-348 Pages 3-79 to 3-83

PERMEABLE CONCRETE MAY ONLY BE USED ON THE CONTRIBUTING ZONE

19. BMPs Installed in a Series Designed as Required in RG-348 Pages 3-32

Michael E. Barrett, Ph.D., P.E. recommended that the coefficient for E_2 be changed from 0.5 to 0.65 on May 3, 2006

$E_{TOT} = [1 - ((1 - E_1) \times (1 - 0.65E_2) \times (1 - 0.25E_3))] \times 100 = 0.00$ percent NET EFFICIENCY OF THE BMPs IN THE SERIES
 EFFICIENCY OF FIRST BMP IN THE SERIES = $E_1 =$ percent
 EFFICIENCY OF THE SECOND BMP IN THE SERIES = $E_2 =$ percent
 EFFICIENCY OF THE THIRD BMP IN THE SERIES = $E_3 =$ percent

THEREFORE, THE NET LOAD REMOVAL WOULD BE:
 (A_1 AND A_2 VALUES ARE FROM SECTION 3 ABOVE)

$L_R = E_{TOT} \times P \times X (A_1 \times 34.6 \times A_2 \times 0.54) = 0.00$ lbs

20. Stormceptor

Required TSS Removal in BMP Drainage Area= NA lbs
 Impervious Cover Overtreatment= ac
 TSS Removal for Uncaptured Area = 0.00 lbs
 BMP Sizing Effective Area = NA EA
 Calculated Model Size(s) = #N/A
 Actual Model Size (if multiple values provided in Calculated Model Size or if you are choosing a larger model size) = Model Size
 Surface Area = #N/A ft²
 Overflow Rate = #VALUE! V_o
 Rounded Overflow Rate = #VALUE! V_o
 BMP Efficiency % = #VALUE! %
 L_R Value = #VALUE! lbs
 TSS Load Credit = #VALUE! lbs
 Is Sufficient Treatment Available? (TSS Credit ≥ TSS Uncapt.) #VALUE!
 TSS Treatment by BMP (LM + TSS Uncapt.) = #VALUE!

21. Vortech

Required TSS Removal in BMP Drainage Area= NA lbs
 Impervious Cover Overtreatment= ac
 TSS Removal for Uncaptured Area = 0.00 lbs
 BMP Sizing Effective Area = NA EA
 Calculated Model Size(s) = #N/A
 Actual Model Size (if choosing larger model size) = Pick Model Size
 Surface Area = #N/A ft²
 Overflow Rate = #VALUE! V_o
 Rounded Overflow Rate = #VALUE! V_o
 BMP Efficiency % = #VALUE! %
 L_R Value = #VALUE! lbs
 TSS Load Credit = #VALUE! lbs
 Is Sufficient Treatment Available? (TSS Credit ≥ TSS Uncapt.) #VALUE!
 TSS Treatment by BMP (LM + TSS Uncapt.) = #VALUE!

Treatment Summary by Watershed

Watershed	Total Watershed Area (ac.)	Previously Approved Impervious Cover (ac.)	Previously Approved Impervious Cover - Veramendi Apartments (ac.)	Proposed Impervious Cover(ac.)	Total Impervious Cover (ac.)	PBMP	Required TSS Removal Annually (lbs)	TSS Removed Annually (lbs)
A	5.69		3.96		3.96	Approved Batch Detention Basin*	3,554	3,790
UNCAPTURED C	0.19		0.14		0.14	Overtreatment Approved Batch Detention Basin*	126	
ROAD	3.98	3.58			3.58	Approved Batch Detention Basin**	3,213	8,635
OFFSITE	30.62				0	Approved Batch Detention Basin**	0	
UG-B	12.09	0.77		7.07	7.84	Approved Batch Detention Basin**	6,391	6,391
B	7.09		5.21		5.21	Approved Batch Detention Basin**	4,676	
D	9.69				0	Approved Batch Detention Basin**		
UNCAPTURED AREA	0.08	0.06			0.06	Overtreatment Approved Batch Detention Basin**	54	
TOTAL	69.43	4.41		7.07	20.79	--	18,014	18,816

*approved Batch Detention Basin From Veramendi Apartments (EAPP ID#13001494-13001495)

**approved Batch detention Basin from Veramendi Word Pkwy Phase 2 (EAPP ID#13001429)

Water Quality Basin Summary

Basin	Design Capture Volume (cf)	Previously Approved Required Volume(cf)	Previously Approved Excess Volume Capacity (cf)	ES #11 Required Volume (cf)	Excess Volume Capacity (cf)
Veramendi Word Pkwy Ph 2 Approved	162,848	49,495	113,353	35,854	77,499
Proposed Apt Batch Detention	23,625	22,380	1,245	--	1,245

Attachment G

***NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment G***

Inspection, Maintenance, Repair, and Retrofit Plan

The inspection and maintenance plan outlines the procedures necessary to maintain the performance of the Permanent Best Management Practices for this project. It should be noted that the plan provides guidelines that may have to be adjusted dependent on site-specific and weather-related conditions.

The developer of the Veramendi Master Development owns the existing batch detention basin and in turn, is responsible for providing the inspections and maintenance to the pond as needed.

Attachment I

***NBISD – Elementary School 11
Water Pollution Abatement Plan
Attachment I***

Measures for Minimizing Surface Stream Contamination

There are no surface streams on, or near the project site. The closest stream is located approximately 1000 feet to the northwest of the project site. Runoff from the project site is channeled through the existing batch detention basin on the northwest corner of the site before reaching the proximity of the stream.

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

I MARIL LIGGETT
Print Name
DIRECTOR OF CONSTRUCTION
Title - Owner/President/Other
of NEW BRAUNFELS I.S.D.
Corporation/Partnership/Entity Name
have authorized Richard Underwood, P.E.
Print Name of Agent/Engineer
of Kimley-Horn & Associates
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.

SIGNATURE PAGE:

[Handwritten Signature]
Applicant's Signature

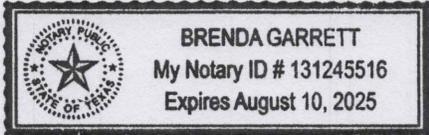
9.5.23
Date

THE STATE OF Texas §
County of Comal §

BEFORE ME, the undersigned authority, on this day personally appeared Mark Liggott 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 5th day of September, 2023

[Handwritten Signature]
NOTARY PUBLIC



Brenda Garrett
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 8/10/25

Application Fee Form

Texas Commission on Environmental Quality

Name of Proposed Regulated Entity: New Elementary School #11

Regulated Entity Location: Word Parkway, New Braunfels, Tx

Name of Customer: New Braunfels ISD

Contact Person: Richard Underwood, P.E.

Phone: (210)321-3415

Customer Reference Number (if issued): CN 600397814

Regulated Entity Reference Number (if issued): RN 110566643

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

San Antonio Regional Office

Mailed to: TCEQ - Cashier

Overnight Delivery to: TCEQ - Cashier

Revenues Section

Mail Code 214

P.O. Box 13088

Austin, TX 78711-3088

12100 Park 35 Circle

Building A, 3rd Floor

Austin, TX 78753

(512)239-0357

Site Location (Check All That Apply):

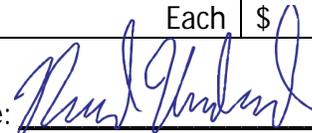
Recharge Zone

Contributing Zone

Transition Zone

<i>Type of Plan</i>	<i>Size</i>	<i>Fee Due</i>
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	11.53 Acres	\$ 6,500
Sewage Collection System	L.F.	\$
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: 9-7-2023

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

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

Organized Sewage Collection Systems and Modifications

<i>Project</i>	<i>Cost per Linear Foot</i>	<i>Minimum Fee- Maximum Fee</i>
Sewage Collection Systems	\$0.50	\$650 - \$6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

<i>Project</i>	<i>Cost per Tank or Piping System</i>	<i>Minimum Fee- Maximum Fee</i>
Underground and Aboveground Storage Tank Facility	\$650	\$650 - \$6,500

Exception Requests

<i>Project</i>	<i>Fee</i>
Exception Request	\$500



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.)		
<input checked="" type="checkbox"/> New Permit, Registration or Authorization (Core Data Form should be submitted with the program application.)		
<input type="checkbox"/> Renewal (Core Data Form should be submitted with the renewal form)	<input type="checkbox"/> 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 600397814		RN 110566643

SECTION II: Customer Information

4. General Customer Information		5. Effective Date for Customer Information Updates (mm/dd/yyyy)		
<input type="checkbox"/> New Customer <input type="checkbox"/> Update to Customer Information <input type="checkbox"/> Change in Regulated Entity Ownership <input type="checkbox"/> Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)				
<i>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).</i>				
6. Customer Legal Name (If an individual, print last name first: eg: Doe, John)			<i>If new Customer, enter previous Customer below:</i>	
New Braunfels ISD				
7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number (if applicable)	
11. Type of Customer:		<input type="checkbox"/> Corporation	<input type="checkbox"/> Individual	Partnership: <input type="checkbox"/> General <input type="checkbox"/> Limited
Government: <input type="checkbox"/> City <input type="checkbox"/> County <input type="checkbox"/> Federal <input type="checkbox"/> Local <input type="checkbox"/> State <input checked="" type="checkbox"/> Other		<input type="checkbox"/> Sole Proprietorship	<input type="checkbox"/> Other:	
12. Number of Employees			13. Independently Owned and Operated?	
<input type="checkbox"/> 0-20 <input type="checkbox"/> 21-100 <input type="checkbox"/> 101-250 <input type="checkbox"/> 251-500 <input checked="" type="checkbox"/> 501 and higher			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
14. Customer Role (Proposed or Actual) – as it relates to the Regulated Entity listed on this form. Please check one of the following				
<input type="checkbox"/> Owner <input type="checkbox"/> Operator <input checked="" type="checkbox"/> Owner & Operator <input type="checkbox"/> Other: <input type="checkbox"/> Occupational Licensee <input type="checkbox"/> Responsible Party <input type="checkbox"/> VCP/BSA Applicant				
15. Mailing Address:		1000 N WALNUT		
City	New Braunfels	State	TX	ZIP
				78130
			ZIP + 4	5506
16. Country Mailing Information (if outside USA)			17. E-Mail Address (if applicable)	
18. Telephone Number		19. Extension or Code		20. Fax Number (if applicable)

SECTION III: Regulated Entity Information

21. General Regulated Entity Information <i>(If 'New Regulated Entity' is selected, a new permit application is also required.)</i>									
<input type="checkbox"/> New Regulated Entity <input type="checkbox"/> Update to Regulated Entity Name <input type="checkbox"/> Update to Regulated Entity Information									
<i>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).</i>									
22. Regulated Entity Name <i>(Enter name of the site where the regulated action is taking place.)</i>									
NBISD - Elementary School 11									
23. Street Address of the Regulated Entity: <i>(No PO Boxes)</i>									
		City		State		ZIP		ZIP + 4	
24. County									

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

25. Description to Physical Location:		The Project site is located approximately 0.15 mi Northeast of the Word Parkway and TX-337 Intersection.							
26. Nearest City				State		Nearest ZIP Code			
New Braunfels				TX		78130			
<i>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).</i>									
27. Latitude (N) In Decimal:		29.729495		28. Longitude (W) In Decimal:		-98.139307			
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds				
29	43	46.2	98	08	21.5				
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)			
8211				611110					
33. What is the Primary Business of this entity? <i>(Do not repeat the SIC or NAICS description.)</i>									
34. Mailing Address:		2551 LOOP 337							
		City	New Braunfels	State	TX	ZIP	78130	ZIP + 4	8502
35. E-Mail Address:		dstoker@nbisd.org							
36. Telephone Number			37. Extension or Code			38. Fax Number <i>(if applicable)</i>			
(840) 643-5700						() -			

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.

<input type="checkbox"/> Dam Safety	<input type="checkbox"/> Districts	<input checked="" type="checkbox"/> Edwards Aquifer	<input type="checkbox"/> Emissions Inventory Air	<input type="checkbox"/> Industrial Hazardous Waste
		13001494		
<input type="checkbox"/> Municipal Solid Waste	<input type="checkbox"/> New Source Review Air	<input type="checkbox"/> OSSF	<input type="checkbox"/> Petroleum Storage Tank	<input type="checkbox"/> PWS
<input type="checkbox"/> Sludge	<input type="checkbox"/> Storm Water	<input type="checkbox"/> Title V Air	<input type="checkbox"/> Tires	<input type="checkbox"/> Used Oil
<input type="checkbox"/> Voluntary Cleanup	<input type="checkbox"/> Wastewater	<input type="checkbox"/> Wastewater Agriculture	<input type="checkbox"/> Water Rights	<input type="checkbox"/> Other:

SECTION IV: Preparer Information

40. Name:	Richard Underwood	41. Title:	Authorized Agent
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(210) 321-3415		() -	richard.underwood@kimley-horn.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:	Kimley-Horn	Job Title:	Project Manager
Name (In Print):	Richard Underwood	Phone:	(210) 321- 3415
Signature:		Date:	09/08/2023

Property Details

Account		
Property ID:	72190	Geographic ID: 720003002800
Type:	Real	Zoning: R2
Property Use:	500 SCHOOL	
Location		
Situs Address:	2551 LOOP 337 NEW BRAUNFELS, TX 78266	
Map ID:	NB 80	Mapsco:
Legal Description:	A- 3 SUR- 2 J M VERAMENDI, ACRES 52.6253	
Abstract/Subdivision:	A0003 - A- 3 SUR- 2 J M VERAMENDI	
Neighborhood:	C457-HWY46	
Owner		
Owner ID:	41951	
Name:	NEW BRAUNFELS I S D	
Agent:		
Mailing Address:	1000 N WALNUT AVE NEW BRAUNFELS, TX 78130	
% Ownership:	100.0%	
Exemptions:	EX-XV - Other Exemptions (including public property, religious organizations, charitable organizations, and other property not reported elsewhere) For privacy reasons not all exemptions are shown online.	

Property Values

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Improvement Homesite Value:	\$0 (+)
Improvement Non-Homesite Value:	\$25,395,610 (+)
Land Homesite Value:	\$0 (+)
Land Non-Homesite Value:	\$10,681,950 (+)
Agricultural Market Valuation:	\$0 (+)
Market Value:	\$36,077,560 (=)
Agricultural Value Loss: ⓘ	\$0 (-)
Homestead Cap Loss: ⓘ	\$0 (-)
Appraised Value:	\$36,077,560
Ag Use Value:	\$0

In order to see most current ownership information click on "advanced" and change the year to 2024.

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: NEW BRAUNFELS I S D **%Ownership:** 100.0%

Entity	Description	Market Value	Taxable Value
046	COMAL COUNTY	\$36,077,560	\$0
046LR	COMAL COUNTY LATERAL ROAD	\$36,077,560	\$0
CNB	CITY OF NEW BRAUNFELS	\$36,077,560	\$0
SNBI	NEW BRAUNFELS ISD	\$36,077,560	\$0

Property Improvement - Building

Description: COMMERCIAL **Type:** COMMERCIAL **State Code:** F1 **Living Area:** 225,158.00sqft **Value:** \$25,395,610

Type	Description	Class CD	Year Built	SQFT
COMM	Commercial Improvement	C	0	225,158.00

Property Land

Type	Description	Acreage	Sqft	Eff Front	Eff Depth	Market Value	Prod. Value
COM-FRNTG	commercial tract with good frontage	52.5253	2,288,000.00	0.00	0.00	\$10,680,380	\$0
COM-FRNTG	commercial tract with good frontage	0.1000	4,356.00	0.00	0.00	\$1,570	\$0

Property Roll Value History

Year	Improvements	Land Market	Ag Valuation	HS Cap Loss	Appraised
2024	N/A	N/A	N/A	N/A	N/A
2023	\$25,395,610	\$10,681,950	\$0	\$0	\$36,077,560
2022	\$15,848,530	\$8,901,630	\$0	\$0	\$24,750,160
2021	\$16,580,010	\$8,900,520	\$0	\$0	\$25,480,530
2020	\$16,665,750	\$5,239,720	\$0	\$0	\$21,905,470
2019	\$16,245,420	\$5,239,720	\$0	\$0	\$21,485,140
2018	\$14,214,740	\$5,239,720	\$0	\$0	\$19,454,460
2017	\$14,588,440	\$5,239,720	\$0	\$0	\$19,828,160
2016	\$12,119,620	\$5,239,720	\$0	\$0	\$17,359,340
2015	\$0	\$5,239,720	\$0	\$0	\$5,239,720
2014	\$0	\$3,638,120	\$0	\$0	\$3,638,120
2013	\$0	\$3,638,120	\$0	\$0	\$3,638,120

Property Deed History

Deed Date	Type	Description	Grantor	Grantee	Volume	Page	Number
4/15/1961	WD	WARRANTY DEED		NEW BRAUNFELS I S D	123	210	123210