

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: MORAVA ENCLAVE					2. Regulated Entity No.:				
3. Customer Name: MORAVA HOLDINGS LLC					4. Customer No.:				
5. Project Type: (Please circle/check one)	<input checked="" type="radio"/> New	Modification			Extension		Exception		
6. Plan Type: (Please circle/check one)	<input checked="" type="radio"/> WPAP	<input type="radio"/> CZP	<input type="radio"/> SCS	<input type="radio"/> UST	<input type="radio"/> AST	<input type="radio"/> EXP	<input type="radio"/> EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: (Please circle/check one)	<input type="radio"/> Residential		<input checked="" type="radio"/> Non-residential			8. Site (acres):		10.00	
9. Application Fee:	\$5,000		10. Permanent BMP(s):			EXTENDED & BATCH PONDS			
11. SCS (Linear Ft.):	3,842		12. AST/UST (No. Tanks):			0			
13. County:	Williamson		14. Watershed:			Salado Creek			

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.)	—	—	—	—	—
Region (1 req.)	—	—	—	—	—
County(ies)	—	—	—	—	—
Groundwater Conservation District(s)	<input type="checkbox"/> Edwards Aquifer Authority <input type="checkbox"/> Trinity-Glen Rose	<input 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 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.	
Diane Bernal	
Print Name of Customer/Authorized Agent	August 30, 2024
<i>Diane Bernal</i>	
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: Diane Bernal /DB Land Consulting LLC

Date: October 22, 2024

Signature of Customer/Agent:



Project Information

1. Regulated Entity Name: Morava Enclave
2. County: Williamson County
3. Stream Basin: Buttermilk Creek - Salado Creek
4. Groundwater Conservation District (If applicable): N/A
5. Edwards Aquifer Zone:

- ☒ Recharge Zone
☐ Transition Zone

6. Plan Type:

- ☒ WPAP
☐ SCS
☐ Modification

- ☐ AST
☐ UST
☐ Exception Request

7. Customer (Applicant):

Contact Person: Vasu Rayapati

Entity: MORAVA HOLDINGS LLC

Mailing Address: 3912 REMINGTON RD

City, State: CEDAR PARK, TX

Zip: 78613

Telephone: 512-788-1317

FAX: N/A

Email Address: moravallc@gmail.com

8. Agent/Representative (If any):

Contact Person: DIANE BERNAL

Entity: DB LAND CONSULTING LLC

Mailing Address: 11917 OAK KNOLL DR., STE. C

City, State: AUSTIN, TX

Zip: 78759

Telephone: 512-215-1433

FAX: N/A

Email Address: DIANEJBERNAL@GMAIL.COM

9. Project Location:

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

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

TRAVEL NORTH ON IH 35 FOR 27.7 MILES, EXIT FM 487 OR C BUD STOCKTON LOOP.
TURN WEST (LEFT) TO TRAVEL ON FM 487 FOR 7 MILES PROPERTY IS ON RIGHT
HAND SIDE AFTER HIGH SCHOOL

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: 7/19/2024 (completed)

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.

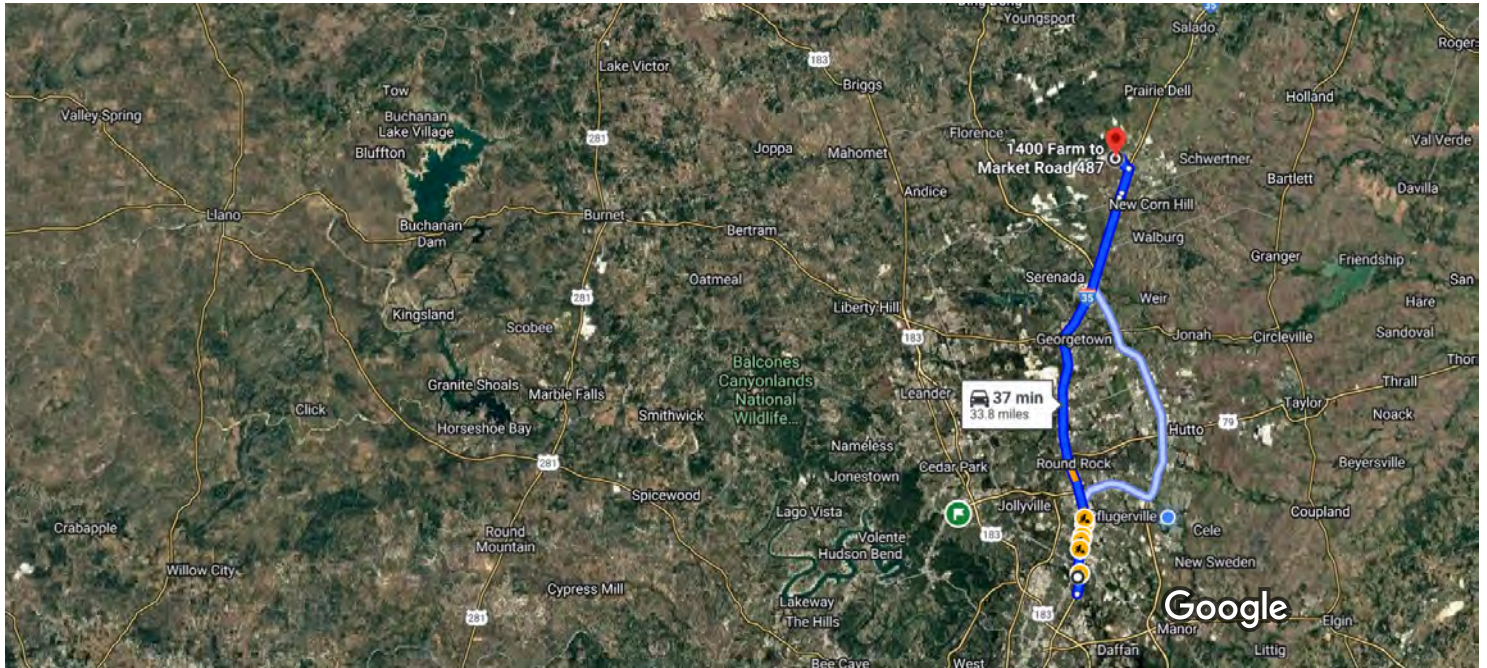
21. ☒ No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the Executive Director.

ATTACHMENT A - ROAD MAP



12100 Park 35 Circle, Austin, TX to 1400 FM487,
Jarrell, TX 76537

Drive 33.8 miles, 37 min



Imagery ©2024 TerraMetrics, Map data ©2024 Google 5 mi

12100 Park 35 Circle, Austin, TX

Get on I-35 N from S I-35 Frontage Rd and N Interstate 35
Frontage Rd

- _____ 6 min (2.8 mi)
↑ 1. Head west toward Park 35 Cir
_____ 466 ft
- ↪ 2. Turn right onto Park 35 Cir
_____ 0.3 mi
- ↪ 3. Turn right onto S I-35 Frontage Rd
_____ 0.9 mi
- ↩ 4. Use the left lane to turn left onto E Braker Ln
_____ 282 ft
- ↩ 5. Turn left at the 1st cross street onto N Interstate
35 Frontage Rd
_____ 1.3 mi
- ⬆ 6. Use the left lane to take the ramp onto I-35 N
_____ 0.1 mi

Follow I-35 N to N IH 35 Service Rd in Jarrell. Take the exit
toward C Bud Stockton Loop from I-35 N

- _____ 24 min (27.7 mi)
⬆ 7. Merge onto I-35 N
_____ 27.4 mi
- ↪ 8. Take the exit toward C Bud Stockton Loop

0.3 mi

Continue on N IH 35 Service Rd to your destination

7 min (3.3 mi)

↗ 9. Merge onto N IH 35 Service Rd

1.9 mi

↶ 10. Turn left onto County Rd 313

394 ft

↑ 11. Continue straight onto C.Bud Stockton Loop

0.9 mi

↶ 12. Turn left onto FM487

0.4 mi

↗ 13. Turn right

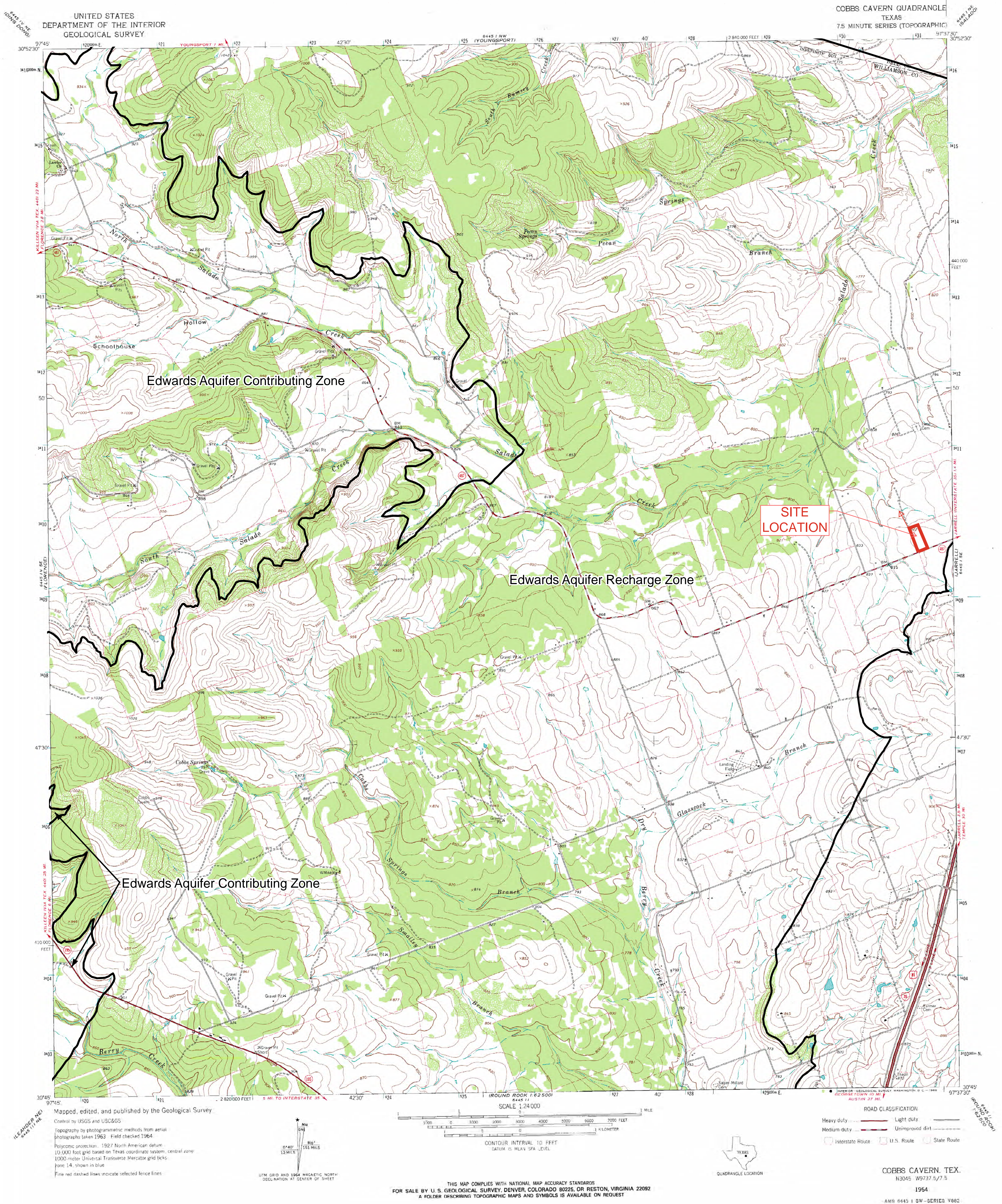
 Destination will be on the right

0.1 mi

1400 FM487

Jarrell, TX 76537

ATTACHMENT B - USGS MAP



Regulatory Zones

30 TAC Chapter 213- Edwards Aquifer Effective May 1985

This map was produced by the Groundwater Planning and Assessment Team of the Texas Commission on Environmental Quality to detail the boundaries of the regulatory zones of the Edwards Aquifer Protection Program, as described in Texas Administrative Code Title 30, Part 1, §213.3. No other claims are made to the accuracy or completeness of the data or to its suitability for a particular use. For more information about the Edwards Aquifer Protection Program, please contact the TCEQ Regional Offices in San Antonio or Austin. Printed June 2006.

**Project Information
Attachment C
(TCEQ-0587)**

Project Description

History / Existing Development

The proposed project known as the Morava Enclave owned by Morava Holdings LLC will occur on 10.0 acres of land located east of IH 35 along FM 487. In the original configuration, the site is a developed residential large acre parcel identified under Williamson County's official record under warrant deed Document No. 2021098585 and Williamson County Appraisal District property ID R096114.

The existing site contains approximately 0.48 acres (20,909.9 SF) of residential area. The proposed project will develop approximately 6.99 acres (304,484.40 SF) of site area. Development includes two retail shell buildings proposed at 15,540 SF and a 96-unit townhome development at the rear of the property with associated drive aisles and parking areas.

Two drainage areas are identified for this development. Drainage area A flows to the South towards the right-of-way where it leaves the site in the roadside drainage channel to the west and will be controlled by a trapezoidal weir at the water quality elevation (extended detention). Drainage area B flows to the north where it leaves the site to the northwest and will be controlled by a rectangular weir (batch detention). Pond pack information is included with this submission for TCEQ's review as exhibit C of the included Engineer's Report.

Types of erosion controls will be in accordance with the City of Jarrell Development Code. Erosion control details can be found on the construction plan details sheet 26 and the erosion control plan can be found on sheet 5.

The property will also require an organized sewer collection system application with the amount of wastewater lines and taps proposed at this location to be submitted separately. Approximately 3,842 LF of wastewater lines are proposed for this development.

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: Matt Anding

Telephone: 832-641-8143

Date: 08/07/2024

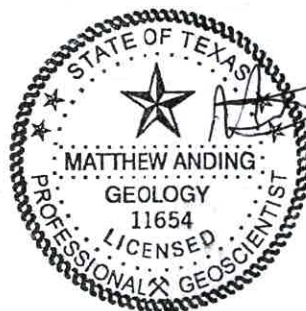
Fax: _____

Representing: Anding Environmental Consulting, LLC (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:



Regulated Entity Name: Morava Holdings, LLC



Project Information

1. Date(s) Geologic Assessment was performed: 07/26/2024

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)
GeB	C	3'
HeB	D	6'

** 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" = 90'
 Site Geologic Map Scale: 1" = 90'
 Site Soils Map Scale (if more than 1 soil type): 1" = 90'
9. Method of collecting positional data:
 - ☒ Global Positioning System (GPS) technology.
 - ☐ Other method(s). Please describe method of data collection: _____
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 0 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
- ☐ The wells are not in use and have been properly abandoned.
- ☐ The wells are not in use and will be properly abandoned.
- ☐ The wells are in use and comply with 16 TAC Chapter 76.
- ☒ There are no wells or test holes of any kind known to exist on the project site.

Administrative Information

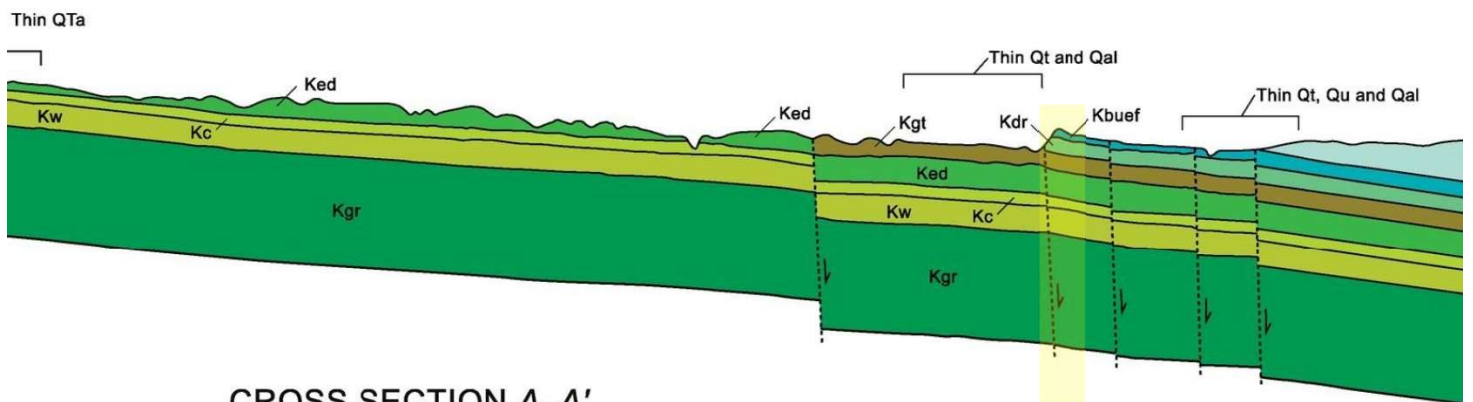
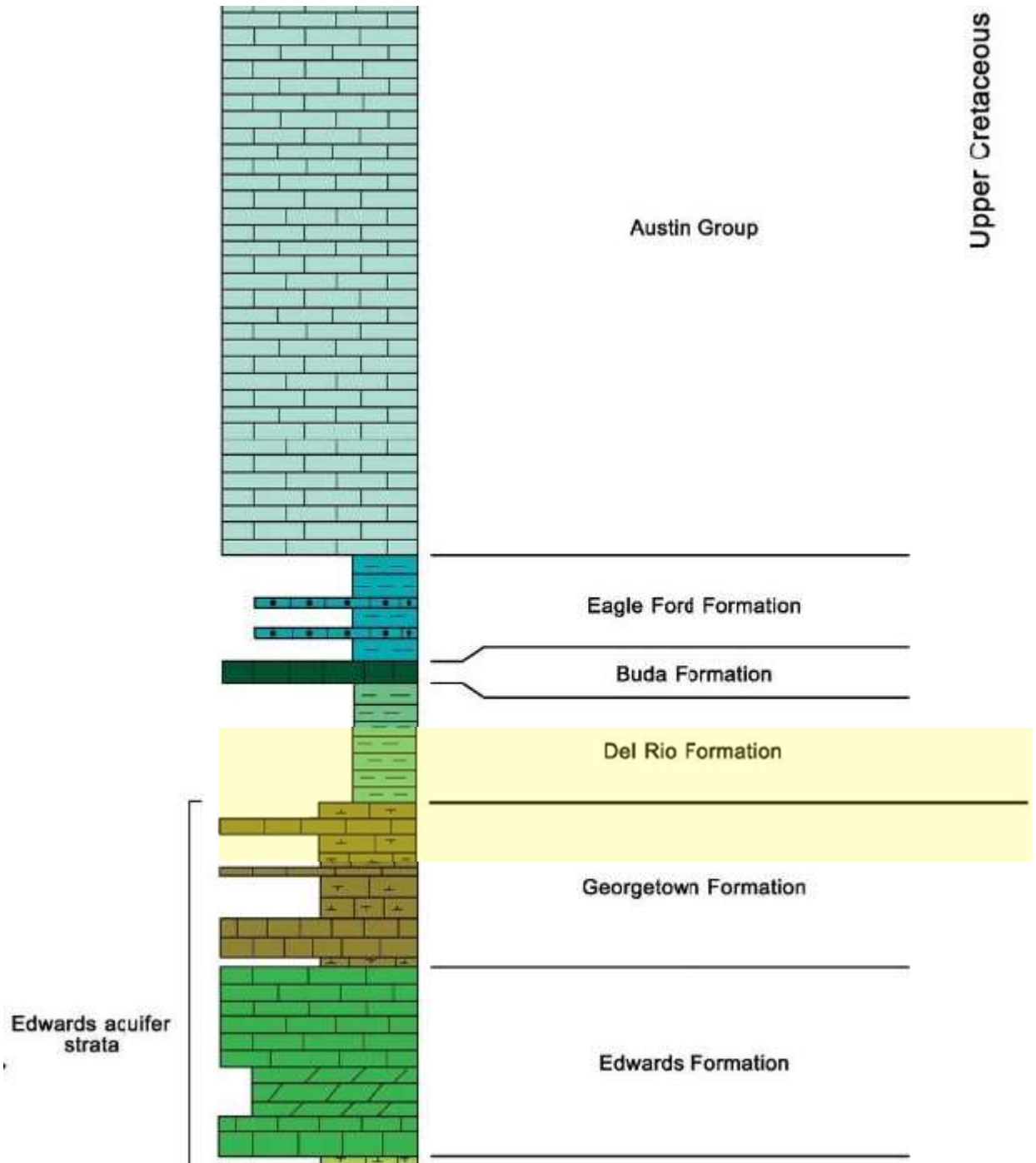
15. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies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

GEOLOGIC ASSESSMENT

ATTACHMENT A - GEOLOGIC ASSESSMENT TABLE

GEOLOGIC ASSESSMENT
ATTACHMENT B - STRATIGRAPHIC COLUMN

STRATIGRAPHIC COLUMN



GEOLOGIC ASSESSMENT
ATTACHMENT C - SITE GEOLOGY



GEOLOGIC ASSESSMENT

1400 FM 487, Jarrell, Texas

Prepared for:

Morava Holdings LLC

Prepared by:

Anding Environmental Consulting, LLC

August 2024

Geologic Assessment

1400 FM 487, Jarrell, Texas

Prepared for:

Morava Holdings LLC

Prepared by:



Anding Environmental Consulting, LLC
938 River Terrace
New Braunfels, TX 78130

August 2024

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Table 3-1 Site Soils

Attachments

Attachment A	Geologic Assessment Table
Attachment B	Stratigraphic Column
Attachment C	Site Geology and Geologic Assessment
Attachment D	Site Geologic Maps
Attachment E	Photo Log

Acronyms

BMP	Best Management Practices
EAPP	Edwards Aquifer Protection Plan
FEMA	Federal Emergency Management Administration
GPS	Global Positioning System
TCEQ	Texas Commission on Environmental Quality
USDA	United States Department of Agriculture
USGS	United States Geological Survey

1.0 INTRODUCTION AND PURPOSE

1.1 Introduction

This Geologic Assessment was prepared in general accordance with to 30 TAC §213.5(b)(3), effective September 01, 2003, Texas Commission on Environmental Quality (TCEQ) requirements for regulated developments within the Edwards Aquifer Recharge Zone, and the “Instructions to Geologists”, TCEQ-0585-Instructions (Rev. 10-1-04). Per TCEQ guidance, a proposed project on the Site for a future mixed-use development requires a Geologic Assessment to identify all potential pathways for contaminant movement to the Edwards Aquifer and provide sufficient geologic information so that the appropriate Best Management Practices (BMPs) can be proposed in the Edwards Aquifer Protection Plan (EAPP). This Geologic Assessment has been prepared by a Texas Board of Professional Geoscientists licensed geologist, Mr. Matt Anding, P.G.

1.2 Project Description

The Site is located at 1400 FM 487, Jarrell, Texas, near the intersection of Black Opan Drive and FM 487. The center of the Site is located at 30°48'56.09"N Latitude and 97°37'47.99"W Longitude (WGS 84), and the Site is ~10.0 acres in size. The Site is currently developed with a residential homestead and consists of livestock pastures. The property location is depicted on **Figure D-1**. A project is in place to develop the Site with mixed-use retail, restaurants, and townhouses.

2.0 METHODOLOGY

2.1 Research Information

The Geologic Assessment was performed by Matt Anding, P.G., with Anding Environmental Consulting, LLC (Anding Environmental) on July 26, 2024. Anding Environmental first conducted a desktop analysis of the geology of the area surrounding the Site. The research included, but was not limited to, the Geologic Atlas of Texas, Federal Emergency Management Agency (FEMA) maps, Edwards Aquifer Recharge Zone Maps, USGS 7.5 Minute Quadrangle Maps, Bureau of Economic Geology online digital data, historic aerials and topographic maps, and the United States Department of Agriculture (USDA) Soil Survey of Williamson County, Texas.

2.2 Field Survey

After reviewing the available desktop information, a field investigation was performed to identify any geologic or man-made potential recharge features. A transect spacing of approximately 25-50 feet, or less depending on Site vegetation, was used to inspect the Site. A 2023 aerial photograph, in conjunction with a hand held sub-meter Trimble GeoXH Global Positioning System (GPS), was used to navigate on the property and search for potential recharge features, as recommended in the “Instructions to Geologists”, TCEQ-0585-Instructions (Rev. 10-1-04). The Geologic Assessment Form, Stratigraphic Column, and the Geologic Assessment Table have been filled with the appropriate information for this Site and are included in this report. Special attention was given to the mapped faults, bedrock outcroppings, and other structural features mapped in the area.

2.3 Data Gaps

No significant data gaps were incurred during the desktop analysis or field reconnaissance. One minor data gap was incurred during the site visit. A mound of brush and a mound of fill dirt are located in the southeastern corner of the Site. The brush mound was less than 100 sq ft and the fill dirt mound was less than 400 sq ft. These mounds prevented Anding Environmental from directly observing the ground surface in those areas. Given the Site history and land use (livestock pasture), historic aerials, soils, topography and drainage, surface geology, and overall Site findings, it is Anding Environmental’s professional opinion that these mounds do not represent significant data gaps as it is highly unlikely any potential sensitive features are located under the mounds.

2.4 Limitations of Assessment

No Geologic Assessment can wholly eliminate uncertainty regarding potential pathways for contaminant movement to the Edwards Aquifer in connection with a property. Performance of a Geologic Assessment in accordance with TCEQ-0585 instructions is intended to reduce, but cannot eliminate, uncertainty regarding the potential for surficial points of infiltration in connection with a property, and the TCEQ recognizes reasonable limits of time and cost.

Anding Environmental assumes no responsibility for the discovery of any surficial or subsurface points of infiltration, caves, solution cavities or enlarged fractures/faults, sinkholes, or any other karst features not observed during this Geologic Assessment. Anding Environmental does not have any responsibility with regard to the Client's compliance with or fulfillment of its obligation under any law, ordinance, or regulation prevailing at any of the observed locations.

3.0 NARRATIVE DESCRIPTION OF SITE GEOLOGY

3.1 Site Characterization

The Site consists of a driveway to a residential homestead and a livestock barn, and the remaining portions of the Site are livestock pasture. The residential homestead has electricity, a septic system, and municipal hook up for potable water and does not have a water well on Site. The Site is bordered by FM 487 to the south, a commercial property to the east, Jarrell High School to the north, and residential agriculture land to the west.

The Site is located on the eastern edge of the Balcones Escarpment on the edge of the Blackland Prairies just southwest of the town of Jarrell. The Site is positioned on gently sloping topography with a topographic high entering the eastern Site boundary and radially sloping to the southwest, west, and northwest, generally towards an unnamed tributary of Salado Creek to the west of the Site. The highest elevation is approximately 833 ft amsl along the eastern site boundary. The lowest elevation is approximately 820 ft amsl in the northwestern Site corner. Surface water tends to largely sheetflow from the eastern portion to the western portion of the Site. A minor livestock tank was created in the northwestern Site corner sometime after 2012 by digging out a low lying area and using the soil to create a berm in the corner, catching sheetflow from the northern pasture. No significant hydrologic features exist on the Site, only a roadside drainage ditch along the Site's southern boundary, flowing east to west.

The Site vegetation consists of pasture grasses, weeds, and flowers with no trees in the pastures. The residential homestead consists of maintained landscaping including a lawn and oak trees. Scrub brush and mature trees are located along the western Site boundary fencing.

3.2 Site Geology

Per the TCEQ Edwards Aquifer Program GIS dataset, the entire Site is located within the Edwards Aquifer Recharge Zone. A map of the Site and Edwards Aquifer Zones is presented as **Figure D-3**.

The following resources were most utilized in mapping the Site geology:

- Digital Geologic Map Database for the State of Texas (USGS)
- 1992 Geologic Map of Texas (Bureau of Economic Geology)
- 1997 Geologic Map of the Jarrell Quadrangle, Texas
- 1997-1998 Summary Report for the STATEMAP Project: Geological Mapping to Support Improved Data Base Development and Understanding of Critical Aquifers in Texas
- 2005 Geologic Map of the West Half of the Taylor, Texas, 30X60 Min Quadrangle (USGS)
- 2013 Hydrogeology of the Northern Segment of the Edwards Balcones Fault Zone Aquifer in the Salado Creek Basin and Environs

High resolution geologic mapping in the Site area was best found in the 2005 Geologic Map of the West Half of the Taylor, Texas. The 2005 quadrangle maps the Site as largely Del Rio Clay Formation (Kdr) with a small portion of the northwest Site corner mapped as Georgetown Formation (Kgt).

Del Rio Clay (Kdr) (Upper Cretaceous) – The majority of the Site consists of the Del Rio Clay Formation (Kdr), a primary upper confining unit of the Edward Aquifer. The Del Rio Formation consists of calcareous, fossiliferous, poorly indurated, plastic, dark gray to olive brown clays (Collins 1998). The Del Rio Clay has no recognized cavern development and no significant porosity or permeability. Thickness ~65 ft. in the area.

Georgetown Formation (Kgt) (Lower Cretaceous) – The Georgetown Formation is mapped in the northwestern corner of the Site. The Georgetown Formation is the uppermost unit of the Edwards Aquifer. This unit is characterized by reddish-brown and gray to light-tan, marly limestone with biomicritic texture (Collins 1998). Though rare, small vugs are often present. The Georgetown is considered the Uppermost Edwards aquifer strata, though typically a semi-confining unit due to very low porosity and permeability, and has little or no karstification or cavern development. Thickness ~65 ft. to 110 ft. in the area.

No bedrock outcroppings were observed at the Site. The Site was observed to have deep soils.

The Site is located along the eastern edge of the Balcones Fault Zone where surface geology transitions from Edwards Group limestones to Confining Group units (Del Rio Clay, Buda Formation, and Eagle Ford Formation). Based on literature research, the Site has a concealed normal fault running through the northwestern Site corner when the Georgetown Formation contacts the Del Rio Formation. Anding Environmental observed no fault structures on the Site during the field reconnaissance or on aerial imagery. Normal faulting is also mapped approximately 0.6 miles to the east where the Eagle Ford Formation transitions to the Austin Group.

A geologic map of the Site is presented as **Figure D-5. Attachment E, Photo Log**, displays photographs of typical outcroppings of the mapped geologic unit on Site.

3.3 Site Soils

The majority of the Site and surrounding area is mapped as Heiden clays, with the northern portion of the Site mapped as Georgetown clay loams. Soils on the Site were observed to be rather deep with no bedrock outcroppings. During the time of the Site visit, construction was occurring on the property adjacent to the north of the site where a large amount of soil was being excavated, displaying how deep soils are in the area (See **Photo Log**). **Table 3-1** displays soils mapped on the Site and **Figure D-6** illustrates the soils in relation to the Site.

Table 3-1 – Site Soils

GeB	Georgetown clay loam, 0 to 2 percent slopes
HeB	Heiden clay, 1 to 3 percent slopes

Georgetown clay loam (Geb), 0 to 2 percent slopes – The Georgetown series consists of moderately deep, well drained, loamy and stony soils on uplands (USDA 1983). The soils form in clayey material over indurated limestones, and hence are located over the Georgetown Formation

in the northern portion of the Site. The first 0 to 7 inches are typically clay loams, followed by ~20 inches of cobbly clays before hitting bedrock. Georgetown clay loams are well drained, have high runoff, and have a low capacity to transmit water.

Heiden clay (HeB), 1 to 3 percent slopes - The Heiden series consists of deep to very deep clayey soils on uplands. The clays, typical of the Blackland Prairie, are well drained, very slowly permeable soils that formed in clayey residuum weathered from mudstone (USDA 1983). These nearly level to moderately steep soils occur on footslopes of base slopes, shoulders of interfluvies, and backslopes of side slopes of ridges on dissected plains. Surficial clays can be rocky with mudstone fragments, and clays can be as deep as 70 inches to bedrock. Slopes range from 0.5 to 20 percent.

3.4 Site Assessment

The Site is located on the Del Rio Formation which is not known for having many bedrock outcroppings due to typically deeper soils. No bedrock outcroppings were observed on the Site. The entirety of the Site has little elevation change, just minor slopes to the west/northwest. As the Site has been utilized as agricultural pastures for livestock, and a residential homestead, the Site is not currently in natural conditions, but is instead well maintained and soils have been historically plowed.

The Del Rio Clay has no recognized cavern development and no significant porosity or permeability. The Georgetown Formation is only mapped in the northwestern corner of the Site where a livestock tank has been excavated. The excavation did not reach limestone bedrock and has deep enough clay soils on top of bedrock to retain water from the Site's sheetflow runoff.

No geologic features, sensitive features, or potential recharge features were observed on the Site.

4.0 SUMMARY

Anding Environmental has conducted a Geologic Assessment for the referenced Site in accordance with 30 TAC §213.5(b)(3), TCEQ requirements for regulated developments within the Edwards Aquifer Recharge Zone, and the “Instructions to Geologists”, TCEQ-0585-Instructions (Rev. 10-1-04). No other geologic features, sensitive features, or potential recharge features were observed on the Site.

It is Anding Environmental’s professional judgement that **the Site has low potential for rapid surface water movement to the Edwards Aquifer via direct infiltration.**

Please note that other karst features may exist on Site, either buried or obscured from view, which may have potential for openings to the subsurface. If any additional potentially karst features are discovered during future Site activities, please do not hesitate to contact Anding Environmental for support.

5.0 REFERENCES

Bureau of Economic Geology, 1992, Geologic Map of Texas: University of Texas at Austin, Virgil E. Barnes, project supervisor, Hartmann, B.M. and Scranton, D.F., cartography, scale 1: 500,000

Bureau of Economic Geology. *Geologic Atlas of Texas, Austin Sheet*. 1981.

Collins, E.W. *Geologic map of the Jarrell quadrangle, Texas*. Bureau of Economic Geology. 1997.

Collins, E.W, Raney, J. *Summary Report for the STATEMAP Project: Geological Mapping to Support Improved Data Base Development and Understanding of Critical Aquifers in Texas*. USGS. 1998.

Edwards Aquifer Authority. Maps and GIS. <https://www.edwardsaquifer.org/science-maps/maps-geographic-information-systems-gis/> Accessed June 2024.

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Stoeser, D.B., Shock, Nancy, Green, G.N., Dumonceaux, G. M., and Heran, W.D., in press, *A Digital Geologic Map Database for the State of Texas*: U.S. Geological Survey Data Series.

Texas Commission on Environmental Quality. Regulatory Databases. <http://www.tceq.state.tx.us/>

Texas Water Development Board. USGS Geologic Atlas of Texas (GAT) Viewer. <https://webapps.usgs.gov/txgeology/> Accessed July 2024.

U.S. Department of Agriculture (USDA), 2024. NRCS Web Soil Survey. *Custom Soil Report for Williamson County, Texas*. Accessed July 2024.

U.S. Department of Agriculture. *Soil Survey of Williamson County Texas*. 1983.

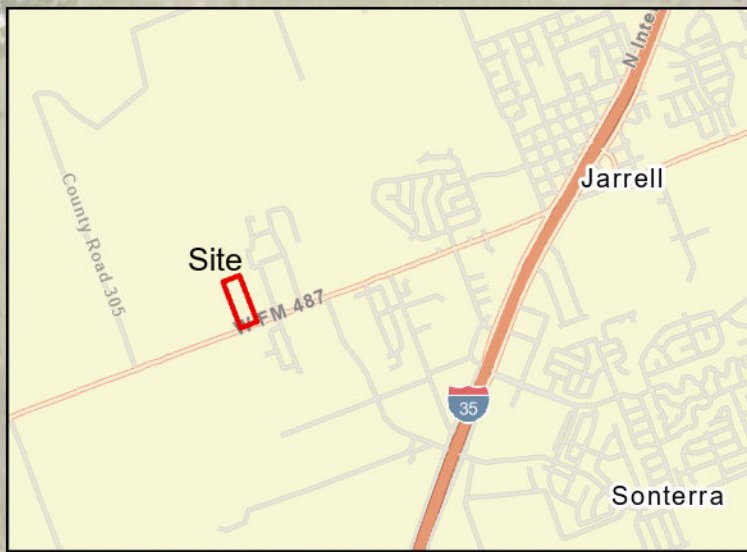
U.S. Geological Survey. Topographic Maps. <https://ngmdb.usgs.gov/maps/topoview/viewer>

U.S. Geological Survey. Texas Geology. <http://mrdata.usgs.gov/sgmc/tx.html>

U.S. Geological Survey. *2005 Geologic Map of the West Half of the Taylor, Texas, 30X60 Min Quadrangle* (USGS). 2005.

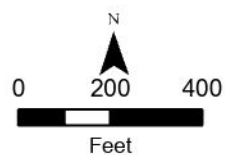
Yelderman, Joe C. *Hydrogeology of the Northern Segment of the Edwards Balcones Fault Zone Aquifer in the Salado Creek Basin and Environs*. 2013.

GEOLOGIC ASSESSMENT
ATTACHMENT D - SITE GEOLOGIC MAPS



Legend

Site



**1400 FM 487, Jarrell, Texas
Williamson County**

Site Location

Geologic Assessment
1400 FM 487, Jarrell, Texas



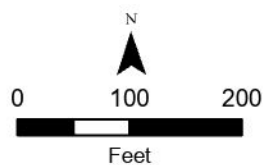
DATE
7/23/2024

FIGURE
1



Legend

 Site



**1400 FM 487, Jarrell, Texas
Williamson County**

Site Aerial

Geologic Assessment
1400 FM 487, Jarrell, Texas



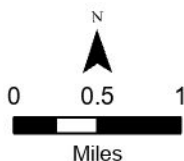
DATE
7/23/2024

FIGURE
2



Legend

- Site
- Edwards Aquifer Contributing Zone
- Edwards Aquifer Recharge Zone



**1400 FM 487, Jarrell, Texas
Williamson County**

Edwards Aquifer Zone Map

Geologic Assessment
1400 FM 487, Jarrell, Texas



DATE
7/23/2024

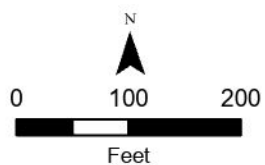
FIGURE
3



Legend

Site

Elevation Contours
2' Intervals



**1400 FM 487, Jarrell, Texas
Williamson County**

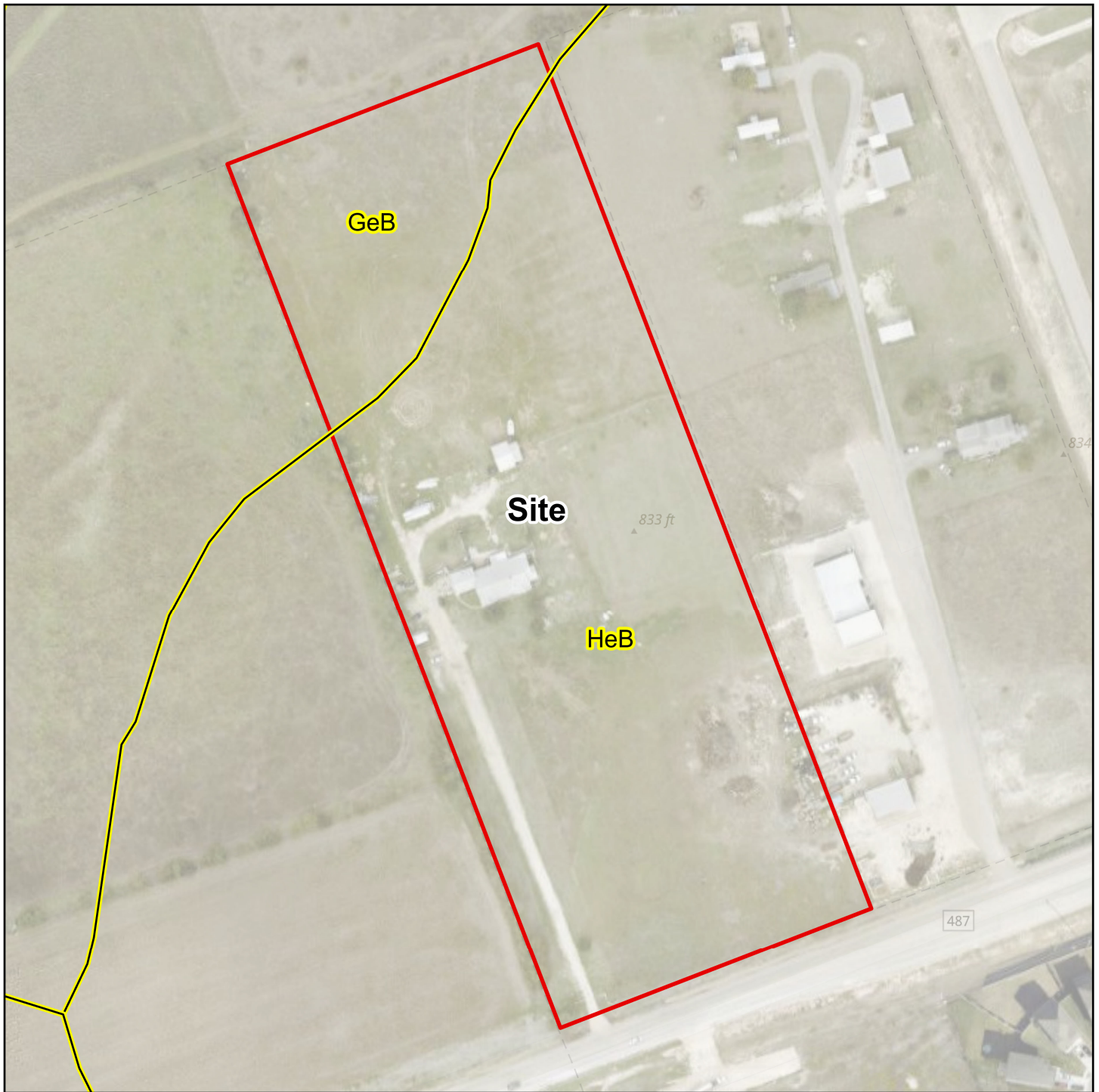
Site Topography

Geologic Assessment
1400 FM 487, Jarrell, Texas



DATE
7/23/2024

FIGURE
4

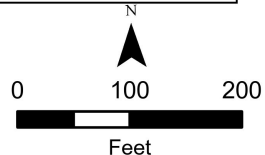


Legend

Site

Soil Map Unit Name

GeB	Georgetown clay loam, 0 to 2 percent slopes
HeB	Heiden clay, 1 to 3 percent slopes



**1400 FM 487, Jarrell, Texas
Williamson County**

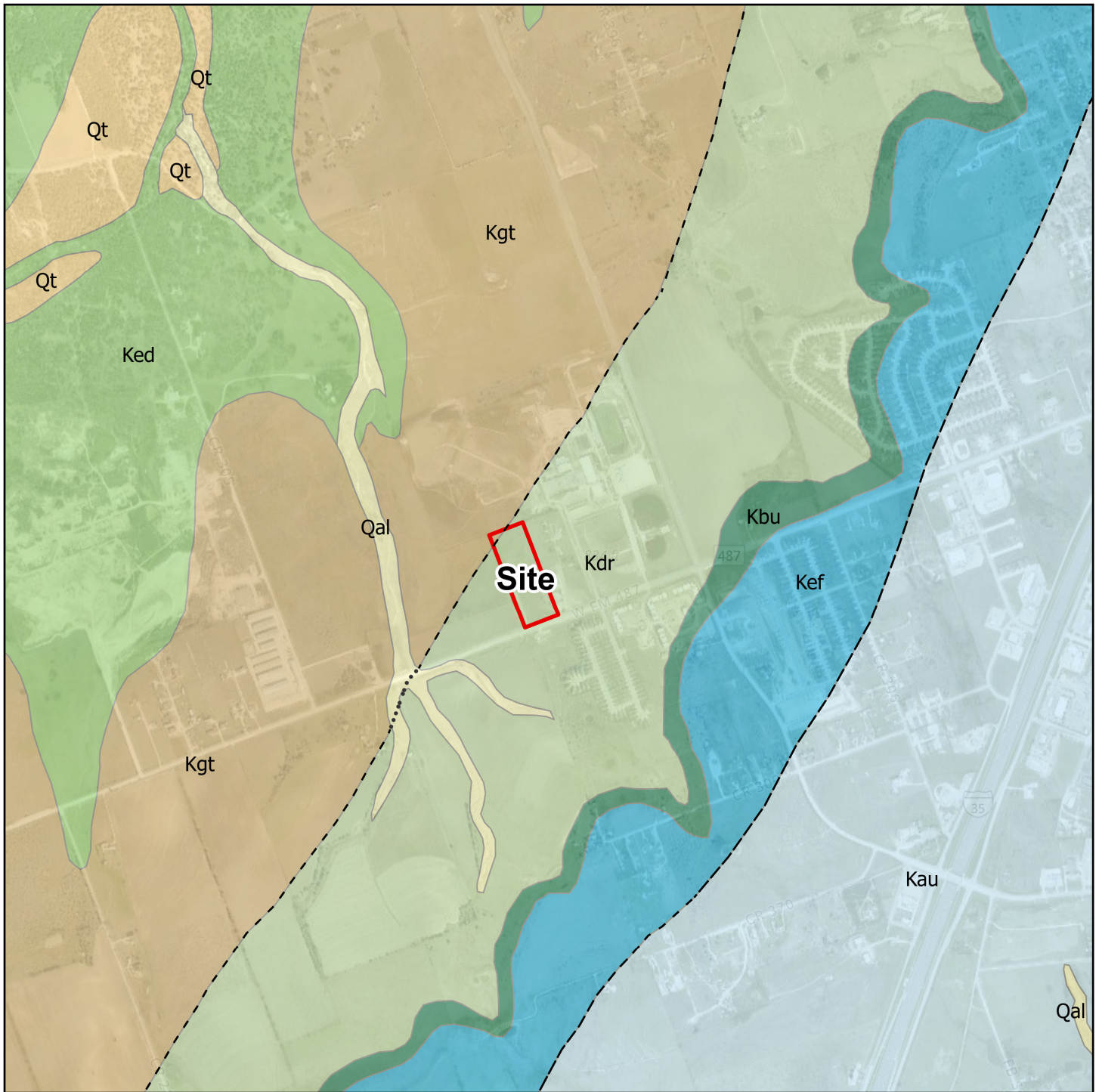
Site Soils

Geologic Assessment
1400 FM 487, Jarrell, Texas



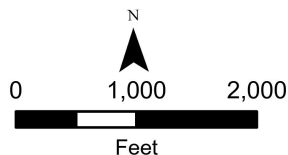
DATE
7/23/2024

FIGURE
5



Legend

- Site
- Kau - Austin Group
- Kbu - Buda Formation
- Kdr - Del Rio Formation
- Ked - Edwards Limestone
- Kef - Eagle Ford Formation
- Kgt - Georgetown Formation
- Qal - Alluvium
- Qt - Terrace Deposits
- Concealed Normal Fault
- - - Inferred Normal Fault



**1400 FM 487, Jarrell, Texas
Williamson County**

Site Geology

Geologic Assessment
1400 FM 487, Jarrell, Texas



DATE
7/23/2024

FIGURE
6



Legend

- Site
- Kdr - Del Rio Formation
- Kgt - Georgetown Formation
- Inferred Normal Fault
- Soil Map Unit Name



0 50 100
Feet

1 inch = 90 feet

**1400 FM 487, Jarrell, Texas
Williamson County**

Site Findings

Geologic Assessment
1400 FM 487, Jarrell, Texas



DATE
8/7/2024

FIGURE
7

**GEOLOGIC ASSESSMENT
ATTACHMENT E - PHOTO LOG**

Attachment E - Photo Log
Site Investigation Photos



Site



Southern Site Boundary Along FM 487



**Site Entrance
Southern Site Boundary**



Southwestern Site Corner



Western Site Boundary



Northwestern Site Corner



Northern Site Boundary



Northeastern Site Corner



Eastern Site Boundary



Southeastern Site Corner



Driveway into Site



Pasture in Southern Portion of Site



**Residential Homestead
Center of Site**



Livestock Barn – Rear of Residential Homestead



Rear of Residential Homestead



Pasture in Northern Portion of Site



Livestock Tank in Northwestern Site Corner



**Typical Pasture Vegetation Community and
Fenceline Vegetation Community**



Typical Pasture Vegetation Community



Georgetown clay loams (GeB)



Georgetown clay loams (GeB)



**Excavated Soil on Property Adjacent to the
North
Assumed Deep Georgetown clay loams**



Heiden Clays (HeB)



Heiden Clays (HeB)



**Soil and Brush Piles Data Gap
Southeastern Corner of Site**

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: Diane Bernal / DB Land Consulting LLC

Date: 10/22/2024

Signature of Customer/Agent:



Regulated Entity Name: Morava Enclave

Regulated Entity Information

1. The type of project is:

- ☐ Residential: Number of Lots: _____
- ☒ Residential: Number of Living Unit Equivalents: 96
- ☒ Commercial
- ☐ Industrial
- ☐ Other: _____

2. Total site acreage (size of property): 10.00

3. Estimated projected population: 77

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	123,060	÷ 43,560 =	2.825
Parking	19,521	÷ 43,560 =	0.448
Other paved surfaces	161,903.40	÷ 43,560 =	3.717
Total Impervious Cover	304,484.40	÷ 43,560 =	6.990

Total Impervious Cover 6.99 ÷ Total Acreage 10.0 X 100 = 69.9% 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>18,865</u> Gallons/day
<u> </u> % Industrial	<u> </u> Gallons/day
<u> </u> % Commingled	<u> </u> Gallons/day
TOTAL gallons/day <u>18,865</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 Donahoe Wastewater (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" = 80'.

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 Firmette 48491CO150F dated 12/20/2019

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

☐ The wells are not in use and have been properly abandoned.

☐ The wells are not in use and will be properly abandoned.

☐ The wells are in use and comply with 16 TAC §76.

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

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

☐ All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.

☒ No sensitive geologic or manmade features were identified in the Geologic Assessment.

☐ **Attachment D - Exception to the Required Geologic Assessment.** A request and justification for an exception to a portion of the Geologic Assessment is attached.

- 22. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.
- 23. ☒ Areas of soil disturbance and areas which will not be disturbed.
- 24. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.
- 25. ☒ Locations where soil stabilization practices are expected to occur.
- 26. ☐ Surface waters (including wetlands).
☒ N/A
- 27. ☐ Locations where stormwater discharges to surface water or sensitive features are to occur.
☒ There will be no discharges to surface water or sensitive features.
- 28. ☒ Legal boundaries of the site are shown.

Administrative Information

- 29. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.
- 30. ☒ Any modification of this WPAP will require Executive Director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

WATER POLLUTION ABATEMENT PLAN

Attachments

(TQEQ-0584)

ATTACHMENT A – FACTORS AFFECTING WATER QUALITY

The proposed development may include factors that could affect storm and ground water quality:

- Disturbance of vegetated areas.
- Construction spoils
- Leaking oil from parked vehicles.
- Loss of vegetative ground cover due to inadequate watering or mismanagement.
- Over fertilizing vegetative areas.
- The use of roads by automotive traffic and subsequent oil / grease pollutants from normal use.
- The accidental or improper discharge of the following:
 - a. Concrete
 - b. Cleaning solvents
 - c. Detergents
 - d. Petroleum based products
 - e. Paints
 - f. Paint solvents
 - g. Acids
 - h. Concrete additives
 - i. Portable restrooms

ATTACHMENT B – VOLUME AND CHARACTER OF STORMWATER

For the character and volume of the stormwater run-off, please see the accompanying Engineer's floodplain analysis.

ATTACHMENT C – SUITABILITY LETTER FROM AUTHORIZED AGENT

This attachment is not applicable to this project as it is tying into an existing sewage collection system from the City of Jarrell.

ATTACHMENT D – EXCEPTION TO THE REQUIRED GEOLOGIC ASSESSMENT

No exception to the required geologic assessment is requested at this time and can be found in the next section Geologic Assessment section prepared by Anding Environmental..

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: Diane Bernal / DB Land Consulting LLC

Date: October 22, 2024

Signature of Customer/Agent:



Regulated Entity Name: Morava Enclave

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: Buttermilk Creek - Salado Creek

Temporary Best Management Practices (TBMPs)

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

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

- ☒ A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.
 - ☒ A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.
 - ☒ A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.
 - ☒ A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.
8. ☒ The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.
- ☐ **Attachment E - Request to Temporarily Seal a Feature.** A request to temporarily seal a feature is attached. The request includes justification as to why no reasonable and practicable alternative exists for each feature.
- ☒ There will be no temporary sealing of naturally-occurring sensitive features on the site.
9. ☒ **Attachment F - Structural Practices.** A description of the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site is attached. Placement of structural practices in floodplains has been avoided.
10. ☒ **Attachment G - Drainage Area Map.** A drainage area map supporting the following requirements is attached:
- ☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.
 - ☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.
 - ☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.
 - ☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

- ☒ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. Erosion and sediment controls other than sediment basins or sediment traps within each disturbed drainage area will be used.
11. ☐ **Attachment H - Temporary Sediment Pond(s) Plans and Calculations.** Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are attached.
- ☒ N/A
12. ☒ **Attachment I - Inspection and Maintenance for BMPs.** A plan for the inspection of each temporary BMP(s) and measure(s) and for their timely maintenance, repairs, and, if necessary, retrofit is attached. A description of the documentation procedures, recordkeeping practices, and inspection frequency are included in the plan and are specific to the site and/or BMP.
13. ☒ All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.
14. ☒ If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).
15. ☒ Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.
16. ☒ Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

Soil Stabilization Practices

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

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

18. ☒ Records must be kept at the site of the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
19. ☒ Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.

Administrative Information

20. ☒ All structural controls will be inspected and maintained according to the submitted and approved operation and maintenance plan for the project.
21. ☒ If any geologic or manmade features, such as caves, faults, sinkholes, etc., are discovered, all regulated activities near the feature will be immediately suspended. The appropriate TCEQ Regional Office shall be immediately notified. Regulated activities must cease and not continue until the TCEQ has reviewed and approved the methods proposed to protect the aquifer from any adverse impacts.
22. ☒ Silt fences, diversion berms, and other temporary erosion and sediment controls will be constructed and maintained as appropriate to prevent pollutants from entering sensitive features discovered during construction.

TEMPORARY STORMWATER SECTION **(TCEQ-0602)**

ATTACHMENT A - SPILL RESPONSE ACTIONS

The responsible person shall immediately abate and contain the spill or discharge and cooperate fully with the executive director and the local incident command system. The responsible person shall also begin reasonable response actions based on the significance of the spill.

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 minor spills:
 - a. Contain the spread of the spill
 - b. Recover the spilled material
 - c. Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills:

1. This response may require the cessation of all other activities.
2. Spills should be cleaned up immediately.
3. Contain spread of the spill.
4. Notify the project foreman immediately.
5. 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.
6. If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
7. If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant / Hazardous Spills:

1. Notify the TCEQ by telephone as soon as possible and within 24 hours at 512-239-1000 (Austin) 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 in 40 CFR parts 110, 119 and 302, the contractor should notify the National Response Center at 1-800-424-8802.
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 – POTENTIAL SOURCES OF CONTAMINATION

- Disturbance of vegetated areas.
- Construction spoils
- Leaking oil from parked vehicles.
- Loss of vegetative ground cover due to inadequate watering or mismanagement.
- Over fertilizing vegetative areas.
- The use of roads by automotive traffic and subsequent oil / grease pollutants from normal use.
- The accidental or improper discharge of the following:
 - a. Concrete
 - b. Cleaning solvents
 - c. Detergents
 - d. Petroleum based products
 - e. Paints
 - f. Paint solvents
 - g. Acids
 - h. Concrete additives
 - i. Portable restrooms

ATTACHMENT C – SEQUENCE OF MAJOR ACTIVITIES

Construction Sequences:

The area within the limit of construction will be disturbed. All disturbed area will be re-vegetated. Construction Sequence #3 will have the most major activities which will disturb site soils.

1. Erosion and sediment controls, soil stabilization, and tree protection are to be installed as indicated on the attached site plan.

ESTIMATE OF AREAS OF ACTIVITIES

Activity	Area Estimate
Silt Fencing	1,400.00 LF
Stabilized Construction Entrance (SCE)	1,000.0 SF
Rock Berms (2)	30 LF

2. Schedule a preconstruction coordination meeting to be held with the City, Owner, Architects, Civil Engineer, and all other utility companies as required by the City Engineer. A 72 hour notification of E.V. inspection is needed prior to preconstruction conference.
3. Excavation, infrastructure, sand filter system, and building construction will commence on site.

ESTIMATE OF AREAS OF ACTIVITIES

Activity	Area Estimate
Building Construction Retail	15,540.00 SF
Building Construction Residential	107,520.00 SF

4. Erosion and sediment controls will be revised, if needed, to comply with inspectors' directives, and revised construction schedule relative to the water quality plan requirements and the erosion plan.

5. Rough-cut all required or necessary ponds. The outlet system shall be protected from erosion and shall be maintained throughout the course of construction until final restoration is achieved.
6. Permanent controls will be cleaned out and filter media will be installed prior to / concurrently with re-vegetation of the site.
7. Project Engineer writing concurrence letter, and scheduling final inspection with environmental inspector, prior to the removal of erosion controls.
8. Complete permanent erosion control and site restoration. Remove temporary erosion/sedimentation controls and tree protection. Restore any areas disturbed during removal of erosion/sedimentation controls.

ATTACHMENT D – TEMPORARY BEST MANAGEMENT PRACTICES & MEASURES

The two basic categories of temporary control methods for construction-generated pollution are erosion and sediment controls. Erosion controls are used to prevent soil on the construction site from being mobilized and transported by storm-water runoff. Sediment controls temporarily detain the runoff. Runoff velocities are reduced in these controls allowing sediment in the runoff to settle out.

The following information is a description of the TBMPs and measures that will be used during and after construction.

1. Temporary Construction Entrance/Exit. The temporary construction entrance/exit will be located on the South western end of the site along FM 487. Please see attached sheet number 5. The purpose of a temporary gravel construction entrance is to provide a stable entrance/exit condition from the construction site and keep mud and sediment off public roads. A stabilized construction entrance is a stabilized pad of crushed stone located at any point traffic will be entering or leaving the construction site from a public right-of-way, street, alley, sidewalk or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking or flowing of sediment onto public rights-of-way. This practice will be used at all points of construction ingress and egress. The entrance will be maintained in a condition, which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed, or tracked onto public rights-of-way will be removed immediately by contractor. When necessary, wheels will be cleaned to remove sediment prior to entrance onto public right-of-way. When washing is required, it will be done on an area stabilized with crushed stone that drains into appropriate designated area. All sediment will be prevented from entering and storm drain, ditch or water course by using approved methods. Refer to sheet 5 attached to this section for location of the construction entrance and sheet 26 for the detail describing the construction entrance.
2. Silt Fence. The silt fence barrier will be located along the northern and western sides of the property. Please see attached sheet number 5. A silt fence is a barrier consisting of geotextile fabric supported by metal posts to prevent soil and sediment loss from a site. When properly used, silt fences can be highly effective at controlling sediment from disturbed areas. They cause runoff to pond, allowing heavier solids to settle out. The purpose of a silt fence is to intercept and detain water-borne sediment from

unprotected areas of a limited extent. Silt fence will be used during the entire period of construction near the perimeter of a disturbed area to intercept sediment while allowing water to percolate through. This fence will remain in place until the disturbed area is permanently stabilized. All fencing will be inspected weekly, and after any rainfall. Sediment will be removed when buildup reaches 6 inches. Any torn fabric will be replaced or a second line of fencing will be installed parallel to the torn section. Any sections of fencing that are crushed or collapsed in the course of construction activity will be replaced or repaired. If a section of fence is obstructing vehicular access it will be relocated to a spot where it will provide equal protection, but will not obstruct vehicles. When construction is complete, the sediment will be disposed of in a manner that will not cause additional siltation and the prior location of the silt fence will be re-vegetated. The fence itself will be disposed of in an approved landfill. Refer to the attached sheet 5 for location of silt-fencing and sheet 26 for a detail describing the silt-fencing.

3. Concrete Washout Area The concrete washout area will be located on the eastern side of the property. Please see attached sheet number 5. The purpose of concrete washout areas is to prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout offsite, performing onsite washout in a designated area, and training employees and subcontractors.

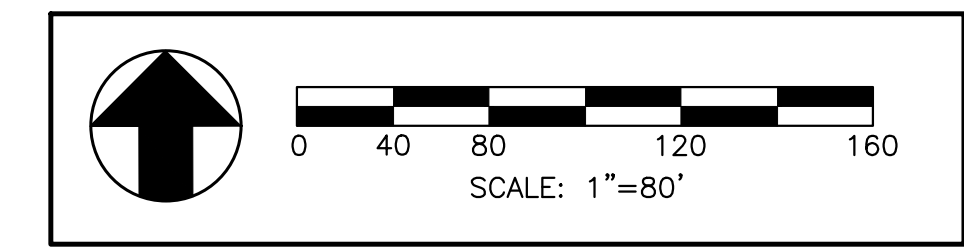
The following steps will help reduce stormwater pollution from concrete wastes:

- Incorporate requirements for concrete waste management into material supplier and subcontractor agreements.
- Avoid mixing excess amounts of fresh concrete.
- Perform washout of concrete trucks in designated areas only.
- Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
- Do not allow excess concrete to be dumped onsite, except in designated areas.

For onsite washout:

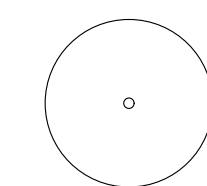
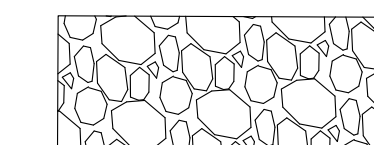
- Locate washout area at least 50 feet from sensitive features, storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste.
- Wash out wastes into the temporary pit where the concrete can set, be broken up, and then disposed properly.

Below grade concrete washout facilities are typical. These consist of a lined excavation sufficiently large to hold expected volume of washout material. Above grade facilities are used if excavation is not practical. Temporary concrete washout facility (type above grade) should be constructed as shown on the details at the end of this section, with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations. Plastic lining material should be a minimum of 10 mil in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material. When temporary concrete washout facilities are no longer required for the work, the hardened concrete should be removed and disposed of. Materials used to construct temporary concrete washout facilities should be removed from the site of the work and disposed of. Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled and repaired.

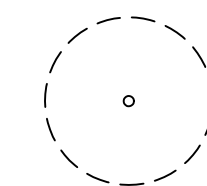


LEGEND

- BOUNDARY / RIGHT OF WAY
- EASEMENT
- ADJOINER
- PROPOSED CONTOUR
- EXISTING CONTOUR
- TREE PROTECTION FENCING
- LIMITS OF CONSTRUCTION
- SILT FENCE
- INLET PROTECTION



TREE TO REMAIN



TREE TO BE REMOVED

NOTES:

- NO CONSTRUCTION INVOLVING COMBUSTIBLE MATERIALS SHALL TAKE PLACE UNTIL FIRE APPARATUS ACCESS ROADS AND FIRE HYDRANTS ARE INSTALLED.
- NO OVERHEAD OBSTRUCTIONS SHALL BE LOWER THAN 13 FEET 6 INCHES
- ALL APPROVED FIRE APPARATUS ROADS SHALL BE CAPABLE OF SUPPORTING THE IMPOSED LOAD OF FIRE APPARATUS WEIGHING AT LEAST 75,000 POUNDS
- THE MAXIMUM GRADE OF THE FIRE LANE SHALL NOT EXCEED 10%
- ALL DISTURBED AREAS SHALL BE RE-VEGETATED TO MEET THE REQUIREMENTS OF THE CITY OF CEDAR PARK'S ORDINANCES.
- ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY INSPECTOR AT TIME OF CONSTRUCTION.

TREE LIST

- *1296 12" LIVE OAK
- *1297 11" LIVE OAK
- *1298 12" LIVE OAK
- * TREE TO BE REMOVED

MORAVA ENCLAVE
1400 FM 487, JARRELL, TX 76537

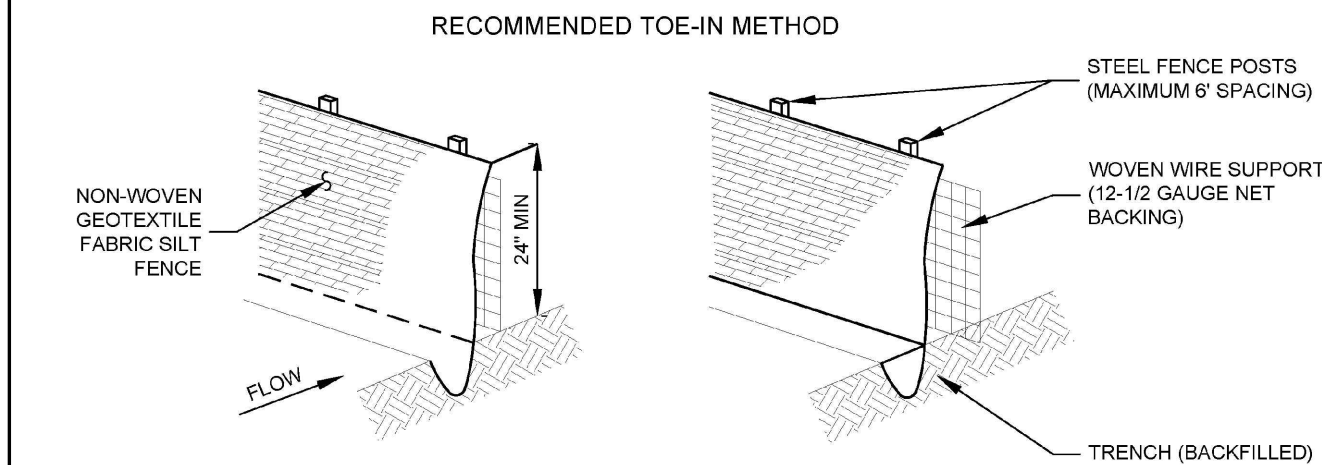
EROSION & SEDIMENTATION
CONTROL PLAN



PRO. NO. _____
SHEET 6 OF 30




CAUTION:
CONTRACTOR TO VERIFY ALL EXISTING UTILITIES
VERTICALLY AND HORIZONTALLY PRIOR TO
CONSTRUCTION. CONTRACTOR TO NOTIFY THE
ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.

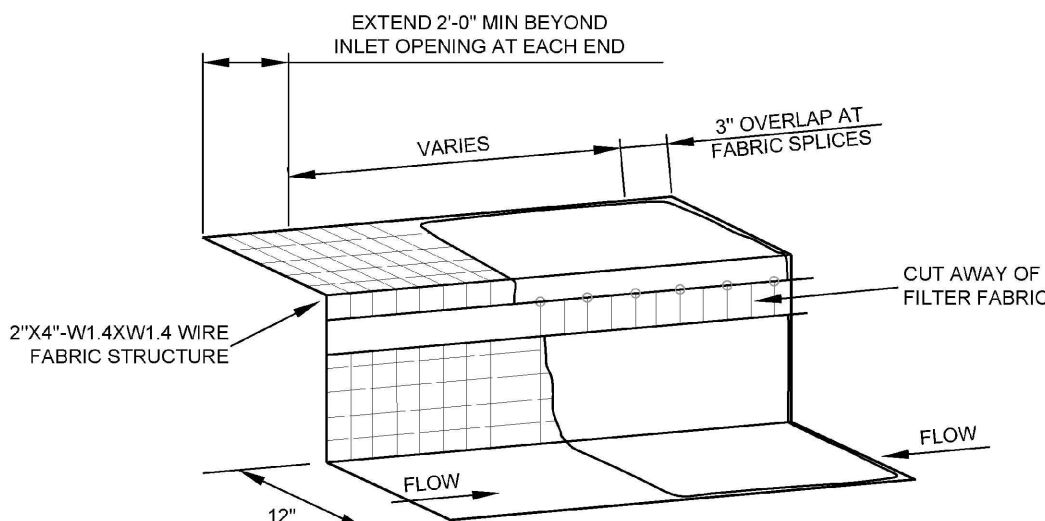


NOTES:

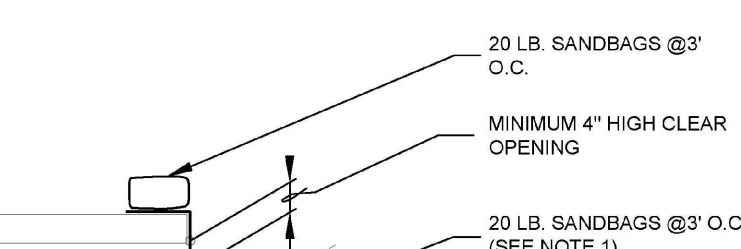
1. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MIN. OF ONE (1) FOOT.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G. PAVEMENT) WEIGHT FABRIC FLAP WITH WASHED GRAVEL ON UPHILL SIDE TO PREVENT FLOW UNDER FENCE.
3. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE SHALL BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IN TURN IS SECURELY FASTENED TO THE STEEL FENCE POSTS.
5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 6 INCHES. THE SILT SHALL BE DISPOSED OF IN AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.
8. SILT FENCE SHALL BE REMOVED AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.

SILT FENCE DETAIL

	CITY OF JARRELL Engineering and Capital Improvements	THE ARCHITECT / ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD	STANDARD No. EC-10 Revision Date: 03/15/2022
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CROSS SECTION

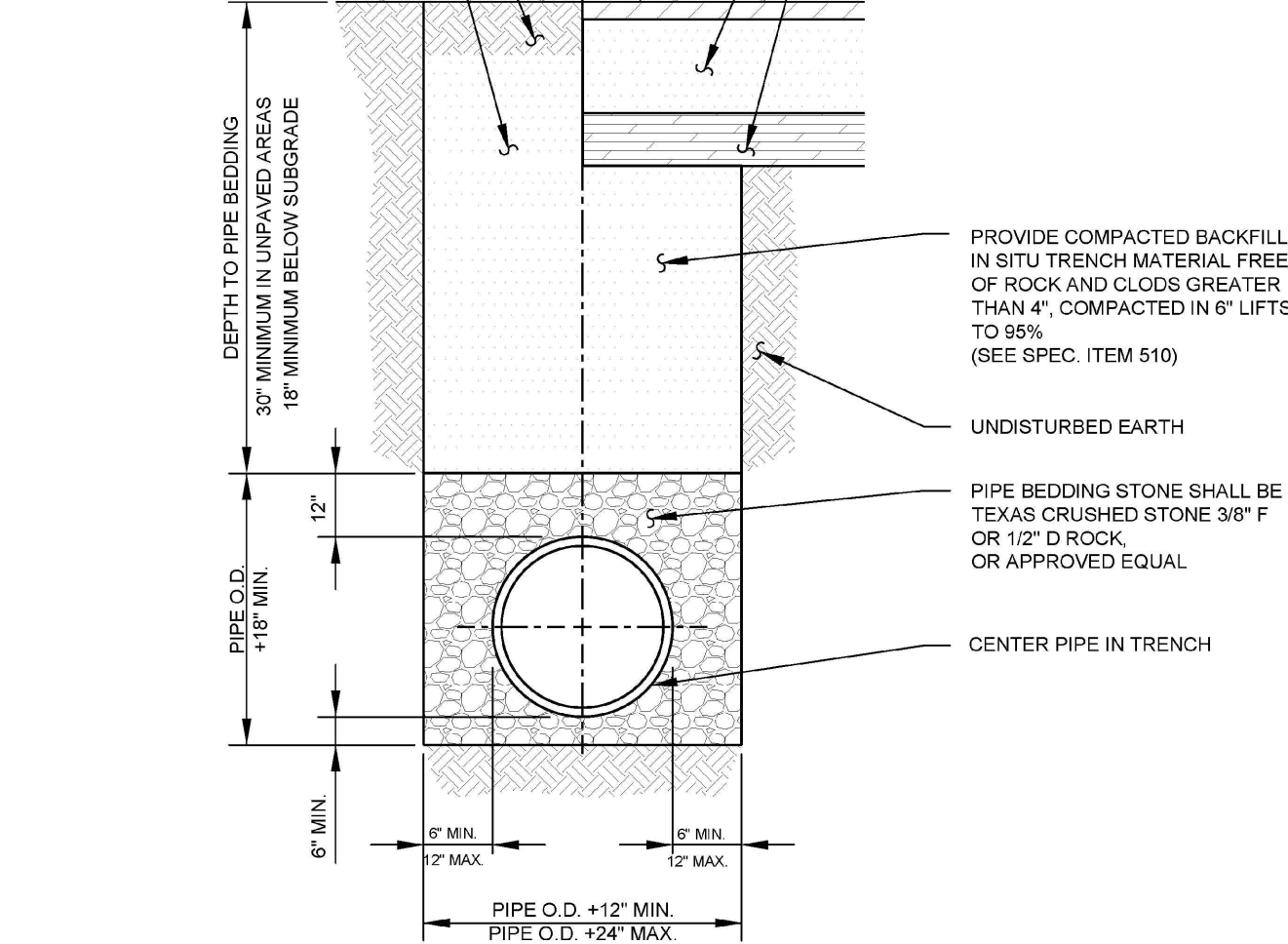
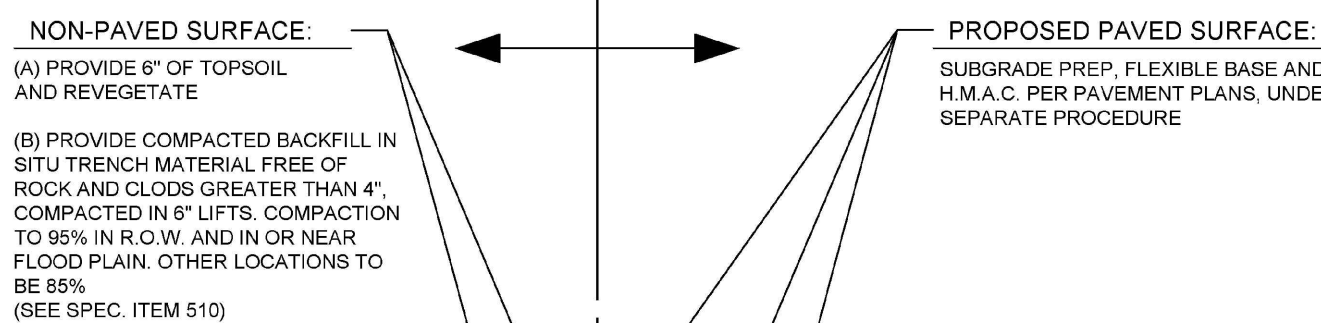


NOTES:

1. WHERE MINIMUM CLEARANCES CAUSE TRAFFIC TO DRIVE IN THE GUTTER, THE CONTRACTOR MAY SUBSTITUTE A 1" X 4" BOARD SECURED WITH CONCRETE NAILS 3" O.C. NAILED INTO THE GUTTER IN LIEU OF SANDBAGS TO HOLD THE FILTER DIKE IN PLACE. UPON REMOVAL, CLEAN ANY DIRT/DEBRIS FROM NAILING LOCATIONS, APPLY CHEMICAL SANDING AGENT AND APPLY NON-SHRINK GROUT FLUSH WITH SURFACE OF GUTTER.
2. A SECTION OF FILTER FABRIC SHALL BE REMOVED AS SHOWN ON THIS DETAIL OR AS DIRECTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR HOG RINGS AT THIS LOCATION.
3. DAILY INSPECTION SHALL BE MADE BY THE CONTRACTOR AND SILT ACCUMULATION MUST BE REMOVED WHEN DEPTH REACHES 2".
4. CONTRACTOR SHALL MONITOR THE PERFORMANCE OF INLET PROTECTION DURING EACH RAINFALL EVENT AND IMMEDIATELY REMOVE THE INLET PROTECTIONS IF THE STORM-WATER BEGINS TO OVERTOP THE CURB.
5. INLET PROTECTIONS SHALL BE REMOVED AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.

CURB INLET PROTECTION DETAIL


	CITY OF JARRELL Engineering and Capital Improvements	THE ARCHITECT / ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD	STANDARD No. EC-14 Revision Date: 03/15/2022
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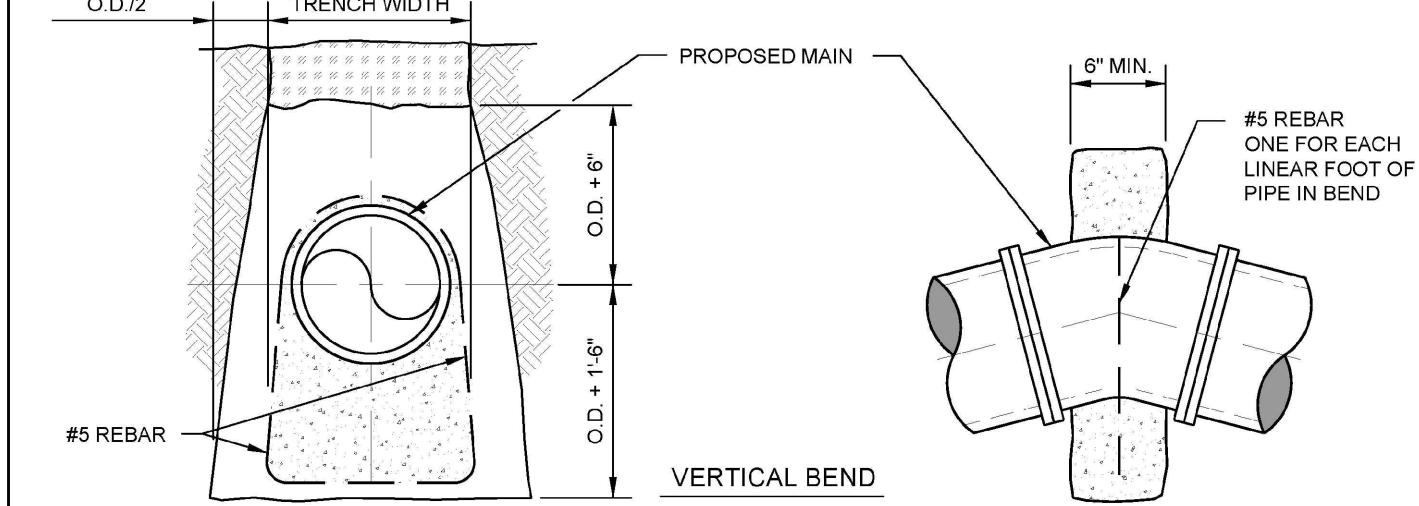
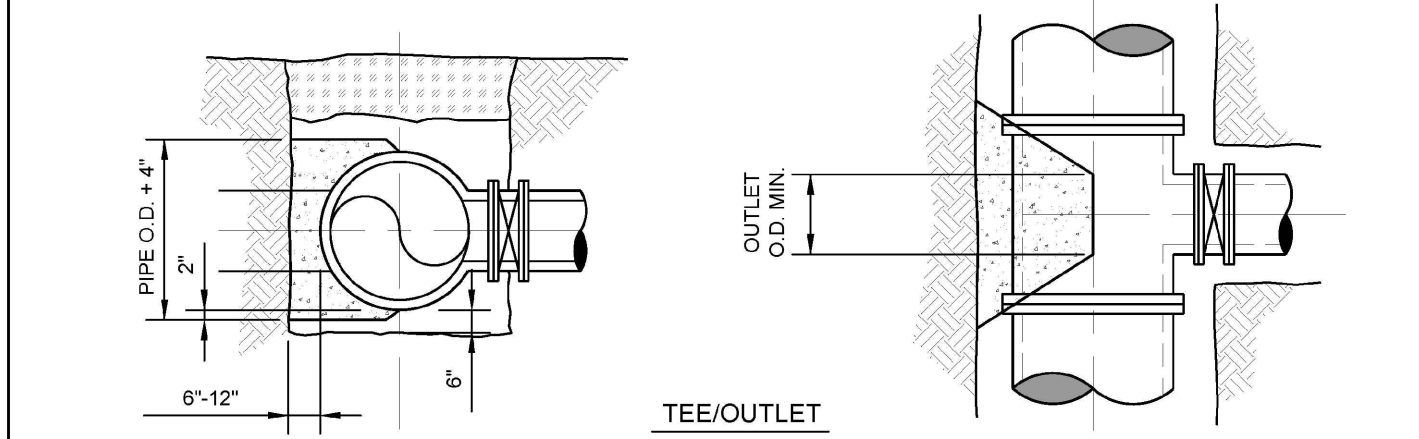
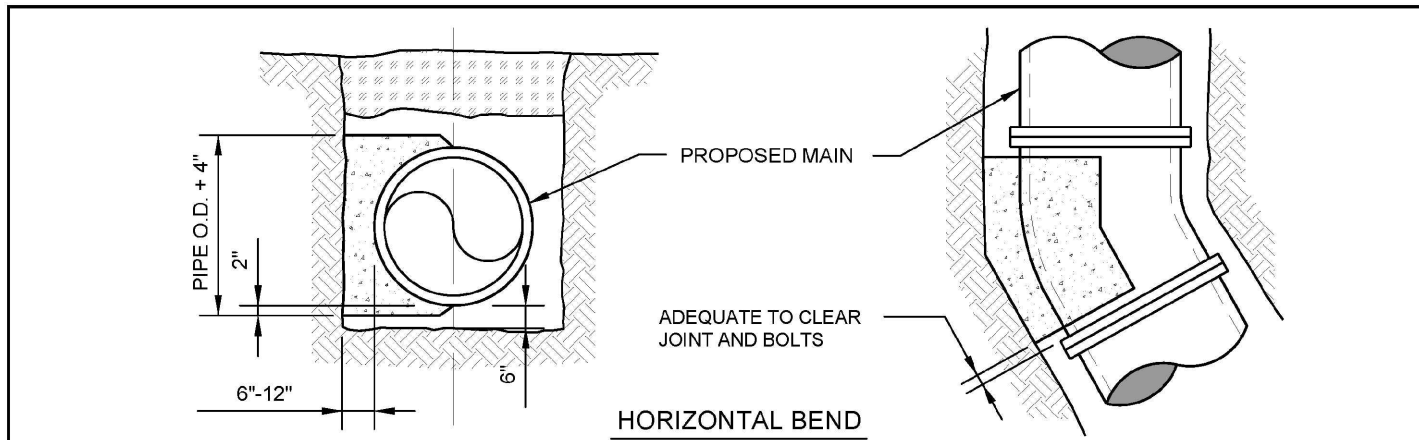


NOTE:

1. ALL TRENCHING AND TRENCH SAFETY SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.


WATER LINE BEDDING & SURFACE REPAIR DETAIL (NON-PAVED & PROPOSED PAVED SURFACE)

	CITY OF JARRELL Engineering and Capital Improvements	THE ARCHITECT / ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD	STANDARD No. WT-08 Revision Date: 03/15/2022
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THRUST BLOCK DESIGN AS FOLLOWS:	SOIL TYPE	PRESSURE
A. PRESSURE OF 150 P.S.I. (ACTUAL IF HIGHER)	LIMESTONE	4000 LBS./SQ. FT.
+ 50% SURGE ALLOWANCE	UNDISTURBED SOIL CALICHE	2000 LBS./SQ. FT.
B. MAXIMUM SOIL BEARING:	LOOSE OR SPONGY SOIL	1500 LBS./SQ. FT.
C. ALL PIPE & FITTING TO BE WRAPPED WITH 40 PLASTIC MIL.		

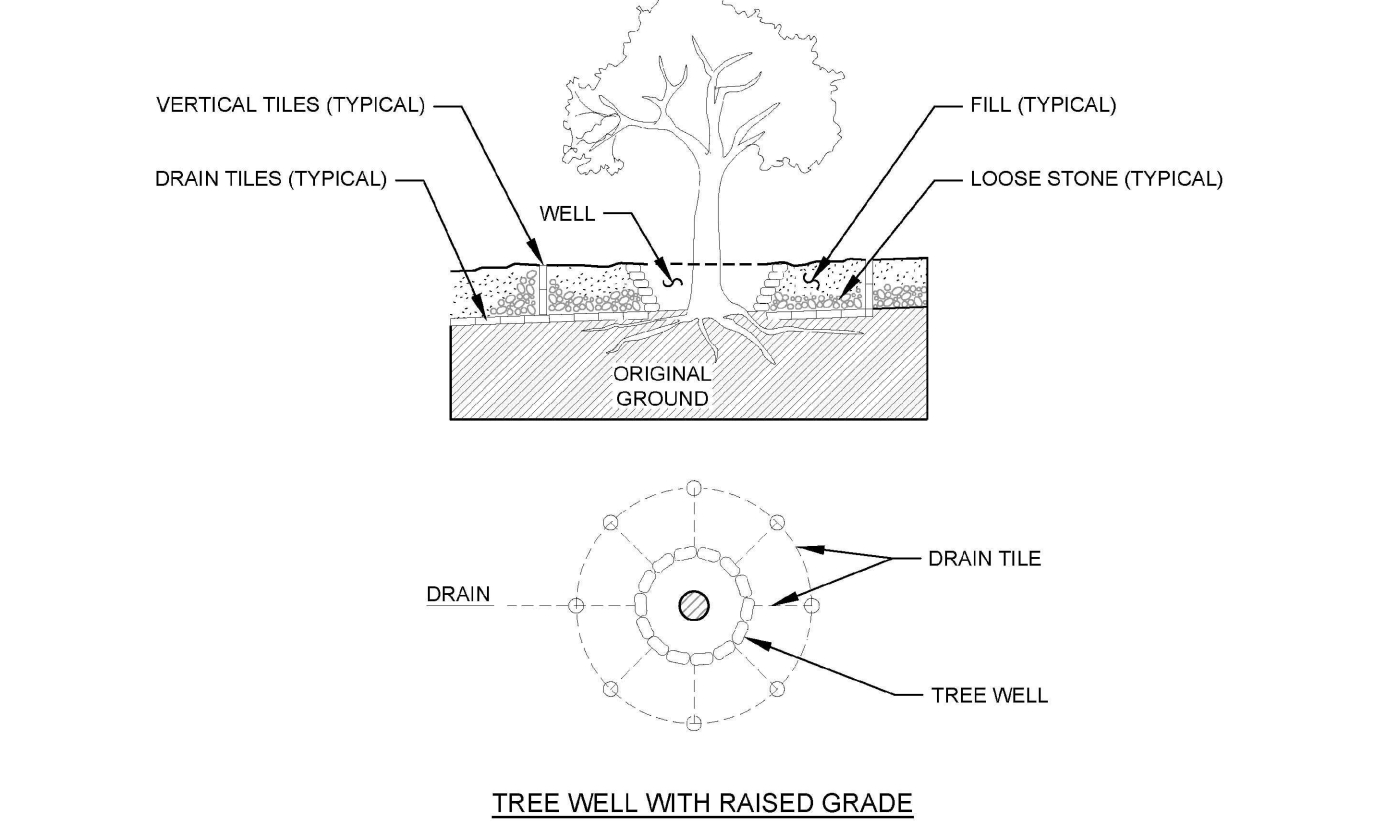
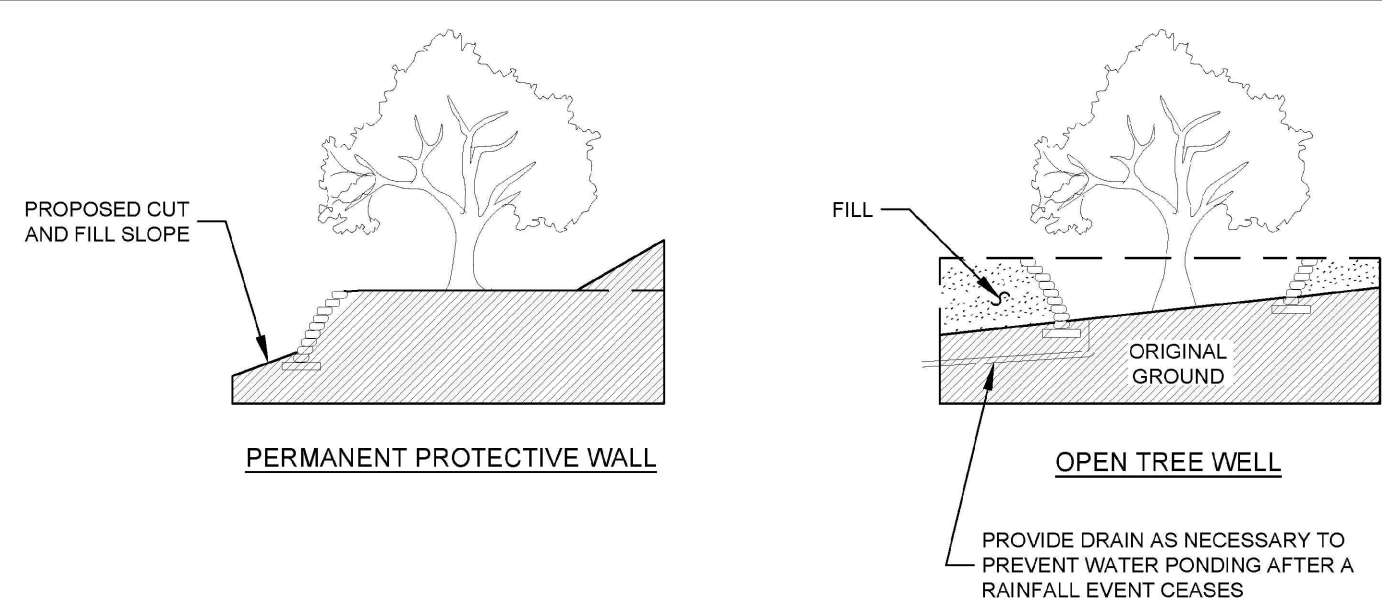
THRUST BLOCK DETAIL

	CITY OF JARRELL Engineering and Capital Improvements	THE ARCHITECT / ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD	STANDARD No. WT-25 Revision Date: 03/15/2022
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1. ALL TREES NOT LOCATED WITHIN THE LIMITS OF CONSTRUCTION AND OUTSIDE OF DISTURBED AREAS SHALL BE PRESERVED. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL TREES TO BE PRESERVED FROM HIS ACTIVITIES.
2. ALL TREES SHOWN TO BE RETAINED WITHIN THE LIMITS OF CONSTRUCTION ON THE PLANS, SHALL BE PROTECTED DURING CONSTRUCTION WITH FENCING. SEE TREE PROTECTION TREE WELLS (EC-02), TREE PROTECTION TREE LOCATION (EC-03) AND TREE PROTECTION FENCE-CHAIN LINK (EC-04).
3. TREE PROTECTION FENCES SHALL BE ERRECTED ACCORDING TO CITY STANDARDS FOR TREE PROTECTION, INCLUDING TYPES OF FENCING AND SIGNAGE.
4. TREE PROTECTION FENCES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING, OR GRADING) AND SHALL BE MAINTAINED THROUGHOUT ALL PHASES OF THE CONSTRUCTION PROJECT.
5. EROSION AND SEDIMENTATION CONTROL BARRIERS SHALL BE INSTALLED OR MAINTAINED IN A MANNER WHICH DOES NOT RESULT IN SOIL BUILD UP WITHIN TREE DRIFLINES.
6. FENCES SHALL COMPLETELY SURROUND THE TREE OR CLUSTERS OF TREES, LOCATED AT THE OUTERMOST LIMITS OF THE TREE BRANCHES (DRIFLINE) OR CRITICAL ROOT ZONE (CRZ), WHICHEVER IS GREATER, AND SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROJECT IN ORDER TO PREVENT THE FOLLOWING:
 - a. SOIL COMPACTION IN CRZ AREA RESULTING FROM VEHICULAR TRAFFIC OR STORAGE OF EQUIPMENT OR MATERIAL.
 - b. CRZ DISTURBANCES DUE TO GRADE CHANGES OR TRENCHING NOT REVIEWED AND AUTHORIZED BY THE FORESTRY MANAGER.
 - c. WOUNDS TO EXPOSED ROOTS, TRUNK, OR LIMBS BY MECHANICAL EQUIPMENT.
 - d. OTHER ACTIVITIES DETRIMENTAL TO TREES SUCH AS CHEMICAL STORAGE, CONCRETE TRUCK CLEANING, AND FIRES.
7. EXCEPTIONS TO INSTALLING TREE FENCES AT THE TREE DRIFLINES OR CRZ, WHICHEVER IS GREATER, MAY BE PERMITTED IN THE FOLLOWING CASES:
 - a. WHERE THERE IS TO BE AN APPROVED GRADE CHANGE, IMPERMEABLE PAVING SURFACE, OR TREE WELL.
 - b. WHERE PERMEABLE PAVING IS TO BE INSTALLED, ERECT THE FENCE AT THE OUTER LIMITS OF THE PERMEABLE PAVING AREA.
 - c. WHERE TREES ARE CLOSE TO PROPOSED BUILDINGS, ERECT THE FENCE NO CLOSER THAN 6 FEET TO THE BUILDING.
 - d. WHERE THERE ARE SEVERE SPACE CONSTRAINTS DUE TO TRACT SIZE, OR OTHER SPECIAL REQUIREMENTS, CONTACT THE FORESTRY MANAGER TO DISCUSS ALTERNATIVES.
8. WHERE ANY OF THE ABOVE EXCEPTIONS RESULT IN A FENCE THAT IS CLOSER THAN 5 FEET TO A TREE TRUNK, THE TRUNK SHALL BE PROTECTED BY STRAPPED-ON PLANKING TO A HEIGHT OF 8 FEET OR TO THE LIMITS OF LOWER BRANCHING) IN ADDITION TO THE REDUCED FENCING PROVIDED.
9. WHERE ANY OF THE ABOVE EXCEPTIONS RESULT IN AREAS OF UNPROTECTED ROOT ZONES UNDER THE DRIFLINE OR CRZ, WHICHEVER IS GREATER, THOSE AREAS SHOULD BE COVERED WITH 4 INCHES OF ORGANIC MULCH TO MINIMIZE SOIL COMPACTION.
10. ALL GRADING WITHIN CRZ AREAS SHALL BE DONE BY HAND OR WITH SMALL EQUIPMENT TO MINIMIZE ROOT DAMAGE. PRIOR TO GRADING, RELOCATE PROTECTIVE FENCING TO 2 FEET BEHIND THE GRADE CHANGE AREA.
11. ANY ROOTS EXPOSED BY CONSTRUCTION ACTIVITY SHALL BE PRUNED FLUSH WITH THE SOIL, AND BACKFILLED WITH GOOD QUALITY TOP SOIL WITHIN TWO DAYS. IF EXPOSED ROOT AREAS CANNOT BE BACKFILLED WITHIN 2 DAYS, AN ORGANIC MATERIAL WHICH REDUCES SOIL TEMPERATURE AND MINIMIZES WATER LOSS DUE TO EVAPORATION SHALL BE PLACED TO COVER THE ROOTS UNTIL BACKFILL CAN OCCUR.
12. PRIOR TO EXCAVATION OR GRADE CUTTING WITHIN TREE DRIFLINES, A CLEAN CUT SHALL BE MADE WITH A ROCK SAW OR SIMILAR EQUIPMENT, IN A LOCATION AND TO A DEPTH APPROVED BY THE FORESTRY MANAGER, TO MINIMIZE DAMAGE TO REMAINING ROOTS.
13. TREES MOST HEAVILY IMPACTED BY CONSTRUCTION ACTIVITIES WILL BE WATERED DEEPLY ONCE A WEEK DURING PERIODS OF HOT, DRY WEATHER. TREE CROWNS ARE TO BE SPRAYED WITH WATER PERIODICALLY TO REDUCE DUST ACCUMULATION ON LEAVES.
14. WHEN INSTALLING CONCRETE ADJACENT TO THE ROOT ZONE OF A TREE, A PLASTIC VAPOR BARRIER SHALL BE PLACED BEHIND THE CONCRETE TO PROHIBIT LEACHING OF LIME INTO THE CRZ.
15. ANY TRENCHING REQUIRED FOR THE INSTALLATION OF LANDSCAPE IRRIGATION SHALL BE PLACED AS FAR FROM EXISTING TREE TRUNKS AS POSSIBLE.
16. NO LANDSCAPE TOPSOIL DRESSING GREATER THAN FOUR (4) INCHES SHALL BE PERMITTED WITHIN THE DRIFLINE OR CRZ OF TREES, WHICHEVER IS GREATER. NO TOPSOIL IS PERMITTED ON ROOT FLARES OF ANY TREE.
17. PRUNING TO PROVIDE CLEARANCES FOR STRUCTURES, VEHICULAR TRAFFIC, AND CONSTRUCTION EQUIPMENT SHALL TAKE PLACE BEFORE CONSTRUCTION BEGINS. ALL PRUNING MUST BE DONE ACCORDING TO CITY STANDARDS AND AS OUTLINED IN LITERATURE PROVIDED BY THE INTERNATIONAL SOCIETY OF ARBORICULTURE (ISA PRUNING TECHNIQUES).
18. ALL OAK TREE CUTS, INTENTIONAL OR UNINTENTIONAL, SHALL BE SEALED WITH AN APPROVED PRUNING SEALER IMMEDIATELY (WITHIN 10 MINUTES). TREE PAINT MUST BE KEPT ON SITE AT ALL TIMES.
19. THE FORESTRY MANAGER HAS THE AUTHORITY TO REQUIRE ADDITIONAL TREE PROTECTION BEFORE OR DURING CONSTRUCTION. TREES APPROVED FOR REMOVAL SHALL BE REMOVED IN A MANNER WHICH DOES NOT IMPACT TREES TO BE PRESERVED. REFER TO THE CITY OF JARRELL TREE TECHNICAL MANUAL FOR APPROPRIATE REMOVAL METHODS.
20. PRIOR TO CONSTRUCTION, ALL LOWER TREE LIMBS OVER ROADWAYS MUST BE PRUNED TO A HEIGHT OF 14 FEET USING THE TECHNIQUES DESCRIBED IN THE CITY OF JARRELL TREE TECHNICAL MANUAL.
21. DEVIATIONS FROM THE ABOVE REQUIREMENTS AND NEGLIGENT DAMAGE TO TREES MAY BE CONSIDERED AS ORDINANCE VIOLATIONS.

TREE PROTECTION NOTES

	CITY OF JARRELL Engineering and Capital Improvements	THE ARCHITECT / ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD	STANDARD No. EC-01 Revision Date: 03/15/2022
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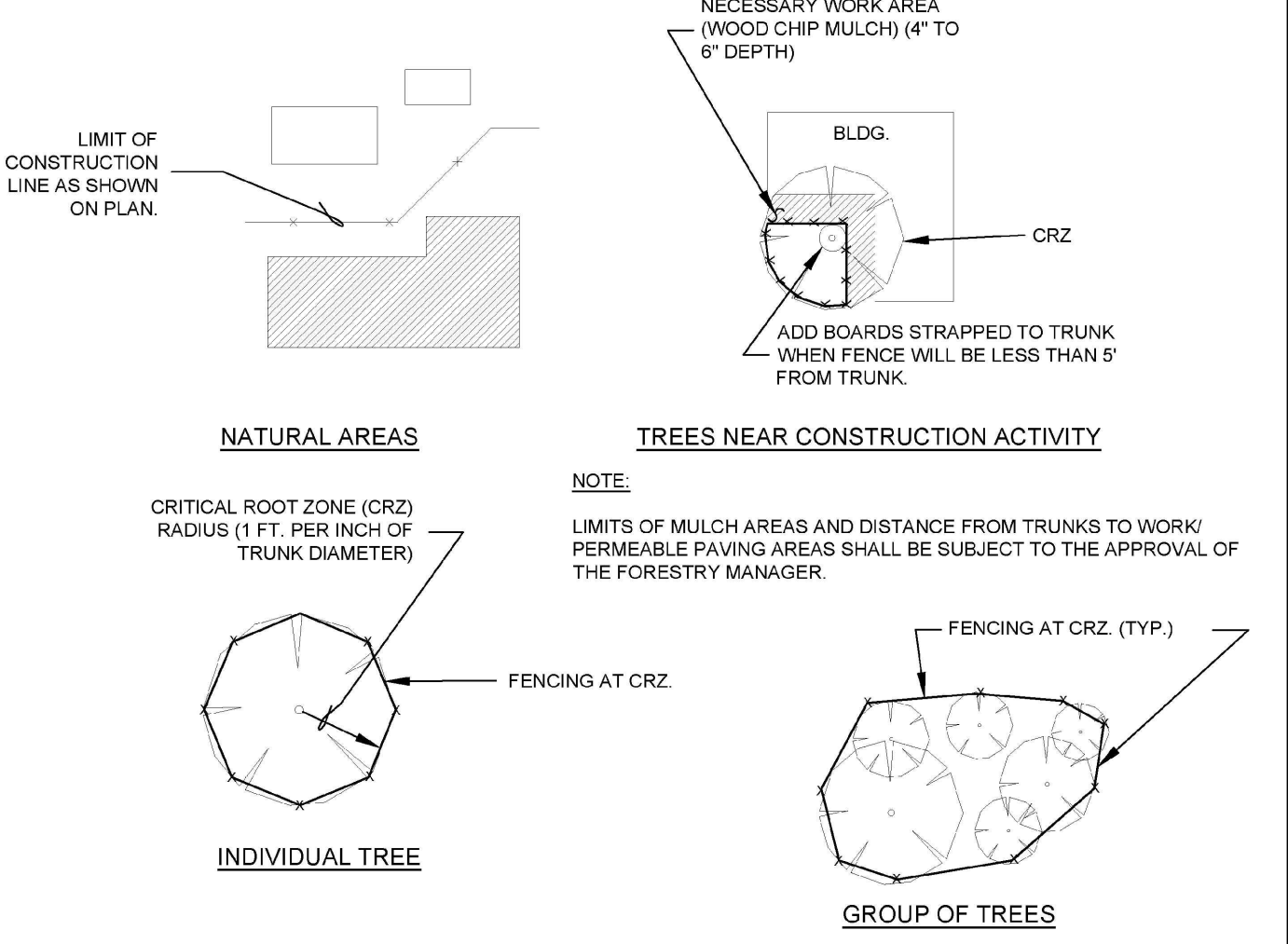
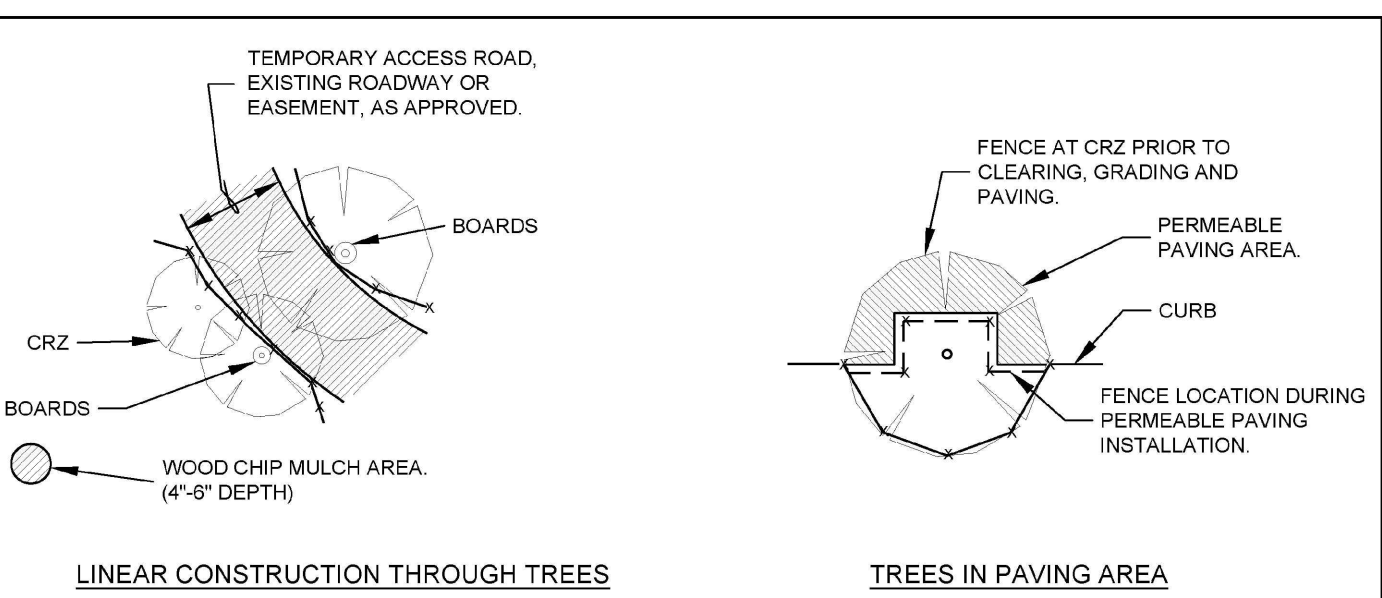


NOTE:


LOCATION, TYPE, DEPTHS AND CONSTRUCTION SPECIFICATIONS OF FILL, DRAINS AND WALLS SHALL BE SUBJECT TO THE APPROVAL OF THE FORESTRY MANAGER.

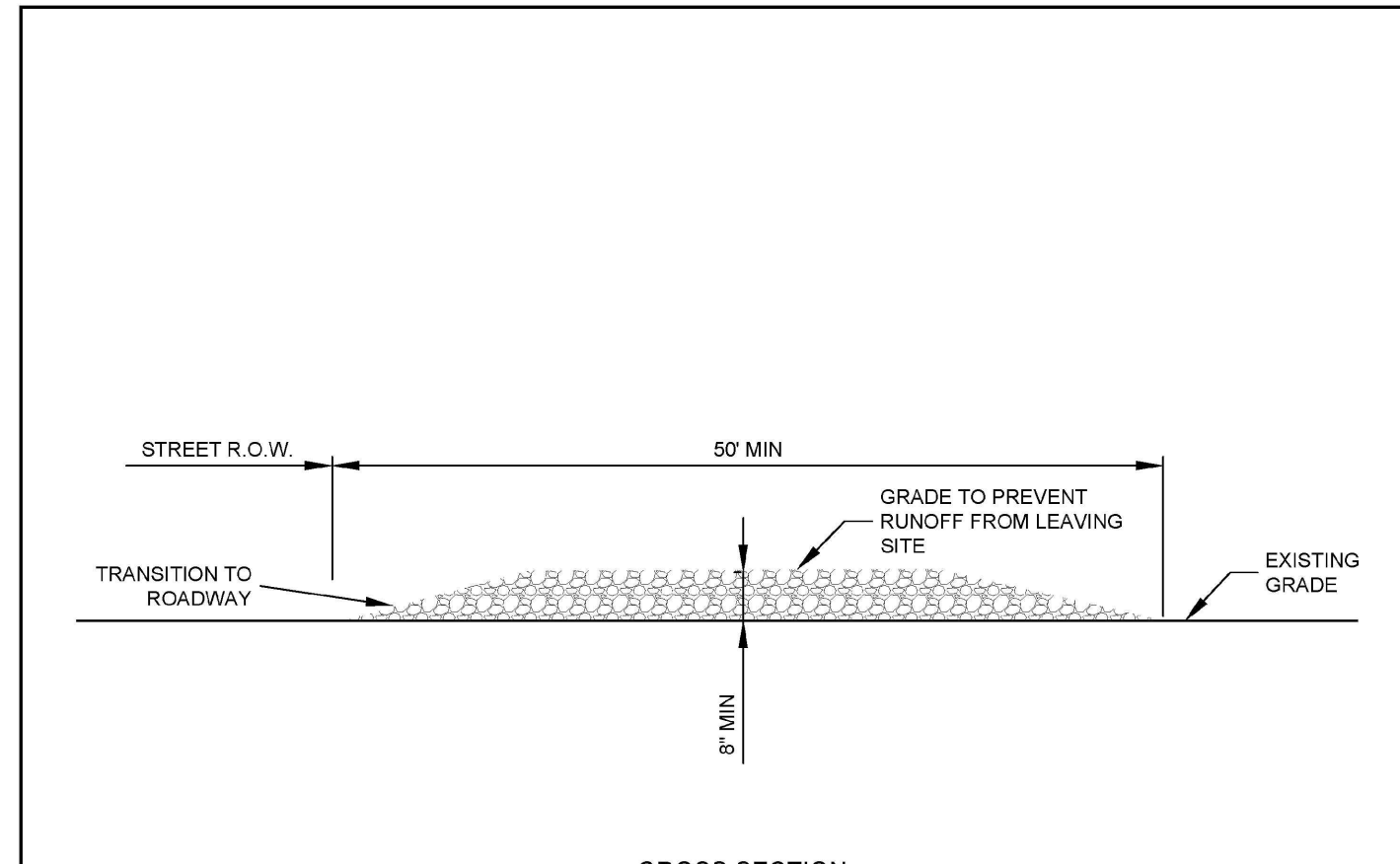
TREE PROTECTION TREE WELLS

	CITY OF JARRELL Engineering and Capital Improvements	THE ARCHITECT / ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD	STANDARD No. EC-02 Revision Date: 03/15/2022
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TREE PROTECTION FENCE LOCATIONS

	CITY OF JARRELL Engineering and Capital Improvements	THE ARCHITECT / ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD	STANDARD No. EC-03 Revision Date: 03/15/2022
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- NOTES:
1. STONE SIZE SHALL BE 3" - 8" OPEN GRADED ROCK.
 2. THICKNESS OF CRUSHED STONE PAD TO BE NOT LESS THAN 8".
 3. LENGTH SHALL BE A MINIMUM OF 50' FROM ACTUAL ROADWAY, AND WIDTH NOT LESS THAN FULL WIDTH OF INGRESS/EGRESS.
 4. ENTRANCE SHALL BE PROPERLY GRADED TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.
 5. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY BY CONTRACTOR.
 6. AS NECESSARY, WHEELS MUST BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT OF WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.

STABILIZED CONSTRUCTION ENTRANCE DETAIL

	CITY OF JARRELL Engineering and Capital Improvements	THE ARCHITECT / ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD	STANDARD No. EC-09 Revision Date: 03/15/2022
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ATTACHMENT E – REQUEST TO TEMPORARILY SEAL A FEATURE

There will be no request to temporarily seal a feature.

ATTACHMENT F – STRUCTURAL PRACTICES

Silt Fence will be used to divert all upgradient on-site flows. Silt Fencing description below.

Silt Fence. A silt is a barrier consisting of geotextile fabric supported by metal posts to prevent soil and sediment loss from a site. When properly used, silt fences can be highly effective at controlling sediment from disturbed areas. They cause runoff to pond, allowing heavier solids to settle out. The purpose of a silt fence is to intercept and detain water-borne sediment from unprotected areas of a limited extent. Silt fence will be used during the entire period of construction near the perimeter of a disturbed area to intercept sediment while allowing water to percolate through. This fence will remain in place until the disturbed area is permanently stabilized. All fencing will be inspected weekly, and after any rainfall. Sediment will be removed when buildup reaches 6 inches. Any torn fabric will be replaced or a second line of fencing will be installed parallel to the torn section. Any sections of fencing that are crushed or collapsed in the course of construction activity will be replaced or repaired. If a section of fence is obstructing vehicular access it will be relocated to a spot where it will provide equal protection, but will not obstruct vehicles. When construction is complete, the sediment will be disposed of in a manner that will not cause additional siltation and the prior location of the silt fence will be revegetated. The fence itself will be disposed of in an approved landfill.

ATTACHMENT G – DRAINAGE AREA MAP

Refer to the attached drainage area map sheet 7 submitted for this project.

ATTACHMENT H – TEMPORARY SEDIMENT POND PLANS AND CALCULATIONS

There will not be a temporary sediment pond. Refer to the attached engineer's report for the calculations of a permanent BMP that was constructed first before any structure is built on-site.

ATTACHMENT I - INSPECTION AND MAINTENANCE FOR BMPs

The following is a description of documentation procedures and recordkeeping practices for the Morava Enclave.

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

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.

Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges.

A Weekly Inspection and Maintenance Form has been created to maintain the BMPs onsite. The Onsite Project Manager will be responsible for scheduling the weekly inspection and making sure all necessary repairs be made to ensure the proper performance of the onsite BMPs. The form consists of temporary BMPs inspected, a list of items for each BMP, a date of last inspection/maintenance, the current condition of the item being inspected, a description of the maintenance or repair that is needed, and when the maintenance or repair was complete. Documentation must be kept during construction and for a period of three (3) years following completion of construction project.

Silt Fencing: The silt fence barrier will be located along the southern and eastern perimeter of the property. Please see attached sheet number 5. A silt is a barrier consisting of geotextile fabric supported by metal posts to prevent soil and sediment loss from a site. When properly used, silt fences can be highly effective at controlling sediment from disturbed areas. They cause runoff to pond, allowing heavier solids to settle out. The purpose of a silt fence is to intercept and detain water-borne sediment from unprotected areas of a limited extent. Silt fencing will be used during the entire period of construction near the perimeter of a disturbed area to intercept sediment while allowing water to percolate through. This fence will remain in place until the disturbed area is permanently stabilized.

All fencing will be inspected weekly, and after any rainfall event.

- Sediment will be removed when buildup reaches 6 inches.
- Any torn fabric will be replaced or a second line of fencing will be installed parallel to the torn section.
- Any sections of fencing that are crushed or collapsed in the course of construction activity will be replaced or repaired.
- If a section of fence is obstructing vehicular access it will be relocated to a spot where it will provide equal protection, but will not obstruct vehicles.
- When construction is complete, the sediment will be disposed of in a manner that will not cause additional siltation and the prior location of the silt fence will be revegetated. The fence itself will be disposed of in an approved landfill.

Temporary Construction Entrance/Exit. The temporary construction entrance/exit will be located and supplemented by the Southwestern existing driveway of the property. The construction entrance will be located along FM 487. Please see attached sheet number 5. The purpose of a temporary gravel construction entrance is to provide a stable entrance/exit condition from the construction site and keep mud and sediment off public roads. A stabilized construction entrance is a stabilized pad of crushed stone located at any point traffic will be entering or leaving the construction site from a public right-of-way, street, alley, sidewalk or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking or flowing of sediment onto public rights-of-way. This practice will be used at all points of construction ingress and egress.

The entrance will be maintained in a condition, which will prevent tracking or flowing of sediment onto public rights-of-way.

- i. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment.
- ii. All sediment spilled, dropped, washed, or tracked onto public rights-of-way will be removed immediately by contractor.
- iii. When necessary, wheels will be cleaned to remove sediment prior to entrance onto public right-of-way.
- iv. When washing is required, it will be done on an area stabilized with crushed stone that drains into appropriate designated area.
- v. All sediment will be prevented from entering and storm drain, ditch or water course by using approved methods.

Concrete Washout Area The concrete washout area will be located on the northernmost corner of the property. Please see attached sheet number 5. The purpose of concrete washout areas is to prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout offsite, performing onsite washout in a designated area, and training employees and subcontractors.

The following steps will help reduce stormwater pollution from concrete wastes:

- Incorporate requirements for concrete waste management into material supplier and subcontractor agreements.
- Avoid mixing excess amounts of fresh concrete.
- Perform washout of concrete trucks in designated areas only.
- Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
- Do not allow excess concrete to be dumped onsite, except in designated areas.

For onsite washout:

- Locate washout area at least 50 feet from sensitive features, storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste.
- Wash out wastes into the temporary pit where the concrete can set, be broken up, and then disposed properly.

Below grade concrete washout facilities are typical. These consist of a lined excavation sufficiently large to hold expected volume of washout material. Above grade facilities are used if excavation is not practical. Temporary concrete washout facility (type above grade) should be constructed as shown on the details at the end of this section, with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations. Plastic lining material should be a minimum of 10 mil in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material. When temporary concrete washout facilities are no longer required for the work, the hardened concrete should be removed and disposed of. Materials used to construct temporary concrete washout facilities should be removed from the site of the work and disposed of. Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled and repaired.

Pest Management. The control of insects and weeds will be with minimal use of insecticides and herbicides.

Attached is the inspection and maintenance plan prepared for the temporary BMPs during construction of the Morava Enclave.

This plan and associated weekly inspection form shall be maintained by the owner of project manager (appropriate staff) of construction of this site for the period of construction. Upon completion of construction hard copies can be scanned and archived electronically

I, Vasu Rayapati, Managing Member, Morava Holdings, LLC., have read the best management practices (BMPs) for temporary stormwater found in Attachment I of the TCEQ Application. Instruction and guidance as mentioned above has been provided to me so that I may be able to recognize issues that may require immediate attention with temporary onsite BMPs. Appropriate project staff will be assigned to weekly monitor the BMPs for this project and repair or replace as necessary.



Vasu Rayapati
Managing Member
Morava Holdings, LLC

VASUDEVARAO RAYAPATI

October 22, 2024

Date

Temporary BMP Maintenance Log

This form to be completed bi-weekly and following any major rain event.

[illegible]

Temporary BMPs Maintenance Log

This form to be completed bi-weekly and following any major rain event.

Pollution Prevention Measure	Inspection Date	Corrective Action Description	Date Completed
General			
Revegetation			
Erosion/sediment controls			
Vehicle exits			
Equipment areas			
Concrete rinse			
Construction debris			
Material areas			
Trash receptacles			
Infrastructure			
Utility clearing			
Utility construction			
Drainage construction			
Site cleanups			
Building			
Clearing for building			
Foundation grading			
Utility construction			
Foundation construction			
Building Construction			
Site grading			
Site cleanup			

- Indicate N/A where does measure does not apply.

ATTACHMENT J – SCHEDULE OF INTERIM AND PERMANENT SOIL STABILIZATION PRACTICES

The following is a description of the schedule of the interim and permanent soil stabilization practices for the Morava Enclave project.

Permanent BMPs are those measures that are used to control pollution from regulated activities after construction is complete. Under 30 TAC Chapter 213, permanent BMPs are implemented to reduce pollution of surface water or stormwater that originates on site or upgradient from the site and flows across the site. They must prevent pollution of surface water downgradient of the site, including pollution caused by contaminated stormwater runoff from the site. To the extent practical, BMPs must maintain flow to naturally occurring sensitive features identified in the geologic assessment, executive director review, or during excavation, blasting, or construction.

Vegetative techniques can and should apply to every construction project with few exceptions. Vegetation effectively reduces erosion in swales, stockpiles, berms mild to medium slopes and along roadways.

Below is the schedule of the soil stabilization practices.

Construction Sequences:

All of the site will be disturbed and all disturbed area will be re-vegetated. Construction Sequences #1 and #3 shows the scheduling of the interim and permanent soil stabilization practices.

1. Erosion and sediment controls, soil stabilization, and tree protection are to be installed as indicated on the approved site plan.
2. Schedule a preconstruction coordination meeting to be held with the City, Owner, Architects, Civil Engineer, and all other utility companies as required by the City of Engineer. A 72 hour notification of E.V. inspection is needed prior to preconstruction conference.
3. Excavation, infrastructure, pond construction and building construction will commence on site.
4. Erosion and sediment controls will be revised, if needed, to comply with inspectors' directives, and revised construction schedule relative to the water quality plan requirements and the erosion plan during construction. If a disturbed area is not to be worked on for more than 14 days, disturbed area needs to be stabilized by vegetation, mulch, tarp or revegetation matting. Temporary vegetative controls must be initialized as seen on sheet 2 – general notes of this project's plan, sub section temporary vegetative stabilization. Additionally refer to the environmental notes found on sheet 5 of the project's plan. Temporary Irrigation should be provided to replace moisture loss to evaporation – significant rain events may allow postponement until the next scheduled irrigation.
5. Rough-cut all required or necessary ponds. The permanent outlet structure must be constructed prior to development of any embankment or excavation that leads to ponding conditions. The outlet system must consist of a low-level outlet and an emergency overflow meeting the requirements of the drainage criteria manual of the City of Jarrell as required. The outlet system shall be protected from erosion and shall be maintained throughout the course of construction until final restoration is achieved.
6. Permanent controls will be cleaned out and filter media will be installed prior to / concurrently with revegetation of the site.
7. Final grading must be completed prior to seeding, minimizing all steep slopes. In addition, all necessary erosion structures such as dikes, swales, diversions should also be installed.
8. Seedbed should be well pulverized, loose, and uniform. Fertilizer shall be installed as indicated on the site plan sheet 2 – general notes indicative of the area and time frame the project is located.

9. Project Engineer writing concurrence letter, and scheduling final inspection with environmental inspector, prior to the removal of erosion controls.

10. Complete permanent erosion and site restoration. Remove temporary erosion / sedimentation controls and tree protection. Restore any areas disturbed during removal of erosion / sedimentation controls.

Inspection and Maintenance

Temporary vegetation, if used, should be inspected weekly and after each rain event to locate and repair any erosion occurring.

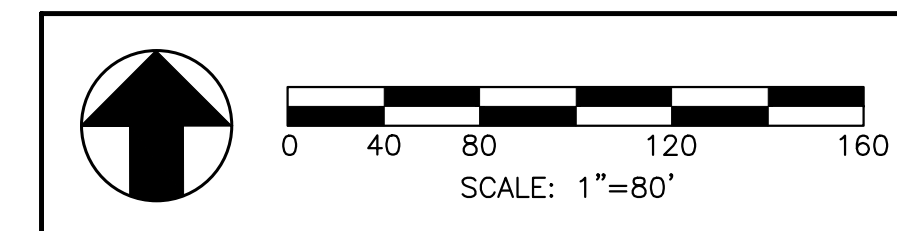
Erosion from storms or other damage should be repaired as soon as practical by regenerating the area and applying new seed.

If vegetative cover is less than 80% the area should be reseeded.

Additional erosion control measures may be required by the site environmental inspector at the time of construction, to keep the project in compliance with the City of Jarrell Development Regulations.

Contractor shall use dust control measures during site construction such as irrigation trucks and mulching as directed by the environmental inspector.

Contractor will clean spoils that migrate onto the roads a minimum of once daily.



- LEGEND**
- BOUNDARY / RIGHT OF WAY
 - - - EASEMENT
 - - - ADJOINER
 - PROPOSED CONTOUR
 - EXISTING CONTOUR
 - DRAINAGE AREA BOUNDARY
 - TC --- TC TIME OF CONCENTRATION
 - PROPOSED CONTOURS
 - A-1 POINT OF ANALYSIS
 - # INLET LABEL
 - DRAINAGE FLOW DIRECTION
 - P1 DRAINAGE AREA #
 - 1.667 DRAINAGE AREA (Ac.)

NOTES:

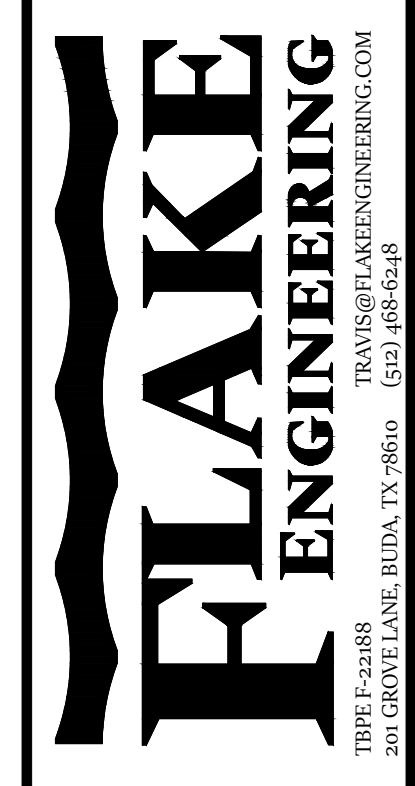
1. CALCULATIONS DEMONSTRATE THAT THE PEAK FLOWS FOR POST-DEVELOPMENT CONDITION DO NOT INCREASE FROM PRE-DEVELOPMENT CONDITIONS.

DRAINAGE AREA	SHEET FLOW				SHALLOW CONCENTRATED FLOW				CHANNEL FLOW (GUTTER)			
	SLOPE (F/T)	L FT	n	Tc sheet (MIN.)	SLOPE (F/T)	L FT	Paved? Y or N	Tc Shallow (MIN.)	Vavg (F/T)	L	Tc Shallow (MIN.)	Total Tc (MIN.)
EX A	0.018	40.000	0.24	6.3	0.018	377	N	2.9	3.00	959	5.33	14.6
EX B	0.016	40.000	0.24	6.6	0.016	787	N	6.4	4.00	0	0.00	12.9
PR A	0.010	30.000	0.02	0.9	0.010	239	Y	2.0	4.00	365	1.52	5.0
PR B	0.010	30.000	0.24	6.3	0.010	105	Y	0.9	4.00	612	2.55	9.7

AREA NAME	DETENTION SUMMARY TABLE (NRCS METHOD)			
	PR A	EX A	PR B	EX B
Drainage Area (ac.)	3.651	4.468	6.333	5.524
CN #	93.80	84.949	93.80	84.458
IC (%)	70%	7%	70%	3%
Tc (hrs)	0.083	0.243	0.162	0.215
2 year	14.65 cfs	12.21 cfs	26.07 cfs	15.69 cfs
10 year	24.44 cfs	23.19 cfs	43.63 cfs	29.87 cfs
25 year	31.62 cfs	31.38 cfs	56.55 cfs	40.46 cfs
100 year	44.98 cfs	46.53 cfs	80.49 cfs	60.03 cfs

811 Know what's below. Call before you dig.

CAUTION: CONTRACTOR TO VERIFY ALL EXISTING UTILITIES VERTICALLY AND HORIZONTALLY PRIOR TO CONSTRUCTION. CONTRACTOR TO NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.



MORAVA ENCLAVE
1400 FM 487, JARRELL, TX 76537

PROPOSED DRAINAGE AREA MAP



PRO. NO. _____

SHEET **7** OF **30**

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: Diane Bernal / DB Land Consulting LLC

Date: October 22, 2024

Signature of Customer/Agent



Regulated Entity Name: Morava Enclave

Permanent Best Management Practices (BMPs)

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

1. ☒ Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.
☐ N/A
2. ☒ These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.
☒ The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

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

☐ N/A

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

☐ N/A

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

☐ The site will be used for low density single-family residential development and has 20% or less impervious cover.

☐ The site will be used for low density single-family residential development but has more than 20% impervious cover.

☒ The site will not be used for low density single-family residential development.

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

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

☒ The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.

☐ The site will not be used for multi-family residential developments, schools, or small business sites.

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

- ☒ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is attached.
 - ☐ No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.
 - ☐ Permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, and an explanation is attached.
7. ☒ **Attachment C - BMPs for On-site Stormwater.**
- ☒ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is attached.
 - ☐ Permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached.
8. ☒ **Attachment D - BMPs for Surface Streams.** A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is attached. Each feature identified in the Geologic Assessment as sensitive has been addressed.
- ☐ N/A
9. ☒ The applicant understands that to the extent practicable, BMPs and measures must maintain flow to naturally occurring sensitive features identified in either the geologic assessment, executive director review, or during excavation, blasting, or construction.
- ☒ The permanent sealing of or diversion of flow from a naturally-occurring sensitive feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed.
 - ☐ **Attachment E - Request to Seal Features.** A request to seal a naturally-occurring sensitive feature, that includes, for each feature, a justification as to why no reasonable and practicable alternative exists, is attached.
10. ☒ **Attachment F - Construction Plans.** All construction plans and design calculations for the proposed permanent BMP(s) and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. The plans are attached and, if applicable include:
- ☒ Design calculations (TSS removal calculations)
 - ☒ TCEQ construction notes
 - ☒ All geologic features
 - ☒ All proposed structural BMP(s) plans and specifications
- ☐ N/A

11. ☒ **Attachment G - Inspection, Maintenance, Repair and Retrofit Plan.** A plan for the inspection, maintenance, repairs, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan includes all of the following:
- ☒ Prepared and certified by the engineer designing the permanent BMPs and measures
 - ☒ Signed by the owner or responsible party
 - ☒ Procedures for documenting inspections, maintenance, repairs, and, if necessary retrofit
 - ☒ A discussion of record keeping procedures
- ☐ N/A
12. ☐ **Attachment H - Pilot-Scale Field Testing Plan.** Pilot studies for BMPs that are not recognized by the Executive Director require prior approval from the TCEQ. A plan for pilot-scale field testing is attached.
- ☒ N/A
13. ☒ **Attachment I - Measures for Minimizing Surface Stream Contamination.** A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is attached. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity, which increase erosion that results in water quality degradation.
- ☐ N/A

Responsibility for Maintenance of Permanent BMP(s)

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

14. ☒ The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.
- ☐ N/A
15. ☒ A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development, or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.
- ☐ N/A

PERMANENT STORMWATER SECTION
(TCEQ-0600)
Morava Enclave

ATTACHMENT A – 20% OR LESS IMPERVIOUS COVER WAIVER

There is not a request of the 20% or less impervious cover waiver.

ATTACHMENT B – BMPs FOR UPGRADIENT STORMWATER

The Morava Enclave Development will have no surface water, ground water, or stormwater that would originate upgradient from the site.

ATTACHMENT C – BMP FOR ON-SITE STORMWATER

Batch Detention Basin / Extended Detention Basin There is on-site stormwater quality control. Water quality ponds are often perceived as a positive aesthetic element in a community and offer significant opportunity for creative pond configuration and landscape design. In this case, a batch pond is proposed in the rear of the property and extended detention will be located at the front of the property. A batch detention basin is primarily used to remove particulate pollutants and to reduce maximum runoff rates associated with development to their pre-development levels. Extended detention is more commonly used to reduce particulate pollutants by reducing the maximum runoff rates to their pre-development levels. This type of water quality also removes nutrients, heavy metals, toxic materials and oxygen-demanding materials associated with the particles. The control of the runoff rates serves to protect drainage channels below the device from erosion and to reduce downstream flooding.

Sheets 17 (extended detention) and 18 (batch detention) are provided to show drainage areas and ponds containing each area. Calculations are also provided on each proposed pond. Please review sheets 17 and 18 for drainage area assignments.

ATTACHMENT D – BMPs FOR SURFACE STREAMS

Batch Detention Basin / Extended Detention Basin These devices require less area and hydraulic head than sand filters and provide similar TSS removal. The detention basins may be berm-encased areas, excavated basins or buried tanks. Batch basins have superior water quality performance than traditional extended detention basins and achieve a total suspended solids (TSS) removal efficiency of 91%. Run-off from this site will be discharged to Salado Creek after it has been routed through a batch detention basin where it will be cleansed of pollutant to treat runoff on the northern portion of the project site. Extended detention work to temporarily store a portion of the stormwater runoff following a storm event. Water is controlled by means of a hydraulic control structure to restrict outlet discharge. Substantial removal of TSS is possible if stormwater is retained for more than 24 hours.

Sheets 17 (extended detention) and 18 (batch detention) are provided to show drainage areas and ponds containing each area. Calculations are also provided on each proposed pond. Please review sheets 17 and 18 for drainage area assignments.

ATTACHMENT E – REQUEST TO SEAL FEATURES

There is not a request to seal features at this time. Refer to the Geologic Assessment regarding findings on the subject site.

ATTACHMENT F – CONSTRUCTION PLANS

Refer to the attached site plan submitted to the City of Jarrell for review.

ATTACHMENT G – INSPECTION, MAINTENANCE, REPAIR AND RETROFIT PLAN

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

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.

Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges.

A Weekly Inspection and Maintenance Form has been created to maintain the BMPs onsite. The Onsite Project Manager will be responsible for scheduling the weekly inspection and making sure all necessary repairs be made to ensure the proper performance of the onsite BMPs. The form consists of the BMP inspected, a list of items for each BMP, a date of last inspection/maintenance, the current condition of the item being inspected, a description of the maintenance or repair that is needed, and when the maintenance or repair was complete.

A batch detention basin is an extended detention basin modified to operate as a batch reactor. A valve on the first detention basin outlet is used to capture the produced runoff for a fixed amount of time and then release it.

Batch detention basins are a series of depressed basins. The first basin temporarily stores a portion of stormwater runoff following a storm event. The collected discharge is controlled by a valve connected to the outlet structure of the first detention basin. The valve is closed between storm events. A controller opens the valve and releases the captured runoff into the second basin after a 12-hour detention time and closes the valve after the first basin has drained. Substantial removal of TSS is achieved in the captured stormwater since the entire first flush volume is treated. Batch detention basins do not have a permanent water pool between storm events.

Batch Detention Basins are designed to prevent clogging of the outflow structure and re-suspension of captured sediment during a discharge. They also provide enhanced dissolved pollutant removal performance. The batch detention design typically incorporates a non-clogging outflow structure, such as an orifice protected by a trash rack, or a perforated riser pipe protected by riprap.

Maintenance Guidelines for Batch Detention

Inspections. Inspections should take place a minimum of twice a year. One inspection should take place during wet weather to determine if the basin is meeting the target detention time of 12 hours and a drawdown time of no more than 48 hours. The remaining inspections should occur between storm events so that manual operation of the valve and controller can be verified. The level sensor in the basin should be inspected and any debris or sediment in the area should be removed. The outlet structure and the trash screen should be inspected for signs of clogging. Debris and sediment should be removed from the orifice and outlet(s) as described in previous sections. Debris obstructing the valve should be removed. During each inspection, erosion areas inside and downstream of this BMP should be identified and repaired/revegetated immediately.

Mowing. The basin, basin side-slopes, and embankment of the basin must be mowed to prevent woody growth and control weeds. A mulching mower should be used, or the grass clippings should be caught and removed. Mowing should take place at least twice a year, or more frequently if vegetation exceeds 18 inches in height. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas.

Litter and Debris Removal. Litter and debris removal should take place at least twice a year, as part of the periodic mowing operations and inspections. Debris and litter should be removed from the surface of the basin. Particular attention should be paid to floatable debris around the outlet structure. The outlet should be checked for possible clogging or obstructions and any debris removed.

Erosion control. The basin side slopes and embankment all may periodically suffer from slumping and erosion. To correct these problems, corrective action, such as regrading and revegetation, may be necessary. Correction of erosion control should take place whenever required based on the periodic inspections.

Nuisance Control. Standing water or soggy conditions may occur in the basin. Some standing water may occur after a storm event since the valve may close with 2 to 3 inches of water in the basin. Some flow into the basin may also occur between storms due to spring flow and residential water use that enters the storm sewer system. Twice a year, the facility should be evaluated in terms of nuisance control (insects, weeds, odors, algae, etc.).

Structural Repairs and Replacement. With each inspection, any damage to structural elements of the basin (pipes, concrete drainage structures, retaining walls, etc.) should be identified and repaired immediately. An example of this type of repair can include patching of cracked concrete, sealing of voids, removal of vegetation from cracks and joints. The various inlet/outlet structures in a basin will eventually deteriorate and must be replaced.

Sediment Removal. A properly designed batch detention basin will accumulate quantities of sediment over time. The accumulated sediment can detract from the appearance of the facility and reduce the pollutant removal performance of the facility. The sediment also tends to accumulate near the outlet structure and can interfere with the level sensor operation. Sediment shall be removed from the basin at least every 5 years, when sediment depth exceeds 6 inches, when the sediment interferes with the level sensor or when the basin does not drain within 48 hours. Care should be taken not to compromise the basin lining during maintenance.

Logic Controller. The Logic Controller should be inspected as part of the twice yearly investigations. Verify that the external indicators (active, cycle in progress) are operating properly by turning the controller off and on, and by initiating a cycle by triggering the level sensor in the basin. The valve should be manually opened and closed using the open/close switch to verify valve operation and to assist in inspecting the valve for debris. The solar panel should be inspected and any dust or debris on the panel should be carefully removed. The controller and all other circuitry and wiring should be inspected for signs of corrosion, damage from insects, water leaks, or other damage. At the end of the inspection, the controller should be reset.

Extended Detention Basins are normally used to remove particulate pollutants and to reduce maximum runoff rates associated with development to their pre-development levels. The water quality benefits are the removal of sediment and buoyant materials.

Extended detention basins have moderate to high maintenance requirements, depending on the extent to which future maintenance needs are anticipated during the design stage. If regular maintenance and inspections are not undertaken, the basin will not achieve its intended purposes.

There are many factors that may affect the basin's operation and that should be periodically checked. These factors can include mowing, control of pond vegetation, removal of accumulated bottom sediments, removal of debris from all inflow and outflow structures, unclogging of orifice perforations, and the upkeep of all physical structures that are within the detention pond area. One should conduct periodic inspections and after each significant storm. Remove floatables and correct erosion problems in the pond slopes and bottom. Pay particular attention to the outlet control perforations for signs of clogging. If the orifices are clogged, remove sediment and other debris. The generic aspects that must be considered in the maintenance plan for a detention facility are as follows:

Maintenance Guidelines for Extended Detention

Inspections. Basins should be inspected at least twice a year (once during or immediately following wet weather) to evaluate facility operation. When possible, inspections should be conducted during wet weather to determine if the pond is meeting the target detention times. In particular, the extended detention control device should be regularly inspected for evidence of clogging, or conversely, for too rapid a release. If the design drawdown times are exceeded by more than 24 hours, then repairs should be scheduled immediately. The upper stage pilot channel, if any, and its flow path to the lower stage should be checked for erosion problems. During each inspection, erosion areas inside and downstream of the BMP should be identified and repaired or revegetated immediately.

Mowing. The upper stage, side slopes, embankment, and emergency spillway of an extended detention basin must be mowed regularly to discourage woody growth and control weeds. Grass areas in and around basins should be mowed at least twice annually to limit vegetation height to 18 inches. More frequent mowing to maintain aesthetic appeal may be necessary in landscaped areas. When mowing of grass is performed, a mulching mower should be used, or grass clippings should be caught and removed.

Debris and Litter Removal. Debris and litter will accumulate near the extended detention control device and should be removed during regular mowing operations and inspections. Particular attention should be paid to floating debris that can eventually clog the control device or riser.

Erosion Control. The pond side slopes, emergency spillway, and embankment all may periodically suffer from slumping and erosion, although this should not occur often if the soils are properly compacted during construction. Regrading and revegetation may be required to correct the problems. Similarly, the channel connecting an upper stage with a lower stage may periodically need to be replaced or repaired.

Structural Repairs and Replacement. With each inspection, any damage to the structural elements of the system (pipes, concrete drainage structures, retaining walls, etc.) should be identified and repaired immediately. These repairs should include patching of cracked concrete, sealing of voids, and removal of vegetation from cracks and joints. The various inlet/outlet and riser works in a basin will eventually deteriorate and must be replaced. Public works experts have estimated that corrugated metal pipe (CMP) has a useful life of about 25 yr, whereas reinforced concrete barrels and risers may last from 50 to 75 yr.

Nuisance Control. Standing water (not desired in a extended detention basin) or soggy conditions within the lower stage of the basin can create nuisance conditions for nearby residents. Odors, mosquitoes, weeds, and litter are all occasionally perceived to be problems. Most of these problems are generally a sign that regular inspections and maintenance are not being performed (e.g., mowing, debris removal, clearing the outlet control device).

Sediment Removal. When properly designed, dry extended detention basins will accumulate quantities of sediment over time. Sediment accumulation is a serious maintenance concern in extended detention dry ponds for several reasons. First, the sediment gradually reduces available stormwater management storage capacity within the basin. Second, unlike wet extended detention basins (which have a permanent pool to conceal deposited sediments), sediment accumulation can make dry extended detention basins very unsightly. Third, and perhaps most importantly, sediment tends to accumulate around the control device. Sediment deposition increases the risk that the orifice will become clogged, and gradually reduces storage capacity reserved for pollutant removal. Sediment can also be resuspended if allowed to accumulate over time and escape through the hydraulic control to downstream channels and streams. For these reasons, accumulated sediment needs to be removed from the lower stage when sediment buildup fills 20% of the volume of the basin or at least every 10 years.

I, Vasu Rayapati, Managing Member, Morava Holdings, LLC, have read the best management practices (BMPs) for permanent stormwater found in Attachment G of this TCEQ Application. Instruction and guidance as mentioned above has been provided to me so that I may be able to recognize issues that may require immediate attention with the permanent BMPs. Appropriate staff will be assigned to monitor the BMPs for this site and repair or replace as necessary.

K. Vasudeva Rao

VASUDEVA RAO KAYAPATI

October 22, 2024

Vasu Rayapati
Managing Member
Morava Holdings,
LLC

Date
Date

I, Travis Flake, P.E., have prepared and certified the Inspection, Maintenance, Repair and, if necessary, retrofit (IMRR) plan of the permanent BMPs and measures found as Attachment G of this TCEQ application.

Travis Flake

Travis Flake, P.E.
Flake Engineering

1/7/2025

Date

ATTACHMENT H – PILOT-SCALE FIELD TESTING PLAN

This attachment is not applicable to this project.

ATTACHMENT I – MEASURES FOR MINIMIZING SURFACE STREAM CONTAMINATION

Measures for temporary controls are:

Temporary Construction Entrance/Exit. The purpose of a temporary gravel construction entrance is to provide a stable entrance/exit condition from the construction site and keep mud and sediment off public roads. A stabilized construction entrance is a stabilized pad of crushed stone located at any point traffic will be entering or leaving the construction site from a public right-of-way, street, alley, sidewalk or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking or flowing of sediment onto public rights-of-way. This practice will be used at all points of construction ingress and egress. The entrance will be maintained in a condition, which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed, or tracked onto public rights-of-way will be removed immediately by contractor. When necessary, wheels will be cleaned to remove sediment prior to entrance onto public right-of-way. When washing is required, it will be done on an area stabilized with crushed stone that drains into appropriate designated area. All sediment will be prevented from entering and storm drain, ditch or water course by using approved methods. Refer to sheet 6 attached to this section for location of the construction entrance and sheet 26 for the detail describing the construction entrance.

Silt Fence. A silt fence is a barrier consisting of geotextile fabric supported by metal posts to prevent soil and sediment loss from a site. When properly used, silt fences can be highly effective at controlling sediment from disturbed areas. They cause runoff to pond, allowing heavier solids to settle out. The purpose of a silt fence is to intercept and detain water-borne sediment from unprotected areas of a limited extent. Silt fence will be used during the entire period of construction near the perimeter of a disturbed area to intercept sediment while allowing water to percolate through. This fence will remain in place until the disturbed area is permanently stabilized. All fencing will be inspected weekly, and after any rainfall. Sediment will be removed when buildup reaches 6 inches. Any torn fabric will be replaced or a second line of fencing will be installed parallel to the torn section. Any sections of fencing that are crushed or collapsed in the course of construction activity will be replaced or repaired. If a section of fence is obstructing vehicular access it will be relocated to a spot where it will provide equal protection, but will not obstruct vehicles. When construction is complete, the sediment will be disposed of in a manner that will not cause additional siltation and the prior location of the silt fence will be revegetated. The fence itself will be disposed of in an approved landfill. Refer to the attached sheet 5 for location of silt-fencing and sheet 26 for a detail describing the silt-fencing.

Concrete Washout Area The concrete washout area will be located on the southern portion of the project within the areas defined as commercial. Please see attached sheet number 5. The purpose of concrete washout areas is to prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout offsite, performing onsite washout in a designated area, and training employees and subcontractors.

The following steps will help reduce stormwater pollution from concrete wastes:

- Incorporate requirements for concrete waste management into material supplier and subcontractor agreements.
- Avoid mixing excess amounts of fresh concrete.
- Perform washout of concrete trucks in designated areas only.
- Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
- Do not allow excess concrete to be dumped onsite, except in designated areas.

For onsite washout:

- Locate washout area at least 50 feet from sensitive features, storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste.
- Wash out wastes into the temporary pit where the concrete can set, be broken up, and then disposed properly.

Below grade concrete washout facilities are typical. These consist of a lined excavation sufficiently large to hold expected volume of washout material. Above grade facilities are used if excavation is not practical. Temporary concrete washout facility (type above grade) should be constructed as shown on the details at the end of this section, with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations. Plastic lining material should be a minimum of 10 mil in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material. When temporary concrete washout facilities are no longer required for the work, the hardened concrete should be removed and disposed of. Materials used to construct temporary concrete washout facilities should be removed from the site of the work and disposed of. Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled and repaired.

Measures for permanent control are:

Two ponds are proposed on this project to minimize surface stream contamination and change the way in which water enters a stream because of construction and development. An extended detention and batch detention system will be used to treat storm water runoff for the subject site. The proposed extended detention pond has a capture volume required of 12,063 cubic feet and the project provides a capture volume of 14,475 cubic feet. The proposed batch detention pond has a required capture volume of 13,949 cubic feet and the project provides a capture volume of 16,739 cubic feet.

GENERAL NOTES:

1. IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER, AND SUCCESSORS TO THE CURRENT PROPERTY OWNER, TO ENSURE THE SUBJECT PROPERTY AND ANY IMPROVEMENTS ARE MAINTAINED IN CONFORMANCE WITH THIS SITE DEVELOPMENT PLAN.
2. THIS DEVELOPMENT SHALL COMPLY WITH ALL STANDARDS OF THE UNIFIED DEVELOPMENT CODE (UDC), THE CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND SPECIFICATIONS MANUAL, THE DEVELOPMENT MANUAL AND ALL OTHER APPLICABLE CITY STANDARDS.
3. THIS SITE DEVELOPMENT PLAN SHALL MEET THE UDC STORMWATER REQUIREMENTS.
4. ALL SIGNAGE REQUIRES A SEPARATE APPLICATION AND APPROVAL FROM THE INSPECTION SERVICES DEPARTMENT. NO SIGNAGE IS APPROVED WITH THE SITE DEVELOPMENT PLAN.
5. SIDEWALKS SHALL BE PROVIDED IN ACCORDANCE WITH THE UDC.
6. DRIVEWAYS WILL REQUIRE APPROVAL BY THE DEVELOPMENT ENGINEER OF THE CITY OF GEORGETOWN.
7. OUTDOOR LIGHTING SHALL COMPLY WITH SECTION 7.04 OF THE UDC.
8. SCREENING OF MECHANICAL EQUIPMENT, DUMPSTERS AND PARKING SHALL COMPLY WITH CHAPTER 8 OF THE UDC. THE SCREENING IS SHOWN ON THE LANDSCAPE AND ARCHITECTURAL PLANS, AS APPLICABLE.
9. THE COMPANION LANDSCAPE PLAN HAS BEEN DESIGNED AND PLANT MATERIALS SHALL BE INSTALLED TO MEET ALL REQUIREMENTS OF THE UDC.
10. ALL MAINTENANCE OF REQUIRED LANDSCAPE SHALL COMPLY WITH THE MAINTENANCE STANDARDS OF CHAPTER 8 OF THE UDC.
11. A SEPARATE IRRIGATION PLAN SHALL BE REQUIRED AT THE TIME OF BUILDING PERMIT APPLICATION.
12. FIRE FLOW REQUIREMENTS OF _____ PER MINUTE (INCLUDE AMOUNT) ARE BEING MET BY THIS PLAN.
13. ANY HERITAGE TREE NOTED ON THIS SITE DEVELOPMENT PLAN IS SUBJECT, IN PERPETUITY, TO THE MAINTENANCE, CARE, PRUNING AND REMOVAL REQUIREMENTS OF THE UNIFIED DEVELOPMENT CODE.
14. THE CONSTRUCTION PORTION OF THESE PLANS WERE PREPARED, SEALED, SIGNED AND DATED BY A TEXAS LICENSED PROFESSIONAL ENGINEER. THEREFORE, BASED ON THE ENGINEER'S CONCURRENCE OF COMPLIANCE, THE CONSTRUCTION PLANS FOR CONSTRUCTION OF THE PROPOSED PROJECT ARE HEREBY APPROVED SUBJECT TO THE STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS MANUAL AND ALL OTHER APPLICABLE CITY, STATE AND FEDERAL REQUIREMENTS AND CODES.
15. THIS PROJECT IS SUBJECT TO ALL CITY STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS IN EFFECT AT THE TIME OF SUBMITTAL OF THE PROJECT TO THE CITY.
16. WHERE NO EXISTING OVERHEAD INFRASTRUCTURE EXISTS, UNDERGROUND ELECTRIC UTILITY LINES SHALL BE LOCATED ALONG THE STREET AND WITHIN THE SITE. WHERE EXISTING OVERHEAD INFRASTRUCTURE IS TO BE RELOCATED, IT SHALL BE RE-INSTALLED UNDERGROUND AND THE EXISTING FACILITIES SHALL BE REMOVED AT THE DISCRETION OF THE DEVELOPMENT ENGINEER.
17. ALL ELECTRIC AND COMMUNICATION INFRASTRUCTURE SHALL COMPLY WITH UDC SECTION 13.06.
18. THE PROPERTY SUBJECT TO THIS APPLICATION IS SUBJECT TO THE WATER QUALITY REGULATIONS OF THE CITY OF GEORGETOWN.
19. A GEOLOGIC ASSESSMENT, IN ACCORDANCE WITH THE CITY OF GEORGETOWN WATER QUALITY REGULATIONS, WAS COMPLETED ON 11-21-20. ANY SPRINGS AND STREAMS AS IDENTIFIED IN THE GEOLOGIC ASSESSMENT ARE SHOWN HEREIN.

SEQUENCE OF CONSTRUCTION:

1. TEMPORARY EROSION AND SEDIMENTATION MUST BE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND MANUFACTURERS SPECIFICATIONS.
2. THE ENVIRONMENTAL PROJECT MANAGER OR SITE SUPERVISOR MUST CONTACT THE CITY OF GEORGETOWN DEVELOPMENT SERVICE DEPARTMENT, ENVIRONMENTAL INSPECTOR AT (512)-974-2278, & TCEQ REGIONAL OFFICE AT LEAST 72 HOURS PRIOR TO THE SCHEDULED DATE OF THE REQUIRED PRE-CONSTRUCTION MEETING.
3. A PRE-CONSTRUCTION CONFERENCE PRIOR TO COMMENCEMENT OF CONSTRUCTION. 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.
4. EVALUATE TEMPORARY EROSION CONTROL INSTALLATION. 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. REVIEW CONSTRUCTION SCHEDULE AND THE WATER POLLUTION ABATEMENT PLAN (WPAP) REQUIREMENTS.
5. ROUGH-CUT ALL REQUIRED OR NECESSARY PONDS, WITHER PERMANENT OUTLET STRUCTURE OR TEMPORARY OUTLET MUST BE CONSTRUCTED PRIOR TO DEVELOPMENT OF ANY EMBANKMENTS OR EXCAVATION THAT LEADS TO PONDING CONDITIONS. THE OUTLET SYSTEM MUST CONSIST OF A LOW-LEVEL OUTLET AND AN EMERGENCY OVERFLOW MEETING THE REQUIREMENTS OF CITY CODE. THE OUTLET SYSTEM SHALL BE PROTECTED FROM EROSION AND SHALL BE MAINTAINED THROUGH THE COURSE OF CONSTRUCTION OR UNTIL FINAL RESTORATION IS ACHIEVED.
6. INSTALL UNDERGROUND UTILITIES AND ROUGH GRADE THE PARKING AREAS AS PER THE APPROVED CONSTRUCTION PLANS. INSTALL INLET PROTECTION PER EROSION CONTROL AND SITE RESTORATION.
7. COMPLETE CONSTRUCTION DECELERATION LANE, DRIVE PARKING, CURBS, PADS, SIDEWALKS, SIGNS POLES, START REVEGETATION OF THE SITE INSTALL LANDSCAPING.
8. CONTACT PROJECT ENGINEER AND LANDSCAPE ARCHITECT FOR FINAL INSPECTION WITH APPROVAL. SUBMIT LETTERS OF CONCURRENCE TO THE DEVELOPMENT SERVICE DEPARTMENT, FOR FINAL CITY INSPECTION APPROVAL FORM.
9. REMOVE TEMPORARY EROSION AND SEDIMENTATION CONTROLS AND TREE PROTECTION. RESTORE ANY AREAS DISTURBED DURING REMOVAL OF ESC.

GENERAL NOTES

1. THESE CONSTRUCTION PLANS WERE PREPARED, SEALED AND DATED BY A TEXAS LICENSED PROFESSIONAL ENGINEER. THEREFORE BASED ON THE ENGINEER'S CONCURRENCE OF COMPLIANCE, THE CONSTRUCTION PLANS FOR CONSTRUCTION OF THE PROPOSED PROJECT ARE HEREBY APPROVED SUBJECT TO THE STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS MANUAL AND ALL OTHER APPLICABLE CITY, STATE AND FEDERAL REQUIREMENTS AND CODES.
2. THIS PROJECT IS SUBJECT TO ALL CITY STANDARD SPECIFICATIONS AND DETAILS IN EFFECT AT THE TIME OF SUBMITTAL OF THE PROJECT OF THE CITY.
3. THE SITE CONSTRUCTION PLANS SHALL MEET ALL REQUIREMENTS OF THE APPROVED SITE PLAN.
4. WASTEWATER MAINS AND SERVICE LINES SHALL BE SDR 26 PVC.
5. WASTEWATER MAINS SHALL BE INSTALLED WITHOUT HORIZONTAL OR VERTICAL BENDS.
6. MAXIMUM DISTANCE BETWEEN WASTEWATER MANHOLES IS 500 FEET.
7. WASTEWATER MAINS SHALL BE LOW PRESSURE AIR TESTED AND MANDREL TESTED BY THE CONTRACTOR ACCORDING TO CITY OF GEORGETOWN AND TCEQ REQUIREMENTS.
8. WASTEWATER MANHOLES SHALL BE VACUUM TESTED AND COATED BY THE CONTRACTOR ACCORDING TO CITY OF GEORGETOWN AND TCEQ REQUIREMENTS.
9. WASTEWATER MAINS SHALL BE CAMERA TESTED BY THE CONTRACTOR AND SUBMITTED TO THE CITY ON DVD FORMAT PRIOR TO PAVING THE STREETS.
10. PRIVATE WATER SYSTEM FIRE LINES SHALL BE TESTED BY THE CONTRACTOR TO 200 PSI FOR 2 HOURS.
11. PRIVATE WATER SYSTEM FIRE LINES SHALL BE DUCTILE IRON PIPING FROM THE WATER MAIN TO THE BUILDING SPRINKLER SYSTEM, AND 200 PSI C900 PVC FOR ALL OTHERS.
12. PUBLIC WATER SYSTEM MAINS SHALL BE 150 PSI C900 PVC AND TESTED BY THE CONTRACTOR AT 150 PSI FOR 4 HOURS.
13. ALL BENDS AND CHANGES IN DIRECTION ON WATER MAINS SHALL BE RESTRAINED AND THRUST BLOCKED.
14. LONG FIRE HYDRANT LEADS SHALL BE RESTRAINED.
15. ALL WATER LINES ARE TO BACTERIA TESTED BY THE CONTRACTOR ACCORDING TO THE CITY STANDARDS AND SPECIFICATIONS.
16. WATER AND SEWER MAIN CROSSINGS SHALL MEET ALL REQUIREMENTS OF THE TCEQ AND THE CITY.
17. FLEXIBLE BASE MATERIAL FOR PUBLIC STREETS SHALL BE TXDOT TYPE A GRADE 1.
18. HOT MIX ASPHALTIC CONCRETE PAVEMENT SHALL BE TYPE D UNLESS OTHERWISE SPECIFIED AND SHALL BE A MINIMUM OF 2 INCHES THICK ON PUBLIC STREETS AND ROADWAYS.
19. ALL SIDEWALK RAMPS ARE TO BE INSTALLED WITH THE PUBLIC INFRASTRUCTURE.
20. A MAINTENANCE BOND IS REQUIRED TO BE SUBMITTED TO THE CITY PRIOR TO ACCEPTANCE OF THE PUBLIC IMPROVEMENTS. THIS BOND SHALL BE ESTABLISHED FOR 1 YEAR . IN THE AMOUNT OF 25% OF THE COST OF THE PUBLIC IMPROVEMENTS AND SHALL FOLLOW THE CITY FORMAT.
21. RECORD DRAWINGS OF THE PUBLIC IMPROVEMENTS SHALL BE SUBMITTED TO THE CITY BY THE DESIGN ENGINEER PRIOR TO ACCEPTANCE OF THE PROJECT. THESE DRAWINGS SHAJI BE ON MYLAR OR ON TIFF OR PDF (300P DPI). IF A DISK IS SUBMITTED, A BOND SET SHAJJ BE INCLUDED WITH THE DISK.

Texas Commission on Environmental Quality
Contributing Zone 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 ground disturbance or construction 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 should be provided with complete copies of the approved Contributing Zone Plan (CZP) and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractor(s) should keep copies of the approved plan and approval letter onsite.
3. No hazardous substance storage tank shall be installed within 150 feet of a water supply source, distribution system, well, or sensitive feature.
4. 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 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.
5. 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.
6. Sediment must be removed from the sediment traps or sedimentation basins when it occupies 50% of the basin's design capacity.
7. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from being discharged offsite.
8. All excavated material that will be stored on-site must have proper E&S controls.
9. If portions of the site will have a cease in construction activity lasting longer than 14 days, soil TCEQ-0592A (Rev. July 15, 2015) Page 2 of 2 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.
10. The following records should 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.
11. The holder of any approved CZP must notify the appropriate regional office in writing and obtain approval from the executive director prior to initiating any of the following:
 - any physical or operational modification of any best management practices (BMPs) or structure(s), including but not limited to temporary or permanent ponds, dams, berms, silt fences, and diversionary structures;
 - any change in the nature or character of the regulated activity from that which was originally approved;
 - any change that would significantly impact the ability to prevent pollution of the Edwards Aquifer; or
 - any development of land previously identified as undeveloped in the approved contributing zone 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

THESE GENERAL CONSTRUCTION NOTES MUST BE INCLUDED ON THE CONSTRUCTION PLANS PROVIDED TO THE CONTRACTOR AND ALL SUBCONTRACTORS

811

Know what's below.
Call before you dig.

CAUTION:
CONTRACTOR TO VERIFY ALL EXISTING UTILITIES VERTICALLY AND HORIZONTALLY PRIOR TO CONSTRUCTION. CONTRACTOR TO NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.

DATE	
REVISION	
NO.	

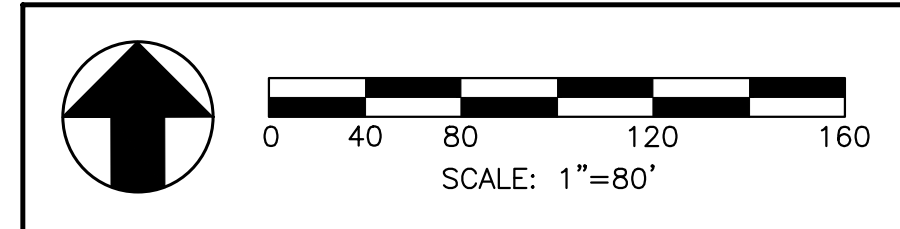
FLAKEENGINEERING

TRAVIS@FLAKEENGINEERING.COM
(512) 488-6248

MORAVA ENCLAVE
1400 FM 487, JARRELL, TX 76537

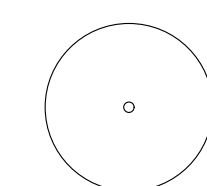
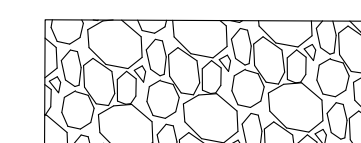
GENERAL NOTES



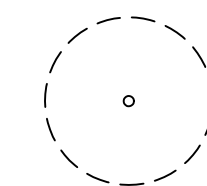


LEGEND

- BOUNDARY / RIGHT OF WAY
- EASEMENT
- ADJOINER
- PROPOSED CONTOUR
- EXISTING CONTOUR
- TREE PROTECTION FENCING
- LIMITS OF CONSTRUCTION
- SILT FENCE
- INLET PROTECTION



TREE TO REMAIN



TREE TO BE REMOVED

NOTES:

- NO CONSTRUCTION INVOLVING COMBUSTIBLE MATERIALS SHALL TAKE PLACE UNTIL FIRE APPARATUS ACCESS ROADS AND FIRE HYDRANTS ARE IN INSTALLED.
- NO OVERHEAD OBSTRUCTIONS SHALL BE LOWER THAN 13 FEET 6 INCHES
- ALL APPROVED FIRE APPARATUS ROADS SHALL BE CAPABLE OF SUPPORTING THE IMPOSED LOAD OF FIRE APPARATUS WEIGHING AT LEAST 75,000 POUNDS
- THE MAXIMUM GRADE OF THE FIRE LANE SHALL NOT EXCEED 10%
- ALL DISTURBED AREAS SHALL BE RE-VEGETATED TO MEET THE REQUIREMENTS OF THE CITY OF CEDAR PARK'S ORDINANCES.
- ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY INSPECTOR AT TIME OF CONSTRUCTION.

TREE LIST

- *1296 12" LIVE OAK
- *1297 11" LIVE OAK
- *1298 12" LIVE OAK
- * TREE TO BE REMOVED

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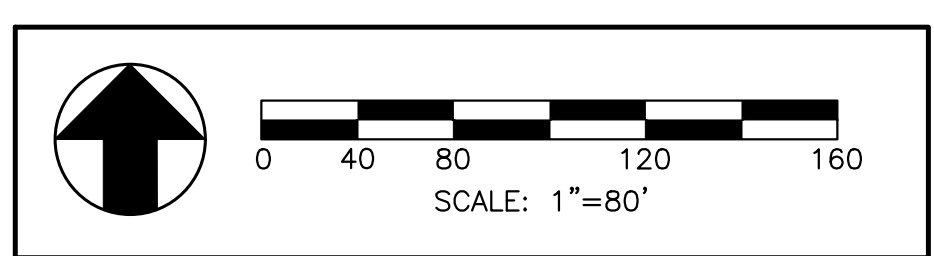
EROSION & SEDIMENTATION CONTROL PLAN



PRO. NO. _____
SHEET **6** OF **30**



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VERTICALLY AND HORIZONTALLY PRIOR TO
CONSTRUCTION. CONTRACTOR TO NOTIFY THE
ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.



LEGEND

- BOUNDARY / RIGHT OF WAY
- EASEMENT
- ADJOINER
- 590 PROPOSED CONTOUR
- 590 EXISTING CONTOUR
- DRAINAGE AREA BOUNDARY
- TC TIME OF CONCENTRATION
- A-1 POINT OF ANALYSIS
- # INLET LABEL
- DRAINAGE FLOW DIRECTION
- E1 DRAINAGE AREA #
- 1.70 DRAINAGE AREA (Ac.)

NOTES:

1. THE FLOW OFF THE SITE HAS NOT BEEN INCREASED FROM EXISTING CONDITION.

DRAINAGE AREA	SHEET FLOW				SHALLOW CONCENTRATED FLOW				CHANNEL FLOW (GUTTER)			
	SLOPE (FT/FT)	L FT	n	Tc sheet (MIN.)	SLOPE (FT/FT)	L FT	Paved? Y or N	Tc Shallow (MIN.)	Vavg (FT/S)	L	Tc Shallow (MIN.)	Total Tc (MIN.)
EX A	0.018	40.000	0.24	6.3	0.018	377	N	2.9	3.00	959	5.33	14.6
EX B	0.016	40.000	0.24	6.6	0.016	787	N	6.4	4.00	0	0.00	12.9
PR A	0.010	30.000	0.02	0.9	0.010	239	Y	2.0	4.00	365	1.52	5.0
PR B	0.010	30.000	0.24	6.3	0.010	105	Y	0.9	4.00	612	2.55	9.7

DETENTION SUMMARY TABLE (NRCS METHOD)			
AREA NAME	EX A	EX B	
Drainage Area (ac.)	4.468	5.524	
CN #	84.949	84.458	
IC (%)	7%	3%	
Tc (hrs)	0.243	0.215	
2 year	12.21 cfs	15.69 cfs	
10 year	23.19 cfs	29.87 cfs	
25 year	31.38 cfs	40.46 cfs	
100 year	46.53 cfs	60.03 cfs	

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DATE

REVISION

NO.

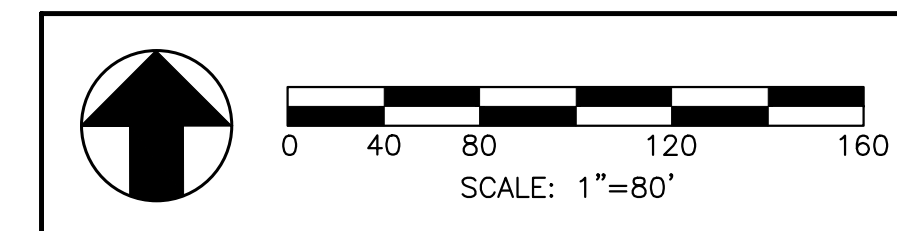
TRAVIS@FLAKEENGINEERING.COM
201 GROVELANE, BUDA, TX 78610
(512) 488-0248

MORAVA ENCLAVE
1400 FM 487, JARRELL, TX 76537

EXISTING DRAINAGE AREA MAP

PRO. NO. _____

SHEET **6** OF **30**



- LEGEND**
- BOUNDARY / RIGHT OF WAY
 - - - EASEMENT
 - - - ADJOINER
 - PROPOSED CONTOUR
 - EXISTING CONTOUR
 - DRAINAGE AREA BOUNDARY
 - TC --- TC TIME OF CONCENTRATION
 - PROPOSED CONTOURS
 - A-1 POINT OF ANALYSIS
 - # INLET LABEL
 - DRAINAGE FLOW DIRECTION
 - P1 DRAINAGE AREA #
 - 1.667 DRAINAGE AREA (Ac.)

NOTES:

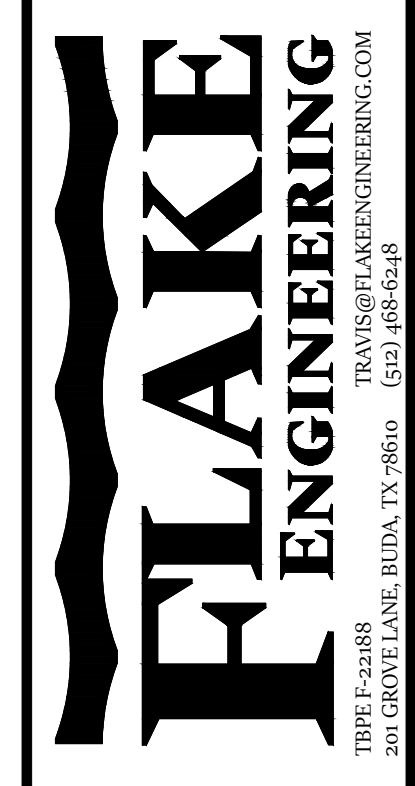
1. CALCULATIONS DEMONSTRATE THAT THE PEAK FLOWS FOR POST-DEVELOPMENT CONDITION DO NOT INCREASE FROM PRE-DEVELOPMENT CONDITIONS.

DRAINAGE AREA	SHEET FLOW				SHALLOW CONCENTRATED FLOW				CHANNEL FLOW (GUTTER)			
	SLOPE (F/T)	L FT	n	Tc sheet (MIN.)	SLOPE (F/T)	L FT	Paved? Y or N	Tc Shallow (MIN.)	Vavg (F/T)	L	Tc Shallow (MIN.)	Total Tc (MIN.)
EX A	0.018	40.000	0.24	6.3	0.018	377	N	2.9	3.00	959	5.33	14.6
EX B	0.016	40.000	0.24	6.6	0.016	787	N	6.4	4.00	0	0.00	12.9
PR A	0.010	30.000	0.02	0.9	0.010	239	Y	2.0	4.00	365	1.52	5.0
PR B	0.010	30.000	0.24	6.3	0.010	105	Y	0.9	4.00	612	2.55	9.7

AREA NAME	DETENTION SUMMARY TABLE (NRCS METHOD)			
	PR A	EX A	PR B	EX B
Drainage Area (ac.)	3.651	4.468	6.333	5.524
CN #	93.80	84.949	93.80	84.458
IC (%)	70%	7%	70%	3%
Tc (hrs)	0.083	0.243	0.162	0.215
2 year	14.65 cfs	12.21 cfs	26.07 cfs	15.69 cfs
10 year	24.44 cfs	23.19 cfs	43.63 cfs	29.87 cfs
25 year	31.62 cfs	31.38 cfs	56.55 cfs	40.46 cfs
100 year	44.98 cfs	46.53 cfs	80.49 cfs	60.03 cfs

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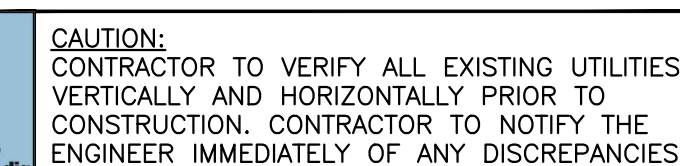
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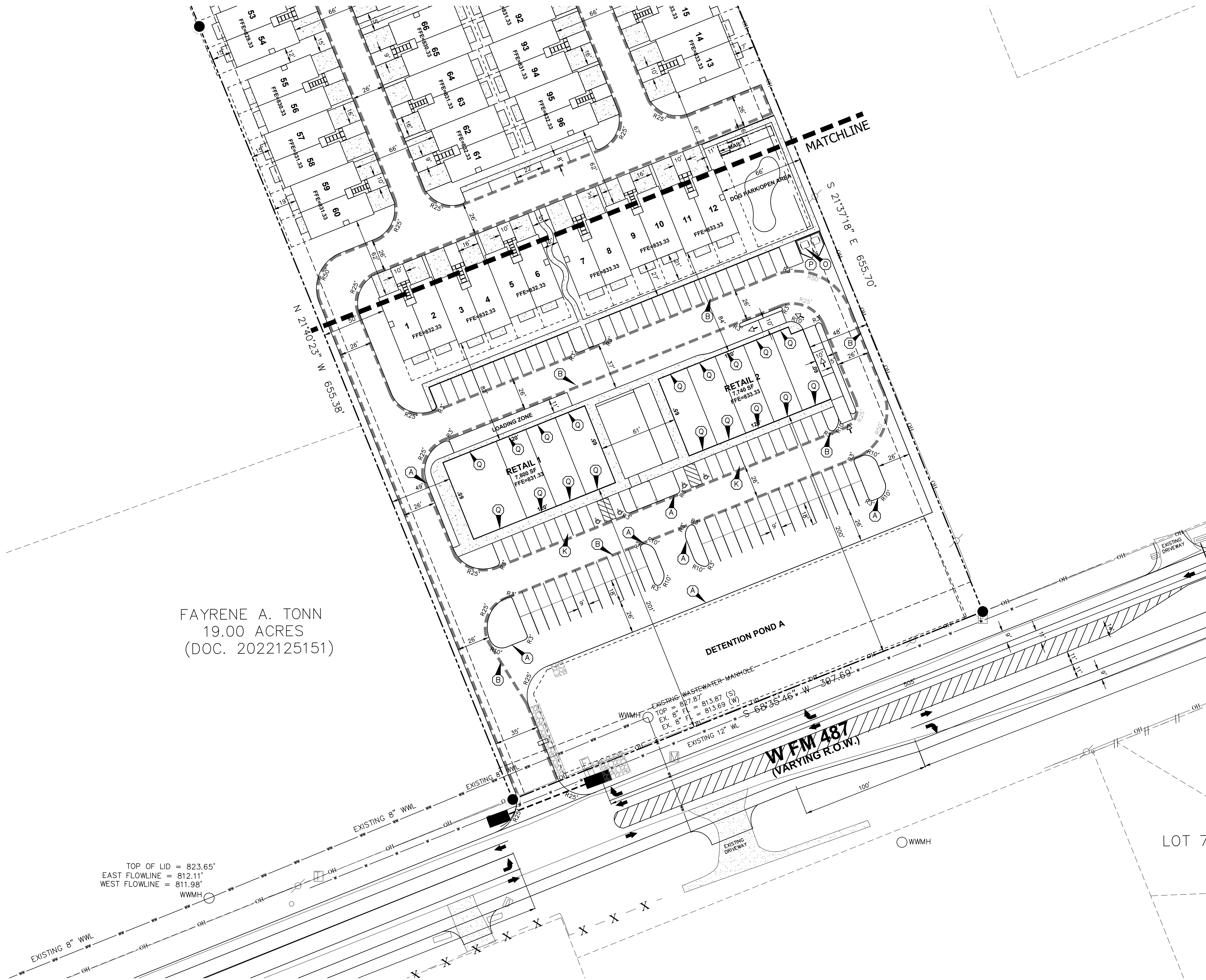
PROPOSED DRAINAGE AREA MAP



PRO. NO. _____

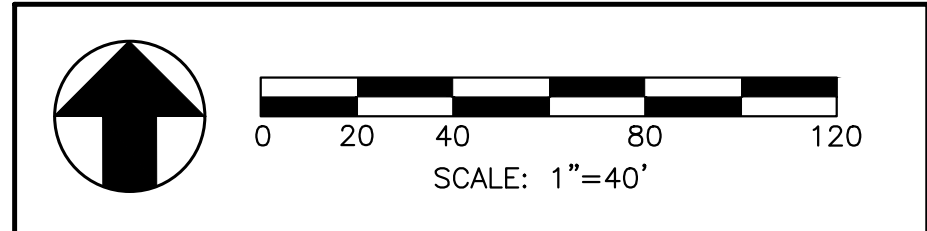
SHEET **7** OF **30**





FAYRENE A. TONN
19.00 ACRES
(DOC. 2022125151)

TOP OF LID = 823.65'
EAST FLOWLINE = 812.11'
WEST FLOWLINE = 811.98'
WWMH



LEGEND

- BOUNDARY / RIGHT OF WAY
- EASEMENT
- ADJOINER
- ACCESSIBLE ROUTE
- FIRE LANE
- LIMITS OF CONSTRUCTION
- CONCRETE SIDEWALK
- FENCE

SITE PLAN KEY NOTES

- (A) 6" CONCRETE CURB (TYP.)
- (B) FIRE LANE STRIPING
- (C) SIDEWALK RAMP
- (D) END 6" CONCRETE CURB
- (E) CONCRETE PAVING
- (G) PROPOSED CONCRETE SIDEWALK
- (J) PIPE BOLLARD (TYP.)
- (K) ACCESSIBLE PARKING W/RAMP
- (L) MONUMENT SIGN (BY OTHERS)
- (M) DRIVE-THRU SIGN
- (N) ACCESSIBLE ROUTE
- (O) TRASH ENCLOSURE
- (P) CONCRETE PAVING (HEAVY DUTY)
- (Q) BUILDING ENTRANCE/EXIT

NOTES:

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- THE MAXIMUM GRADE OF THE FIRE LANE SHALL NOT EXCEED 10%
- ALL UNITS ARE REQUIRED TO HAVE A 13D SPRINKLER SYSTEM.
- NO PERMANENT STRUCTURES ARE ALLOWED IN THE PUBLIC UTILITY EASEMENTS.
- LIGHT SOURCES SHALL BE COMPLETELY CONCEALED WITHIN OPAQUE HOUSINGS AND SHALL NOT BE VISIBLE FROM ADJACENT STREETS OR PROPERTIES. ALL EXTERIOR LIGHTING FIXTURES SHALL BE FULL CUT-OFF TYPE FIXTURES. LIGHTING FIXTURES SHALL BE NO MORE THAN TWENTY-FIVE (25) FEET IN HEIGHT AS MEASURED FROM ADJACENT, FINISHED GRADE (SEC. 12.12.021 (A)(6)(8)).
- NO FENCES OR OTHER IMPEDIMENTS SHALL BE PLACED IN THE LANDSCAPE BUFFERS, PLEASE SEE THE COVENANTS AND RESTRICTIONS, DOC# 2022071869.

Note: Per Williamson County Flood Damage Prevention Order, Article 5, section B, (8), Commercial/industrial, and multifamily development must be in accordance with Williamson County Subdivision Regulations, whether platting or not.



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SITE DIMENSION PLAN A



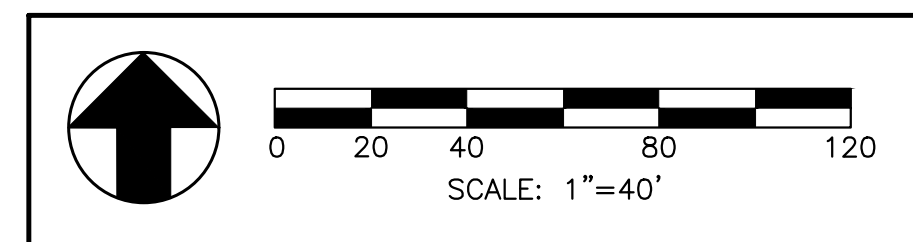
PRO. NO. _____
SHEET 9 OF 30

74.75 ACRES
(DOC.# 9741311)

JARRELL ISD
5.0 ACRES
C.# 9741311)

AUGUST BRAUER, III &
CYNTHIA BRAUER
150.977 ACRES
(DOC.# 2002046521)

Note: Per Williamson County Flood Damage Prevention Order, Article 5, section B, (8), Commercial/Industrial, and multifamily development must be in accordance with Williamson County Subdivision Regulations, whether platting or not.



LEGEND

- BOUNDARY / RIGHT OF WAY
- EASEMENT
- ADJOINER
- ACCESSIBLE ROUTE
- FIRE LANE
- LIMITS OF CONSTRUCTION
- CONCRETE SIDEWALK
- FENCE

SITE PLAN KEY NOTES

- (A) 6" CONCRETE CURB (TYP.)
- (B) FIRE LANE STRIPING
- (C) SIDEWALK RAMP
- (D) END 6" CONCRETE CURB
- (E) CONCRETE PAVING
- (G) PROPOSED CONCRETE SIDEWALK
- (J) PIPE BOLLARD (TYP.)
- (K) "DO NOT ENTER" SIGN
- (L) MONUMENT SIGN (BY OTHERS)
- (M) DRIVE-THRU SIGN
- (N) ACCESSIBLE ROUTE
- (O) TRASH ENCLOSURE
- (P) CONCRETE PAVING (HEAVY DUTY)
- (Q) BUILDING ENTRANCE

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MATCHLINE

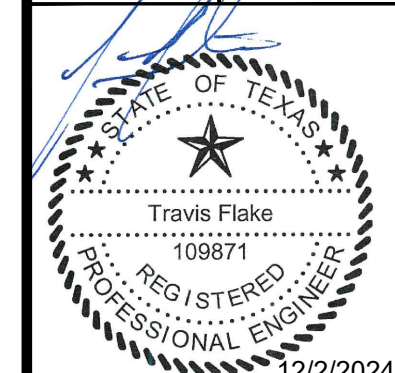


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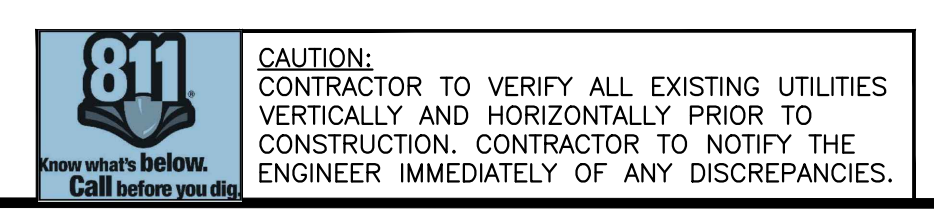


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SITE DIMENSION PLAN B



PRO. NO. _____
SHEET 10 OF 30

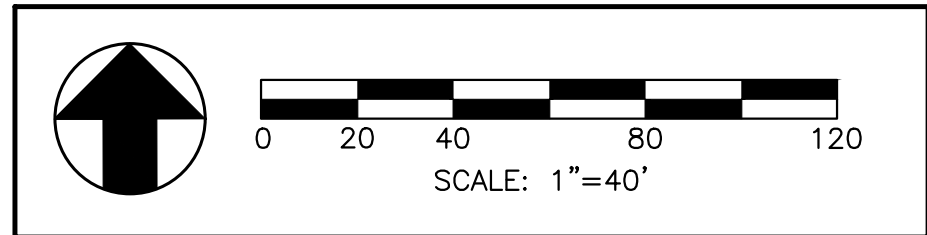


14.10 ACRES
(DOC.# 9741311)

JARRELL ISD
5.0 ACRES
(C.# 9741311)

30 LF
SAW TOOTH CUR CUTS
WITH ROCK RIP RAP

AUGUST BRAUER, III &
CYNTHIA BRAUER
150.977 ACRES
(DOC.# 2002046521)



LEGEND

- BOUNDARY / RIGHT OF WAY
- - - EASEMENT
- - - ADJOINER
- 590— PROPOSED CONTOUR
- 590— EXISTING CONTOUR
- DRAINAGE FLOW DIRECTION

NOTES:

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3. ALL APPROVED FIRE APPARATUS ROADS SHALL BE CAPABLE OF SUPPORTING THE IMPOSED LOAD OF FIRE APPARATUS WEIGHING AT LEAST 75,000 POUNDS
4. THE MAXIMUM GRADE OF THE FIRE LANE SHALL NOT EXCEED 10%



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GRADING PLAN B



PRO. NO. -
SHEET 13 OF 30



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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 = **Williamson**
Total project area included in plan = **9.99** acres
Predevelopment impervious area within the limits of the plan = **0.48** acres
Total post-development impervious area within the limits of the plan = **6.99** acres
Total post-development impervious cover fraction = **0.70**
 P = **32** inches

 L_M TOTAL PROJECT = **5671** lbs.

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

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

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

Drainage Basin/Outfall Area No. = **1**

Total drainage basin/outfall area = **3.65** acres
Predevelopment impervious area within drainage basin/outfall area = **0.31** acres
Post-development impervious area within drainage basin/outfall area = **2.56** acres
Post-development impervious fraction within drainage basin/outfall area = **0.70**
 L_M THIS BASIN = **1952** lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **extended detention**
Removal efficiency = **75** percent

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: $L_R = (\text{BMP efficiency}) \times P \times (A_N \times 34.6 + A_P \times 0.54)$

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 = **3.65** acres
 A_I = **2.56** acres
 A_P = **1.10** acres
 L_R = **2136** lbs

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

Desired L_M THIS BASIN = **1952** lbs. F = **0.91**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area.

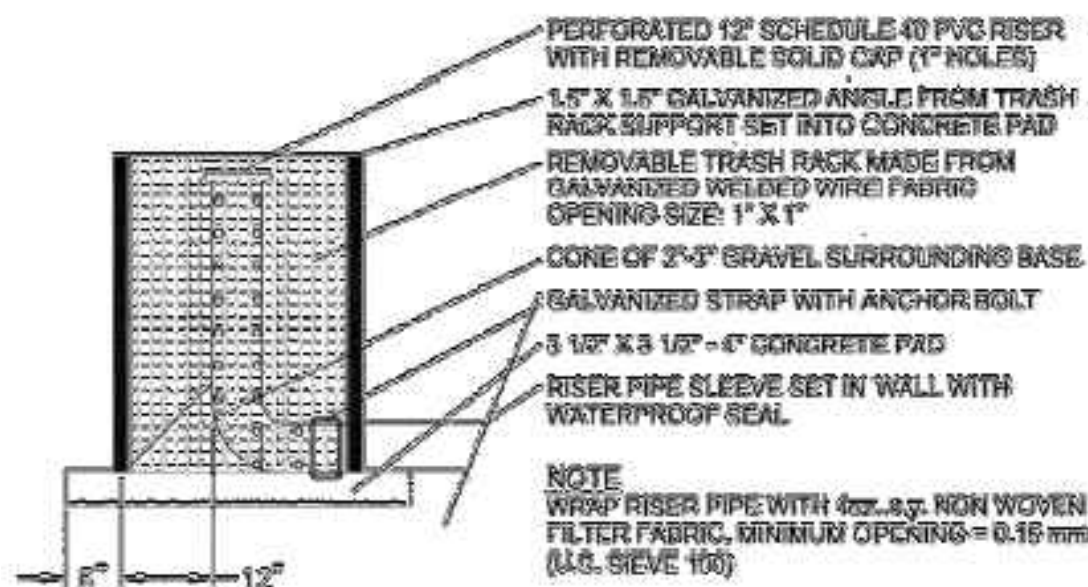
Calculations from RG-348

Pages 3-34 to 3-36

Rainfall Depth = **1.80** inches
Post Development Runoff Coefficient = **0.51**
On-site Water Quality Volume = **12063** cubic feet

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

Off-site area draining to BMP = **0.00** acres
Off-site Impervious cover draining to BMP = **0.00** acres
Impervious fraction of off-site area = **0**
Off-site Runoff Coefficient = **0.00**
Off-site Water Quality Volume = **0** cubic feet

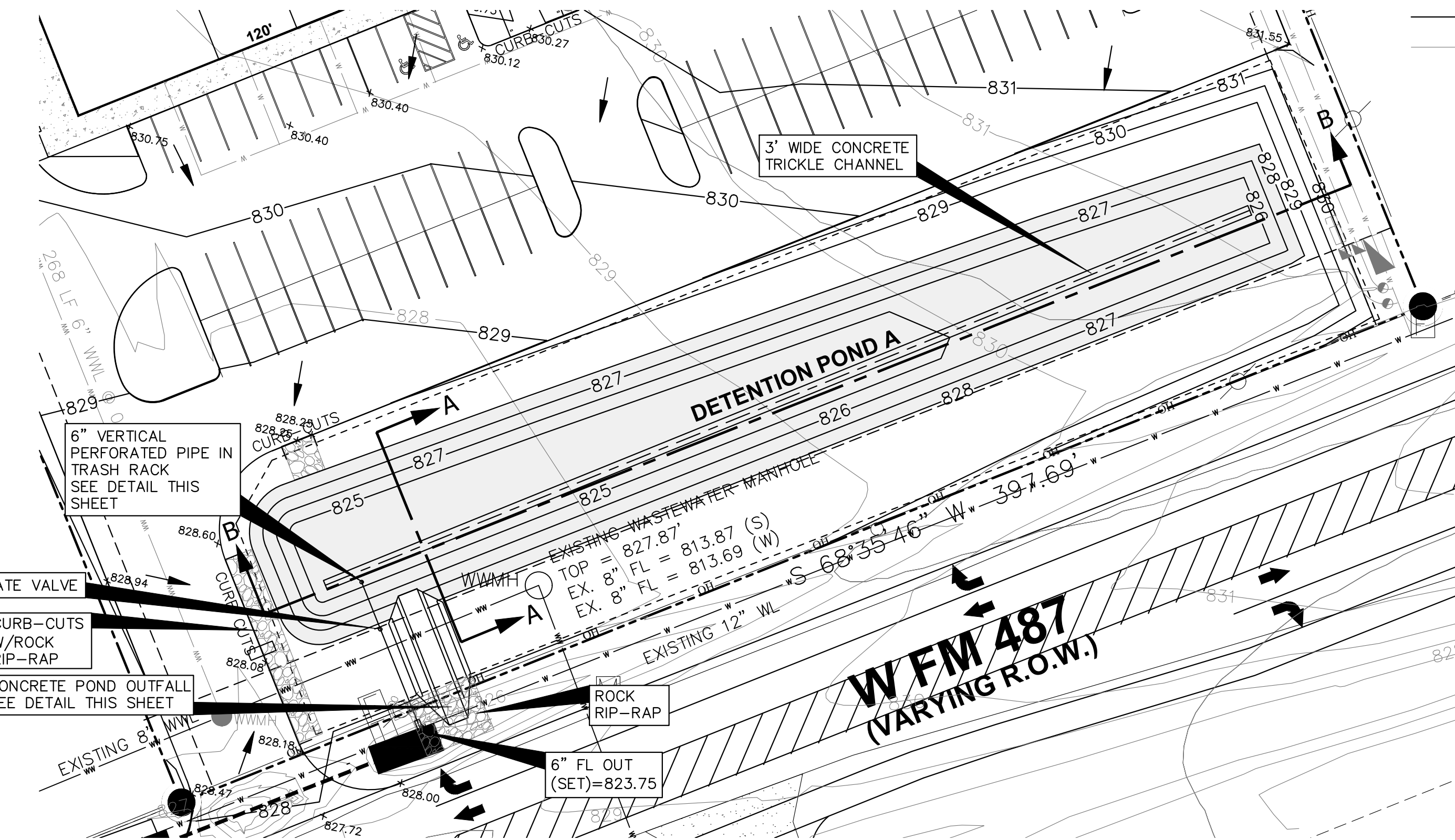
Storage for Sediment = **2413**Total Capture Volume (required water quality volume(s) x 1.20) = **14475** cubic feet

TRASH RACK / RISER PIPE DETAIL

N.T.S.

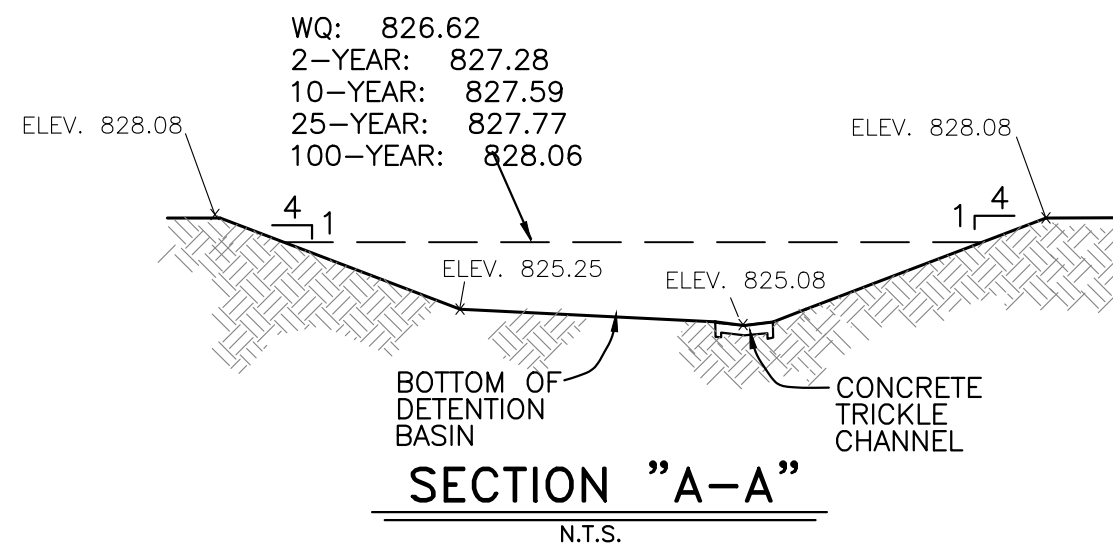
DETENTION SUMMARY TABLE
(NRCS METHOD)

AREA NAME	A (DETENTION PROVIDED)			
	PR A1 (TO POND)	DETENTION POND (WSE)	DETENTION POND RELEASE	EX A
Drainage Area (ac.)	3.651			4.468
CN #	93.80			84.949
IC (%)	70%			7%
Tc (hrs)	0.083			0.243
2 year	14.65 cfs	827.28 (msl)	12.09 cfs	12.21 cfs
10 year	24.44 cfs	827.59 (msl)	21.51 cfs	23.19 cfs
25 year	31.62 cfs	827.77 (msl)	29.13 cfs	31.38 cfs
100 year	44.98 cfs	828.06 (msl)	42.39 cfs	46.53 cfs



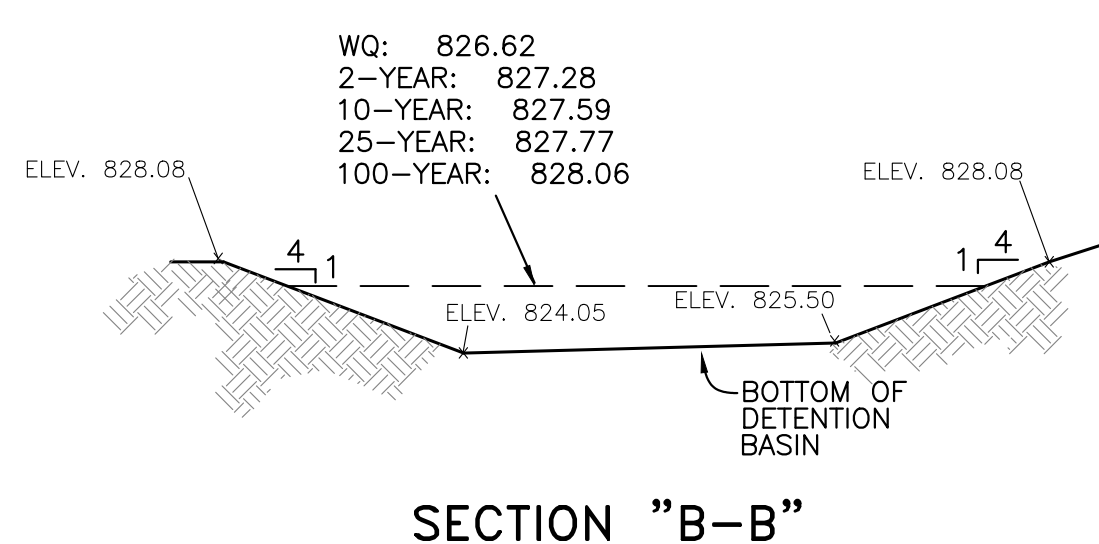
DETENTION POND PLAN VIEW

1" = 30'



SECTION "A-A"

N.T.S.



SECTION "B-B"

N.T.S.

A	Area	Volume	Cum. Volume
824.00	0	0	0
825.00	4338	2169	2169
826.00	8541	6439	8608
826.62	10236	5867	14475
827.00	11253	9897	18505
828.00	14079	16717	31192
828.25	14801	16284	34789

NOTES:

- BATCH DETENTION POND SHALL BE IN ACCORDANCE WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RG-348 MANUAL (ADDENDUM).
- THE BATCH DETENTION POND AND RISER PIPE/TRASH RACK WILL FUNCTION AS THE DEWATERING OUTLET AND SHALL BE INSTALLED AND FUNCTIONAL PRIOR TO ANY GENERAL GRADING AND UTILITY WORK.
- SYSTEM SHALL BE 12 VDC WITH 12VDC BATTERY.
- ACTUATOR SHALL BE ELECTRONIC QUATER-TURN WITH MANUAL OVERRIDE AND POSITION INDICATOR.
- ACTUATOR SHALL BE "AVID 12V ACTUATOR, EPI-6" OR EQUIVALENT.
- ACTUATOR VALVE TO BE SET AT "NORMALLY CLOSED" POSITION.
- CONTROLLER SHALL BE SET TO OPEN VALVE 12 HOURS AFTER INITIAL RAINFALL DETECTION. VALVE TO REMAIN OPEN UNTIL 2HRS FOLLOWING BASIN EMPTY SIGNAL.
- CONTROLLER SHALL HAVE TEST SEQUENCE, ON/OFF/RESET SWITCH AND THE PROGRAMMING SHALL BE FIELD UPLOADABLE.
- CONTROLLER SHALL BE "MORNINGSTAR SOLAR CONTROLLER, 12V, 20 AM" OR EQUIVALENT.
- ALL WIRING SHALL BE INSTALLED IN CONDUIT AND BURIED. CONTACT ENGINEER FOR ADDITIONAL CONTROLLER SCHEMATICS.
- CONTRACTOR TO INSTALL LIBERTY ALARM MODEL ALM-2W OR EQUIVALENT AT A CONTROLLER PANEL.
- ATTACH ALARM RESPONSE SIGN TO CONTROLLER POLE. REFERENCE ALARM SIGN.
- CONTRACTOR TO VERIFY LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION AND ENSURE CONTINUITY OF SERVICES AS NECESSARY.
- ALL POND BOTTOMS, SIDE SLOPES, AND EARTHEN EMBANKMENTS SHALL BE COMPACTED TO NINETY-FIVE (95%) PERCENT MAXIMUM DENSITY IN ACCORDANCE WITH THE CITY OF AUSTIN STANDARD SPECIFICATIONS.



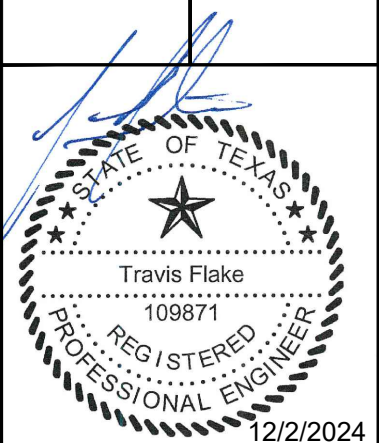
CAUTION:
CONTRACTOR TO VERIFY ALL EXISTING UTILITIES VERTICALLY AND HORIZONTALLY PRIOR TO CONSTRUCTION. CONTRACTOR TO NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.

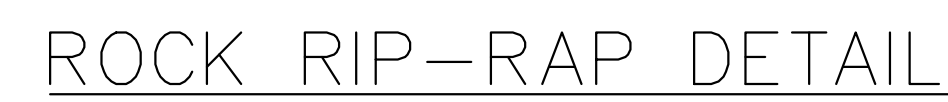
DATE	
REVISION	
NO.	

FLAKE
ENGINEERING
TRAVIS@FLAKEENGINEERING.COM
TYPE F-22188
201 GROVE LANE, RUDA, TX 78640
(512) 488-6248

MORAVA ENCLAVE
1400 FM 487, JARRELL, TX 76537

DETENTION POND 'A'
PLAN





CONCRETE FILLED FIXED SEDIMENT MARKER
FOR BATCH DETENTION POND

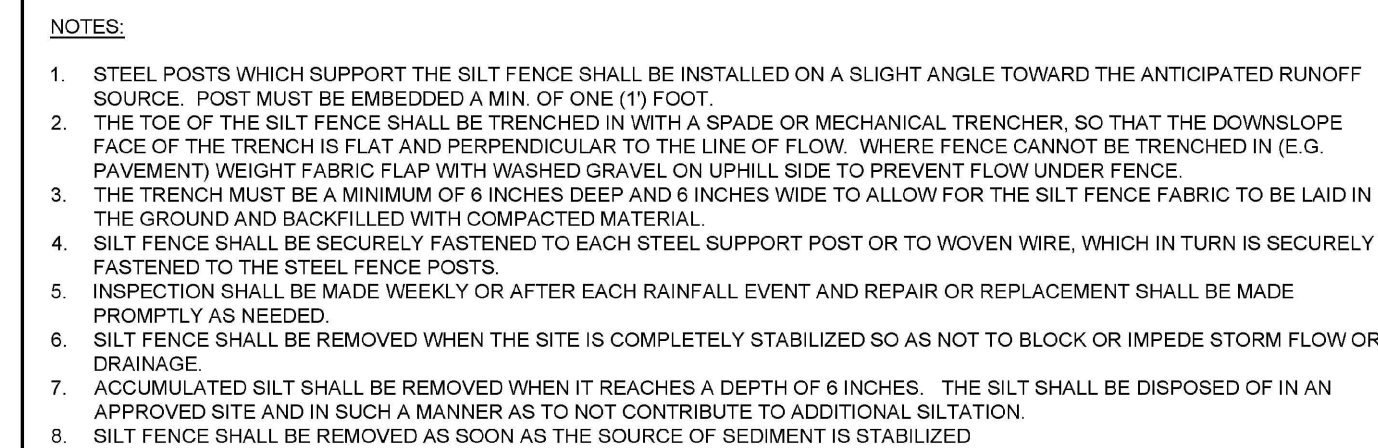
FLOAT SWITCH DETAIL

TRASH RACK / RISER PIPE DETAIL

TYPICAL SLOPED END
TREATMENT AT PIPE

ALARM RESPONSE SIGN

PRO. NO. _____ - _____
SHEET **19** OF **30**



EXTEND 2'-0" MIN BEYOND
INLET OPENING AT EACH END

VARIES

3" OVERLAP AT
FABRIC SPLICES

2"x4"-W/1.4XW/1.4 WIRE
FABRIC STRUCTURE

CUT AWAY OF
FILTER FABRIC

FLOW

12'

ISOMETRIC

20 LB. SANDBAGS @3'
O.C.

MINIMUM 4" HIGH CLEAR
OPENING

20 LB. SANDBAGS @3' O.C.
(SEE NOTE 1)

INLET

CROSS SECTION

NON-PAVED SURFACE:

(A) PROVIDE 6" OF TOPSOIL AND REVEGETATE

(B) PROVIDE COMPACTED BACKFILL IN SITU TRENCH MATERIAL FREE OF ROCK AND CLODS GREATER THAN 4", COMPACTED IN 6" LIFTS, COMPACTION TO 95% IN R.O.W. AND IN OR NEAR FLOOD PLAIN, OTHER LOCATIONS TO BE 80% (SEE SPEC. ITEM 510)

PROPOSED PAVED SURFACE:

SUBGRADE PREP, FLEXIBLE BASE AND H.M.A.C. PER PAVEMENT PLANS, UNDER SEPARATE PROCEDURE

DEPTH TO PIPE BEDDING
30" MINIMUM IN UNPAVED AREAS
18" MINIMUM BELOW SUBGRADE

12"

PIPE O.D. +18" MIN.

6" MIN.

6" MIN.

12" MAX.

12" MAX.

PIPE O.D. +12" MIN.

12" MAX.

12" MAX.

PROVIDE COMPACTED BACKFILL IN SITU TRENCH MATERIAL FREE OF ROCK AND CLODS GREATER THAN 4", COMPACTED IN 6" LIFTS, TO 95% (SEE SPEC. ITEM 510)

UNDISTURBED EARTH

PIPE BEDDING STONE SHALL BE TEXAS CRUSHED STONE 3/8" F OR 1/2" D ROCK, OR APPROVED EQUAL

CENTER PIPE IN TRENCH

The image contains three technical drawings illustrating different pipe installation configurations:

- HORIZONTAL BEND:** A side view of a pipe with a 90-degree horizontal bend. The drawing shows the pipe's outer diameter (O.D.) and the bend's radius. Labels include "PROPOSED MAIN" pointing to the upper pipe section and "ADEQUATE TO CLEAR JOINT AND BOLTS" pointing to the clearance around the bend. Dimensions shown are "PIPE O.D. + 4\"", "2\"", "6\"-12\"", and "b".
- TEE/OUTLET:** A side view of a pipe with a tee or outlet connection. The drawing shows the pipe's outer diameter (O.D.) and the connection point. Labels include "OUTLET O.D. MIN." pointing to the outlet's diameter. Dimensions shown are "PIPE O.D. + 4\"", "2\"", "6\"-12\"", and "b".
- VERTICAL BEND:** A top view of a pipe with a vertical bend. The drawing shows the pipe's outer diameter (O.D.) and the bend's radius. Labels include "PROPOSED MAIN" pointing to the upper pipe section and "#5 REBAR ONE FOR EACH LINEAR FOOT OF PIPE IN BEND" pointing to the rebar reinforcement. Dimensions shown are "O.D./2", "TRENCH WIDTH", "O.D. + 6\"", "O.D. + 14\"", "6\" MIN.", and "1\"".

ALL TREES NOT LOCATED WITHIN THE LIMITS OF CONSTRUCTION AND OUTSIDE OF DISTURBED AREAS SHALL BE PRESERVED. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL TREES TO BE PRESERVED FROM HIS ACTIVITIES.

ALL TREES SHOWN TO BE RETAINED WITHIN THE LIMITS OF CONSTRUCTION ON THE PLANS, SHALL BE PROTECTED DURING CONSTRUCTION WITH FENCING. FENCING SHALL BE INSTALLED TO PROTECT ALL TREES FROM TREE TRIMMING, TREE REMOVAL AND PROTECTION FENCE-CHAIN LINK (EO-04).

EROSION PREVENTION FENCES SHALL BE ERECTED ACCORDING TO THE STANDARDIZATION FOR EROSION PREVENTION, INCLUDING TYPES OF FENCING AND SIGNAGE.

TREE PROTECTION FENCES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY SITE PREPARATION WORK (CLEARING, GRADING, OR GRADING). FENCING SHALL BE INSTALLED THROUGHOUT THE CONSTRUCTION PERIOD.

EROSION AND SEDIMENTATION CONTROL BARRIERS SHALL BE INSTALLED OR MAINTAINED IN A MANNER WHICH DOES NOT RESULT IN SOIL BUILDUP WITHIN TREE DRIPLINES.

ALL TREES LOCATED WITHIN THE TREE OR CLUSTERS OF TREES, LOCATED AT THE OUTERMOST LIMITS OF THE TRANCHES (DRAPLINE) OR CRITICAL ROOT ZONE (CRZ), WHICHEVER IS GREATER, AND SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.

64. SOIL COMPACTION IN CRZ AREA RESULTING FROM VEHICULAR TRAFFIC OR STORAGE OF EQUIPMENT OR MATERIAL.

65. CRZ DISTURBANCES DUE TO GRADE CHANGES OR TRENCING NOT REVIEWED AND AUTHORIZED BY THE FORESTRY MANAGER.

66. WOUNDS TO EXPOSED ROOTS, TRUNK, OR LIMBS BY MECHANICAL EQUIPMENT.

67. OTHER ACTIVITIES DETRIMENTAL TO TREES SUCH AS CHEMICAL, STORAGE, CONCRETE TRUCKS, CLEANING, AND FIRMS.

68. WHERE THERE IS A SIGNIFICANT RISK OF DAMAGE TO TREES, THE PROTECTION FENCE IS GREATER, MAY BE REFINED TO THE FOLLOWING CASES:

69. WHERE THERE IS TO BE AN APPROVED GRADE CHANGE, IMPERMEABLE PAVING SURFACE, OR TREE YELL.

70. WHERE PERMEABLE PAVING IS TO BE INSTALLED, ERECT THE FENCE AT THE OUTER LIMITS OF THE PERMEABLE PAVING AREA.

71. WHERE TREES ARE CLOSE TO PROPOSED BUILDINGS, ERECT THE FENCE NO CLOSER THAN 4 FEET TO THE BUILDING.

72. WHERE THERE ARE SEVERE SPACE CONSTRAINTS TO TRACT SIZE, OR OTHER SPECIAL REQUIREMENTS, CONTACT THE FORESTRY MANAGER TO DISCUSS ALTERNATIVES.

WHERE ANY OF THE ABOVE EXCEPTIONS RESULT IN A FENCE THAT IS CLOSER THAN 5 FEET TO A TREE TRUNK, THE TRUNK SHALL BE PROTECTED BY STRAPPING OR SLACKING TO A HEIGHT OF 6 FEET (OR TO THE LIMITS OF LOWER BRANCHING) IN ADDITION TO THE REDUCED FENCING REQUIRED.

WHERE ANY OF THE ABOVE EXCEPTIONS RESULT IN AREAS OF UNPROTECTED ROOT ZONES UNDER THE DRIPLINE OR CRZ, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THESE AREAS.

ALL GRADING WITHIN CRZ AREAS SHALL BE DONE BY HAND OR WITH SMALL EQUIPMENT TO MINIMIZE ROOT DAMAGE. PRIOR TO GRADING, RELOCATE PROTECTIVE FENCING TO 2 FEET BEHIND THE GRADE CHANGE AREA.

ALL ROOTS WITHIN CRZ AREAS SHALL BE PROTECTED BY COVERING WITH MULCH OR FISH WITH THE SOIL AND BACKFILLED WITH GOOD QUALITY TOP SOIL WITHIN TWO DAYS. IF EXPOSED ROOT AREAS CANNOT BE BACKFILLED WITHIN 2 DAYS, AN ORGANIC MATERIAL WHICH IS PERMEABLE TO WATER AND MINIMIZES WATER LOSS DUE TO EVAPORATION SHALL BE PLACED TO COVER THE ROOTS UN- TIL BACKFILL CAN OCCUR.

PRIOR TO EXCAVATION OR GRADE CUTTING WITHIN TREE DRIPLINES, A CUT SHIELD SHALL BE MADE WITH A ROCK SACK OR SIMILAR EQUIPMENT TO PROTECT A LOCALIZED AREA OF THE CRZ FROM EXCAVATION OR GRADING.

TREES MOST HEAVILY INJURED AND TO BE REMOVED BY AN ACTIVITY SHALL BE REMOVED DEEPLY, ONCE A WEEK DURING PERIODS OF DRY WEATHER. TREE GROWNS ARE TO BE SPRAYED WITH WATER PERIODICALLY TO REDUCE DRY, ACCUMULATION ON LEAVES.

PRIOR TO INSTALLING CONCRETE ADJACENT TO THE ROOT ZONE OF A TREE, A PLASTIC VAPOR BARRIER SHALL BE PLACED BEHIND THE TRUNK TO PROHIBIT LEACHING OF LIME INTO THE CRZ.

ANY TRENCING REQUIRED FOR THE INSTALLATION OF LANDSCAPE IRRIGATION SHALL BE PLACED AS FAR FROM EXISTING TREES AS POSSIBLE.

NO LANDSCAPE TOPSOIL DRESSING GREATER THAN FOUR (4) INCHES SHALL BE PERMITTED WITHIN THE DRIPLINE OR CRZ OF TREES, WHICHEVER IS GREATER. NO TOPSOIL IS PERMITTED ON ROOT FLARES OF ANY TREE.

ANY FORMS OR MATERIALS USED TO PROTECT TREES FROM CONSTRUCTION EQUIPMENT SHALL TAKE PLACE BEFORE CONSTRUCTION BEGINS. ALL PRUNING MUST BE DONE ACCORDING TO CITY STANDARDS AND AS OUTLINED IN LITERATURE AVAILABLE TO THE INTERESTED PARTY.

ALL OAK TREE CUTS, INTENTIONAL OR UNINTENTIONAL, SHALL BE TREATED WITH AN APPROVED PRUNING SEALER IMMEDIATELY WITHIN 10 MINUTES. TREE POINT MUST BE KEPT ON SITE AT ALL TIMES.

ALL PRUNING OR MAINTENANCE OF THE AUTOMATIC IRRIGATION SYSTEM, TREE PROTECTION BEFORE OR DURING CONSTRUCTION.

TREES APPROVED FOR REMOVAL SHALL BE REMOVED IN A MANNER WHICH DOES NOT IMPACT TREES TO BE PRESERVED. REFER TO THE CITY OF JOHNS RANGEL, TREE TECHNICAL MANUAL, FOR APPROPRIATE REMOVAL METHODS.

ALL REMOVALS MUST BE COMPLETED WITHIN 10 DAYS AFTER THE PERMITS ARE ISSUED. A HEIGHT OF 14 FEET USING THE TECHNIQUES DESCRIBED IN THE CITY OF JOHNS RANGEL, TREE TECHNICAL MANUAL.


VIOLATIONS FROM THE ABOVE REQUIREMENTS AND NEGLECT DURING THE CONSTRUCTION SHALL BE CONSIDERED AS ORDINANCE VIOLATIONS.

The diagrams illustrate three methods for constructing a tree well:

- PERMANENT PROTECTIVE WALL:** A cross-section showing a tree with a sloped ground surface. A label "PROPOSED CUT AND FILL SLOPE" points to the slope. Below the tree, a solid, hatched area represents the "PERMANENT PROTECTIVE WALL".
- OPEN TREE WELL:** A cross-section showing a tree with a sloped ground surface. A label "FILL" points to the material added to the slope. Below the tree, a hatched area represents the "ORIGINAL GROUND". A label "OPEN TREE WELL" points to the space around the tree. A note states: "PROVIDE DRAIN AS NECESSARY TO PREVENT WATER PONDING AFTER A RAINFALL EVENT CEASES".
- TREE WELL WITH RAISED GRADE:** A cross-section showing a tree with a raised ground surface. Labels include "VERTICAL TILES (TYPICAL)" for the outer wall, "DRAIN TILES (TYPICAL)" for the inner wall, "WELL" for the central area, "FILL (TYPICAL)" for the material above the tiles, and "LOOSE STONE (TYPICAL)" for the material below the tiles. The "ORIGINAL GROUND" is shown as a hatched area below the raised grade.

A top-down view of the "TREE WELL WITH RAISED GRADE" shows a circular "TREE WELL" with a central "DRAIN" and a ring of "DRAIN TILE" around it. The outer boundary is marked with small circles.

CROSS SECTION

<p>MORAVA ENCLAVE 1400 FM 487, JARRELL, TX 76537</p> <p>STANDARD DETAILS - SHEET 3</p>			<p>FLAKE ENGINEERING</p> <p>TRAVIS FLAKE 1400 FM 487, JARRELL, TX 76537 200 GROVE LANE, RUIDA, TX 78600 (512) 468-6548</p>		NO.	REVISION	DATE
<p>PRO. NO. _____</p> <p>SHEET 26 OF 30</p>							

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

I Vasudeva Rao Rayapati

Print Name
Partner

Title - Owner/President/Other
of Morava Holdings LLC

Corporation/Partnership/Entity Name
have authorized DIANE BERNAL

Print Name of Agent/Engineer
of DB LAND CONSULTING LLC

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:

S. Vasudeva Rao
Applicant's Signature

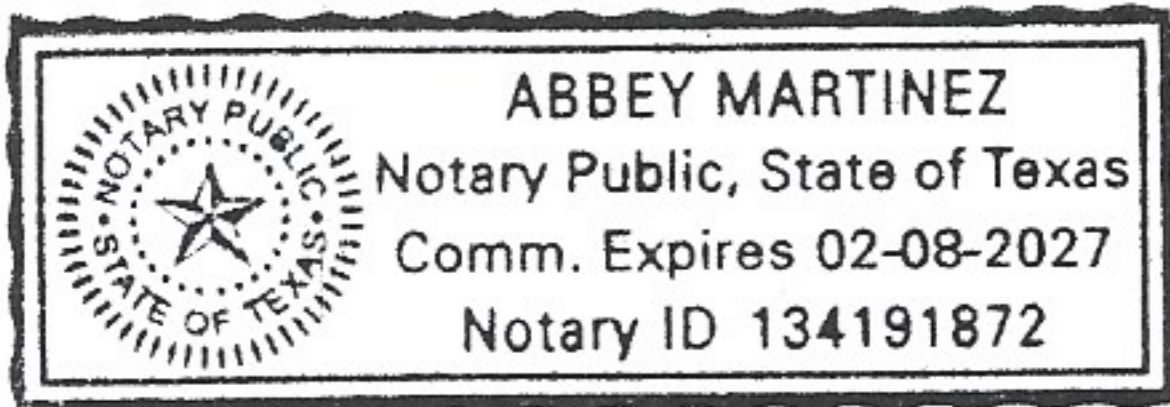
12/19/2024
Date

THE STATE OF Texas §

County of Williamson §

BEFORE ME, the undersigned authority, on this day personally appeared vasudeva rao vasudeva rao 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 19 day of December, 2024.



Abbey Martinez
NOTARY PUBLIC

Abbey Martinez
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 02/08/2027

Application Fee Form

Texas Commission on Environmental Quality

Name of Proposed Regulated Entity: MORAVA ENCLAVE

Regulated Entity Location: 1400 FM 487 JARRELL TEXAS

Name of Customer: MORAVA HOLDINGS LLC

Contact Person: VASU RAYAPATI

Phone: 512-788-1317

Customer Reference Number (if issued):CN _____

Regulated Entity Reference Number (if issued):RN _____

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	10.00 Acres	\$ 5,000
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: Diane Bernal

Date: October 22, 2024

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

Extension of Time Requests

<i>Project</i>	<i>Fee</i>
Extension of Time Request	\$150



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		RN

SECTION II: Customer Information

4. General Customer Information		5. Effective Date for Customer Information Updates (mm/dd/yyyy)			
<input checked="" 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>	
MORAVA HOLDINGS LLC					
7. TX SOS/CPA Filing Number		8. TX State Tax ID (11 digits)		9. Federal Tax ID (9 digits)	10. DUNS Number (if applicable)
803044973		32067504848		83-0944644	
11. Type of Customer:		<input checked="" 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 type="checkbox"/> Other		<input type="checkbox"/> Sole Proprietorship		<input type="checkbox"/> Other:	
12. Number of Employees				13. Independently Owned and Operated?	
<input checked="" type="checkbox"/> 0-20 <input type="checkbox"/> 21-100 <input type="checkbox"/> 101-250 <input type="checkbox"/> 251-500 <input 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:		3912 REMINGTON RD			
City		CEDAR PARK		State	TX
ZIP		78613		ZIP + 4	
16. Country Mailing Information (if outside USA)				17. E-Mail Address (if applicable)	
				moravallc@gmail.com	
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 checked="" 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>								
Morava Enclave								
23. Street Address of the Regulated Entity: <u><i>(No PO Boxes)</i></u>	1400 FM 487							
	City	JARRELL	State	TX	ZIP	76537	ZIP + 4	0
24. County	WILLIAMSON							

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

25. Description to Physical Location:	TRAVEL NORTH ON IH 35 FOR 27.7 MILES, EXIT FM 487 OR C BUD STOCKTON LOOP. TURN WEST (LEFT) TO TRAVEL ON FM 487 FOR 7 MILES PROPERTY IS ON RIGHT HAND SIDE AFTER HIGH SCHOOL									
26. Nearest City	State						Nearest ZIP Code			
JARRELL	TX						76537			
<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:			30.81568			28. Longitude (W) In Decimal:			-97.63035	
Degrees		Minutes		Seconds		Degrees		Minutes		Seconds
30		48		56.448		97		35		49.26
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)	
6514			5399			531110			452210	
33. What is the Primary Business of this entity? <i>(Do not repeat the SIC or NAICS description.)</i>										
TOWNHOMES										
34. Mailing Address:	1400 FM 487									
	City	JARRELL	State	TX	ZIP	76537	ZIP + 4			
35. E-Mail Address:		moravallc@gmail.com								
36. Telephone Number				37. Extension or Code				38. Fax Number <i>(if applicable)</i>		
(512) 788-1317								(0) -		

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
<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:	Diane Bernal			41. Title:	Dev. Consultant
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address		
(512) 215-1433		() -	dianejbernal@gmail.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:	DB LAND CONSULTING		Job Title:	DEV. CONSULTANT	
Name (In Print):	DIANE BERNAL			Phone:	(512) 215- 1433
Signature:				Date:	1/8/2025