601 NW Loop 410, Suite 453
San Antonio, Texas 78216
Tel: 210.494.5511
www.quiddity.com

WATER POLLUTION ABATEMENT PLAN MODIFICATION

FOR

TBAR M CAMP EXPANSION

Regulated Entity ID: RN102745502

Additional ID No: 13001941

Prepared for
Center for Christian Growth, Inc.



September 2025
Job No. 17758-0001-00

QUIDDITY

EDWARDS AQUIFER APPLICATION COVER PAGE SECTION

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: T Bar M Camp Expansion						**2. Regulated Entity No.:** RN102745502			
3. Customer Name: Center for Christian Growth, Inc.						**4. Customer No.: CN604880377**			
5. Project Type: **(Please circle/check one)**	New		Modification			Extension		Exception	
6. Plan Type: **(Please circle/check one)**	WPAP	CZP	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: **(Please circle/check one)**	Residential		Non-residential			**8. Site (acres):**		28.957	
9. Application Fee:	$6,500		**10. Permanent BMP(s):**			Vegetative Filter Strips, Bioretention, Cisterns			
11. SCS (Linear Ft.):	2,542		**12. AST/UST (No. Tanks):**			N/A			
13. County:	Comal		**14. Watershed:**			Comal River			

Application Distribution

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

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

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

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

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

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review. Darren J McAfee, P.E.
Print Name of Customer/Authorized Agent
Darren McAfee 9/16/2025
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):	

QUIDDITY

GENERAL INFORMATION SECTION

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: Darren J. McAfee, P.E.

Date: 9/16/2025

Signature of Customer/Agent:



Project Information

1. Regulated Entity Name: T Bar M Camp Expansion
2. County: Comal
3. Stream Basin: Comal River
4. Groundwater Conservation District (If applicable): Comal Trinity GCD, Edwards Aquifer Authority
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☐ Transition Zone

6. Plan Type:

   ☒ WPAP
   ☐ SCS
   ☒ Modification
   ☐ AST

☐ UST ☐ Exception Request

7. Customer (Applicant):

Contact Person: John MacDonald
Entity: Center for Christian Growth, Inc.
Mailing Address: 2549 W State Hwy 46
City, State: New Braunfels, TX Zip: 78132
Telephone: 830-620-4263 FAX: _____
Email Address: johnmac@tbarm.org

8. Agent/Representative (If any):

Contact Person: Darren J. McAfee, P.E.
Entity: Quiddity Engineering, LLC
Mailing Address: 601 NW Loop 410, Suite 453
City, State: San Antonio, TX Zip: 78216
Telephone: 210-546-0053 FAX: _____
Email Address: dmcafee@quiddity.com

9. Project Location:

☒ The project site is located inside the city limits of New Braunfels.
☐ 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.

The site is located within the city limits of New Braunfels, located off the intersection of SH 46 and FM 1863, approximently 1.45 miles northwest of Loop 337. The proposed site entrance off FM 1863 is approximently 0.25 miles southwest of the intersection. The proposed site entrance off SH 46 is approximently 0.30 miles northwest of the intersection.

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

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

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

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

    ☒ Survey staking will be completed by this date: May 1, 2025

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.

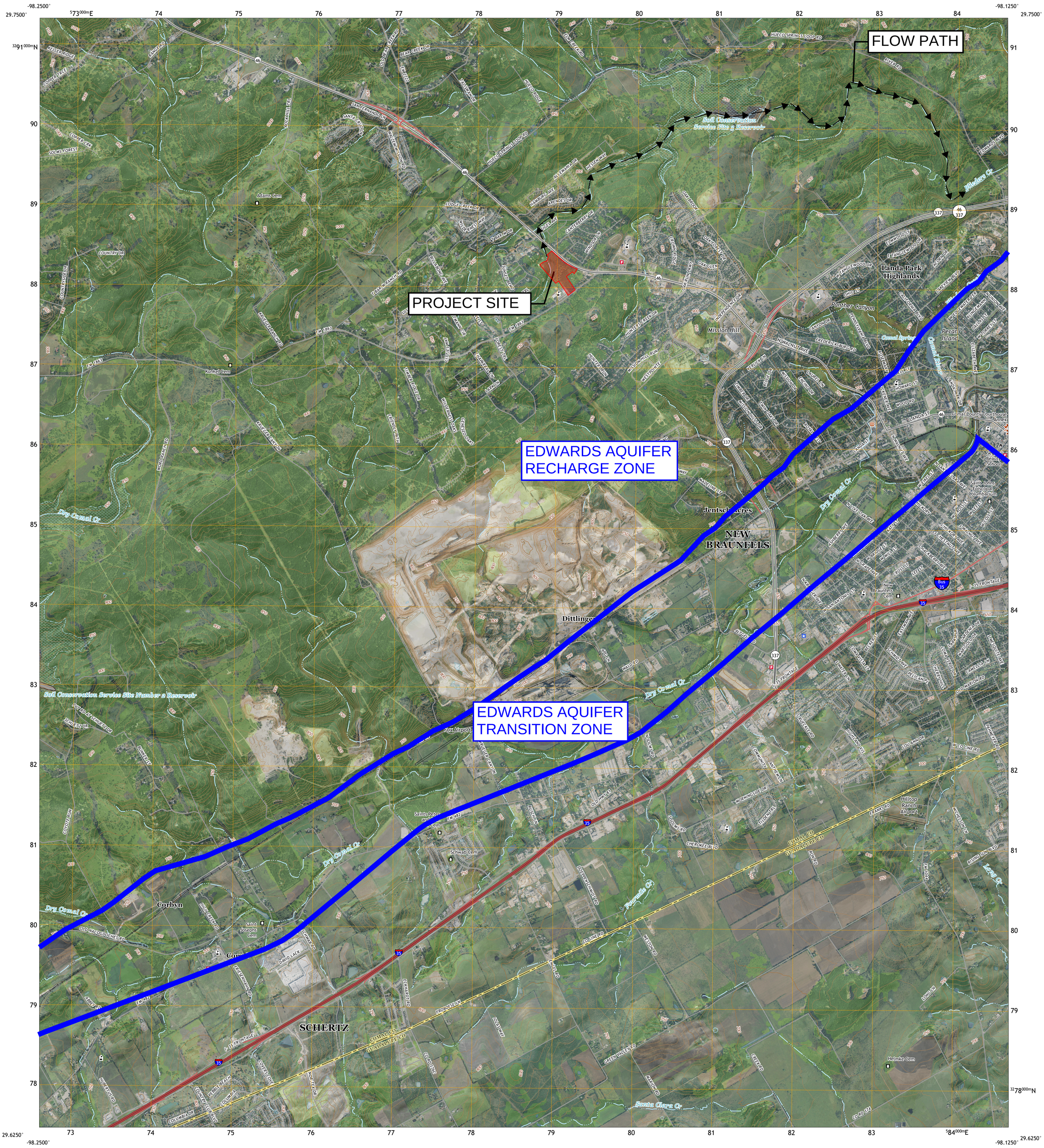

Attachment A
Location Map
Legend
SH 46
Project Site
FM 1863
Google Earth
N
1000 ft

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

USGS science for a changing world

The National Map US Topo

NEW BRAUNFELS WEST QUADRANGLE
TEXAS
7.5-MINUTE SERIES



-98.2500° 29.7500° -98.1250° 29.7500°
29.6250° -98.2500° -98.1250° 29.6250°
573 000mE 74 75 76 77 78 79 80 81 82 83 84 584 000mE
3291 000mN 90 89 88 87 86 85 84 83 82 81 80 79 78 3278 000mN

Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 14R

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery.....NAIP, September 2016 - November 2016
Roads..... U.S. Census Bureau, 2015 - 2019
Names.....GNIS, 1979 - 2022
Hydrography.....National Hydrography Dataset, 2000 - 2018
Contours.....National Elevation Dataset, 2021
Boundaries.....Multiple sources; see metadata file 2019 - 2021

Wetlands.....FWS National Wetlands Inventory Not Available

MN
GN
3°58′ 71 MILS
0°24′ 7 MILS
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
NT
Grid Zone Designation 14R

SCALE 1:24 000
1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

TEXAS
QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES
1 Smithson Valley
2 Sattler
3 Hunter
4 Bat Cave
5 New Braunfels East
6 Schertz
7 Marion
8 McQueeney

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

NEW BRAUNFELS WEST, TX
2022

NSN 7643016397410
NGA REF NO. USGSX24K31661

Attachment C

PROJECT DESCRIPTION

The T Bar M Camp Expansion is a 28.957-acre commercial lot, located at 2549 West SH Highway 46 in New Braunfels, Texas, within Comal County. The proposed development will be an expansion of the existing T Bar M Camp Retreat facilities directly northwest of the proposed lot. The site mainly consists of uncleared/undeveloped land, with one existing tract that currently has a residential house and unpaved driveway on the property that were built before 1984. This residential house is serviced by an on-site water supply well located approximately 90 feet south of the structure and is covered and housed within a wooden well-house structure. The residential house is also serviced by a residential septic tank that is approximately 8 feet by 6 feet in dimension and is located approximately 70 feet west of the structure. There are two existing concrete-lined ponds onsite; one located approximately 200 feet northwest of the residential structure and one located approximately 552 feet south of the north property corner. The project is within the Edwards Aquifer Recharge Zone and the Comal Trinity Groundwater Conservation District. No part of the project site falls within the 100-year floodplain per FEMA firm panel #48091C0435F, dated September 2, 2009.

The proposed use of the site will be an expansion of the adjacent T Bar M Camp Retreat facilities to be used as a family and day camp. The new facilities will include new buildings, paved roads and parking, sports courts, walking paths, and a detention pond. The existing residential structure, septic tank, and unpaved driveway will be demolished. The proposed facilities will be developed over 3 phases of construction. Phase 1 includes the demolition of the existing unpaved driveway. Phase 1 also includes the construction of all public water and wastewater utilities, private utilities, the detention pond, 6 buildings, sports courts, paved roads, walking paths, and permanent BMP's. Phase 2 includes the demolition of the existing residential structure and septic tank. Phase 2 also includes the construction of private utilities, 3 buildings, walking paths, and permanent BMP's. Phase 3 includes the construction of private utilities, 1 building, paved roads, walking paths, and permanent BMPs. Please reference the Erosion Control Plan, Attachment H of the Temporary Stormwater Section, which shows the construction phases by color.

The impervious cover of the site will be 7.63 acres, at ultimate build-out conditions. However, 1.18 acres is rooftop area that will be captured by cisterns. Per TCEQ's Technical Guidance Manual (TGM) RG-348 (rev. 2005), impervious cover to be treated for TSS removal does not include rooftops if it is part of a rainwater harvesting system. Therefore, the total impervious cover of the site to be treated is 6.45 acres, or 22.31%, at ultimate build-out conditions. There are 143.0 acres of upgradient runoff that flows through a natural dry drainage channel to an unnamed tributary. Please reference the Additional Documents section at the end of this report for the Existing Drainage Area Map. This unnamed tributary outfalls to Blieder's Creek, and ultimately to the Comal River. Of this acreage, 0.90 acres will be treated through a bioretention facility, with 0.19 acres of that being impervious. The total impervious area that will be treated for TSS removal is 6.64 acres. The on-site detention pond will be used for detention only. The proposed permanent BMP's for TSS removal includes cisterns, natural and engineered vegetative filter strips, and bioretention (separate from detention pond). Cisterns will be used to capture runoff from some of the rooftops. The vegetative filter strips will be used to treat the runoff from the paved streets and paved parking. Bioretention facilities will be used to treat paved areas and the runoff from the buildings that are not treated by cisterns. There are five proposed cisterns, nine proposed bioretention facilities, and twenty-six proposed vegetative filter strips.

QUIDDITY

GEOLOGIC ASSESSMENT SECTION

Geologic Assessment

Texas Commission on Environmental Quality

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

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

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

Signature

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

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

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

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

Signature of Geologist:



8/2/2023

Regulated Entity Name: T Bar M Camp Expansion – 28.96 Acres

Project Information

1. Date(s) of Geologic Assessment was performed: April 29, 2022 and July 11, 2023
2. Type of Project:

☒ WPAP ☐ AST

☒ SCS ☐ UST

3. Location of Project:

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

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

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

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness (feet)
Rumple-Comfort association, undulating (RUD)	C	Veneer to 4 feet

**Soil Group Definitions (Abbreviated)*

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

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

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

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

   Applicant's Site Plan Scale: 1" = 80'
   Site Geologic Map Scale: 1" = 80'
   Site Soils Map Scale (if more than 1 soil type): See ***Site Geologic Map***

9. Method of collecting positional data:

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

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

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

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

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

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

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

☒ There are 11 (#) test holes/well present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
- ☒ The test holes are not in use and have been properly abandoned.
- ☐ The wells are not in use and will be properly abandoned.
- ☒ The well is in use and complies with 16 TAC Chapter 76.

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

Administrative Information

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

ATTACHMENTS

ATTACHMENT A

GEOLOGIC ASSESSMENT TABLE
(TCEQ-0585-TABLE)

COMMENTS TO GEOLOGIC ASSESSMENT TABLE

SOIL PROFILE

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: ***T Bar M Camp Expansion - 28.96 Acres - New Braunfels, Comal County, Texas***
*(**RKI** Project No. ASF15-092-01)*

LOCATION			FEATURE CHARACTERISTICS											EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	>40	<1.6	>1.6	
S-1	N29 43 25.69	W98 11 3.42	SF	20	Kep	8.0	10.0		N-S		1/FT	0.5-1	F	6	26	✓		✓		Hilltop
S-2	N29 43 19.43	W98 10 54.50	CD	5	Kep	6.5	6.0	1.5					F	6	11	✓		✓		Hilltop
S-3	N29 43 16.75	W98 11 2.38	CD	5	Kep	24.0	66.0	3.0					X	6	11	✓			✓	Drainage
S-4	N29 43 20.88	W98 11 2.49	CD	5	Kep	12.0	12.0	2.5					X	6	11	✓			✓	Drainage
S-5	N29 43 23.04	W98 11 0.77	F	20	Kep	854.0	10.0		NE-SW	10			C / F	8	38	✓			✓	Drainage
S-6	N29 43 14.36	W98 11 0.16	MB (Well)	30	Kep	0.3	0.3	~400-425[1]					N	35	65		✓	✓		Hilltop
S-7	N29 43 15.34	W98 11 0.94	MB (Septic)	30	Kep	8.0	6.0	~6.0					F / X	8	38	✓		✓		Hilltop
S-8	N29 43 23.55	W98 11 3.85	MB (SS)	30	Kep	1,404.0	3.0	~3.0-4.0					F	6	36	✓			✓	Drainage
S-9	N29 43 19.05	W98 11 7.21	MB (PTH, B-1)	30	Kep	8.0	0.5	20.0					Z	5	35	✓		✓		Hilltop
S-10	N29 43 19.25	W98 11 5.75	MB (PTH, B-2)	30	Kep	8.0	0.5	20.0					Z	5	35	✓		✓		Hilltop
S-11	N29 43 16.76	W98 11 3.75	MB (PTH, B-3)	30	Kep	8.0	0.5	20.0					Z	5	35	✓		✓		Hilltop
S-12	N29 43 16.43	W98 11 0.94	MB (PTH, B-4)	30	Kep	8.0	0.5	20.0					Z	5	35	✓		✓		Hilltop
S-13	N29 43 13.70	W98 10 59.16	MB (PTH, B-5)	30	Kep	8.0	0.5	20.0					Z	5	35	✓		✓		Hilltop
S-14	N29 43 15.14	W98 10 57.87	MB (PTH, B-6)	30	Kep	8.0	0.5	20.0					Z	5	35	✓		✓		Hilltop
S-15	N29 43 15.64	W98 10 56.56	MB (PTH, B-7)	30	Kep	8.0	0.5	20.0					Z	5	35	✓		✓		Hilltop
S-16	N29 43 18.40	W98 11 0.22	MB (PTH, B-8)	30	Kep	8.0	0.5	20.0					Z	5	35	✓		✓		Hilltop
S-17	N29 43 22.05	W98 11 2.65	MB (PTH, B-9)	30	Kep	8.0	0.5	20.0					Z	5	35	✓		✓		Hilltop
S-18	N29 43 23.86	W98 11 1.88	MB (PTH, B-10)	30	Kep	8.0	0.5	20.0					Z	5	35	✓		✓		Hilltop

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

Features: SS = sanitary sewer utility; Well = water-supply well; Septic = septic system; PTH = plugged geotechnical test hole.

Formation: Kep = Person Formation

1. The onsite well depth is unknown. The depths are estimated based on surrounding water wells.

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

8A INFILLING	
N	None, exposed bedrock
C	Coarse - cobbles, breakdown, sand, gravel
O	Loose or soft mud or soil, organics, leaves, sticks, dark colors
F	Fines, compacted clay-rich sediment, soil profile, gray or red colors
V	Vegetation. Give details in narrative description
FS	Flowstone, cements, cave deposits
X	Other materials: ***Concrete-lined (Features S-3 and S-4) and granular bedding materials for the septic system (Feature S-7) and sewer utility trench (Feature S-8).***
Z	***Soil cuttings for geotechnical test holes (Features S-9 through S-18.***

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

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

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

Date: *8/2/2023*

Sheet 1 of 1

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

COMMENTS TO GEOLOGIC ASSESSMENT TABLE
T Bar M Camp Expansion – 28.96 Acres
New Braunfels, Comal County, Texas

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

Karst Feature

Feature S-1 consists of solution-enlarged fractures in a limestone outcrop measuring approximately 8 x 10 feet in plan view. This feature is located near the north property corner. The limestone exposure is generally consistent along the 840 foot elevation contour interval. The fractures shown are oriented at approximately 170° (N-S). The fracture density was observed to be one per foot with apertures ranging from approximately 6 inches to 1 foot. Fracture infilling consisted of fine, compact soils. At the time field activities were conducted, there was no direct or indirect evidence of capacity for rapid infiltration.



Non-Karst Closed Depression



Feature S-2 is located within the northeast portion of the subject property near State Highway 46 and is classified as a non-karst closed depression. The feature dimensions are 6.5 x 6 x 1 feet in length, width and depth, respectively. The long axis of this feature is oriented E-W. The feature was apparently formed by animal burrowing and is completely contained within the soil horizon. At the time field activities were conducted, there was no direct or indirect evidence of capacity for rapid infiltration.

Feature S-3 consists of concrete-lined pond measuring approximately 24 x 66 feet in plan view. The pond is located approximately 200 feet northwest of the existing residential structure within an existing drainage channel (i.e., tributary to Blieders Creek). As depicted in the photograph, the pond was observed filled with water and water plants. It is inferred that the cementitious materials comprising the pond liner extend through soils to depths greater than approximately 3 feet, intersecting the underlying limestone bedrock (Person Formation).





Feature S-4 consists of concrete-lined pond similar to ***Feature S-3*** measuring approximately 12 x 12 feet in plan view. The pond is located approximately 552 feet south of the north property corner within the Blieders Creek tributary. The pond was observed filled with water. It is inferred that the cementitious materials comprising the pond liner extend through soils to depths greater than approximately 2.5 feet, intersecting the underlying limestone bedrock (Person Formation).

Fault

Feature S-5

The fault (***Feature S-5***) was mapped based on review of the published geologic reference entitled *Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Outcrop* (Small and Hanson, 1994). Field evidence of faulting was not observed near the mapped location or surrounding vicinity. In addition to the field reconnaissance efforts, **Raba Kistner, Inc.** inspected historical aerial photography of the area via Google Earth™ from years 1995 to 2023. No evidence of faulting or pervasive lineations were observed in the aerial photographs. Therefore, the location of this feature is inferred as indicated on the ***Site Geologic Map*** by the dashed line.

Manmade Features in Bedrock (MB)

Feature S-6 (Water-Supply Well)



Feature S-6 is a water-supply well likely completed in the Edwards Aquifer. The wellhead is located approximately 90 feet to the south of the residential structure. The well has a 4-inch polyvinyl chloride (PVC) surface casing with an associated submersible pump and a pressure tank, and is covered and housed within a wooden well-house structure. Review of the Texas Water Development Board (TWDB) Well Registration Database did not indicate any information regarding this well; however a nearby water-supply well located approximately 1,415 feet to the northwest (i.e., within the Mission Valley Estates subdivision) is reportedly installed to a depth of 421 feet in the Edwards Aquifer.

Feature S-7 (Septic System)



Feature S-7 is a septic system of unknown size located approximately 70 feet to the west of an existing residential structure. It is assumed to be approximately 8 feet long, 6 wide, and 6 feet deep based on typical septic system dimensions. It is inferred that the base of the septic system is installed into the limestone bedrock of the underlying Person Formation. Cleanouts and an apparent leach field were observed within the vicinity of the residential structure.

Feature S-8 (Sanitary Sewer Line Trench)

Feature S-8 consists of trench for an existing sanitary sewer utility that extends from the Sanctuary building within the existing T Bar M Camp area into the assessment area along the north property boundary. The sanitary sewer utility extends through the north-central portion of the assessment area terminating along the west-central property boundary. The existing utility location data was provided by Quiddity (2023). Sanitary sewer manholes were not observed during field reconnaissance activities. It is inferred that the trench hosting the sanitary sewer utility is approximately 3 feet wide and installed to depths of approximately 3 to 4 feet. The length of the trench within the assessment area is estimated to be 1,404 feet.

Features S-9 through S-18 (Plugged Geotechnical Test Holes):

Features S-9 through S-18 consist of plugged geotechnical test holes installed by Rock Engineering and Testing Laboratory, LLC in April 2023 to support the construction of additional cabins for the T Bar M Camp. A total of ten test holes were drilled within the project site to depths of approximately 20 feet below the existing ground surface using air-rotary methods. According to the geotechnical test hole log data, a dark brown to reddish-brown clay stratum ranging from a few inches to approximately 4 feet was encountered underlain by very hard tan limestone comprising the top of the Edwards formation. Shallow groundwater was not observed during drilling operations. Based on the referenced geotechnical report and observations in conjunction with field reconnaissance activities, the test holes were backfilled with soil cuttings following completion of drilling activities. No evidence of the test holes were observed during the field mapping effort.

SOIL PROFILE
T Bar M Camp Expansion – 28.96 Acres
New Braunfels, Comal County, Texas

SOIL SERIES	THICKNESS ON SITE	DESCRIPTION
Rumple Comfort	**Veneer to 4 feet**	***Rumple-Comfort-association, undulating (RUD):*** Rumple soils make up about 60% of this association and are on broad ridge tops and side slopes. The surface layer is dark reddish brown very cherty clay loam about 10 inches thick with rounded chert, limestone cobbles and gravel cover about 20% of the surface. The subsoil is dark reddish brown very cherty clay to approximate depth of 14 inches and dark reddish brown extremely stony clay to a depth of about 28 inches. The surface layer of the Comfort soil is dark brown, neutral, extremely stony clay about 7 inches thick. The subsoil is dark reddish brown, mildly alkaline, extremely stony clay to a depth of 12 inches. The underlying material for both Rumple and Comfort soils is indurated fractured limestone fragments

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

Reported test hole data (Rock, 2023) indicates that surface soils vary in thickness, ranging from approximately 0.25 to 4 feet and consisting of dark brown to reddish-brown clay soils overlying limestone rock units. The geotechnical drilling data is generally consistent with the published soil information presented above.

ATTACHMENT B

STRATIGRAPHIC COLUMN

STRATIGRAPHIC COLUMN
T Bar M Camp Expansion – 28.96 Acres
New Braunfels, Comal County, Texas

STRATIGRAPHIC FORMATION	THICKNESS	DESCRIPTION
Edwards Limestone (Ked) Person Formation (Kep)	180-224 feet	Unit consists of gray to light tan marly limestone. Identified in the field by the presence of *Waconella wacoensis.*
Cyclic and Marine Members, undivided	80–100 feet	Unit consists of massive mudstone to packstone; *miliolid* grainstone; and chert. Identified in the field by cycles of massive beds to relatively thin beds. ***Isolated exposures observed throughout the SITE.***
Leached and Collapsed Members, undivided	80–100 feet	Unit consists of crystalline limestone, mudstone to grainstone and chert. Identified in the field by bioturbated iron-stained beds separated by massive limestone beds. ***Not exposed at the SITE.***
Regional Dense Member	20–24 feet	Unit consists of dense, argillaceous mudstone. Identified in the field by wispy iron-oxide stains. ***Not exposed at the SITE.***

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

ATTACHMENT C

NARRATIVE OF SITE SPECIFIC GEOLOGY

SITE GEOLOGY NARRATIVE
T Bar M Camp Expansion – 28.96 Acres
New Braunfels, Comal County, Texas

Introduction

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

This geologic assessment report documents conditions observed by **RKI** within the project boundaries on April 28, 2022, May 2, 2022, and July 11, 2023. The SITE was fully reassessed in July 2023 to support the current land development plan as further discussed in the WPAP.

Site Description

Site Location. The overall tract to be developed, which is located northwest of State Highway (SH) 46 and Farm-to-Market (FM) 1863 intersection, comprises approximately 28.96 acres. The SITE is primarily undeveloped, but hosts a former residential structure. Based on review of official maps published by the TCEQ, the SITE is fully located within the Edwards Aquifer Recharge Zone (EARZ). As such, the performance of a geologic assessment is required to facilitate planned construction activities in accordance with applicable provisions set forth in the Edwards Aquifer Protection Program (EAPP) rules.

RKI understands that planned improvements include main structures, cabins, tennis courts, and roadway, in addition to the installation of a SCS system, which comprises approximately 2,900 linear feet of an 8-inch diameter polyvinyl chloride (PVC) sanitary sewer line. In accordance with TCEQ requirements, the full extent of the proposed SCS alignment and surrounding 50-foot buffer zone were fully assessed in conjunction with Geologic Assessment activities.

As presented on the attached ***Site Geologic Map,*** adjacent properties include: T Bar M Camp to the northwest; SH 46 to the north/northeast with commercial (Standard Casualty Company) and single-family residential development (Northwoods Subdivision) beyond; residential property to the east; FM 1863 and vacant land beyond to the south; school development to the southwest (New Braunfels Christian Academy); and single-family residential development to the west (Mission Valley Estates).

Topography and Drainage. Topographic contours on the U.S. Geological Survey (USGS, 2022) 7.5-minute topographic map (i.e. New Braunfels West Quadrangle) were reviewed to evaluate the general surface conditions and drainage patterns along with more detailed 2-foot topographic contours obtained from the

Comal County Geographic Information System (GIS) Hub (i.e., open data portal) (CCEO, 2023) are depicted on the ***Site Geologic Map***. The SITE consists of a gently sloping hillside characterized by hilltop topography. The property is transected from north to the southwest by an unnamed tributary to Blieders Creek. Maximum elevations occur along the south property boundary near FM 1863 on the order 886 feet relative to mean sea level (msl), which slopes to a minimum elevation of 831 feet msl along the unnamed tributary to Blieders Creek at the north property boundary.

The surface drainage patterns for the majority of the SITE are locally to the north/northwest toward the unnamed tributary. The majority of drainage across the SITE occurs as sheet flow directed toward the unnamed tributary, which reaches a confluence with Blieders Creek approximately 0.2 miles north beyond the SITE boundary. A review of the Flood Insurance Rate Map (FIRM 48091C0435F, FEMA, September 2, 2009) indicates that no portion of the SITE is within the 100-year floodplain. The SITE is fully within Zone X as designated on official maps (i.e., an area determined to be outside of the defined 0.2% annual probability floodplain area).

Historical Property Use. Although research pertaining to past SITE operations and historical land use activities was beyond the scope of this assessment, historical aerial imagery was reviewed to evaluate past land use and the presence of lineations that could indicate the presence of normal faulting. The following aerial photographs Google Earth™ were reviewed: 1995, 2005, 2008, 2010, 2012 through 2021, and 2023. The 1995 aerial photograph indicates a single residential structure and caliche drive within the south-central portion of the property. The 2005 through 2010 aerial photographs indicate small structures in the northwest corner of the property with additional small shed-like structures installed in 2012. The SITE remain unchanged in the aerial photographs from 2013 to 2023. With the exception of the few structures on the property, the SITE is heavily vegetated.

Classification of Recharge Features: As further described herein, 18 recharge features were identified within SITE boundaries including a solution-enlarged fracture outcrop, non-karst closed depressions, manmade features (i.e., water well, a septic system, sanitary sewer utility line, and test holes), in addition to an inferred normal fault. The significance of these features was assessed using definitions and guidance provided in *Instructions to Geologists (TCEQ-0585-Instructions, revised October 1, 2004)*. All features within the SITE that met the criteria presented in this reference were mapped. The characteristics of all mapped features and the assessments of these features, as defined by the TCEQ, are presented in the attached ***Geologic Assessment Table (TCEQ-0585-Table)***.

Stratigraphy

As presented in the attached ***Stratigraphic Column***, information pertaining to the lithologies and thickness of geologic units underlying the SITE was primarily taken from Collins (2000) and Small and Hanson (1994). Collective published data referenced indicate that the Person Formation (Kep) underlies the SITE. As depicted on the ***Site Geologic Map***, the Kep is commonly divided into three distinct members: (i) Cyclic and Marine Member, undivided – mudstone to packstone, grainstone, and chert; (ii) Leached and Collapsed Member, undivided - unit includes crystalline limestone, mudstone to grainstone, and chert; and (iii) Regional Dense Member - unit consists of dense, carbonate mudstone. The reported total thickness of the Kep in the SITE vicinity is on the order of 180 to 224 feet. The uppermost or Cyclic and Marine member of the Kep represents the portion of the Edwards Limestone directly underlying the west

portion of the SITE to depths on the order of 80 to 100 feet. Based upon the work of Maclay (1995), this unit contains many open fractures and possesses low matrix permeability with total porosity on the order of 5 to 10%. Patch exposures of the Kep were observed along the Blieders Creek tributary.

Structure

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

Based on review of historical aerial photographs, published maps, and in conjunction with field mapping efforts, no indications of lineations that could be associated with normal faulting were identified within the boundaries of the SITE. Small and Hanson (1994) mapped a fault that transects near the north portion of the SITE, designated herein as ***Feature S-18***. This feature is described as a normal fault that juxtaposes the younger Del Rio Clay formation to the northwest with older Edwards Limestone to the southeast in the SITE vicinity. However, as direct evidence of faulting (e.g., lineations, changes in soil type and vegetation, fractured rock outcrops, etc.) was not observed near the mapped fault or in the surrounding vicinity, the location is inferred as indicated by dashed lines on the ***Site Geologic Map***. Any direct or indirect evidence of faulting may be obscured by the presence of soil cover.

This feature is classified as not sensitive, based upon the lack of discrete recharge openings along the inferred fault trace and low relative infiltration rate of overlying clay soils (i.e., no evidence of capacity for rapid infiltration). This classification is based upon the point assignment criteria presented in the ***Geologic Assessment Table (TCEQ-0585)*** and professional judgment.

Karst Feature

A solution enlarged fracture outcrop ***(S-1)*** is located near the north property corner of the SITE and formed the Person Formation. ***Feature S-1*** is approximately 8 feet in length and 10 feet in width and is oriented N-S. Fracture density was observed to be one per foot with apertures ranging from approximately 0.5 to 1 foot. Collective field observations indicate that the fractures are limited to the surface and do not connect to larger subsurface karst features openings.

This feature is classified as not sensitive owing to the inferred surficial erosional origin; extent limited to the surface with no connection to underlying limestone, and estimated low relative infiltration rates (i.e., no evidence of rapid infiltration capacity).

Non-Karst Closed Depressions

Three non-karst closed depression (NKCD) were identified throughout the SITE. These features penetrate the surface soils that were not formed by karst processes. No indications of direct drainage or rapid

infiltration were observed in connection with these features. The following is a brief description of these features:

Feature S-2 was apparently formed by animal burrowing and measures approximately 6.5 x 6 x 1 feet in length, width and depth, respectively. The feature is completely contained within the soil horizon. At the time field activities were conducted, there was no direct or indirect evidence of capacity for rapid infiltration.

Features S-3 and S-4 are manmade concrete-lined ponds with brick coping. The larger pond measures approximately 24 feet in length and 66 feet in width and the smaller pond measures approximately 12 feet in length and width. The depths of these features range from approximately 2.5 to 3 feet. These ponds are located along the unnamed tributary to Blieders Creek and were holding water at the time of field reconnaissance.

These non-karst closed depression features do not have capacity for rapid infiltration of surface runoff and are therefore considered not sensitive based upon the point assignment criteria set forth in the ***Geologic Assessment Table (TCEQ-0585)*** and professional judgment.

Manmade Features

As presented on the ***Site Geologic Map***, thirteen manmade features were identified that may potentially serve to enhance the transmission of surface runoff to the subsurface. The features consist of a sanitary sewer utility trench, an existing domestic water well, residential septic system, in addition to plugged geotechnical test holes. Information regarding the location of the existing utility trench was gleaned from the Site Plan Exhibit prepared by Quiddity, the project civil engineer (provided to **RKI** on June 26, 2023), in addition to field observations of a well-house and cleanouts. The following is a brief description of the features that were identified excluding geotechnical test holes:

Feature S-6 is a domestic water-supply well completed in the Edwards Aquifer. Review of the Texas Water Development Board website does not indicate any information regarding this well. It is estimated the well is approximately 400 to 425 in depth based on review of water wells within the SITE vicinity, which extend into the underlying Edwards Limestone. This feature is classified as sensitive, having a high potential of transmitting fluids into the Edwards Aquifer if the well casing was to become compromised. At the time field mapping activities were conducted, the well was operational and the casing was found to be in good condition.

Feature S-7 is a residential septic system estimated to be approximately 8 feet long by 6 feet wide based on typical septic system dimensions. It is likely installed up to 6 feet deep into the underlying bedrock of the Person Formation. This feature is classified as not sensitive considering typical septic system design criteria, which facilitates controlled infiltration to the subsurface, and the absence of natural karst features observed in proximity.

Feature S-8 is an existing sanitary sewer utility trench (Quiddity, 2023). The utility trench is inferred to be approximately 3 feet wide and installed to depths of approximately 3 to 4 feet into the underlying bedrock of the Person Formation This feature is classified as not sensitive

Although not directly observable, it is inferred that the subgrade trenches (***Features S-7*** and S***-8***) are backfilled in accordance with standard construction practices that include the use of structural fill soils (e.g., base course materials, limestone gravel, compacted clay soils, etc.) overlain by native or fill soils, depending upon location and surface improvements. These trenches were not observed in conjunction with any naturally occurring recharge features. Although the backfilled trenches may exhibit a somewhat greater relative infiltration rate than the surrounding soil/rock strata underlying the project boundaries, these manmade features were collectively classified as not sensitive, having a low potential of preferentially transmitting fluids into the Edwards Aquifer. This classification is based upon the point assignment criteria presented in the ***Geologic Assessment Table (TCEQ-0585)*** and professional judgment.

Information regarding the locations of the geotechnical test holes were gleaned from the Preliminary Subsurface Exploration, Laboratory Testing Program, and Geotechnical Discussion report prepared by Rock Engineering and Testing Laboratory, LLC, dated May 10, 2023 (provided to **RKI** by Quiddity on June 26, 2023). There were no remaining field indications of these plugged test holes. The following is a discussion of the features that were identified:

Features S-9 through S-18 consist of geotechnical borings installed by Rock Engineering and Testing Laboratory, LLC as part of the referenced geotechnical engineering study (Rock, 2023). These were reportedly installed with air rotary to maximum total depths of approximately 20 feet. Borings generally encountered very stiff dark brown to reddish-brown clay soils to depths of approximately 3 inches to 4 feet. Below these depths, a hard, tan limestone consisting of the uppermost part of the Edwards Limestone was reported. These logging observations are consistent with mapped soil and rock types. No groundwater was observed during drilling operations. These logging observations are consistent with mapped soil and rock types. No shallow groundwater was observed during drilling operations.

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

Potential for Fluid Migration to the Edwards Aquifer

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

- The SITE is primarily underlain by surface soils ranging in thickness from approximately 0.25 to 4 feet based on geotechnical drilling data and field observations. The Rumple-Comfort clays are classified as Hydrologic Soil Group C and have low infiltration rate with medium runoff potential when thoroughly wet, and a slow rate of water transmission.

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

- With the exception of the water-supply well (***Feature S-6***), which is observed in use and in good condition, the manmade features present at the SITE, are collectively classified as not sensitive based on consideration of construction/plugging details and application of point assignment criteria and professional judgment.

- The fault (***Feature S-5***) is inferred as no direct field evidence was observed. This feature is classified as not sensitive within the SITE boundaries, based upon the lack of discrete recharge openings along the majority of the fault trace, and inferred low relative infiltration rate of overlying soil cover.

References

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ATTACHMENT D

FEATURE POSITION TABLE
(GPS COORDINATES)

SITE GEOLOGIC MAP

FEATURE POSITION TABLE

T Bar M Camp Expansion - 28.96 Acres

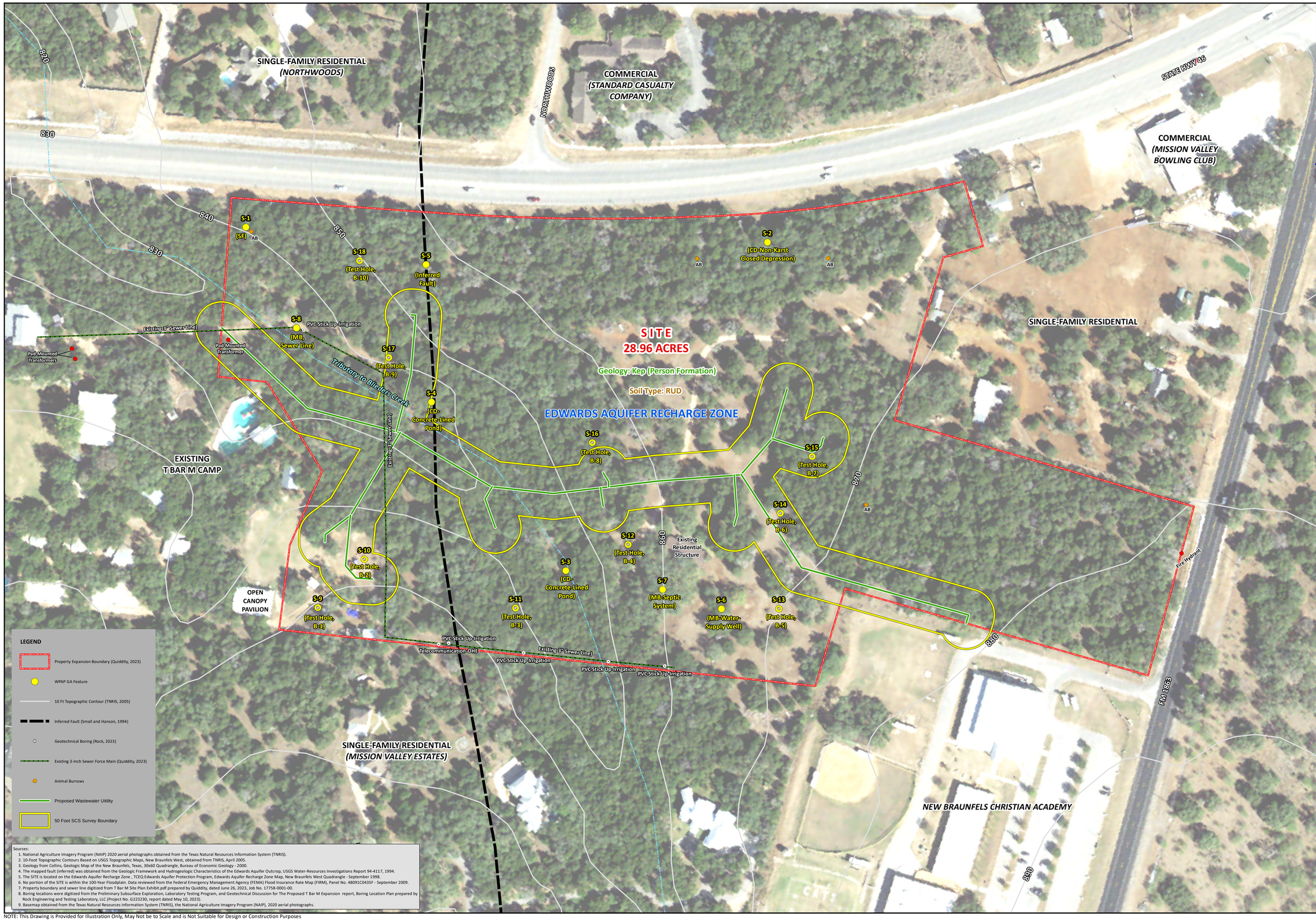
New Braunfels, Comal County, Texas

RKI Project No. ASF15-092-01

Feature Designation	Feature Type	Date Collected	North Latitude	West Longitude	UTM Northing (meters)	UTM Easting (meters)
S-1	Solution-Enlarged Fracture	7/11/2023	N29 43 25.69	W98 11 3.42	3288460	578892
S-2	Non-Karst Closed Depression	7/11/2023	N29 43 19.43	W98 10 54.50	3288269	579133
S-3	Non-Karst Closed Depression	7/11/2023	N29 43 16.75	W98 11 2.38	3288185	578922
S-4	Non-Karst Closed Depression	7/11/2023	N29 43 20.88	W98 11 2.49	3288312	578918
S-5	Fault	7/11/2023	N29 43 23.04	W98 11 0.77	3288378	578964
S-6	Manmade feature in bedrock (Water Well)	7/11/2023	N29 43 14.36	W98 11 0.16	3288112	578982
S-7	Manmade feature in bedrock (Septic Tank)	7/11/2023	N29 43 15.34	W98 11 0.94	3288142	578961
S-8	Manmade feature in bedrock (Sanitary Sewer Utility Trench)	7/11/2023	N29 43 23.55	W98 11 3.85	3288394	578881
S-9	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-1)	7/11/2023	N29 43 19.05	W98 11 7.21	3288255	578831
S-10	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-2)	7/11/2023	N29 43 19.25	W98 11 5.75	3288261	578831
S-11	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-3)	7/11/2023	N29 43 16.76	W98 11 3.75	3288185	578885
S-12	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-4)	7/11/2023	N29 43 16.43	W98 11 0.94	3288175	579961
S-13	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-5)	7/11/2023	N29 43 13.70	W98 10 59.16	3288092	579009
S-14	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-6)	7/11/2023	N29 43 15.14	W98 10 57.87	3288136	579044
S-15	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-7)	7/11/2023	N29 43 15.64	W98 10 56.56	3288152	579079
S-16	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-8)	7/11/2023	N29 43 18.40	W98 11 0.22	3288236	578980
S-17	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-9)	7/11/2023	N29 43 22.05	W98 11 2.65	3288348	579914
S-18	Manmade feature in bedrock (Plugged Geotechnical Test Hole, B-10)	7/11/2023	N29 43 23.86	W98 11 1.88	3288404	578934

Notes:

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



LEGEND

- Property Expansion Boundary (Quiddity, 2023)
- WPAP GA Feature
- 10 Ft Topographic Contour (TNRIS, 2005)
- Inferred Fault (Small and Hanson, 1994)
- Geotechnical Boring (Rock, 2023)
- Existing 3-Inch Sewer Force Main (Quiddity, 2023)
- Animal Burrows
- Proposed Wastewater Utility
- 50 Foot SCS Survey Boundary

Sources:
1. National Agriculture Imagery Program (NAIP) 2020 aerial photographs obtained from the Texas Natural Resources Information System (TNRIS).
2. 10-Foot Topographic Contours Based on USGS Topographic Maps, New Braunfels West, obtained from TNRIS, April 2005.
3. Geology from Collins, Geologic Map of the New Braunfels, Texas, 30x60 Quadrangle, Bureau of Economic Geology - 2000.
4. The mapped fault (inferred) was obtained from the Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Outcrop, USGS Water-Resources Investigations Report 94-4117, 1994.
5. The SITE is located on the Edwards Aquifer Recharge Zone , TCEQ Edwards Aquifer Protection Program, Edwards Aquifer Recharge Zone Map, New Braunfels West Quadrangle - September 1998.
6. No portion of the SITE is within the 100-Year Floodplain. Data reviewed from the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), Panel No. 48091C0435F - September 2009.
7. Property boundary and sewer line digitized from T Bar M Site Plan Exhibit.pdf prepared by Quiddity, dated June 26, 2023, Job No. 17758-0001-00.
8. Boring locations were digitized from the Preliminary Subsurface Exploration, Laboratory Testing Program, and Geotechnical Discussion for The Proposed T Bar M Expansion report, Boring Location Plan prepared by Rock Engineering and Testing Laboratory, LLC (Project No. G223230, report dated May 10, 2023).
9. Basemap obtained from the Texas Natural Resources Information System (TNRIS), the National Agriculture Imagery Program (NAIP), 2020 aerial photographs.

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

RABA KISTNER
12821 West Golden Lane
San Antonio, Texas 78249
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F 210.699.6426
www.rkci.com
TBPE Firm F-3257 / TBPG #50220

8/2/2023

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

SITE GEOLOGIC MAP

T BAR M CAMP EXPANSION
28.96.4 ACRES
NEW BRAUNFELS, COMAL COUNTY, TEXAS

REVISIONS

No.	DATE	DESCRIPTION

PROJECT No.:
ASF15-092-01

ISSUE DATE:	08/02/2023
DRAWN BY:	LAW
CHECKED BY:	RAS
REVIEWED BY:	RVK

N W E S

0 20 40 80 FEET
1 INCH = 80 FEET

QUIDDITY

MODIFICATION OF A PREVIOUSLY APPROVED PLAN

Modification of a Previously Approved Plan

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Transition Zone and Relating to 30 TAC 213.4(j), Effective June 1, 1999

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

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

Signature

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

Print Name of Customer/Agent: Darren J. McAfee, P.E.

Date: 9/16/2025

Signature of Customer/Agent:



Project Information

1. Current Regulated Entity Name: Center for Cristian Growth, Inc.
   Original Regulated Entity Name: Center for Cristian Growth, Inc.
   Regulated Entity Number(s) (RN): RN102745502
   Edwards Aquifer Protection Program ID Number(s): 13001941
   ☒ The applicant has not changed and the Customer Number (CN) is: 604880377
   ☐ The applicant or Regulated Entity has changed. A new Core Data Form has been provided.

2. ☒ **Attachment A: Original Approval Letter and Approved Modification Letters**. A copy of the original approval letter and copies of any modification approval letters are attached.

3. A modification of a previously approved plan is requested for (check all that apply):
   - ☒ Physical or operational modification of any water pollution abatement structure(s) including but not limited to ponds, dams, berms, sewage treatment plants, and diversionary structures;
   - ☐ Change in the nature or character of the regulated activity from that which was originally approved or a change which would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;
   - ☐ Development of land previously identified as undeveloped in the original water pollution abatement plan;
   - ☐ Physical modification of the approved organized sewage collection system;
   - ☐ Physical modification of the approved underground storage tank system;
   - ☐ Physical modification of the approved aboveground storage tank system.

4. ☒ Summary of Proposed Modifications (select plan type being modified). If the approved plan has been modified more than once, copy the appropriate table below, as necessary, and complete the information for each additional modification.

WPAP Modification Summary	***Approved Project***	***Proposed Modification***
Acres	28.957	28.957
Type of Development	commercial	commercial
Number of Residential Lots	N/A	N/A
Impervious Cover (acres)	7.63	6.45
Impervious Cover (%	26.35	22.27
Permanent BMPs	vegetative filter strips, bioretention	vegetative filter strips, bioretention, cisterns
Other		

SCS Modification Summary	***Approved Project***	***Proposed Modification***
Linear Feet		
Pipe Diameter		
Other		

AST Modification Summary	***Approved Project***	***Proposed Modification***
Number of ASTs	_____	_____
Volume of ASTs	_____	_____
Other	_____	_____

UST Modification Summary	***Approved Project***	***Proposed Modification***
Number of USTs	_____	_____
Volume of USTs	_____	_____
Other	_____	_____

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

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

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

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

Attachment A

ORIGINAL APPROVAL LETTER

Jon Niermann, *Chairman*
Bobby Janecka, *Commissioner*
Catarina R. Gonzales, *Commissioner*
Kelly Keel, *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

September 18, 2024

Mr. John MacDonald
Center for Christian Growth, Inc.
2549 W. State Hwy 46
New Braunfels, Texas 78132

Re: Approval of a Water Pollution Abatement Plan (WPAP)
T Bar M Camp Expansion; Located at 2549 Highway 46 W; New Braunfels, Comal County, Texas
Edwards Aquifer Protection Program ID: 13001941, Regulated Entity No. RN102745502

Dear Mr. MacDonald:

The Texas Commission on Environmental Quality (TCEQ) has completed its review on the application for the above-referenced project submitted to the Edwards Aquifer Protection Program (EAPP) by Quiddity Engineering, LLC. on behalf of the applicant, Center for Christian Growth, Inc. on May 24, 2024. Final review of the application was completed after additional material was received on July 23, 2024, August 28, 2024, September 18, 2024 and September 19, 2024.

As presented to the TCEQ, the application was prepared in general compliance with the requirements of 30 Texas Administrative Codes (TAC) Chapter §213. The permanent best management practices (BMPs) and measures represented in the application were prepared by a Texas licensed professional engineer (PE). All construction plans and design information were sealed, signed, and dated by a Texas licensed PE. Therefore, the application for the construction of the proposed project and methods to protect the Edwards Aquifer are **approved,** subject to applicable state rules and the conditions in this letter.

This approval expires two years from the date of this letter, unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been officially requested. This approval or extension will expire, and no extension will be granted if more than 50 percent of the project has not been completed within ten years from the date of this letter.

The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer protection plan. A motion for reconsideration must be filed in accordance with 30 TAC §50.139.

PROJECT DESCRIPTION

The proposed commercial project will have an area of approximately 28.957-acres. The project will include will be an expansion of the adjacent T Bar M Camp Retreat facilities to be used as a family and day camp. The new facilities will include new buildings, paved roads and parking, sports courts, walking paths, and a detention pond. The existing residential structure, septic tank, concrete-lined ponds, unpaved driveway will be demolished. The proposed facilities will be developed over 3 phases of construction. Phase 1 includes the demolition of the existing

unpaved driveway and the concrete-lined ponds. Phase 1 also includes the construction of all public water and wastewater utilities, private utilities, the detention pond, 6 buildings, sports courts, paved roads, walking paths, and permanent BMP's. Phase 2 includes the demolition of the existing residential structure and septic tank. Phase 2 also includes the construction of private utilities, 3 buildings, walking paths, and permanent BMP's. Phase 3 includes the construction of private utilities, 1 building, paved roads, walking paths, and permanent BMPs. The impervious cover will be 8.39-acres (29 percent) with 0.33-acres of pre-existing impervious cover which will be removed. Project wastewater will be disposed of by conveyance to the existing Gruene Waste Recycling Facility.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, sixteen (16) Bioretention facilities, two (2) natural vegetative filter strips and twenty-three (23) engineered vegetative filter strips, designed using the TCEQ technical guidance, *RG-348, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices,* will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 7,234 pounds of TSS generated from the 8.06-acres of impervious cover. The approved permanent BMPs and measures meet the required 80 percent removal of the increased load in TSS caused by the project.

The permanent BMPS shall be operational prior to occupancy or use of the proposed project. Inspection, maintenance, repair, and retrofit of the permanent BMPs shall be in accordance with the approved application.

GEOLOGY

According to the Geologic Assessment (GA) included with the application, the surficial units of the site are the Person Formation of the Edwards Limestone. No sensitive geologic features were identified in the GA. The site assessment conducted on July 8, 2024 by TCEQ staff determined the site to be generally as described by the GA.

STANDARD CONDITIONS

1. The plan holder (applicant) must comply with all provisions of 30 TAC Chapter §213 and all technical specifications in the approved plan. The plan holder should also acquire and comply with additional and separate approvals, permits, registrations or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, Dam Safety, Underground Injection Control) as required based on the specifics of the plan.

2. In addition to the rules of the Commission, the plan holder must also comply with state and local ordinances and regulations providing for the protection of water quality as applicable.

Prior to Commencement of Construction:

3. Within 60 days of receiving written approval of an Edwards Aquifer protection plan, the plan holder must submit to the EAPP proof of recordation of notice in the county deed records, with the volume and page number(s) of the county record. A description of the property boundaries shall be included in the deed recordation in the county deed records. TCEQ form, Deed Recordation Affidavit (TCEQ-0625), may be used.

4. The plan holder of any approved Edwards Aquifer protection plan must notify the EAPP and obtain approval from the executive director prior to initiating any modification to the activities described in the referenced application following the date of the approval.

5. The plan holder must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the EAPP no later than 48 hours prior to commencement of the regulated activity. Notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person.

6. Temporary erosion and sedimentation (E&S) controls as described in the referenced application, must be installed prior to construction, and maintained during construction. Temporary E&S controls may be removed when vegetation is established, and the construction area is stabilized. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

7. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring or gravel. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation.

<u>During Construction:</u>

8. This approval does not authorize the installation of temporary or permanent aboveground storage tanks on this project that will have a total storage capacity of five hundred gallons or more of static hydrocarbons or hazardous substances without prior approval of an Aboveground Storage Tank facility application.

9. If any sensitive feature is encountered during construction, replacement, or rehabilitation on this project, all regulated activities must be **immediately** suspended near it and notification must be made to TCEQ EAPP staff. Temporary BMPs must be installed and maintained to protect the feature from pollution and contamination. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality.

10. All water wells, including injection, dewatering, and monitoring wells shall be identified in the geologic assessment and must be in compliance with the requirements of the Texas Department of Licensing and Regulation 16 TAC Chapter §76 and all other locally applicable rules, as appropriate.

11. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.

12. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge must be filtered through appropriately selected BMPs.

13. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.

14. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

<u>After Completion of Construction:</u>

15. Owners of permanent BMPs and temporary measures must ensure that the BMPs and measures are constructed and function as designed. A Texas licensed PE must certify in writing that the **permanent** BMPs or measures were constructed as designed. The certification letter must be submitted to the EAPP within 30 days of site completion.

16. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property or the ownership of the property is transferred to the entity. A copy of the transfer of responsibility must be filed with the executive director through the EAPP within 30 days of the transfer. TCEQ form, Change in Responsibility for Maintenance on Permanent BMPs and Measures (TCEQ-10263), may be used.

The holder of the approved Edwards Aquifer protection plan is responsible for compliance with Chapter §213 and any condition of the approved plan through all phases of plan implementation. Failure to comply with any condition within this approval letter is a violation of Chapter §213 and is subject to administrative rule or orders and penalties as provided under §213.10 of this title (relating to Enforcement). Such violations may also be subject to civil penalties and injunction. Upon legal transfer of this property, the new owner is required to comply with all terms of the approved Edwards Aquifer protection plan.

This action is taken as delegated by the executive director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Mr. Drew Evans of the Edwards Aquifer Protection Program at (210) 403-4053 or the regional office at 512-339-2929.

Sincerely,

Monica Reyes

Monica Reyes, Section Manager
Edwards Aquifer Protection Program
Texas Commission on Environmental Quality

MR/de

cc: Mr. Darren J. McAfee, P.E., Quiddity Engineering, LLC.

Attachment B

NARRATIVE OF PROPOSED MODIFICATION

The proposed modification has been made to the T Bar M Camp Expansion Water Pollution Abatement Plan that was approved by TCEQ on September 18, 2024. The approved Water Pollution abatement Plan is for a 28.957-acre commercial development with 0.33-acres of pre-existing impervious cover. The proposed development includes 8.39-acres of total impervious cover that is to be treated for total suspended solids (TSS) removal through sixteen bioretention facilities, two natural vegetative filter strips, and twenty-three engineered filter strips. The required TSS treatment for this project is 7,234 pounds generated from the 8.06-acres of new imperious cover.

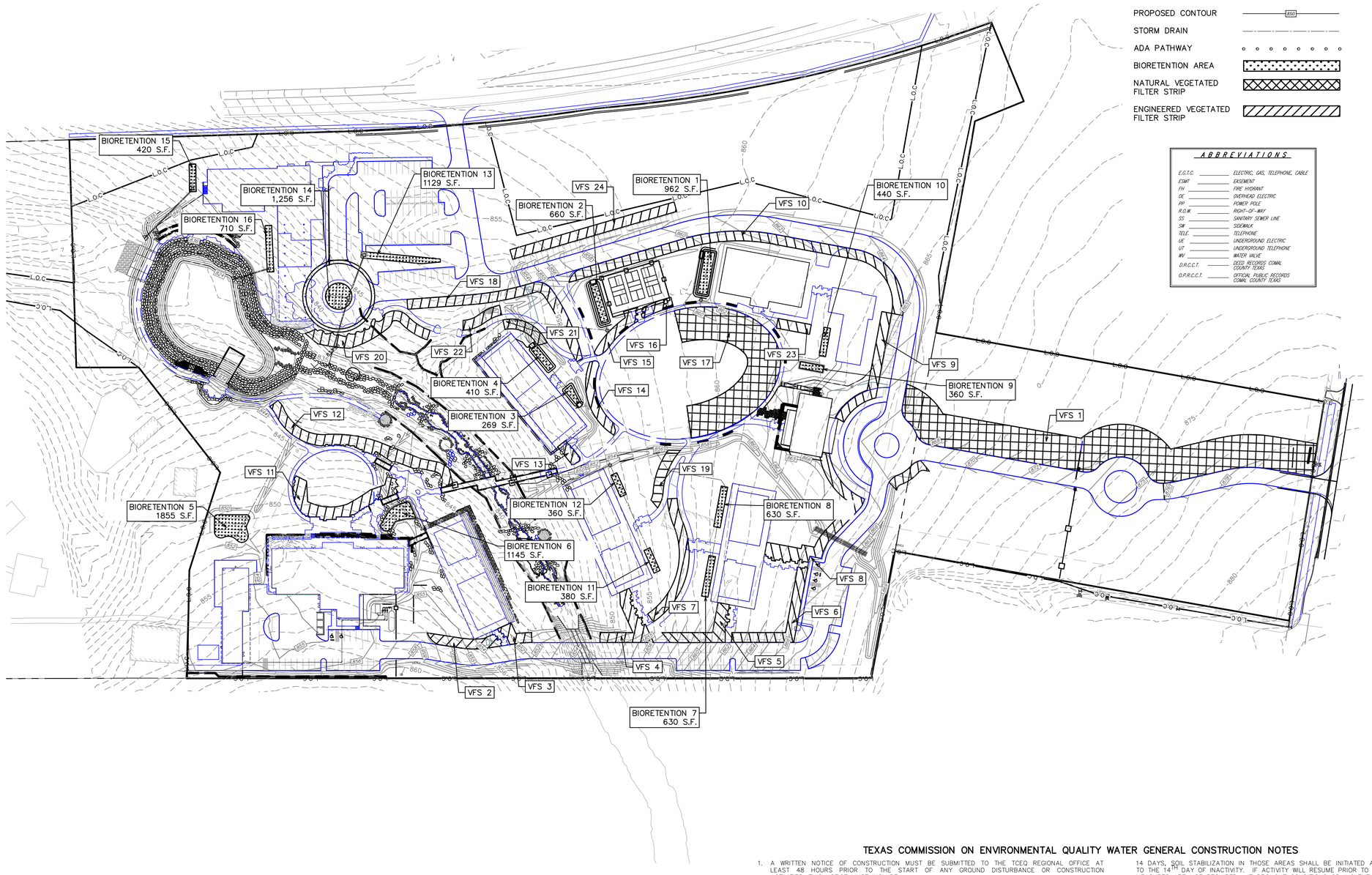
The proposed modification to the approved Water Pollution Abatement Plan is limited to a physical modification and does not change the nature or character of the regulated activity from that which was originally approved, nor does the change significantly impact the ability of the plan to prevent pollution to the Edwards Aquifer. The proposed modification does not change the overall acreage of the site nor the use of the development. The proposed modification includes a change in the proposed permanent BMPs to include nine bioretention facilities, two natural vegetative filter strips, twenty-four engineered vegetative filter strips, and five cisterns. The proposed cisterns will capture runoff from some of the rooftops for a total of 1.18-acres of rooftop area. Per TCEQ's Technical Guidance Manual (TGM) RG-348 (rev.2005), impervious cover to be treated for TSS removal does not include rooftops if it is part of a rainwater harvesting system. Therefore, the total impervious cover of the site to be treated is 6.45 acres, requiring 5,492 pounds of TSS to be treated.

The table below outlines the modifications to the proposed Permanent BMPs from the approved WPAP and the modifications are further outlined in the updated Permanent Stormwater Section and the Detailed Bioretention/Cistern Design Sheets section.

BMP	Modification
Biorention A-1	removed
Biorention A-2	removed
Biorention A-3	removed
Biorention A-4	removed
Biorention A-5	depth of planting soil, impervious cover
Biorention A-6	removed
Biorention A-7	n/a
Biorention A-8	n/a
Biorention A-9	removed
Biorention A-10	removed
Biorention A-11	n/a
Biorention A-12	n/a
Biorention A-13	n/a
Biorention A-14	n/a
Biorention A-15	n/a
Biorention A-16	n/a
VFS B-1	area, impervious cover
VFS B-2	area, impervious cover
VFS B-3	area, impervious cover
VFS B-4	n/a
VFS B-5	n/a
VFS B-6	n/a
VFS B-7	n/a
VFS B-8	n/a
VFS B-9	impervious cover
VFS B-10	n/a
VFS B-11	location, area, impervious cover
VFS B-12	location, area, impervious cover
VFS B-13	area, impervious cover
VFS B-14	area, impervious cover
VFS B-15	area, impervious cover
VFS B-16	location, area, impervious cover
VFS B-17	area, impervious cover
VFS B-18	area, impervious cover
VFS B-19	area
VFS B-20	n/a
VFS B-21	location, area, impervious cover
VFS B-22	location, area, impervious cover
VFS B-23	location, area, impervious cover
VFS B-24	n/a
VFS B-25	n/a
VFS B-26	added
Cistern C-1	added
Cistern C-2	added
Cistern C-3	added
Cistern C-4	added
Cistern C-5	added
Cistern C-6	added

Attachment C

CURRENT SITE PLAN OF THE APPROVED PROJECT



ABBREVIATIONS

E.G.T.C.	ELECTRIC, GAS, TELEPHONE, CABLE
ESMT	EASEMENT
FH	FIRE HYDRANT
OE	OVERHEAD ELECTRIC
PP	POWER POLE
R.O.W.	RIGHT-OF-WAY
SS	SANITARY SEWER LINE
SW	SIDEWALK
TELE.	TELEPHONE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
WV	WATER VALVE
D.R.C.C.T.	DEED RECORDS COMAL COUNTY TEXAS
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS COMAL COUNTY TEXAS

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist Facilities Prior to any Construction Activities

CAUTION!!!
CONTACT:
1-800-DIG-TESS
48 HOURS PRIOR TO CONSTRUCTION

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY WATER GENERAL CONSTRUCTION NOTES

1. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START 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 ON-SITE.
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 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:
    - A. 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;
    - B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED;
    - C. ANY CHANGE THAT WOULD SIGNIFICANTLY IMPACT THE ABILITY TO PREVENT POLLUTION OF THE EDWARDS AQUIFER; OR
    - D. 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

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION

TCEQ ATTACHMENT "F" CONSTRUCTION PLANS - OVERALL SWQ

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100 • San Antonio, Texas 78249 • 210.494.5511

SCALE: AS SHOWN
DATE: AUGUST 2024
JOB NO. 17758-0001-00
SUBMITTED:
DGN. BY: DJM
DWN. BY: JS/CJ
DWG. NO. NONE
SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED
PROFESSIONAL ENGINEER
9/18/2024

SHEET NO. 1 OF 17

K:\17758\17758-0001-00 T Bar M - Camp Expansion\2 Design Phase\CAD\WRAP\17758-0001 T Bar M SWQ 4.1.24.dwg © September 18, 2024

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QUIDDITY

APPLICATION FORM SECTION

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: Darren J. McAfee, P.E.

Date: 9/16/2025

Signature of Customer/Agent:



Regulated Entity Name: T Bar M Camp Expansion

Regulated Entity Information

1. The type of project is:

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

2. Total site acreage (size of property):28.957

3. Estimated projected population:N/A

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

Table 1 - Impervious Cover Table

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	112,373	÷ 43,560 =	2.58
Parking	134,865	÷ 43,560 =	3.10
Other paved surfaces	75,139	÷ 43,560 =	1.95
Total Impervious Cover	322,377	÷ 43,560 =	7.63

Total Impervious Cover 7.63 **÷ Total Acreage** 28.957 **X 100 =** 26.35**% Impervious Cover**

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

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

For Road Projects Only

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

7. Type of project:

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

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

   ☐ Concrete
   ☐ Asphaltic concrete pavement
   ☐ Other: _____

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

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

10. Length of pavement area: _____ feet.

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

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

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

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

Stormwater to be generated by the Proposed Project

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

Wastewater to be generated by the Proposed Project

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

100% Domestic	36,776 Gallons/day
_____% Industrial	_____ Gallons/day
_____% Commingled	_____ Gallons/day

TOTAL gallons/day 36,776

15. Wastewater will be disposed of by:

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

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

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

☒ Sewage Collection System (Sewer Lines):

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

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

☐ The SCS was previously submitted on_____.

☐ The SCS was submitted with this application.

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

☒ The sewage collection system will convey the wastewater to the Gruene WRF (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 firm panel #48091C0435F, dated September 2, 2009

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

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

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

☒ There are 1 (#) 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.

Attachment A

FACTORS AFFECTING SURFACE WATER QUALITY

Potential sources of contamination could be from the following:

Construction Phase

1. Fluids may be dropped from the use of construction equipment.
2. Fluids may be dropped form vehicles entering the site during construction.
3. Fluids may be dropped or spilled by construction workers constructing on site.
4. Mud or dirt may be tracked onto streets form construction areas.
5. Fine Particles may be washed from non-stabilized surfaces.
6. Debris from the site may leave the site by person, vehicle, or construction equipment.
7. Miscellaneous litter may be left on site from construction workers on site.

Post Construction

1. Fluids from vehicles or maintenance equipment that utilizes the site.
2. Landscape chemicals to maintain landscape features.
3. Litter that comes from the general public within the site or in the surrounding areas.

Attachment B

VOLUME AND CHARACTER OF STORMWATER

Existing Conditions

The existing tract currently does not have storm sewer infrastructure, temporary BMPs, or permanent BMPs in place. The existing conditions of the 28.957-acre tract mainly consists of uncleared/undeveloped land, with one existing tract that currently has a residential house and unpaved driveway on the property. The site is located within the Edwards Aquifer Recharge Zone and the Comal Trinity Groundwater Conservation District. The average slope of the site is approximately 3%, with a natural channel located in the middle of the site. The site currently has 143.0 acres of upgradient runoff that flows through the natural channel to an unnamed tributary, and ultimately to Blieder's Creek. The existing 100-year storm event flow, including upstream and offsite flow, is 1,046.8 cubic feet per second (cfs) at the downstream analysis point.

Proposed Conditions

The proposed facilities will include new buildings, paved roads, sports courts, walking paths, and a detention pond. The proposed slopes will be similar to existing with grading changes concentrated around proposed buildings, roadways, and walking paths. Ground disturbance will be isolated to the areas of proposed development. Otherwise, the site will not be disturbed and will be left in a natural state. Runoff from impervious areas will be treated for TSS removal through cisterns, bioretention, natural vegetative filter strips, or engineered vegetative filter strips. After treatment, stormwater will sheet flow across the site to a proposed on-site detention pond. The proposed flow for a 100-year storm event at the downstream analysis point will be 1,035.8 cfs. Refer to the Proposed Drainage Area Map included with Attachment G in the Temporary Stormwater section of this report.

Attachment C

SUITABILITY LETTER FROM AUTHORIZED AGENT

The site does not have an on-site sewage facility.

Attachment D

EXCEPTION TO THE REQUIRED GEOLOGIC ASSESSMENT

The Geologic Assessment is included in this report.

QUIDDITY

TEMPORARY STORMWATER SECTION

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: Darren J McAfee, P.E.

Date: 9/16/2025

Signature of Customer/Agent:



Regulated Entity Name: T Bar M Camp Expansion

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: diesel & other fuel for construction equipment

   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: Blieders 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.

Attachment A

SPILL RESPONSE ACTIONS

From TCEQ Section 30 TAC 327.5.

---

1. 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 which may include, but are not limited to, the following actions:
    - arrival of the responsible person or response personnel hired by the responsible person at the site of the discharge or spill;
    - initiating efforts to stop the discharge or spill;
    - minimizing the impact to the public health and the environment;
    - neutralizing the effects of the incident;
    - removing the discharged or spilled substances; and
    - managing the wastes.
2. Upon request of the local government responders or the executive director, the responsible person shall provide a verbal or written description, or both, of the planned response actions and all actions taken before the local governmental responders or the executive director arrive. When the agency on-scene coordinator requests this information, it is subject to possible additional response action requirements by the executive director. The information will serve as a basis for the executive director to determine the need for:
    - further response actions by the responsible person;
    - initiating state funded actions for which the responsible person may be held liable to the maximum extent allowed by law; and
    - subsequent reports on the response actions.
3. Except for discharges or spills occurring during the normal course of transportation about which carriers are required to file a written report with the U.S. Department of Transportation under 49 CFR §171.16, the responsible person shall submit written information, such as a letter, describing the details of the discharge or spill and supporting the adequacy of the response action, to the appropriate TNRCC regional manager within 30 working days of the discovery of the reportable discharge or spill. The regional manager has the discretion to extend the deadline. The documentation shall contain one of the following items:
    - A statement that the discharge or spill response action has been completed and a description of how the response action was conducted. The statement shall include the initial report information required by §327.3(c) of this title (relating to Notification Requirements). The executive director may request additional information. Appropriate response actions at any time following the discharge or spill include use of the Texas Risk Reduction Program rules in Chapter 350 of this title (relating to Texas Risk Reduction Program).
    - A request for an extension of time to complete the response action, along with the reasons for the request. The request shall also include a projected work schedule outlining the time required to complete the response action. The executive director may grant an extension up to six months from the date the spill or discharge was reported. Unless otherwise notified by the

appropriate regional manager or the Emergency Response Team, the responsible person shall proceed according to the terms of the projected work schedule.

- A statement that the discharge or spill response action has not been completed nor is it expected to be completed within the maximum allowable six month extension. The statement shall explain why completion of the response action is not feasible and include a projected work schedule outlining the remaining tasks to complete the response action. This information will also serve as notification that the response actions to the discharge or spill will be conducted under the Texas Risk Reduction Program rules in Chapter 350 of this title (relating to Texas Risk Reduction Program)

Numbers for Spill Response:

State of Texas 24-Hour Spill-Reporting Hotline and the State Emergency Response Commission

Phone: 1-800-832-8224

Texas Commission on Environmental Quality (San Antonio Regional Office),

Hours: Monday-Friday, 8:00 a.m.–5:00 p.m.

Address: 14250 Judson Rd, San Antonio TX 78233-4480,

Main Line: 210-490-3096

Local Emergency Response Teams

911

Attachment B

POTENTIAL SOURCES OF CONTAMINATION

1. Fluids may be dropped from the use of construction equipment.
2. Fluids may be dropped form vehicles entering the site during construction.
3. Fluids may be dropped or spilled by construction workers constructing on site.
4. Mud or dirt may be tracked onto streets form construction areas.
5. Fine Particles may be washed from non-stabilized surfaces.
6. Debris from the site may leave the site by person, vehicle, or construction equipment.
7. Miscellaneous litter may be left on site from construction workers on site.

Attachment C

SEQUENCE OF MAJOR ACTIVITIES

Major Activities	Area Disturbed	Permanent Stabilization
1. Installation of Temporary Best Management Practices • Silt Fence • Silt Fence with Rock Berm • Construction Entrance • Tree Protection • Concrete Washout • Inlet Protection	20.62 ac.	Sod/Seeding
2. Earthwork: site grading, excavation, etc.	20.62 ac.	Sod/Seeding/ Pavement
3. Installation of site utilities	3.06 ac.	Sod/Seeding/ Pavement
4. Building Structures	2.58 ac.	Concrete
5. Cleanup of site and removal of Temporary Best Management Practices	20.62 ac.	Sod/Seeding

Attachment D

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

1. There is upgradient stormwater that will flow into disturbed areas and will be cleaned by silt fencing, silt fencing with rock berm, inlet filters, or in the temporary sedimentation basin as appropriate prior to off-site release.

2. All onsite stormwater flowing will be cleaned by silt fencing, silt fencing with rock berm, inlet filters, or in the temporary sedimentation basin as appropriate prior to off-site release.

3. All “possibly sensitive” or “sensitive” features will either be sealed or protected with a perimeter barrier prior to any construction (but after Erosion and Sedimentation clearing).

4. All runoff flows will be maintained to all "possibly sensitive" or "sensitive" features except any features which have been sealed. Runoff flows will be treated prior to entering or flowing across a feature (see 2 above).

5. Any sensitive features identified on the property have been noted in in the Geologic Assessment section of this report.

Attachment E

REQUEST TO TEMPORARILY SEAL A FEATURE

There will be no temporary sealing required.

Attachment F

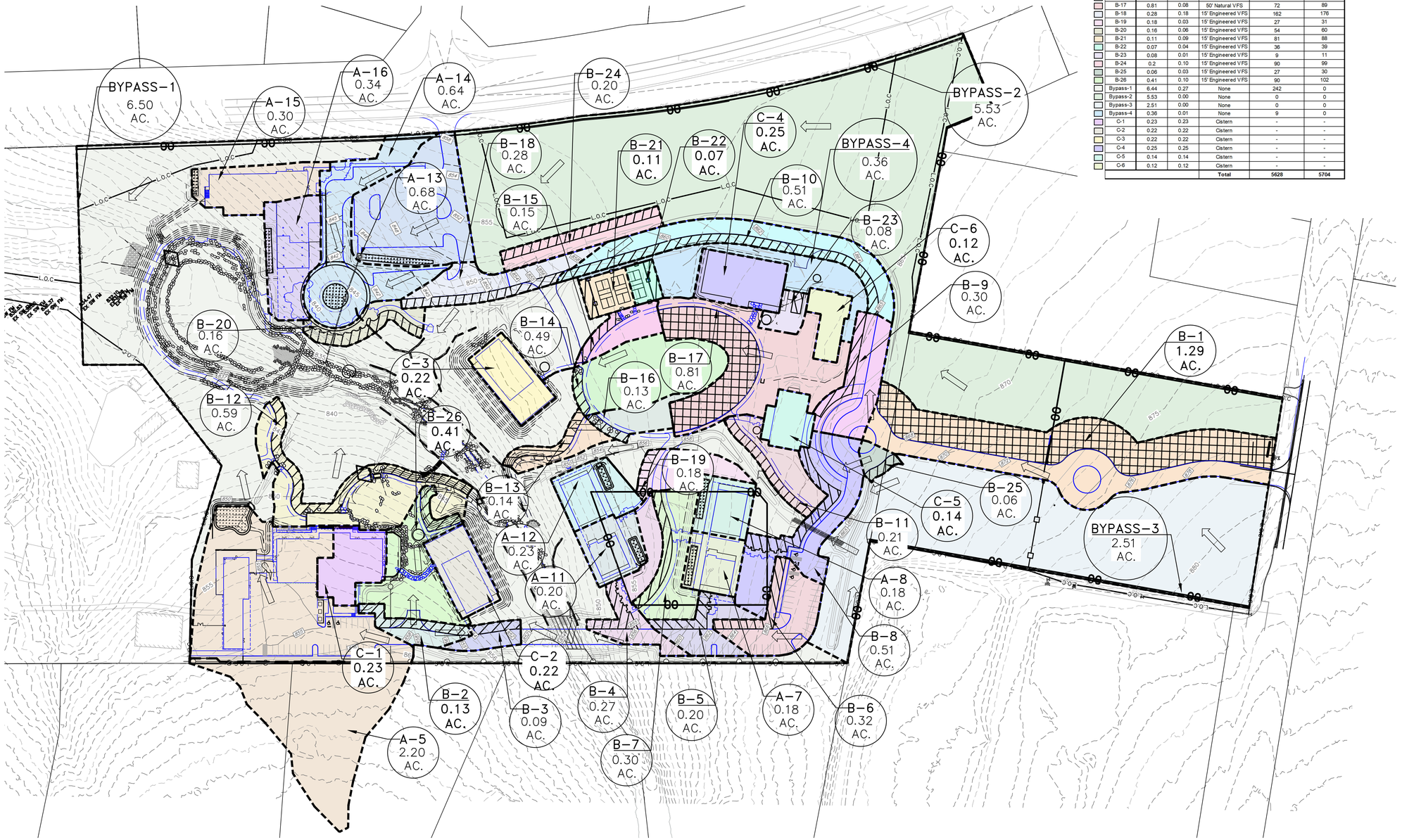
STRUCTURAL PRACTICES

1. A stabilized construction entrance with washout pit will be constructed at all locations where vehicular traffic enters and leaves the site. This will reduce sediments which leave the site and are tracked or fall onto adjacent roadways.
2. Silt fencing and silt fencing with rock berm will be installed adjacent to any drainage way which receives sheet flow from upgradient-disturbed areas and along the side slope perimeter of disturbed areas.
3. Inlet protection will be used to provide protection against silt transport or accumulation in the storm sewer system.

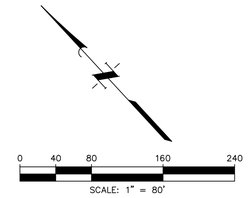
Attachment G

DRAINAGE AREA MAP

The drainage area map included with this section shows that the proposed project exceeds ten (10) acres contributing to the same discharge point disturbed during construction at the same time. A temporary sedimentation basin will be provided. The drainage area map included in this section shows the size of the various drainage sub-areas. The temporary sedimentation basin calculations are included on the Erosion Control Plan following Attachment H of this section.



	Watershed	Total Watershed Area (ac.)	Total Impervious Cover (ac.)	BMP	Required TSS Removal in Watershed Area (lbs)	Total TSS Removed (lbs)
	A-5	2.2	1.04	Bioretention	763	770
	A-7	0.18	0.14	Bioretention	126	136
	A-8	0.18	0.14	Bioretention	126	136
	A-11	0.2	0.15	Bioretention	135	135
	A-12	0.23	0.15	Bioretention	135	135
	A-13	0.68	0.49	Bioretention	438	443
	A-14	0.64	0.54	Bioretention	483	483
	A-15	0.3	0.22	Bioretention	197	197
	A-16	0.34	0.27	Bioretention	242	242
	B-1	1.29	0.47	50' Natural VFS	422	469
	B-2	0.13	0.07	15' Engineered VFS	63	69
	B-3	0.09	0.06	15' Engineered VFS	54	59
	B-4	0.27	0.13	15' Engineered VFS	117	128
	B-5	0.2	0.15	15' Engineered VFS	135	146
	B-6	0.32	0.29	15' Engineered VFS	280	282
	B-7	0.3	0.05	15' Engineered VFS	45	52
	B-8	0.51	0.30	15' Engineered VFS	269	294
	B-9	0.3	0.20	15' Engineered VFS	180	196
	B-10	0.51	0.32	15' Engineered VFS	287	313
	B-11	0.21	0.04	15' Engineered VFS	36	41
	B-12	0.59	0.14	15' Engineered VFS	126	143
	B-13	0.14	0.04	15' Engineered VFS	36	40
	B-14	0.49	0.02	15' Engineered VFS	18	27
	B-15	0.15	0.03	15' Engineered VFS	27	31
	B-16	0.13	0.01	15' Engineered VFS	9	12
	B-17	0.81	0.08	50' Natural VFS	72	89
	B-18	0.28	0.18	15' Engineered VFS	162	176
	B-19	0.18	0.03	15' Engineered VFS	27	31
	B-20	0.16	0.06	15' Engineered VFS	54	60
	B-21	0.11	0.09	15' Engineered VFS	81	88
	B-22	0.07	0.04	15' Engineered VFS	36	39
	B-23	0.08	0.01	15' Engineered VFS	9	11
	B-24	0.2	0.10	15' Engineered VFS	90	99
	B-25	0.06	0.03	15' Engineered VFS	27	30
	B-26	0.41	0.10	15' Engineered VFS	90	102
	Bypass-1	6.44	0.27	None	242	0
	Bypass-2	5.53	0.00	None	0	0
	Bypass-3	2.51	0.00	None	0	0
	Bypass-4	0.36	0.01	None	9	0
	C-1	0.23	0.23	Cistern	-	-
	C-2	0.22	0.22	Cistern	-	-
	C-3	0.22	0.22	Cistern	-	-
	C-4	0.25	0.25	Cistern	-	-
	C-5	0.14	0.14	Cistern	-	-
	C-6	0.12	0.12	Cistern	-	-
				Total	**5628**	**5704**



LEGEND

- EXISTING CONTOUR (850)
- PROPOSED CONTOUR (850)
- STORM DRAIN
- BIORETENTION AREA
- NATURAL VEGETATED FILTER STRIP
- ENGINEERED VEGETATED FILTER STRIP
- SHEET FLOW ARROW

ABBREVIATIONS

E.G.T.C.	ELECTRIC, GAS, TELEPHONE, CABLE
ESMT.	EASEMENT
FH	FIRE HYDRANT
OE	OVERHEAD ELECTRIC
PP	POWER POLE
R.O.W.	RIGHT-OF-WAY
SS	SANITARY SEWER LINE
SW	SIDEWALK
TELE.	TELEPHONE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
WV	WATER VALVE
D.R.C.C.T.	DEED RECORDS COMAL COUNTY TEXAS
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS COMAL COUNTY TEXAS

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist Facilities Prior to any Construction Activities

CAUTION!!!
CONTACT:
1-800-DIG-TESS
48 HOURS PRIOR TO CONSTRUCTION

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION

WPAP DRAINAGE AREA MAP

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100 • San Antonio, Texas 78249 • 210.494.5511

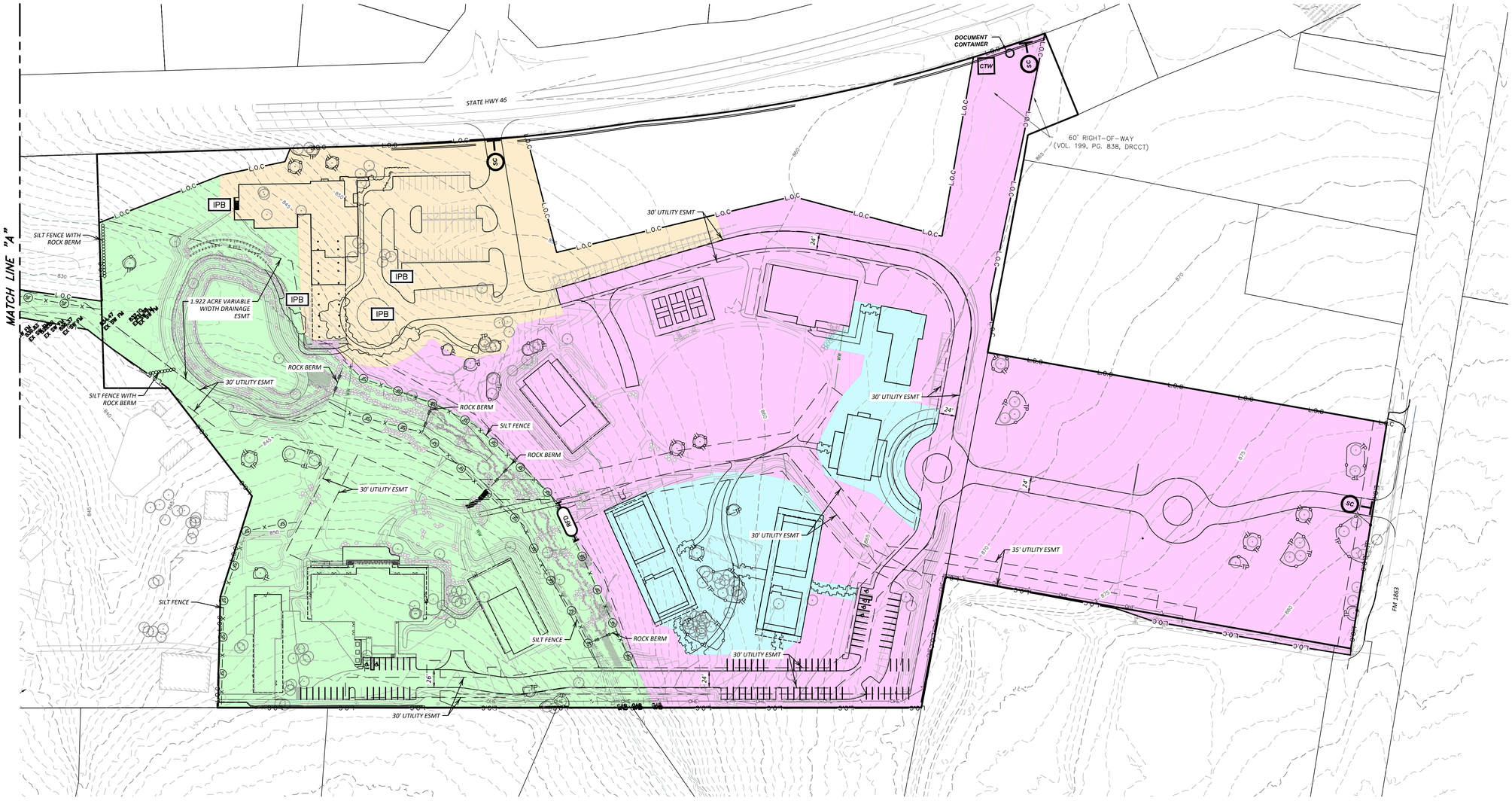
SCALE: AS SHOWN | DGN. BY: DJM
DATE: JULY 2025 | DWN. BY: CDJ
JOB NO. 17758-0001-00 | DWG. NO. NONE
SUBMITTED: | SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

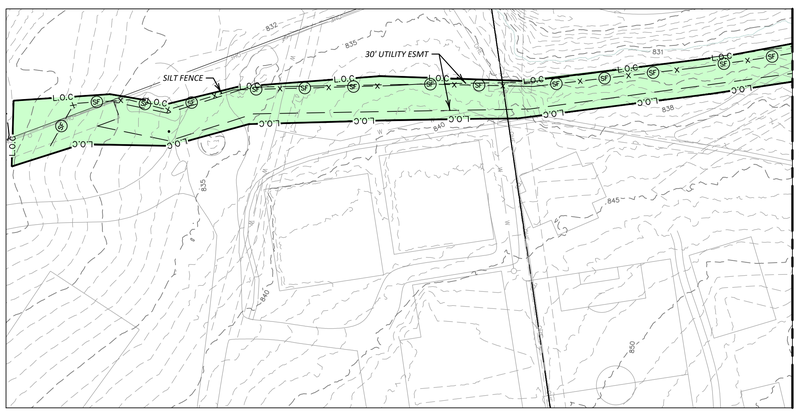
STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/16/2025

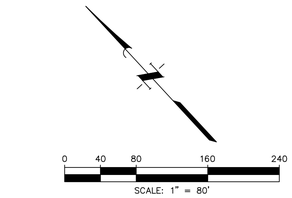
SHEET NO. 1 OF 1

K:\17758\17758-0001-00 T Bar M - Comp Expansion\2 Design Phase\CAD\WPAP\Addendum 1\17758-0001 T Bar M SWQ Modification 1 rdj.dwg 01: September 16, 2025

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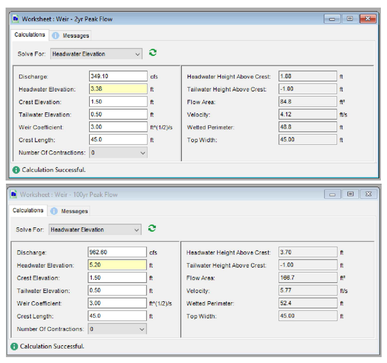
LEGEND

- LIMITS OF CONSTRUCTION
- SILT FENCE
- SILT FENCE WITH ROCK BERM
- ROCK BERM
- TREE PROTECTION FENCING
- STABILIZED CONSTRUCTION ENTRANCE/EXIT
- CONCRETE TRUCK WASHOUT AREA
- DOCUMENT CONTAINER
- ROCK FILTER DAM
- INLET PROTECTION BARRIER
- PHASE 1 - DRAINAGE AREA A CONSTRUCTION AREA
- PHASE 1 - DRAINAGE AREA B CONSTRUCTION AREA
- PHASE 2 CONSTRUCTION AREA
- PHASE 3 CONSTRUCTION AREA

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist Facilities Prior to any Construction Activities

CAUTION!!!
CONTACT:
1-800-DIG-TESS
48 HOURS PRIOR TO CONSTRUCTION

EXISTING CHANNEL ROCK BERM CALCULATIONS:



	Total Area	Disturbed Area
Phase 1 - Drainage Area A	8.47	7.40
Phase 1 - Drainage Area B	13.19	6.70
Phase 2	3.07	1.51
Phase 3	3.07	2.05

EROSION CONTROL NOTES:

1. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL INSTALL EROSION AND SEDIMENTATION CONTROLS AT LOCATION SHOWN ON PLANS.
2. CONTRACTOR SHALL INSPECT ALL EROSION AND SEDIMENTATION CONTROL SYSTEMS SPECIFIED HEREIN, AT A MINIMUM OF ONCE EVERY CALENDAR DAY.
3. CONTRACTOR SHALL MAINTAIN, REPAIR AND/OR REPLACE DAMAGED EROSION AND SEDIMENTATION CONTROL SYSTEM THROUGHOUT THE DURATION OF THE CONTRACT. (NO SEPARATE PAY).
4. CONTRACTOR SHALL PROVIDE PROTECTED STORAGE AREAS FOR CHEMICALS, PAINTS, SOLVENTS, FERTILIZERS, AND OTHER POTENTIALLY TOXIC MATERIALS.
5. CONTRACTOR SHALL LOCATE FUEL/MATERIAL STORAGE AREAS AWAY FROM STORM WATER CONVEYANCE SYSTEMS. CONTRACTOR SHALL USE SILT FENCING, HAY BALES, OR BERMS AROUND FUEL STORAGE AREAS. (NO SEPARATE PAY).
6. CONTRACTOR SHALL ADVISE OWNER IMMEDIATELY, VERBALLY, AND IN WRITING, OF ANY FUEL OR TOXIC MATERIAL SPILLS ONTO THE PROJECT/CONSTRUCTION AREA AND THE ACTION TAKEN TO REMEDY THE PROBLEM.
7. CONTRACTOR IS RESPONSIBLE FOR DISPOSING OF HIS FUELS, MATERIALS, AND CONTAMINATED EXCAVATIONS IN A LEGALLY APPROVED MANNER. (NO SEPARATE PAY).
8. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE ENVIRONMENTAL LAWS.
9. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATELY MAINTAINED SANITARY FACILITIES.
10. AT COMPLETION OF THE CONTRACT, OWNER AND/OR OWNER'S REPRESENTATIVE WITH THE CONTRACTOR SHALL EXAMINE EROSION AND SEDIMENTATION CONTROL SYSTEM BEFORE RELIEVING CONTRACTOR OF HIS MAINTENANCE RESPONSIBILITIES.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR STREET CLEANING, ON A DAILY BASIS, ALL MUD AND DIRT DEPOSITED ON THE EXISTING PAVEMENT DUE TO HIS CONSTRUCTION ACTIVITY.
12. AS PROPOSED INLETS ARE INSTALLED THROUGHOUT THE SITE PROVIDE INLET BARRIER PROTECTION AT EACH INLET IN ORDER TO PROTECT STORM SEWER SYSTEM.
13. PER TPDES REQUIREMENTS, DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITIES HAVE CEASED (TEMPORARILY OR PERMANENTLY) SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITY RESUMES WITHIN 21 DAYS. SEEDING DOES NOT CONSTITUTE AS STABILIZATION.
14. SEE SHEET 2 FOR STANDARD EROSION CONTROL DETAILS.

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION

EROSION CONTROL PLAN

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100•San Antonio, Texas 78249•210.494.5511

SCALE: AS SHOWN DGN. BY: DJM
DATE: JULY 2025 DWN. BY: CDJ
JOB NO. 17758-0001-00 DWG. NO. NONE
SUBMITTED: SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
7/15/2025

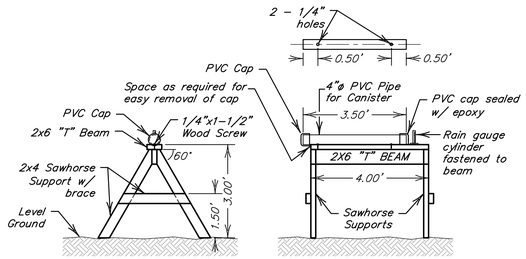
SHEET NO. 1 OF 2

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GENERAL S.W.P.P.P. NOTES:

1. The location of Erosion and Sedimentation Control facilities are approximate. Contractor may modify, relocate, or add facilities with prior authorization from the Engineer.
2. Where a note or detail differs from the official Texas Commission On Environmental Quality (TCEQ) latest edition regulations, the TCEQ note or detail shall apply.
3. Additional erosion and sedimentation control facilities in accordance with TCEQ latest edition regulations may be implemented.

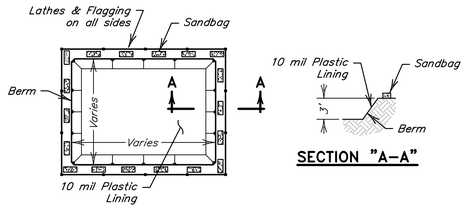


SECTION VIEW — PROFILE VIEW

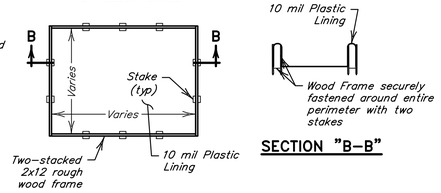
NOTES:

1. This canister shall be used to store the complete Storm Water Pollution Prevention Plan (SWPPP) and all other related documents so that they are available on–site for the Inspector.
2. The canister shall be located on solid level ground adjacent to the construction entrance and on the opposite side of the Concrete Washout Area.

S.W.P.P.P. DOCUMENT CONTAINER
(NTS)



PLAN VIEW — SECTION "A–A"
TYPE: "BELOW GRADE"

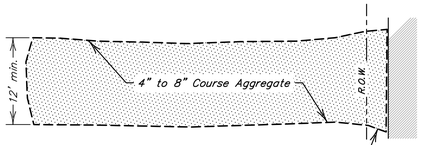


PLAN VIEW — SECTION "B–B"
TYPE: "ABOVE GRADE"

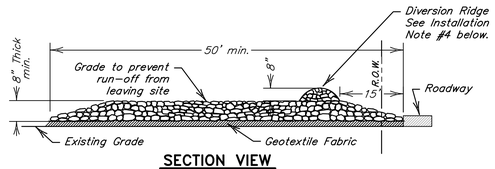
NOTES:

1. Actual layout to be determined in the field.
2. Temporary concrete washout facility should be constructed 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.
3. The pit shall be located in an area easily accessible to construction traffic. The pit shall be located at least 50 feet from sensitive features, storm drains, open ditches, or water bodies and protected from storm water runoff.
4. When temporary concrete washout facilities are no longer required for the work, the hardened concrete should be removed and disposed of. All materials used to construct the temporary facility should be removed from the site and disposed of. Holes, depressions or other ground disturbance caused by the removal of the temporary facilities should be backfilled and repaired.
5. Excess concrete shall not be disposed of within the pit.

CONCRETE WASHOUT AREA
(NTS)



PLAN VIEW



SECTION VIEW

MATERIALS:

1. The aggregate should consist of four (4) inch to eight (8) inch washed stone over a stable foundation as specified in the plan.
2. The aggregate should be placed with a minimum thickness of eight (8) inches.
3. The geotextile fabric should be designed specifically for use as a soil filtration media with an approximate weight of 6 oz./sq.yd., a Mullen burst rating of 140 #/sq.in., and an equivalent opening size greater that a U.S. Sieve No. 50.
4. If a washing facility is required, a level area with a minimum of four (4) inch diameter washed stone or commercial rock should be included in the plans. Wastewater should be diverted to a sediment trap or basin.

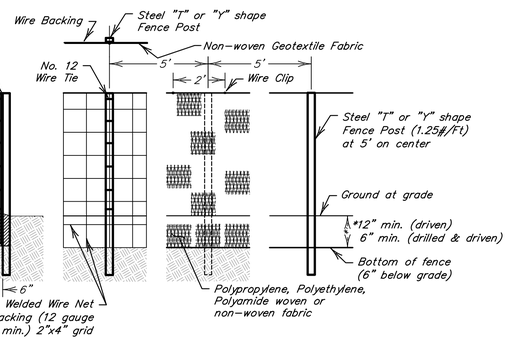
INSTALLATION:

1. Avoid curves on public roads and steep slopes. Remove vegetation and other objectionable material from the foundation area. Grade a crown in the center of the foundation for positive drainage.
2. The minimum width of the facility should be either twelve (12) feet or the full width of Exit roadway, whichever is greater.
3. The Exit should be at least fifty (50) feet long.
4. If the slope toward the road exceeds two (2) percent, construct a diversion ridge six (6) inches to eight (8) inches high with three to one (3H:1V) ratio side slopes across the foundation at approximately fifteen (15) feet from the Exit to divert runoff away from the public road.
5. Place geotextile fabric and grade the foundation to improve stability, especially where wet conditions are anticipated.
6. Place stone to the dimensions and grade shown on plans. Leave the surface smooth and sloped for drainage.
7. Divert all surface runoff and drainage from the stone pad to a sediment trap or basin.
8. Install a pipe under the pad as needed to maintain proper public road drainage.

INSPECTION AND MAINTENANCE GUIDELINES:

1. The Exit should be maintained in a condition which will prevent the tracking and flowing of sediment into public right–of–way. This may require a periodic top dressing of additional stone as conditions demand and repairing and/or cleaning out any measures used to trap sediment.
2. All sediment spilled, dropped, washed or tracked into the public right–of–way should be removed immediately by the Contractor.
3. When necessary vehicular wheels should be cleaned to remove sediment prior to entering the public right–of–way.
4. When washing is required it should be done on an area stabilized with crushed stone that drains into an approved sediment trap or sediment basin.
5. All sediment should be prevented from entering any storm drain, ditch, or water course by using approved methods.

TEMPORARY CONSTRUCTION EXIT
(NTS)



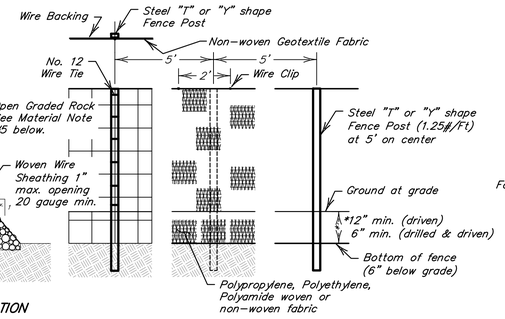
MATERIALS:

1. Silt fence material should be polypropylene, polyethylene or polyamide woven or non–woven fabric. The fabric width should be thirty–six (36) inches with a minimum unit weight of 4.5 oz./sq.yd., a Mullen burst strength exceeding 190 #/sq.in., ultraviolet stability exceeding 70%, and minimum apparent opening size of U.S. Sieve No. 30.
2. Fence posts should be made of hot rolled steel, at least four (4) feet long with Tee or Y–bar cross section, surface painted or galvanized, minimum nominal weight 1.25 #/ft, and Brindell hardness exceeding 140. Either #5 or #6 reinforcing bars may also be used to anchor the berm.
3. Woven wire backing to support the fabric should be galvanized twelve (12) gauge minimum two by four (2x4) inch welded wire.
4. The trench must be a minimum of six (6) inches deep and six (6) inches wide to allow for the silt fence fabric to be laid in the ground and backfilled with compacted material.
5. Silt fence should be securely fastened to each steel support post or to woven wire attached to the steel fence post. Where ends of the fabric meet there should be a securely fastened three (3) foot overlap.
6. Silt fence should be removed when the site is completely stabilized so as not to block or impede storm flow or drainage.
7. Silt fences shall be built to the length specified, including forty–five (45) degree wings in each end. The minimum length of the wings is three (3) feet.

INSPECTION AND MAINTENANCE GUIDELINES:

1. Inspection should be made weekly and after each rainfall by the Responsible Party.
2. Remove sediment when buildup reaches 6 inches.
3. Replace any torn fabric or install a second line of fencing parallel to the torn section.
4. During the course of construction activities, Contractor shall replace or repair any crushed, collapsed sections. If a section of fence is obstructing vehicular access, Contractor should relocate it to a spot where it will provide equal protection but will not obstruct vehicles. A triangular filter dike may be preferable to a silt fence at common vehicle access points.
5. When construction is complete, the sediment should be disposed of in a manner that will not cause additional silt accumulation and the prior location of the silt fence should be re–vegetated. The fence itself should be disposed of in an approved landfill.

SILT FENCE



ROCK BERM OPTION
Use only when specifically noted on Construction Drawings.

MATERIALS:

1. Silt fence material should be polypropylene, polyethylene or polyamide woven or non–woven fabric. The fabric width should be thirty–six (36) inches with a minimum unit weight of 4.5 oz./sq.yd., a Mullen burst strength exceeding 190 #/sq.in., ultraviolet stability exceeding 70%, and minimum apparent opening size of U.S. Sieve No. 30.
2. Fence posts should be made of hot rolled steel, at least four (4) feet long with Tee or Y–bar cross section, surface painted or galvanized, minimum nominal weight 1.25 #/ft, and Brindell hardness exceeding 140. Either #5 or #6 reinforcing bars may also be used to anchor the berm.
3. Woven wire backing to support the fabric should be galvanized twelve (12) gauge minimum two by four (2x4) inch welded wire.
4. The berm structure should be secured with a woven wire sheathing having a maximum opening of one (1) inch and a minimum twenty (20) gauge diameter galvanized wire fastened with shoat rings.
5. Clean, open graded three (3) inch to five (5) inch diameter rock should be used, however in areas where high velocities or large volumes of flow are expected five (5) inch to eight (8) inch diameter rocks may be used.

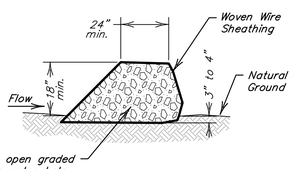
INSTALLATION:

1. Lay out the woven wire sheathing perpendicular to the flow line. The sheathing should be twenty (20) gauge woven wire mesh with one (1) inch openings.
2. Install the silt fence along the center of the proposed beam placement, as with a normal silt fence shown in detail this sheet.
3. Place the rock along the sheathing on both sides of the silt fence to a height not less that twenty–four (24) inches. Specifications for rock must meet the criteria in Materials Note #5.
4. Wrap the wire sheathing around the rock and secure with tie wire so that the ends of the sheathing overlap at least two (2) inches. The berm should retain its shape when walked upon.
5. The Rock Berm should be removed when the site is re–vegetated or otherwise stabilized or it may remain in place as a permanent B.M.P. if drainage is adequate.
6. Rock Berms and Silt Fences shall be built to the length specified, including forty–five (45) degree wings at each end. The minimum length of the wings is three (3) feet.

INSPECTION AND MAINTENANCE GUIDELINES:

1. Inspection should be made weekly and after each rainfall by the Responsible Party. For installations in stream beds additional daily inspections should be made on rock berm.
2. Remove sediment and other debris when buildup reaches six (6) inches and dispose of the accumulated silt in an approved method.
3. Repair any lose wire sheathing.
4. The berm should be reshaped as needed during inspection.
5. The berm should be replaced when the structure ceases to function as intended due to silt accumulation among the rocks, washout, construction traffic damage, etc.
6. The rock berm should be left in place until all upstream areas are stabilized and accumulated silt is removed.

SILT FENCE WITH ROCK BERM OPTION
(NTS)



MATERIALS:

1. The berm structure should be secured with a woven wire sheathing having a maximum opening of one (1) inch and a minimum twenty (20) gauge diameter galvanized wire fastened with shoat rings.
2. Clean, open graded three (3) inch to five (5) inch diameter rock should be used, however in areas where high velocities or large volumes of flow are expected five (5) inch to eight (8) inch diameter rocks may be used.

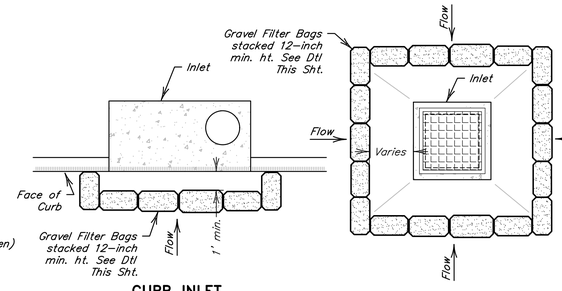
INSTALLATION:

1. Lay out the woven wire sheathing perpendicular to the flow line. The sheathing should be twenty (20) gauge woven wire mesh with one (1) inch openings.
2. Berm should have a top width of two (2) feet minimum with side slopes being two to one (2H:1V) ratio slope or flatter.
3. Place the rock along the sheathing as shown above to a height not less than eighteen (18) inches.
4. Wrap the wire sheathing around the rock and secure with tie wire so that the ends of the sheathing overlap at least two (2) inches. The berm should retain its shape when walked upon.
5. Berm should be built along the contour at zero percent grade or as near as possible.
6. The ends of the berm should be tied into existing up–slope grade and the berm should be buried in a trench approximately three (3) to four (4) inches deep to prevent failure of the control.

INSPECTION AND MAINTENANCE GUIDELINES:

1. Inspection should be made weekly and after each rainfall event by the Responsible Party. For installations in stream beds additional daily inspections should be made.
2. Remove sediment and other debris when buildup reaches six (6) inches and dispose of the accumulated silt in a approved manner that will not cause any additional siltation.
3. Repair any loose wire sheathing.
4. The berm should be reshaped as needed during inspection.
5. The berm should be replaced when the structure ceases to function as intended due to silt accumulation among the rocks, washout, construction traffic damage, etc.
6. The rock berm should be left in place until all upstream areas are stabilized and accumulated silt is removed.

ROCK BERM
(NTS)



CURB INLET — GRATE INLET

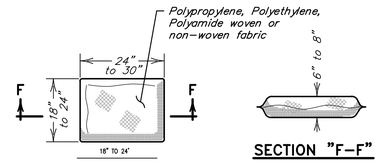
INSTALLATION:

1. The filter bags should be stacked to form a uniform, continuous barrier about one (1) foot high all around the inlet opening.

INSPECTION AND MAINTENANCE GUIDELINES:

1. Inspection should be made weekly and after each rainfall event. Repair or replacement should be made promptly as needed by the Contractor.
2. Remove sediment when the buildup reaches a depth of three (3) inches. Removed sediment should be deposited in a suitable area and in such a manner that it will not erode.
3. Check placement of device to prevent gaps between device and curb (where applicable).
4. Inspect filter fabric and patch or replace if torn or missing.
5. Structures should be removed and the area stabilized only after the remaining drainage area has been properly stabilized.

BAGGED GRAVEL INLET SEDIMENT FILTER
(NTS)



SECTION "F–F"

NOTES:

1. The filter bag material shall be made of polyptopylene, polyethylene, or pylyamide woven fabric, minimum unit weight of 4 oz./sq.yd., a Mullen burst strength exceeding 300 psi and ultraviolet stability exceeding 70%.
2. The filter bag shall be filled with clean, medium to coarse gravel (0.31 to 0.75 inch diameter).
3. Gravel filters can be used if the immediate and adjacent area to the drain consists of soil or pavement. **Only gravel filters should be installed on top of pavement.**
4. All curb inlet gravel filters should be inspected and repaired after each runoff event. Sediment should be removed where material is within 3–inches of the top of the concrete blocks. Periodically the gravel should be raked to increase infiltration and filtering of runoff waters.
5. Gravel can be placed in porous sacks which will allow water to flow thru gravel and help prevent downstream migration of gravel.

GRAVEL FILTER BAG
(NTS)

INSTALLATION:

1. Preserve natural vegetation within the buffer zone.
2. All unstable steep slopes should be left in natural vegetation.
3. Fence or flag clearing limits and keep all equipment and construction debris out of the natural areas.
4. Keep all excavations outside the drip–line of trees and shrubs.
5. Neither debris nor excess soil should be pushed into the buffer zone area because this action will bury, smother, and damage the natural vegetation.
6. The minimum width of a vegetative buffer used for sediment control should be fifty (50) feet.
7. Providing that there are no flow concentrating areas, natural vegetated filter strip slopes should not exceed 10%.

INSPECTION AND MAINTENANCE GUIDELINES:

Inspection and careful maintenance are important to ensure healthy vegetation. The need for routine maintenance such as mowing, fertilizing, irrigating, and weed and pest control will depend on the species of plants and trees, soil types, location, and climatic conditions. County agricultural extension agencies are a good source of this type of information.

NATURAL VEGETATIVE BUFFER
(NTS)

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist Facilities Prior to any Construction Activities

CAUTION!!!
CONTACT:
1–800–DIG–TESS
48 HOURS PRIOR TO CONSTRUCTION

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION

EROSION CONTROL PLAN

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100 • San Antonio, Texas 78249 • 210.494.5511

SCALE: AS SHOWN — DGN. BY: DJM
DATE: JULY 2025 — DWN. BY: CDJ
JOB NO. 17758–0001–00 — DWG. NO. NONE
SUBMITTED: — SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
7/15/2025

SHEET NO. 2 OF 2

K:\17758\17758–0001–00 T Bar M – Comp. Expansion\2 Design Phase\240 (WPAP) Addendum 1\17758–0001 T Bar M Erosion Control Plan WPAP Addendum 1.dwg © July 14, 2025
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Attachment H

TEMPORARY SEDIMENT POND PLANS AND CALCULATIONS

There is no temporary sedimentation basin proposed with this project.

Attachment I

INSPECTION AND MAINTENANCE FOR BMPS

1. Inspection

   - A qualified inspector (representing the discharger) shall inspect the following items once per calendar week and within 24 hours after the end of a 1/2-inch or greater rainfall:
     - disturbed areas of the construction site that have not been finally stabilized
     - areas used for storage of materials that are exposed to precipitation
     - structural and stabilization control measures
     - construction entrance/exits
   - The E & S inspector shall have authority to require immediate action on the part of the Contractor to correct any nonconforming items found during inspections or to require revisions to the E & S controls if appropriate. If revisions are needed, they shall be implemented within 7 calendar days after the date of inspection.
   - The E & S inspector will provide written reports covering all items/areas inspected and outlining corrective measures if any.

2. Maintenance

   - All erosion and sedimentation (E & S) measures/controls shall be maintained in good working order by the Contractor. Written maintenance reports shall be prepared covering all inspections and maintenance affecting E & S controls. If repair(s) are necessary, they shall be initiated within 24 hours after report.
   - The construction entrance shall be maintained in a condition which will prevent/minimize tracking or flowing of sediments onto public roadways. Sediments spilled, dropped, washed or tracked onto public roadway must be removed.
   - Temporary and permanent seeding and planting shall be maintained to insure the following:
     - bare spots are filled in
     - wash-outs are filled in
     - healthy growth is promoted
   - For silt fences and rock berms, when silt reaches a depth equal to 1/3 the height of the barrier, the silt shall be removed and mixed with other soil materials to be placed within the embankment areas of the project site. After construction is complete, the silt shall be disposed of off-site.
   - Silt fences shall be maintained to insure the following:
     - torn fabric is replaced
     - loose fabric is properly resecured
     - loose post supports are plumbed and strengthened

    - fabric bottom is buried as anchor
- Rock berms shall be maintained/cleaned by lifting, dropping and reshaping stones as required.
- Truck washout pit shall be maintained/cleaned when silt reaches a depth of six(6) inches. Silt shall be removed and disposed of at an approved site.
- If damage to protected trees occurs, the following maintenance guidelines should be followed:
    - If the soil has become compacted over the root zone of any tree, the ground should be aerated by punching holes with an iron bar. The bar should be driven 1- foot deep and then moved back and forth until the soil is loosened. This procedure should be repeated every 18 inches until all of the compacted soil beneath the crown of the tree has been loosened.
    - Any damage to the crown, trunk, or root system of any tree retained on the site should be repaired immediately.
    - Whenever major root or bark damage occurs, remove some foliage to reduce the demand for water and nutrients.
    - Damaged roots should immediately be cut off cleanly inside the exposed or damaged area. Cut surfaces should be painted with approved tree paint, and moist peat moss, burlap, or topsoil should be spread over the exposed area.
    - To treat bark damage, carefully cut away all loosened bark back into the undamaged area, taper the cut at the top and bottom, and provide drainage at the base of the wound.
    - All tree limbs damaged during construction or removed for any other reason should be cut off above the collar at the preceding branch junction.
    - Care for serious injuries should be prescribed by a forester or a tree specialist.
    - Broadleaf trees that have been stressed or damaged should receive a heavy application of fertilizer to aid their recovery. Trees should be fertilized in the late fall (after November 1) or the early spring (until April 1). Fall applications are preferred, as the nutrients will be made available over a longer period of time. Fertilizer should be applied to the soil over the feeder roots. In no case should it be applied closer than 3 feet to the trunk. Fertilizer should be applied using approved fertilization methods and equipment.
    - Maintain a ground cover of organic mulch around trees that is adequate to prevent erosion, protect roots, and hold water.
- Inlet protection shall be maintained in accordance with the following:
    - Sediment is to be removed when buildup reaches a depth of 3 inches. Removed sediment should be deposited in a suitable area in such a manner that it will not erode.
    - Placement of device is to be checked to prevent gaps between device and the curb.
    - Patch or replace filter fabric if torn or missing.
    - Structures should be removed, and the area stabilized only after the remaining drainage area has been properly stabilized.

Attachment J

SCHEDULE OF INTERIM AND PERMANENT SOIL STABILIZATION PRACTICES

1. Interim stabilization will be performed any time a denuded area remains disturbed for over 14 days without restart within 21 days.
2. Permanent stabilization will be done after construction is complete.
3. Contractor shall sod or seed all disturbed previous areas once finished grade is met.
4. Seeding rates should be as shown in Table 1-2 or as recommended by the county agricultural extension agent.
5. The seed should be applied uniformly with a cyclone seeder, drill, cultipacker seeder or hydroseeder (slurry includes seed, fertilizer and binder)
6. Slopes that are steeper than 3:1 should be covered with appropriate sol stabilization matting as described in the following section to prevent loss of soil and seed.

Table 1-2 Temporary Seeding for Bexar, Comal, Kinney, Medina and Uvalde Counties (Northcutt, 1993)

Dates	**Climate**	**Species (lb/ac)**	
Sept 1 to Nov 30	Temporary Cool Season	Tall Fescue	4.0
		Oats	21.0
		Wheat (Red, Winter)	30.0
		Total	**55.0**
Sept 1 to Nov 30	Cool Season Legume	Hairy Vetch	8.0
May 1 to Aug 31	Temporary Warm Season	Foxtail Millet	30.0

QUIDDITY

PERMANENT STORMWATER SECTION

Permanent Stormwater Section

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Darren J. McAfee, P.E.

Date: 9/16/2025

Signature of Customer/Agent



Regulated Entity Name: T Bar M Camp Expansion

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

Attachment A

20% OR LESS IMPERVIOUS COVER DECLARATION

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

Attachment B

BMPS FOR UPGRADIENT STORMWATER

The site currently has 143.0 acres of upgradient runoff that flows through a natural dry drainage channel to an unnamed tributary. This unnamed tributary's ultimate outfall is Blieder's Creek. Of this acreage, 0.89 acres will be treated through a bioretention facility, with 0.19 acres of that being impervious. All other off-site gradient will be routed to an on-site detention pond through proposed culverts and grassy swales. Please reference the drainage area map included with Attachment G in the Temporary Stormwater Section and TSS Removal calculations included with the Construction Plans as part of Attachment F in this section.

Attachment C

BMPS FOR ON-SITE STORMWATER

Onsite stormwater will ultimately flow to the on-site detention pond being proposed for detention only. The proposed permanent BMPs for TSS removal include natural and engineered vegetative filter strips and bioretention in accordance with TCEQ's Technical Guidance Manual (TGM) RG-348 (rev. 2005) to remove at least 80% TSS from the proposed improvements. Five cisterns are also proposed to capture the rooftop runoff of some buildings. The vegetative filter strips will be used to treat the runoff from the paved streets and parking. Bioretention facilities will be used to treat the runoff from the remaining buildings and some paved areas. Table 1 shows a summary of the permanent BMP coverage on the site and TSS removal capacity.

Table 1: BMP Coverage

Watershed	Total Watershed Area (ac.)	Total Impervious Cover (ac.)	BMP	Required TSS Removal in Watershed Area (lbs)	Total TSS Removed (lbs)
A-5	2.2	1.04	Bioretention	763	770
A-7	0.18	0.14	Bioretention	126	136
A-8	0.18	0.14	Bioretention	126	136
A-11	0.2	0.15	Bioretention	135	135
A-12	0.23	0.15	Bioretention	135	135
A-13	0.68	0.49	Bioretention	438	443
A-14	0.64	0.54	Bioretention	483	483
A-15	0.3	0.22	Bioretention	197	197
A-16	0.34	0.27	Bioretention	242	242
B-1	1.29	0.47	50' Natural VFS	422	469
B-2	0.13	0.07	15' Engineered VFS	63	69
B-3	0.09	0.06	15' Engineered VFS	54	59
B-4	0.27	0.13	15' Engineered VFS	117	128
B-5	0.2	0.15	15' Engineered VFS	135	146
B-6	0.32	0.29	15' Engineered VFS	260	282
B-7	0.3	0.05	15' Engineered VFS	45	52
B-8	0.51	0.30	15' Engineered VFS	269	294
B-9	0.3	0.20	15' Engineered VFS	180	196
B-10	0.51	0.32	15' Engineered VFS	287	313
B-11	0.21	0.04	15' Engineered VFS	36	41
B-12	0.59	0.14	15' Engineered VFS	126	143
B-13	0.14	0.04	15' Engineered VFS	36	40
B-14	0.49	0.02	15' Engineered VFS	18	27
B-15	0.15	0.03	15' Engineered VFS	27	31
B-16	0.13	0.01	15' Engineered VFS	9	12
B-17	0.81	0.08	50' Natural VFS	72	89
B-18	0.28	0.18	15' Engineered VFS	162	176
B-19	0.18	0.03	15' Engineered VFS	27	31
B-20	0.16	0.06	15' Engineered VFS	54	60
B-21	0.11	0.09	15' Engineered VFS	81	88
B-22	0.07	0.04	15' Engineered VFS	36	39
B-23	0.08	0.01	15' Engineered VFS	9	11
B-24	0.2	0.10	15' Engineered VFS	90	99
B-25	0.06	0.03	15' Engineered VFS	27	30
B-26	0.41	0.10	15' Engineered VFS	90	102
Bypass-1	6.44	0.27	None	242	0
Bypass-2	5.53	0.00	None	0	0
Bypass-3	2.51	0.00	None	0	0
Bypass-4	0.36	0.01	None	9	0
C-1	0.23	0.23	Cistern	-	-
C-2	0.22	0.22	Cistern	-	-
C-3	0.22	0.22	Cistern	-	-
C-4	0.25	0.25	Cistern	-	-
C-5	0.14	0.14	Cistern	-	-
C-6	0.12	0.12	Cistern	-	-
			Total	**5628**	**5704**

Attachment D

BMPS FOR SURFACE STREAMS

The site does not directly outflow into a surface stream. All treated runoff from the cisterns, vegetative filter strips, and bioretention facilities will be directed to the on-site detention pond and discharged at a rate less than or equal to existing conditions.

Attachment E

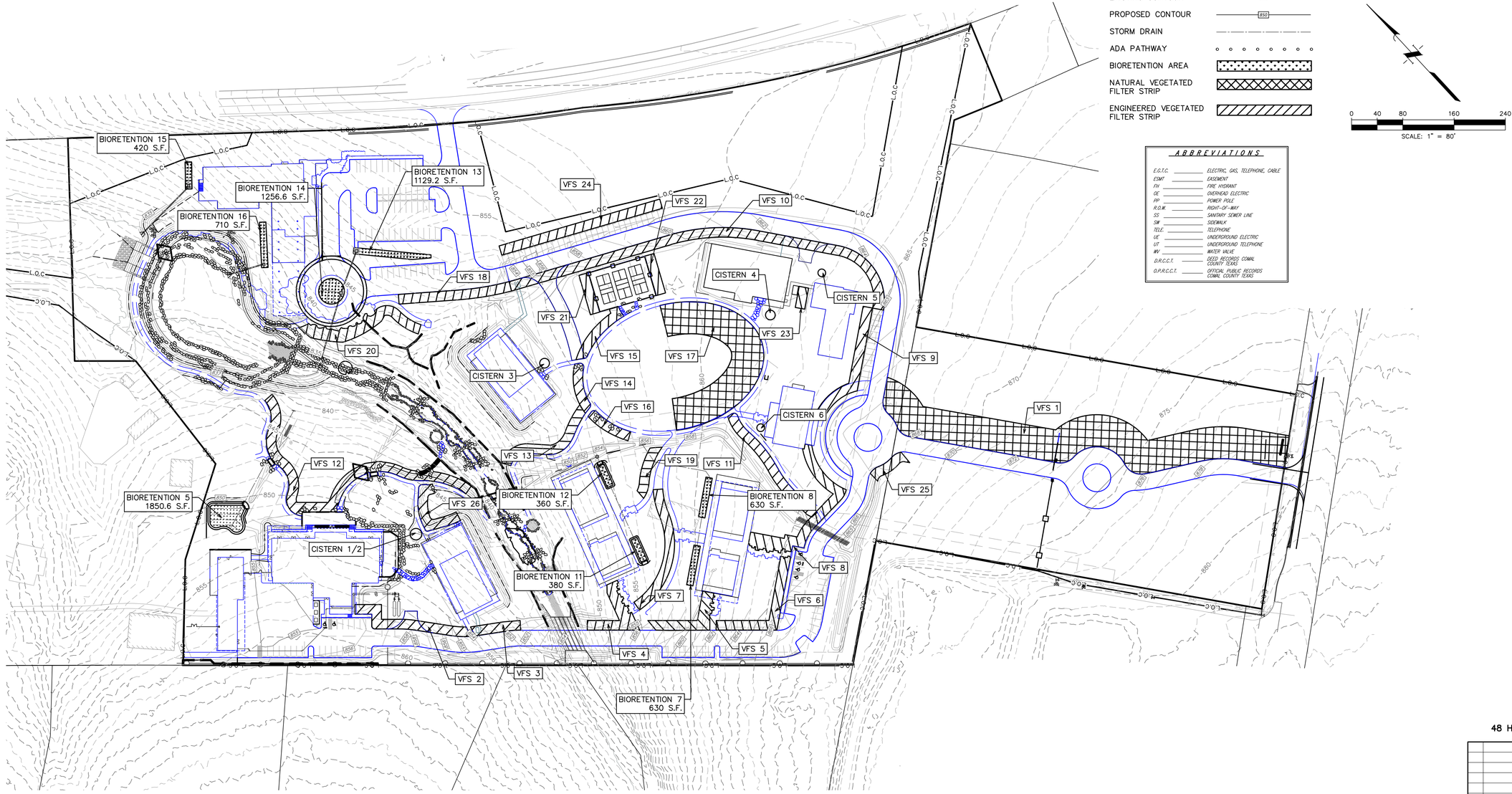
REQUEST TO SEAL FEATURES

The permanent sealing of or diversion of flow from a naturally occurring sensitive feature has not been proposed.

Attachment F

CONSTRUCTION PLANS

Construction plans are included in this section.



ABBREVIATIONS

E.G.T.C.	ELECTRIC, GAS, TELEPHONE, CABLE
ESMT	EASEMENT
FH	FIRE HYDRANT
OE	OVERHEAD ELECTRIC
PP	POWER POLE
R.O.W.	RIGHT-OF-WAY
SS	SANITARY SEWER LINE
SW	SIDEWALK
TELE.	TELEPHONE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
WV	WATER VALVE
D.R.C.C.T.	DEED RECORDS COMAL COUNTY TEXAS
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS COMAL COUNTY TEXAS

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist Facilities Prior to any Construction Activities

CAUTION!!!
CONTACT:
1-800-DIG-TESS
48 HOURS PRIOR TO CONSTRUCTION

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY WATER GENERAL CONSTRUCTION NOTES

1. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START 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 ON-SITE.
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 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:
    - A. 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;
    - B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED;
    - C. ANY CHANGE THAT WOULD SIGNIFICANTLY IMPACT THE ABILITY TO PREVENT POLLUTION OF THE EDWARDS AQUIFER; OR
    - D. 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

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION

TCEQ ATTACHMENT "F" CONSTRUCTION PLANS - OVERALL SWQ

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100 • San Antonio, Texas 78249 • 210.494.5511

SCALE:	AS SHOWN	DGN. BY:	DJM
DATE:	JULY 2025	DWN. BY:	CDJ
JOB NO.	17758-0001-00	DWG. NO.	NONE
SUBMITTED:		SURV. BY:	QUIDDITY ENGINEERING
		F.B. NO.	NONE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER

Darren McAfee 9/16/2025

SHEET NO. 1 OF 15

K:\17758\17758-0001-00 T Bar M - Comp Expansion\2 Design Phase\CAD\WPAP\Addendum 1\17758-0001 T Bar M SWQ Modification 1 cdj.dwg cdj September 16, 2025

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Notes:

1. FILTRATION MEDIA SHALL HAVE A MINIMUM THICKNESS OF 3 FT. SOIL MIXTURE OF 50–60% SAND; 20–30% COMPOST; AND 20–30% TOPSOIL.
2. ALL PIPING TO BE SCHEDULE 40 PVC.
3. PERFORATED PVC PIPE SHALL HAVE 1/4" TO 1/2" INCH OPENINGS SPACED 6 INCHES CENTER TO CENTER.
4. IMPERMEABLE GEOMEMBRANE LINER SHALL HAVE A MINIMUM THICKNESS OF 30 MILS AND BE ULTRAVIOLET RESISTANT.

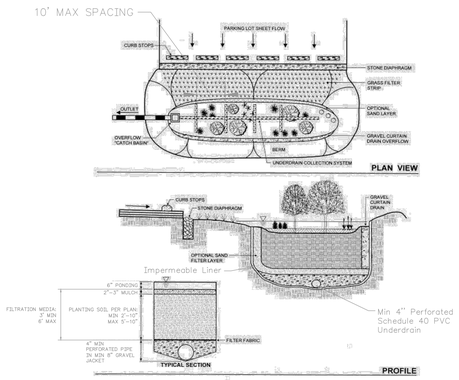


Figure 3-5 Schematic of a Bioretention Facility (MDE, 2000)

BIORETENTION DETAIL

COMPLYING WITH THE EDWARDS AQUIFER RULES
TECHNICAL GUIDANCE ON BEST MANAGEMENT PRACTICES

Bioretention Basin	Area (sq ft)	Water Quality Volume Required (cu ft)
A-5	1850.6	5,155
A-7	630	1,211
A-8	630	1,211
A-11	380	732
A-12	360	693
A-13	1129.2	2,341
A-14	1256.6	2,879
A-15	420	1,060
A-16	710	1,368

Bioswale & Bioretention Volume Calculations

BMP Area #	Total Bioswale /Bioretention Area (SF)	Ponding Depth (ft)	Bioretention Media (Mulch+Engineered Soil +Sand) Depth (ft)*	Gravel Storage (#8 & #57 Stone) Depth (ft)*	Total Equivalent Storage Depth (ft)	Proposed Treatment WQV ** (CF)
5	1850.6	0.5	5.5	1	2.825	5228
7	630.0	0.5	3	1	1.95	1229
8	630.0	0.5	3	1	1.95	1229
11	380.0	0.5	3	1	1.95	741
12	360.0	0.5	3	1	1.95	702
13	1129.2	0.5	3.5	1	2.125	2400
14	1256.6	0.5	4	1	2.3	2890
15	420.0	0.5	4.75	1	2.5625	1076
16	710.0	0.5	3	1	1.95	1385

*The corresponding calculations utilize an average porosity value, n, of 0.35 for the Bioretention Media layers and 0.40 for the Bioretention Gravel layers
** The proposed treatment volume accounts for 20% of designed volume as sediment accumulation.

TSS REMOVAL CALCULATIONS: A-5

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/12/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = A-5

Total drainage basin/outfall area =	2.20	acres
Predevelopment impervious area within drainage basin/outfall area =	0.19	acres
Post-development impervious area within drainage basin/outfall area =	1.04	acres
Post-development impervious fraction within drainage basin/outfall area =	0.47	
$L_{M\ THIS\ BASIN}$ =	763	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Bioretention
Removal efficiency = 89 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	1.30	acres
A_I =	0.85	acres
A_P =	0.45	acres
L_R =	871	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 770 lbs.

F = 0.88

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 =	1.50	inches
Post Development Runoff Coefficient =	0.46	
On-site Water Quality Volume =	3276	cubic feet

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

Off-site area draining to BMP =	0.90	acres
Off-site Impervious cover draining to BMP =	0.19	acres
Impervious fraction of off-site area =	0.21	
Off-site Runoff Coefficient =	0.21	
Off-site Water Quality Volume =	1020	cubic feet
Storage for Sediment =	859	
Total Capture Volume (required water quality volume(s) x 1.20) =	5155	cubic feet

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

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

Required Water Quality Volume for retention basin = NA cubic feet

Irrigation Area Calculations:

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

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

Required Water Quality Volume for extended detention basin = NA cubic feet

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

9A. Full Sedimentation and Filtration System

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

9B. Partial Sedimentation and Filtration System

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

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

Required Water Quality Volume for Bioretention Basin = 5155 cubic feet

TSS REMOVAL CALCULATIONS: A-7

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/12/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = A-7

Total drainage basin/outfall area =	0.18	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.14	acres
Post-development impervious fraction within drainage basin/outfall area =	0.78	
$L_{M\ THIS\ BASIN}$ =	126	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Bioretention
Removal efficiency = 89 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.18	acres
A_I =	0.14	acres
A_P =	0.04	acres
L_R =	143	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 136 lbs.

F = 0.95

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 =	2.60	inches
Post Development Runoff Coefficient =	0.59	
On-site Water Quality Volume =	1009	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 =	202	
Total Capture Volume (required water quality volume(s) x 1.20) =	1211	cubic feet

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

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

Required Water Quality Volume for retention basin = NA cubic feet

Irrigation Area Calculations:

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

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

Required Water Quality Volume for extended detention basin = NA cubic feet

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

9A. Full Sedimentation and Filtration System

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

9B. Partial Sedimentation and Filtration System

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

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

Required Water Quality Volume for Bioretention Basin = 1211 cubic feet

ABBREVIATIONS

E.G.T.C.	ELECTRIC, GAS, TELEPHONE, CABLE
ESMT.	EASEMENT
FH	FIRE HYDRANT
OE	OVERHEAD ELECTRIC
PP	POWER POLE
R.O.W.	RIGHT-OF-WAY
SS	SANITARY SEWER LINE
SW	SIDEWALK
TELE.	TELEPHONE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
WV	WATER VALVE
D.R.C.C.T.	DEED RECORDS COMAL COUNTY TEXAS
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS COMAL COUNTY TEXAS

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist Facilities Prior to any Construction Activities

CAUTION!!!
CONTACT:
1–800–DIG–TESS
48 HOURS PRIOR TO CONSTRUCTION

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION

TCEQ ATTACHMENT "F" CONSTRUCTION PLANS – BIORETENTION (1 OF 4)

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100•San Antonio, Texas 78249•210.494.5511

SCALE: AS SHOWN — DGN. BY: DJM
DATE: JULY 2025 — DWN. BY: CDJ
JOB NO. 17758–0001–00 — DWG. NO. NONE
SUBMITTED: — SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/16/2025

SHEET NO. 2 OF 15

K:\17758\17758–0001–00 T Bar M – Comp Expansion\2 Design Phase\CAD\WPAP\Addendum 1\17758–0001 T Bar M SWQ Modification 1.cdj.dwg odyn: September 16, 2025

©2023 Quiddity Engineering

TSS REMOVAL CALCULATIONS: A-8

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/12/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
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1. The Required Load Reduction for the total project: Calculations from RG-348 — Pages 3-27 to 3-30

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = A-8

Total drainage basin/outfall area =	0.18	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.14	acres
Post-development impervious fraction within drainage basin/outfall area =	0.78	
$L_{M\ THIS\ BASIN}$ =	126	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Bioretention
Removal efficiency = 89 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 = (BMP efficiency) x P x (A_C x 34.6 + A_P x 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 =	0.18	acres
A_I =	0.14	acres
A_P =	0.04	acres
L_R =	143	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 136 lbs.

F = 0.95

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 =	2.60	inches
Post Development Runoff Coefficient =	0.59	
On-site Water Quality Volume =	1009	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 =	202	
Total Capture Volume (required water quality volume(s) x 1.20) =	1211	cubic feet

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

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

Required Water Quality Volume for retention basin = NA cubic feet

Irrigation Area Calculations:

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

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

Required Water Quality Volume for extended detention basin = NA cubic feet

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

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin = NA cubic feet

Minimum filter basin area = NA square feet

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

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins = NA cubic feet

Minimum filter basin area = NA square feet

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

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

Required Water Quality Volume for Bioretention Basin = 1211 cubic feet

TSS REMOVAL CALCULATIONS: A-11

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/12/2025

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = A-11

Total drainage basin/outfall area =	0.20	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.15	acres
Post-development impervious fraction within drainage basin/outfall area =	0.75	
$L_{M\ THIS\ BASIN}$ =	135	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Bioretention
Removal efficiency = 89 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 = (BMP efficiency) x P x (A_C x 34.6 + A_P x 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 =	0.20	acres
A_I =	0.15	acres
A_P =	0.05	acres
L_R =	153	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 135 lbs.

F = 0.88

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 =	1.50	inches
Post Development Runoff Coefficient =	0.56	
On-site Water Quality Volume =	610	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 =	122	
Total Capture Volume (required water quality volume(s) x 1.20) =	732	cubic feet

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

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

Required Water Quality Volume for retention basin = NA cubic feet

Irrigation Area Calculations:

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

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

Required Water Quality Volume for extended detention basin = NA cubic feet

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

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin = NA cubic feet

Minimum filter basin area = NA square feet

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

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins = NA cubic feet

Minimum filter basin area = NA square feet

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

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

Required Water Quality Volume for Bioretention Basin = 732 cubic feet

TSS REMOVAL CALCULATIONS: A-12

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/12/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
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1. The Required Load Reduction for the total project: Calculations from RG-348 — Pages 3-27 to 3-30

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = A-12

Total drainage basin/outfall area =	0.23	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.15	acres
Post-development impervious fraction within drainage basin/outfall area =	0.65	
$L_{M\ THIS\ BASIN}$ =	135	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Bioretention
Removal efficiency = 89 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 = (BMP efficiency) x P x (A_C x 34.6 + A_P x 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 =	0.23	acres
A_I =	0.15	acres
A_P =	0.08	acres
L_R =	154	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 135 lbs.

F = 0.88

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 =	1.50	inches
Post Development Runoff Coefficient =	0.46	
On-site Water Quality Volume =	578	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 =	116	
Total Capture Volume (required water quality volume(s) x 1.20) =	693	cubic feet

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

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

Required Water Quality Volume for retention basin = NA cubic feet

Irrigation Area Calculations:

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

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

Required Water Quality Volume for extended detention basin = NA cubic feet

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

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin = NA cubic feet

Minimum filter basin area = NA square feet

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

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins = NA cubic feet

Minimum filter basin area = NA square feet

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

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

Required Water Quality Volume for Bioretention Basin = 693 cubic feet

ABBREVIATIONS

E.G.T.C.	ELECTRIC, GAS, TELEPHONE, CABLE
ESMT.	EASEMENT
FH	FIRE HYDRANT
OE	OVERHEAD ELECTRIC
PP	POWER POLE
R.O.W.	RIGHT-OF-WAY
SS	SANITARY SEWER LINE
SW	SIDEWALK
TELE.	TELEPHONE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
WV	WATER VALVE
D.R.C.C.T.	DEED RECORDS COMAL COUNTY, TEXAS
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS COMAL COUNTY, TEXAS

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist Facilities Prior to any Construction Activities

CAUTION!!!
CONTACT:
1-800-DIG-TESS
48 HOURS PRIOR TO CONSTRUCTION

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION

TCEQ ATTACHMENT "F" CONSTRUCTION PLANS – BIORETENTION (2 OF 4)

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100•San Antonio, Texas 78249•210.494.5511

SCALE: AS SHOWN — DGN. BY: DJM
DATE: JULY 2025 — DWN. BY: CDJ
JOB NO. 17758-0001-00 — DWG. NO. NONE
SUBMITTED: — SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/16/2025

SHEET NO. 3 OF 15

K:\17758\17758-0001-00 T Bar M - Comp Expansion\2 Design Phase\240\WRAP\Addendum 1\17758-0001 T Bar M SWQ Modification 1.cdj.dwg adm: September 16, 2025

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TSS REMOVAL CALCULATIONS: A-13

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/12/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = A-13

Total drainage basin/outfall area =	0.68	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.49	acres
Post-development impervious fraction within drainage basin/outfall area =	0.72	
$L_{M\ THIS\ BASIN}$ =	438	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Bioretention
Removal efficiency = 89 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: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

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

A_C =	0.68	acres
A_I =	0.49	acres
A_P =	0.19	acres
L_R =	501	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 443 lbs.

F = 0.88

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 =	1.50	inches
Post Development Runoff Coefficient =	0.53	
On-site Water Quality Volume =	1951	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 =	390	
Total Capture Volume (required water quality volume(s) x 1.20) =	2341	cubic feet

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

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

Required Water Quality Volume for retention basin = NA cubic feet

Irrigation Area Calculations:

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

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

Required Water Quality Volume for extended detention basin = NA cubic feet

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

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin = NA cubic feet

Minimum filter basin area = NA square feet

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

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins = NA cubic feet

Minimum filter basin area = NA square feet

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

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

Required Water Quality Volume for Bioretention Basin = 2341 cubic feet

TSS REMOVAL CALCULATIONS: A-14

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/12/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
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Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = A-14

Total drainage basin/outfall area =	0.64	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.54	acres
Post-development impervious fraction within drainage basin/outfall area =	0.84	
$L_{M\ THIS\ BASIN}$ =	483	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Bioretention
Removal efficiency = 89 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: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

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

A_C =	0.64	acres
A_I =	0.54	acres
A_P =	0.10	acres
L_R =	550	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 483 lbs.

F = 0.88

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 =	1.50	inches
Post Development Runoff Coefficient =	0.69	
On-site Water Quality Volume =	2399	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 =	480	
Total Capture Volume (required water quality volume(s) x 1.20) =	2879	cubic feet

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

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

Required Water Quality Volume for retention basin = NA cubic feet

Irrigation Area Calculations:

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

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

Required Water Quality Volume for extended detention basin = NA cubic feet

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

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin = NA cubic feet

Minimum filter basin area = NA square feet

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

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins = NA cubic feet

Minimum filter basin area = NA square feet

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

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

Required Water Quality Volume for Bioretention Basin = 2879 cubic feet

TSS REMOVAL CALCULATIONS: A-15

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/12/2025

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = A-15

Total drainage basin/outfall area =	0.30	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.22	acres
Post-development impervious fraction within drainage basin/outfall area =	0.73	
$L_{M\ THIS\ BASIN}$ =	197	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Bioretention
Removal efficiency = 89 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: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

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

A_C =	0.30	acres
A_I =	0.22	acres
A_P =	0.08	acres
L_R =	225	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 197 lbs.

F = 0.88

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 =	1.50	inches
Post Development Runoff Coefficient =	0.54	
On-site Water Quality Volume =	884	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 =	177	
Total Capture Volume (required water quality volume(s) x 1.20) =	1060	cubic feet

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

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

Required Water Quality Volume for retention basin = NA cubic feet

Irrigation Area Calculations:

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

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

Required Water Quality Volume for extended detention basin = NA cubic feet

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

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin = NA cubic feet

Minimum filter basin area = NA square feet

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

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins = NA cubic feet

Minimum filter basin area = NA square feet

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

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

Required Water Quality Volume for Bioretention Basin = 1060 cubic feet

ABBREVIATIONS

E.G.T.C.	ELECTRIC, GAS, TELEPHONE, CABLE
ESMT.	EASEMENT
FH	FIRE HYDRANT
OE	OVERHEAD ELECTRIC
PP	POWER POLE
R.O.W.	RIGHT-OF-WAY
SS	SANITARY SEWER LINE
SW	SIDEWALK
TELE.	TELEPHONE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
WV	WATER VALVE
D.R.C.C.T.	DEED RECORDS COMAL COUNTY TEXAS
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS COMAL COUNTY TEXAS

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NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION

TCEQ ATTACHMENT "F"
CONSTRUCTION PLANS - BIORETENTION (3 OF 4)

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100•San Antonio, Texas 78249•210.494.5511

SCALE: AS SHOWN | DGN. BY: DJM
DATE: JULY 2025 | DWN. BY: CDJ
JOB NO. 17758-0001-00 | DWG. NO. NONE
SUBMITTED: | SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

STATE OF TEXAS
DARREN J. MCAFEE
137808
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PROFESSIONAL ENGINEER
9/16/2025

SHEET NO. 4 OF 15

K:\17758\17758-0001-00 T Bar M - Comp Expansion\2 Design Phase\CAD\WPAP\Addendum 1\17758-0001 T Bar M SWQ Modification 1 cdj.dwg date: September 16, 2025

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TSS REMOVAL CALCULATIONS: A-16

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/12/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
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Characters shown in red are data entry fields.
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1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = A-16

Total drainage basin/outfall area =	0.34	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.27	acres
Post-development impervious fraction within drainage basin/outfall area =	0.79	
$L_{M\ THIS\ BASIN}$ =	242	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP =	Bioretention	
Removal efficiency =	89	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: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

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

A_C =	0.34	acres
A_I =	0.27	acres
A_P =	0.07	acres
L_R =	275	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 242 lbs.

F = 0.88

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 =	1.50	inches
Post Development Runoff Coefficient =	0.62	
On-site Water Quality Volume =	1140	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 =	228	
Total Capture Volume (required water quality volume(s) x 1.20) =	1368	cubic feet

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

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

Required Water Quality Volume for retention basin = NA cubic feet

Irrigation Area Calculations:

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

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

Required Water Quality Volume for extended detention basin = NA cubic feet

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

9A. Full Sedimentation and Filtration System

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

9B. Partial Sedimentation and Filtration System

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

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

Required Water Quality Volume for Bioretention Basin = 1368 cubic feet

K:\17758\17758-0001-00 T Bar M - Camp Expansion\2 Design Phase\CAD\WPAP Addendum 1\17758-0001 T Bar M SWQ Modification 1 cdj.dwg odyer: September 16, 2025

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ABBREVIATIONS

E.G.T.C.	ELECTRIC, GAS, TELEPHONE, CABLE
ESMT.	EASEMENT
FH	FIRE HYDRANT
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UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
WV	WATER VALVE
D.R.C.C.T.	DEED RECORDS COMAL COUNTY, TEXAS
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS COMAL COUNTY, TEXAS

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist Facilities Prior to any Construction Activities

CAUTION!!!
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1-800-DIG-TESS
48 HOURS PRIOR TO CONSTRUCTION

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION

TCEQ ATTACHMENT "F"
CONSTRUCTION PLANS - BIORETENTION (4 OF 4)

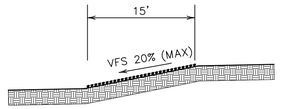
QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23295
4350 Lockhill-Selma Road, Suite 100 • San Antonio, Texas 78249 • 210.494.5511

SCALE: AS SHOWN DGN. BY: DJM
DATE: JULY 2025 DWN. BY: CDJ
JOB NO. 17758-0001-00 DWG. NO. NONE
SUBMITTED: SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

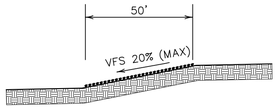
STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED
PROFESSIONAL ENGINEER

Darren McAfee
9/16/2025

SHEET NO.
5
OF 15



ENGINEERED VEGETATIVE FILTER STRIP DETAIL
NOT TO SCALE



NATURAL VEGETATIVE FILTER STRIP DETAIL
NOT TO SCALE

Slope should not exceed 10%

The minimum dimension (in the direction of flow) should be 50 feet

Vegetative Filter Strip	Type	TSS Removal Required (lbs)	Total TSS Removed (lbs)
B-1	50' Natural VFS	422	469
B-2	15' Engineered VFS	63	69
B-3	15' Engineered VFS	54	59
B-4	15' Engineered VFS	117	128
B-5	15' Engineered VFS	135	146
B-6	15' Engineered VFS	260	282
B-7	15' Engineered VFS	45	52
B-8	15' Engineered VFS	269	294
B-9	15' Engineered VFS	180	196
B-10	15' Engineered VFS	287	313
B-11	15' Engineered VFS	36	41
B-12	15' Engineered VFS	126	143
B-13	15' Engineered VFS	36	40
B-14	15' Engineered VFS	18	27
B-15	15' Engineered VFS	27	31
B-16	15' Engineered VFS	9	12
B-17	50' Natural VFS	72	89
B-18	15' Engineered VFS	162	176
B-19	15' Engineered VFS	27	31
B-20	15' Engineered VFS	54	60
B-21	15' Engineered VFS	81	88
B-22	15' Engineered VFS	36	39
B-23	15' Engineered VFS	9	11
B-24	15' Engineered VFS	90	99
B-25	15' Engineered VFS	27	30
B-26	15' Engineered VFS	90	102

TSS REMOVAL CALCULATIONS: B-1

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/12/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-1

Total drainage basin/outfall area =	1.29	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.47	acres
Post-development impervious fraction within drainage basin/outfall area =	0.36	
$L_{M\ THIS\ BASIN}$ =	422	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	1.29	acres
A_I =	0.47	acres
A_P =	0.82	acres
L_R =	469	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 469 lbs.

F = 1.00

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 =	4.00	inches
Post Development Runoff Coefficient =	0.29	
On-site Water Quality Volume =	5429	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 =	1086	
Total Capture Volume (required water quality volume(s) x 1.20) =	6514	cubic feet

TSS REMOVAL CALCULATIONS: B-2

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2025

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-2

Total drainage basin/outfall area =	0.13	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.07	acres
Post-development impervious fraction within drainage basin/outfall area =	0.54	
$L_{M\ THIS\ BASIN}$ =	63	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.13	acres
A_I =	0.07	acres
A_P =	0.06	acres
L_R =	69	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 69 lbs.

F = 1.00

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 =	4.00	inches
Post Development Runoff Coefficient =	0.38	
On-site Water Quality Volume =	717	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 =	143	
Total Capture Volume (required water quality volume(s) x 1.20) =	860	cubic feet

ABBREVIATIONS

E.G.T.C.	ELECTRIC, GAS, TELEPHONE, CABLE
ESMT.	EASEMENT
FH	FIRE HYDRANT
OE	OVERHEAD ELECTRIC
PP	POWER POLE
R.O.W.	RIGHT-OF-WAY
SS	SANITARY SEWER LINE
SW	SIDEWALK
TELE.	TELEPHONE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
WV	WATER VALVE
D.R.C.C.T.	DEED RECORDS COMAL COUNTY TEXAS
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS COMAL COUNTY TEXAS

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist Facilities Prior to any Construction Activities

CAUTION!!!
CONTACT:
1-800-DIG-TESS
48 HOURS PRIOR TO CONSTRUCTION

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION
TCEQ ATTACHMENT "F"
CONSTRUCTION PLANS - VEGETATIVE FILTER STRIPS (1 OF 9)

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100 • San Antonio, Texas 78249 • 210.494.5511

SCALE: AS SHOWN DGN. BY: DJM
DATE: JULY 2025 DWN. BY: CDJ
JOB NO. 17758-0001-00 DWG. NO. NONE
SUBMITTED: SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/16/2025

SHEET NO. 6 OF 15

K:\17758\17758-0001-00 T Bar M - Camp Expansion\2 Design Phase\CAD\WPAP\Addendum 1\17758-0001 T Bar M SWQ-WPS add 1.dwg adam September 16, 2025

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TSS REMOVAL CALCULATIONS: B-3

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2025

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-3

Total drainage basin/outfall area =	0.09	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.06	acres
Post-development impervious fraction within drainage basin/outfall area =	0.67	
$L_{M\ THIS\ BASIN}$ =	54	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.09	acres
A_I =	0.06	acres
A_P =	0.03	acres
L_R =	59	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 59 lbs.

F = 1.01

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 =	4.00	inches
Post Development Runoff Coefficient =	0.47	
On-site Water Quality Volume =	620	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 =	124	
Total Capture Volume (required water quality volume(s) x 1.20) =	743	cubic feet

TSS REMOVAL CALCULATIONS: B-4

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/12/2025

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-4

Total drainage basin/outfall area =	0.27	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.13	acres
Post-development impervious fraction within drainage basin/outfall area =	0.48	
$L_{M\ THIS\ BASIN}$ =	117	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.27	acres
A_I =	0.13	acres
A_P =	0.14	acres
L_R =	128	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 128 lbs.

F = 1.00

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 =	4.00	inches
Post Development Runoff Coefficient =	0.35	
On-site Water Quality Volume =	1362	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 =	272	
Total Capture Volume (required water quality volume(s) x 1.20) =	1635	cubic feet

TSS REMOVAL CALCULATIONS: B-5

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/12/2025

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-5

Total drainage basin/outfall area =	0.20	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.15	acres
Post-development impervious fraction within drainage basin/outfall area =	0.75	
$L_{M\ THIS\ BASIN}$ =	135	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.20	acres
A_I =	0.15	acres
A_P =	0.05	acres
L_R =	146	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 146 lbs.

F = 1.00

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 =	4.00	inches
Post Development Runoff Coefficient =	0.56	
On-site Water Quality Volume =	1626	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 =	325	
Total Capture Volume (required water quality volume(s) x 1.20) =	1951	cubic feet

ABBREVIATIONS

E.G.T.C.	ELECTRIC, GAS, TELEPHONE, CABLE
ESMT.	EASEMENT
FH	FIRE HYDRANT
OE	OVERHEAD ELECTRIC
PP	POWER POLE
R.O.W.	RIGHT-OF-WAY
SS	SANITARY SEWER LINE
SW	SIDEWALK
TELE.	TELEPHONE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
WV	WATER VALVE
D.R.C.C.T.	DEED RECORDS COMAL COUNTY, TEXAS
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS COMAL COUNTY, TEXAS

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist Facilities Prior to any Construction Activities

CAUTION!!!
CONTACT:
1-800-DIG-TESS
48 HOURS PRIOR TO CONSTRUCTION

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION
TCEQ ATTACHMENT "F"
CONSTRUCTION PLANS – VEGETATIVE FILTER STRIPS (2 OF 9)

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100•San Antonio, Texas 78249•210.494.5511

SCALE: AS SHOWN — DGN. BY: DJM
DATE: JULY 2025 — DWN. BY: CDJ
JOB NO. 17758-0001-00 — DWG. NO. NONE
SUBMITTED: — SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED
PROFESSIONAL ENGINEER
9/16/2025

SHEET NO. 7 OF 15

K:\17758\17758-0001-00 T Bar M – Comp Expansion\2 Design Phase\CAD\WPAP\Addendum 1\17758-0001 T Bar M SWQ-VFS add 1.dwg 0:dyn: September 16, 2025

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TSS REMOVAL CALCULATIONS: B-6

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/12/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
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Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-6

Total drainage basin/outfall area =	0.32	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.29	acres
Post-development impervious fraction within drainage basin/outfall area =	0.91	
$L_{M\ THIS\ BASIN}$ =	260	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.32	acres
A_I =	0.29	acres
A_P =	0.03	acres
L_R =	282	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 282 lbs.

F = 1.00

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 =	4.00	inches
Post Development Runoff Coefficient =	0.74	
On-site Water Quality Volume =	3438	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 =	688	
Total Capture Volume (required water quality volume(s) x 1.20) =	4126	cubic feet

TSS REMOVAL CALCULATIONS: B-7

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/12/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-7

Total drainage basin/outfall area =	0.30	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.05	acres
Post-development impervious fraction within drainage basin/outfall area =	0.17	
$L_{M\ THIS\ BASIN}$ =	45	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.30	acres
A_I =	0.05	acres
A_P =	0.25	acres
L_R =	52	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 52 lbs.

F = 0.99

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 =	3.66	inches
Post Development Runoff Coefficient =	0.18	
On-site Water Quality Volume =	710	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 =	142	
Total Capture Volume (required water quality volume(s) x 1.20) =	853	cubic feet

TSS REMOVAL CALCULATIONS: B-8

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/12/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
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Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-8

Total drainage basin/outfall area =	0.51	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.30	acres
Post-development impervious fraction within drainage basin/outfall area =	0.59	
$L_{M\ THIS\ BASIN}$ =	269	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.51	acres
A_I =	0.30	acres
A_P =	0.21	acres
L_R =	294	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 294 lbs.

F = 1.00

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 =	4.00	inches
Post Development Runoff Coefficient =	0.41	
On-site Water Quality Volume =	3051	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 =	610	
Total Capture Volume (required water quality volume(s) x 1.20) =	3661	cubic feet

ABBREVIATIONS

E.G.T.C.	ELECTRIC, GAS, TELEPHONE, CABLE
ESMT.	EASEMENT
FH	FIRE HYDRANT
OE	OVERHEAD ELECTRIC
PP	POWER POLE
R.O.W.	RIGHT-OF-WAY
SS	SANITARY SEWER LINE
SW	SIDEWALK
TELE.	TELEPHONE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
WV	WATER VALVE
D.R.C.C.T.	DEED RECORDS COMAL COUNTY TEXAS
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS COMAL COUNTY TEXAS

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist Facilities Prior to any Construction Activities

CAUTION!!!
CONTACT:
1-800-DIG-TESS
48 HOURS PRIOR TO CONSTRUCTION

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION
TCEQ ATTACHMENT "F"
CONSTRUCTION PLANS - VEGETATIVE FILTER STRIPS (3 OF 9)

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100•San Antonio, Texas 78249•210.494.5511

SCALE: AS SHOWN DGN. BY: DJM
DATE: JULY 2025 DWN. BY: CDJ
JOB NO. 17758-0001-00 DWG. NO. NONE
SUBMITTED: SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/16/2025

SHEET NO. 8 OF 15

K:\17758\17758-0001-00 T Bar M - Comp Expansion\2 Design Phase\CAD\WRAP\Addendum 1\17758-0001 T Bar M SWQ-vFS add 1.dwg adyer September 16, 2025

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TSS REMOVAL CALCULATIONS: B-9

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/12/2025

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan * =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-9

Total drainage basin/outfall area =	0.30	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.20	acres
Post-development impervious fraction within drainage basin/outfall area =	0.67	
$L_{M\ THIS\ BASIN}$ =	180	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.30	acres
A_I =	0.20	acres
A_P =	0.10	acres
L_R =	196	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 196 lbs.

F = 1.00

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 =	4.00	inches
Post Development Runoff Coefficient =	0.47	
On-site Water Quality Volume =	2065	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 =	413	
Total Capture Volume (required water quality volume(s) x 1.20) =	2478	cubic feet

TSS REMOVAL CALCULATIONS: B-10

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/12/2025

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan * =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-10

Total drainage basin/outfall area =	0.51	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.32	acres
Post-development impervious fraction within drainage basin/outfall area =	0.63	
$L_{M\ THIS\ BASIN}$ =	287	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.51	acres
A_I =	0.32	acres
A_P =	0.19	acres
L_R =	313	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 313 lbs.

F = 1.00

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 =	4.00	inches
Post Development Runoff Coefficient =	0.44	
On-site Water Quality Volume =	3266	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 =	653	
Total Capture Volume (required water quality volume(s) x 1.20) =	3919	cubic feet

TSS REMOVAL CALCULATIONS: B-11

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2022

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan * =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-11

Total drainage basin/outfall area =	0.21	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.04	acres
Post-development impervious fraction within drainage basin/outfall area =	0.19	
$L_{M\ THIS\ BASIN}$ =	36	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.21	acres
A_I =	0.04	acres
A_P =	0.17	acres
L_R =	41	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 41 lbs.

F = 0.99

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 =	3.66	inches
Post Development Runoff Coefficient =	0.19	
On-site Water Quality Volume =	543	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 =	109	
Total Capture Volume (required water quality volume(s) x 1.20) =	652	cubic feet

ABBREVIATIONS

E.G.T.C.	ELECTRIC, GAS, TELEPHONE, CABLE
ESMT.	EASEMENT
FH	FIRE HYDRANT
OE	OVERHEAD ELECTRIC
PP	POWER POLE
R.O.W.	RIGHT-OF-WAY
SS	SANITARY SEWER LINE
SW	SIDEWALK
TELE.	TELEPHONE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
WV	WATER VALVE
D.R.C.C.T.	DEED RECORDS COMAL COUNTY TEXAS
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS COMAL COUNTY TEXAS

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist Facilities Prior to any Construction Activities

CAUTION!!!
CONTACT:
1-800-DIG-TESS
48 HOURS PRIOR TO CONSTRUCTION

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION
TCEQ ATTACHMENT "F"
CONSTRUCTION PLANS - VEGETATIVE FILTER STRIPS (4 OF 9)

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100•San Antonio, Texas 78249•210.494.5511

SCALE: AS SHOWN DGN. BY: DJM
DATE: JULY 2025 DWN. BY: CDJ
JOB NO. 17758-0001-00 DWG. NO. NONE
SUBMITTED: SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED
PROFESSIONAL ENGINEER
9/16/2025

SHEET NO. 9 OF 15

K:\17758\17758-0001-00 T Bar M - Comp Expansion\2 Design Phase\CAD\WPAP Addendum 1\17758-0001 T Bar M SWQ-VFS add 1.dwg odyn September 16, 2025

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TSS REMOVAL CALCULATIONS: B-12

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2025

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

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-12

Total drainage basin/outfall area =	0.59	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.14	acres
Post-development impervious fraction within drainage basin/outfall area =	0.24	
$L_{M\ THIS\ BASIN}$ =	126	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

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

A_C =	0.59	acres
A_I =	0.14	acres
A_P =	0.45	acres
L_R =	143	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 143 lbs.

F = 1.00

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 =	4.00	inches
Post Development Runoff Coefficient =	0.22	
On-site Water Quality Volume =	1918	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 =	384	
Total Capture Volume (required water quality volume(s) x 1.20) =	2302	cubic feet

TSS REMOVAL CALCULATIONS: B-13

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
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1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-13

Total drainage basin/outfall area =	0.14	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.04	acres
Post-development impervious fraction within drainage basin/outfall area =	0.29	
$L_{M\ THIS\ BASIN}$ =	36	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

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

A_C =	0.14	acres
A_I =	0.04	acres
A_P =	0.10	acres
L_R =	40	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 40 lbs.

F = 0.99

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 =	3.66	inches
Post Development Runoff Coefficient =	0.25	
On-site Water Quality Volume =	466	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 =	93	
Total Capture Volume (required water quality volume(s) x 1.20) =	560	cubic feet

TSS REMOVAL CALCULATIONS: B-14

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-14

Total drainage basin/outfall area =	0.49	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.02	acres
Post-development impervious fraction within drainage basin/outfall area =	0.04	
$L_{M\ THIS\ BASIN}$ =	18	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

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

A_C =	0.49	acres
A_I =	0.02	acres
A_P =	0.47	acres
L_R =	27	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 27 lbs.

F = 1.02

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 =	4.00	inches
Post Development Runoff Coefficient =	0.07	
On-site Water Quality Volume =	477	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 =	95	
Total Capture Volume (required water quality volume(s) x 1.20) =	572	cubic feet

ABBREVIATIONS

E.G.T.C.	ELECTRIC, GAS, TELEPHONE, CABLE
ESMT.	EASEMENT
FH	FIRE HYDRANT
OE	OVERHEAD ELECTRIC
PP	POWER POLE
R.O.W.	RIGHT-OF-WAY
SS	SANITARY SEWER LINE
SW	SIDEWALK
TELE.	TELEPHONE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
WV	WATER VALVE
D.R.C.C.T.	DEED RECORDS COMAL COUNTY TEXAS
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS COMAL COUNTY TEXAS

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist Facilities Prior to any Construction Activities

CAUTION!!!
CONTACT:
1-800-DIG-TESS
48 HOURS PRIOR TO CONSTRUCTION

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION
TCEQ ATTACHMENT "F"
CONSTRUCTION PLANS – VEGETATIVE FILTER STRIPS (5 OF 9)

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100•San Antonio, Texas 78249•210.494.5511

SCALE: AS SHOWN DGN. BY: DJM
DATE: JULY 2025 DWN. BY: CDJ
JOB NO. 17758-0001-00 DWG. NO. NONE
SUBMITTED: SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/16/2025

SHEET NO. 10 OF 15

K:\17758\17758-0001-00 T Bar M - Comp Expansion\2 Design Phase\240 WPAP\Addendum 1\17758-0001 T Bar M SWQ-VFS add 1.dwg adam September 16, 2025

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TSS REMOVAL CALCULATIONS: B-15

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2025

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

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-15

Total drainage basin/outfall area =	0.15	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.03	acres
Post-development impervious fraction within drainage basin/outfall area =	0.20	
$L_{M\ THIS\ BASIN}$ =	27	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.15	acres
A_I =	0.03	acres
A_P =	0.12	acres
L_R =	31	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 31 lbs.

F = 1.00

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 =	4.00	inches
Post Development Runoff Coefficient =	0.20	
On-site Water Quality Volume =	438	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 =	88	
Total Capture Volume (required water quality volume(s) x 1.20) =	525	cubic feet

TSS REMOVAL CALCULATIONS: B-16

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2025

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-16

Total drainage basin/outfall area =	0.13	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.01	acres
Post-development impervious fraction within drainage basin/outfall area =	0.08	
$L_{M\ THIS\ BASIN}$ =	9	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.13	acres
A_I =	0.01	acres
A_P =	0.12	acres
L_R =	12	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 12 lbs.

F = 1.04

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 =	4.00	inches
Post Development Runoff Coefficient =	0.10	
On-site Water Quality Volume =	196	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 =	39	
Total Capture Volume (required water quality volume(s) x 1.20) =	235	cubic feet

TSS REMOVAL CALCULATIONS: B-17

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/16/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
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1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-17

Total drainage basin/outfall area =	0.81	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.08	acres
Post-development impervious fraction within drainage basin/outfall area =	0.10	
$L_{M\ THIS\ BASIN}$ =	72	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.81	acres
A_I =	0.08	acres
A_P =	0.73	acres
L_R =	89	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 89 lbs.

F = 1.00

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 =	4.00	inches
Post Development Runoff Coefficient =	0.12	
On-site Water Quality Volume =	1457	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 =	291	
Total Capture Volume (required water quality volume(s) x 1.20) =	1749	cubic feet

ABBREVIATIONS

E.G.T.C.	ELECTRIC, GAS, TELEPHONE, CABLE
ESMT.	EASEMENT
FH	FIRE HYDRANT
OE	OVERHEAD ELECTRIC
PP	POWER POLE
R.O.W.	RIGHT-OF-WAY
SS	SANITARY SEWER LINE
SW	SIDEWALK
TELE.	TELEPHONE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
WV	WATER VALVE
D.R.C.C.T.	DEED RECORDS COMAL COUNTY TEXAS
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS COMAL COUNTY TEXAS

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist. Facilities Prior to any Construction Activities

CAUTION!!!
CONTACT:
1-800-DIG-TESS
48 HOURS PRIOR TO CONSTRUCTION

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION
TCEQ ATTACHMENT "F"
CONSTRUCTION PLANS – VEGETATIVE FILTER STRIPS (6 OF 9)

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100•San Antonio, Texas 78249•210.494.5511

SCALE: AS SHOWN DGN. BY: DJM
DATE: JULY 2025 DWN. BY: CDJ
JOB NO. 17758-0001-00 DWG. NO. NONE
SUBMITTED: SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/16/2025

SHEET NO. 11 OF 15

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TSS REMOVAL CALCULATIONS: B-18

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2025

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-18

Total drainage basin/outfall area =	0.28	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.18	acres
Post-development impervious fraction within drainage basin/outfall area =	0.64	
$L_{M\ THIS\ BASIN}$ =	162	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.28	acres
A_I =	0.18	acres
A_P =	0.10	acres
L_R =	176	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 176 lbs.

F = 1.00

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 =	4.00	inches
Post Development Runoff Coefficient =	0.45	
On-site Water Quality Volume =	1844	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 =	369	
Total Capture Volume (required water quality volume(s) x 1.20) =	2213	cubic feet

TSS REMOVAL CALCULATIONS: B-19

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2025

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

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-19

Total drainage basin/outfall area =	0.18	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.03	acres
Post-development impervious fraction within drainage basin/outfall area =	0.17	
$L_{M\ THIS\ BASIN}$ =	27	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.18	acres
A_I =	0.03	acres
A_P =	0.15	acres
L_R =	31	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 31 lbs.

F = 0.99

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 =	3.66	inches
Post Development Runoff Coefficient =	0.18	
On-site Water Quality Volume =	426	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 =	85	
Total Capture Volume (required water quality volume(s) x 1.20) =	512	cubic feet

TSS REMOVAL CALCULATIONS: B-20

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-20

Total drainage basin/outfall area =	0.16	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.06	acres
Post-development impervious fraction within drainage basin/outfall area =	0.38	
$L_{M\ THIS\ BASIN}$ =	54	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.16	acres
A_I =	0.06	acres
A_P =	0.10	acres
L_R =	60	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 60 lbs.

F = 1.00

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 =	4.00	inches
Post Development Runoff Coefficient =	0.29	
On-site Water Quality Volume =	685	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 =	137	
Total Capture Volume (required water quality volume(s) x 1.20) =	822	cubic feet

ABBREVIATIONS

E.G.T.C.	ELECTRIC, GAS, TELEPHONE, CABLE
ESMT.	EASEMENT
FH	FIRE HYDRANT
OE	OVERHEAD ELECTRIC
PP	POWER POLE
R.O.W.	RIGHT-OF-WAY
SS	SANITARY SEWER LINE
SW	SIDEWALK
TELE.	TELEPHONE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
WV	WATER VALVE
D.R.C.C.T.	DEED RECORDS COMAL COUNTY, TEXAS
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS COMAL COUNTY, TEXAS

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist Facilities Prior to any Construction Activities

CAUTION!!!
CONTACT:
1-800-DIG-TESS
48 HOURS PRIOR TO CONSTRUCTION

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION
TCEQ ATTACHMENT "F"
CONSTRUCTION PLANS - VEGETATIVE FILTER STRIPS (7 OF 9)

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100•San Antonio, Texas 78249•210.494.5511

SCALE: AS SHOWN DGN. BY: DJM
DATE: JULY 2025 DWN. BY: CDJ
JOB NO. 17758-0001-00 DWG. NO. NONE
SUBMITTED: SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/16/2025

SHEET NO. 12 OF 15

K:\17758\17758-0001-00 T Bar M - Comal Expansion\2 Design Phase\CAD\WP4\Addendum 1\17758-0001 T Bar M SWQ-eFS add 1.dwg adam, September 16, 2025

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TSS REMOVAL CALCULATIONS: B-21

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2025

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

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-21

Total drainage basin/outfall area =	0.11	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.09	acres
Post-development impervious fraction within drainage basin/outfall area =	0.82	
$L_{M\ THIS\ BASIN}$ =	81	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

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

A_C =	0.11	acres
A_I =	0.09	acres
A_P =	0.02	acres
L_R =	88	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 88 lbs.

F = 1.00

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 =	4.00	inches
Post Development Runoff Coefficient =	0.65	
On-site Water Quality Volume =	1038	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 =	208	
Total Capture Volume (required water quality volume(s) x 1.20) =	1245	cubic feet

TSS REMOVAL CALCULATIONS: B-22

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2025

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-22

Total drainage basin/outfall area =	0.07	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.04	acres
Post-development impervious fraction within drainage basin/outfall area =	0.57	
$L_{M\ THIS\ BASIN}$ =	36	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

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

A_C =	0.07	acres
A_I =	0.04	acres
A_P =	0.03	acres
L_R =	39	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 39 lbs.

F = 0.99

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 =	3.66	inches
Post Development Runoff Coefficient =	0.40	
On-site Water Quality Volume =	372	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 =	74	
Total Capture Volume (required water quality volume(s) x 1.20) =	447	cubic feet

TSS REMOVAL CALCULATIONS: B-23

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/16/2025

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-25

Total drainage basin/outfall area =	0.08	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.01	acres
Post-development impervious fraction within drainage basin/outfall area =	0.13	
$L_{M\ THIS\ BASIN}$ =	9	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

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

A_C =	0.08	acres
A_I =	0.01	acres
A_P =	0.07	acres
L_R =	11	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 11 lbs.

F = 1.02

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 =	4.00	inches
Post Development Runoff Coefficient =	0.15	
On-site Water Quality Volume =	170	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 =	34	
Total Capture Volume (required water quality volume(s) x 1.20) =	204	cubic feet

ABBREVIATIONS

E.G.T.C.	ELECTRIC, GAS, TELEPHONE, CABLE
ESMT.	EASEMENT
FH	FIRE HYDRANT
OE	OVERHEAD ELECTRIC
PP	POWER POLE
R.O.W.	RIGHT-OF-WAY
SS	SANITARY SEWER LINE
SW	SIDEWALK
TELE.	TELEPHONE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
WV	WATER VALVE
D.R.C.C.T.	DEED RECORDS COMAL COUNTY TEXAS
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS COMAL COUNTY TEXAS

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist Facilities Prior to any Construction Activities

CAUTION!!!
CONTACT:
1-800-DIG-TESS
48 HOURS PRIOR TO CONSTRUCTION

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION
TCEQ ATTACHMENT "F"
CONSTRUCTION PLANS –
VEGETATIVE FILTER STRIPS
(8 OF 9)

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100•San Antonio, Texas 78249•210.494.5511

SCALE: AS SHOWN | DGN. BY: DJM
DATE: JULY 2025 | DWN. BY: CDJ
JOB NO. 17758-0001-00 | DWG. NO. NONE
SUBMITTED: | SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED
PROFESSIONAL ENGINEER
9/16/2025

SHEET NO. 13 OF 15

K:\17758\17758-0001-00 T Bar M – Camp Expansion\2 Design Phase\CAD\WPAP Addendum 1\17758-0001 T Bar M SWQ-VFS add 1.dwg adyer September 16, 2025

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TSS REMOVAL CALCULATIONS: B-24

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2025

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-24

Total drainage basin/outfall area =	0.20	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.10	acres
Post-development impervious fraction within drainage basin/outfall area =	0.50	
$L_{M\ THIS\ BASIN}$ =	90	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.20	acres
A_I =	0.10	acres
A_P =	0.10	acres
L_R =	99	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 99 lbs.

F = 1.00

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 =	4.00	inches
Post Development Runoff Coefficient =	0.36	
On-site Water Quality Volume =	1038	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 =	208	
Total Capture Volume (required water quality volume(s) x 1.20) =	1246	cubic feet

TSS REMOVAL CALCULATIONS: B-25

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2025

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-25

Total drainage basin/outfall area =	0.06	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.03	acres
Post-development impervious fraction within drainage basin/outfall area =	0.50	
$L_{M\ THIS\ BASIN}$ =	27	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.06	acres
A_I =	0.03	acres
A_P =	0.03	acres
L_R =	30	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 30 lbs.

F = 1.01

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 =	4.00	inches
Post Development Runoff Coefficient =	0.36	
On-site Water Quality Volume =	311	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 =	62	
Total Capture Volume (required water quality volume(s) x 1.20) =	374	cubic feet

TSS REMOVAL CALCULATIONS: B-26

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2025

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = B-26

Total drainage basin/outfall area =	0.41	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.10	acres
Post-development impervious fraction within drainage basin/outfall area =	0.24	
$L_{M\ THIS\ BASIN}$ =	90	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 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 = (BMP efficiency) x P x (A_I x 34.6 + A_P x 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 =	0.41	acres
A_I =	0.10	acres
A_P =	0.31	acres
L_R =	102	lbs

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

Desired $L_{M\ THIS\ BASIN}$ = 102 lbs.

F = 1.00

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 =	4.00	inches
Post Development Runoff Coefficient =	0.23	
On-site Water Quality Volume =	1356	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 =	271	
Total Capture Volume (required water quality volume(s) x 1.20) =	1627	cubic feet

ABBREVIATIONS

E.G.T.C.	ELECTRIC, GAS, TELEPHONE, CABLE
ESMT.	EASEMENT
FH	FIRE HYDRANT
OE	OVERHEAD ELECTRIC
PP	POWER POLE
R.O.W.	RIGHT-OF-WAY
SS	SANITARY SEWER LINE
SW	SIDEWALK
TELE.	TELEPHONE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
WV	WATER VALVE
D.R.C.C.T.	DEED RECORDS COMAL COUNTY, TEXAS
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS COMAL COUNTY, TEXAS

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist Facilities Prior to any Construction Activities

CAUTION!!!
CONTACT:
1-800-DIG-TESS
48 HOURS PRIOR TO CONSTRUCTION

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION
TCEQ ATTACHMENT "F"
CONSTRUCTION PLANS – VEGETATIVE FILTER STRIPS (9 OF 9)

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100•San Antonio, Texas 78249•210.494.5511

SCALE: AS SHOWN DGN. BY: DJM
DATE: JULY 2025 DWN. BY: CDJ
JOB NO. 17758-0001-00 DWG. NO. NONE
SUBMITTED: SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/16/2025

SHEET NO. 14 OF 15

K:\17758\17758-0001-00 T Bar M - Camp Expansion\2 Design Phase\240 WPAP\Addendum 1\17758-0001 T Bar M SWQ-WPS.xdd 1.dwg adam September 16, 2025

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TSS REMOVAL CALCULATIONS: BYPASS-1

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/16/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = Bypass-1

Total drainage basin/outfall area =	6.44	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.27	acres
Post-development impervious fraction within drainage basin/outfall area =	0.04	
$L_{M\ THIS\ BASIN}$ =	242	lbs.

TSS REMOVAL CALCULATIONS: BYPASS-2

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = Bypass-2

Total drainage basin/outfall area =	5.53	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious fraction within drainage basin/outfall area =	0.00	
$L_{M\ THIS\ BASIN}$ =	0	lbs.

TSS REMOVAL CALCULATIONS: BYPASS-3

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/15/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = Bypass-3

Total drainage basin/outfall area =	2.51	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious fraction within drainage basin/outfall area =	0.00	
$L_{M\ THIS\ BASIN}$ =	0	lbs.

TSS REMOVAL CALCULATIONS: BYPASS-4

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: T Bar M Camp Expansion
Date Prepared: 9/16/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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

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

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

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	28.96	acres
Predevelopment impervious area within the limits of the plan * =	0.33	acres
Total post-development impervious area within the limits of the plan* =	6.45	acres
Total post-development impervious cover fraction * =	0.22	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	5492	lbs.

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

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

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

Drainage Basin/Outfall Area No. = Bypass-4

Total drainage basin/outfall area =	0.36	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.01	acres
Post-development impervious fraction within drainage basin/outfall area =	0.03	
$L_{M\ THIS\ BASIN}$ =	9	lbs.

ABBREVIATIONS

E.G.T.C.	ELECTRIC, GAS, TELEPHONE, CABLE
ESMT.	EASEMENT
FH	FIRE HYDRANT
OE	OVERHEAD ELECTRIC
PP	POWER POLE
R.O.W.	RIGHT-OF-WAY
SS	SANITARY SEWER LINE
SW	SIDEWALK
TELE.	TELEPHONE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
WV	WATER VALVE
D.R.C.C.T.	DEED RECORDS COMAL COUNTY TEXAS
O.P.R.C.C.T.	OFFICIAL PUBLIC RECORDS COMAL COUNTY TEXAS

!!CAUTION!!
Contractor to Verify Exact Location & Depth of Exist Facilities Prior to any Construction Activities

CAUTION!!!
CONTACT:
1-800-DIG-TESS
48 HOURS PRIOR TO CONSTRUCTION

NO.	DATE	REVISIONS	APP.

CENTER FOR CHRISTIAN GROWTH, INC

T BAR M CAMP EXPANSION
TCEQ ATTACHMENT "F"
CONSTRUCTION PLANS - BYPASS DRAINAGE AREAS
(1 OF 1)

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
4350 Lockhill-Selma Road, Suite 100•San Antonio, Texas 78249•210.494.5511

SCALE: AS SHOWN DGN. BY: DJM
DATE: JULY 2025 DWN. BY: CDJ
JOB NO. 17758-0001-00 DWG. NO. NONE
SUBMITTED: SURV. BY: QUIDDITY ENGINEERING
F.B. NO. NONE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/16/2025

SHEET NO. 15 OF 15

K:\17758\17758-0001-00 T Bar M - Camp Expansion\2 Design Phase\CAD\WP&P\Addendum 1\17758-0001 T Bar M SWQ-VFS add 1.dwg odlyn September 16, 2025

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Attachment G

INSPECTION, MAINTENANCE, REPAIR, AND RETROFIT PLAN

Project: T Bar M Camp Expansion

Address: 2549 Hwy 46

City, State, Zip: New Braunfels, Texas 78132

Bioretention Maintenance and Monitoring Procedure

The primary maintenance requirement for bioretention areas is that of inspection and repair or replacement of the treatment area's components. Generally, this involves nothing more than the routine periodic maintenance that is required of any landscaped area. Plants that are appropriate for the site, climatic, and watering conditions should be selected for use in the bioretention cell. Appropriately selected plants will aid in reducing fertilizer, pesticide, water, and overall maintenance requirements. Bioretention system components should blend over time through plant and root growth, organic decomposition, and the development of a natural soil horizon. These biologic and physical processes over time will lengthen the facility's life span and reduce the need for extensive maintenance.

Routine maintenance should include a semi-annual health evaluation of the trees and shrubs and subsequent removal of any dead or diseased vegetation. Diseased vegetation should be treated as needed using preventative and low-toxic measures to the extent possible. BMPs have the potential to create very attractive habitats for mosquitoes and other vectors because of highly organic, often heavily vegetated areas mixed with shallow water. Routine inspections for areas of standing water within the BMP and corrective measures to restore proper infiltration rates are necessary to prevent the creation of mosquito and other vector habitat. In addition, bioretention BMPs are susceptible to invasion by aggressive plant species such as cattails, which increase the chances of standing water and subsequent vector production if not routinely maintained.

To maintain the treatment area's appearance, it may be necessary to prune and weed. Furthermore, mulch replacement is suggested when erosion is evident or when the site begins to look unattractive. Specifically, the entire area may require mulch replacement every two to three years, although spot mulching may be sufficient when there are random void areas.

New Jersey's Department of Environmental Protection states in their bioretention systems standards that accumulated sediment and debris removal (especially at the inflow point) will normally be the primary maintenance function. Other potential tasks include replacement of dead vegetation, soil pH regulation, erosion repair at inflow points, mulch replenishment, unclogging the underdrain, and repairing overflow structures.

Other recommended maintenance guidelines include:

- *Inspections.* BMP facilities should be inspected at least twice a year (once during or immediately following wet weather) to evaluate facility operation. During each inspection, erosion areas inside and downstream of the BMP must be identified and repaired or revegetated immediately.
- *Sediment Removal.* Remove sediment from the facility when sediment depth reaches 3 inches or when the sediment interferes with the health of vegetation or ability of the facility to meet required drawdown times. Sediment removal should be performed at least every 2 years.
- *Drain Time.* When the drain time exceeds 72 hours as observed in the observation well, the filter media should be removed and replaced with more permeable material.
- *Vegetation.* All dead and diseased vegetation considered beyond treatment shall be removed and replaced during semi-annual inspections. Diseased trees and shrubs should be treated during inspections. Re-mulch any bare areas by hand whenever needed. Replace mulch annually in the spring, or more frequently if needed, in landscaped areas of the basin where grass or groundcover is not planted. Grass areas in and around bioretention facilities must 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.
- *Debris and Litter Removal.* Debris and litter will accumulate in the facility and should be removed during regular mowing operations and inspections.
- *Filter Underdrain.* Clean underdrain piping network to remove any sediment buildup every 5 years, or as needed to maintain design drawdown time.
- *Record Keeping.* The Applicant shall maintain records of inspections for the previous five (5) years. The records shall indicate who made the inspections and on what date. In addition, the records shall indicate what the inspector found and what measures were taken to correct the situation.

Cistern Maintenance and Monitoring Procedure

- *Inspections*. Cisterns, along with all their components and accessories, should undergo regular inspections. Replacement or repair of the unit as a whole, any of its constituent parts and accessories, should subsequently be undertaken, if needed. The primary concern of a cistern inspection is to detect leaks, which can allow water to escape or contaminants to enter the tank. In addition, the following elements may be inspected:
  - Roof catchment to ensure that no particulate matter or other parts of the roof are entering the gutter and downspout. Rainwater picks up dust, soot, bird droppings, leaves and other foreign materials that add objectionable organisms, color and odor to the water.
  - Gutters and downspouts should be inspected to ensure they are properly positioned, intact, free of debris, and that there are no leaks or obstructions occurring.
  - Runoff/overflow pipe, to check that overflow is draining in a non-erosive manner.
- *Maintenance.* Maintenance requirements for cisterns are relatively few if they supply non-potable

water. Cisterns should be cleaned at least every five years. This might be needed more often where blowing dust and leaves fall on the roof. Inspecting and cleaning the gutters and downspouts will help to keep the cistern cleaner. Repair leaks promptly with sealants.

- *Drain Time.* To maintain adequate storage, cisterns should be drained within 7 days of a significant rainstorm.
- *Sediment Removal.* Remove sediment from the facility when the sediment depth reaches 20% of the volume of the cistern.
- *Record Keeping.* The Applicant shall maintain records of inspections for the previous five (5) years. The records shall indicate who made the inspections and on what date. In addition, the records shall indicate what the inspector found and what measures were taken to correct the situation.

Vegetative Filter Strips Maintenance and Monitoring Procedures

Once a vegetated area is well established, little additional maintenance is generally necessary. The key to establishing a viable vegetated feature is the care and maintenance it receives in the first few months after it is planted. Once established, all vegetated BMPs require some basic maintenance to ensure the health of the plants including:

- *Pest Management.* An Integrated Pest Management (IPM) Plan should be developed for vegetated areas. This plan should specify how problem insects and weeds will be controlled with minimal or no use of insecticides and herbicides.
- *Seasonal Mowing and Lawn Care. If the filter strip is made up of turf grass, it should be mowed as needed to limit vegetation height to 18 inches, using a mulching mower (or removal of clippings). If native grasses are used, the filter may require less frequent mowing, but a minimum of twice annually. Grass clippings and brush debris should not be deposited on vegetated filter strip areas. Regular mowing should also include weed control practices, however herbicide use should be kept to a minimum (Urbonas et al., 1992). Healthy grass can be maintained without using fertilizers because runoff usually contains sufficient nutrients. Irrigation of the site can help assure a dense and healthy vegetative cover.*
- *Inspection. Inspect filter strips at least twice annually for erosion or damage to vegetation; however, additional inspection after periods of heavy runoff is most desirable. The strip should be checked for uniformity of grass cover, debris and litter, and areas of sediment accumulation. More frequent inspections of the grass cover during the first few years after establishment will help to determine if any problems are developing, and to plan for long-term restorative maintenance needs. Bare spots and areas of erosion identified during semi-annual inspections must be replanted and restored to meet specifications. Construction of a level spreader device may be necessary to reestablish shallow overland flow.*
- *Debris and Litter Removal. Trash tends to accumulate in vegetated areas, particularly along highways. Any filter strip structures (i.e. level spreaders) should be kept free of obstructions to reduce floatables*

being flushed downstream, and for aesthetic reasons. The need for this practice is determined through periodic inspection, but should be performed no less than 4 times per year.

- *Sediment Removal. Sediment removal is not normally required in filter strips, since the vegetation normally grows through it and binds it to the soil. However, sediment may accumulate along the upstream boundary of the strip preventing uniform overland flow. Excess sediment should be removed by hand or with flat-bottomed shovels.*
- *Grass Reseeding and Mulching.* A healthy dense grass should be maintained on the filter strip. If areas are eroded, they should be filled, compacted, and reseeded so that the final grade is level. Grass damaged during the sediment removal process should be promptly replaced using the same seed mix used during filter strip establishment. If possible, flow should be diverted from the damaged areas until the grass is firmly established. Bare spots and areas of erosion identified during semi-annual inspections must be replanted and restored to meet specifications. Corrective maintenance, such as weeding or replanting should be done more frequently in the first two to three years after installation to ensure stabilization. Dense vegetation may require irrigation immediately after planting, and during particularly dry periods, particularly as the vegetation is initially established.
- *Record Keeping.* The Applicant shall maintain records of inspections for the previous five (5) years. The records shall indicate who made the inspections and on what date. In addition, the records shall indicate what the inspector found and what measures were taken to correct the situation.

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's entity having ownership or control of the property (such as without limitation, an owner's association, new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity assumes such obligation in writing or ownership is transferred.

An amended copy of this document will be provided to the Texas Commission on Environmental Quality within thirty (30) days of any changes in the following information.

Signature of Responsible Party

8/12/25

Date

Attachment H

PILOT-SCALE FIELD TESTING PLAN

No pilot study BMPs are being proposed.

Attachment I

MEASURE FOR MINIMIZING SURFACE STREAM CONTAMINATION

Temporary BMPs are to be placed before the start of construction to prevent sediment from leaving the site. These temporary BMPs include a stabilized construction entrance, concrete washout, silt fence, silt fence with rock berm, and tree protection. The proposed permanent BMPs are cisterns, bioretention, and vegetative filter strips. Runoff from the impervious areas will be treated and directed to an on-site detention pond that will discharge flow to conditions less than or equal to existing. All disturbed areas will be re-vegetated after construction activities have been completed.

QUIDDITY

AGENT AUTHORIZATION SECTION

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

I John MacDonald,
Print Name

President,
Title - Owner/President/Other

of Center for Christian Growth, Inc.,
Corporation/Partnership/Entity Name

have authorized Darren J. McAfee, PE
Print Name of Agent/Engineer

of Quiddity Engineering, 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:

Applicant's Signature

11/10/23
Date

THE STATE OF Texas §

County of Comal §

BEFORE ME, the undersigned authority, on this day personally appeared John McDonald 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 10 day of November, 2023.

RANDALL BOLES
ID #128745571
My Commission Expires
October 03, 2027

NOTARY PUBLIC

Randall Boles
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 10/3/2027

QUIDDITY

APPLICATION FEE FORM SECTION

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: T Bar M Camp Expansion
Regulated Entity Location: 2549 Hwy 46 W, New Braunfels, TX 78123
Name of Customer: Center for Christian Growth, Inc.
Contact Person: John MacDonald Phone: 210-546-0053
Customer Reference Number (if issued):CN 604880377
Regulated Entity Reference Number (if issued):RN 102745502
Austin Regional Office (3373)

☐ Hays ☐ Travis ☐ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☒ Comal ☐ Kinney

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

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

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

Site Location (Check All That Apply):

☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	***Size***	***Fee Due***
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	28.957 Acres	$ 6,500
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature:

Date: 6/12/25

Application Fee Schedule

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

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

Organized Sewage Collection Systems and Modifications

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

Underground and Aboveground Storage Tank System Facility Plans and Modifications

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

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*
Extension of Time Request	$150

QUIDDITY

CORE DATA FORM SECTION

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions regarding completion of this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☐ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☐ Renewal (*Core Data Form should be submitted with the renewal form*) ☒ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 604880377		RN 102745502

SECTION II: Customer Information

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

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership

☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)*	*If new Customer, enter previous Customer below:*
Center for Christian Growth, Inc.	

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
0048520101	17516719204	TaxExempt	

11. Type of Customer: ☒ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☐ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☐ 0-20 ☒ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☒ Yes ☐ No

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☒ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other:

15. Mailing Address:	2549 Hwy 46 W						
	City	New Braunfels	State	TX	ZIP	78132	ZIP + 4

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*
	johnmac@tbarm.org

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(830) 620-4263		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information (*If 'New Regulated Entity" is selected below this form should be accompanied by a permit application*)

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated in order to meet TCEQ Agency Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name (*Enter name of the site where the regulated action is taking place.*)

T Bar M Camp Expansion

23. Street Address of the Regulated Entity: *(No PO Boxes)*	2549 Hwy 46 W							
	City	New Braunfels	**State**	TX	**ZIP**	78132	**ZIP + 4**	4731
24. County	Comal							

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	The site is located within the city limits of New Braunfels, located off the intersection of SH 46 and FM 1863, approximently 1.45 miles northwest of Loop 337.

26. Nearest City	**State**	**Nearest ZIP Code**
New Braunfels	TX	78132

27. Latitude (N) In Decimal:			**28. Longitude (W) In Decimal:**		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	43	18.40	98	11	0.22

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
7032	7999	721214	71390

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

family and day recreation camp

34. Mailing Address:	**2549 Hwy 46 W**							
	City	**New Braunfels**	**State**	**TX**	**ZIP**	**78132**	**ZIP + 4**	**4731**
35. E-Mail Address:	**johnmac@tbarm.org**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(830) 620-4263		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☒ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☒ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☒ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Darren J. McAfee, P.E.	**41. Title:**	Project Manager

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(210) 546-0053		( ) -	dmcafee@quiddity.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:	Center for Christian Growth, Inc.	**Job Title:**	President		
Name *(In Print):*	John MacDonald			**Phone:**	(830) 620- **4263**

Signature:		Date:	4/23/25

QUIDDITY

METES AND BOUNDS DESCRIPTION

D★A★MAWYER
LAND SURVEYING

METES AND BOUNDS DESCRIPTION
FOR A
28.957 ACRE TRACT OF LAND

Being a 28.957 acre tract of land situated in the City of New Braunfels, and being out of the Christian Pape Survey No. 831, Abstract No. 777, Comal County, Texas, and the Luis Salinas Survey No. 458, Abstract No. 531, and being out of a 4.721 acre tract of land as conveyed to Center for Christian Growth Inc. in Document No. 201606028096, of the Official Public Records of Comal County, Texas, and all of a 15.033 acre tract of land as conveyed to Center for Christian Growth Inc. described in Document No. 201706001413, of the Official Public Records of Comal County, Texas, and a portion of a 61.423 acre tract of land as described in Document No. 201506007095, of the Official Public Records of Comal County, Texas, and said 28.987 acre tract of land being more particularly described as follows:

BEGINNING at a ½" iron pin found in the Northwesterly Right-of-Way line of FM 1863, and being the Southerly corner of the remainder of a 4.00 acre tract of land conveyed to Helen K.A. Parker in Probate Cause 2013PCA0215, as described in Volume 206, Page 862, of the Deed Records of Comal County, Texas, and being the Southeasterly corner of said 4.721 acre tract of land;

THENCE departing said Southeasterly corner, and with the Northwesterly line of said FM 1863, S 51° 49' 30" W, a distance of 338.87 feet to a ½" iron pin found for the Southerly corner of said 4.721 acre tract of land, and being the original Southeasterly corner of a 27.172 acre tract of land as described in Document No. 200406025466 of the Official Public Records of Comal County, Texas, and being the new dedicated Right-Of-Way corner of Lot 1, New Braunfels Christian Academy as recorded in Document No. 202306020883 of the Official Public Records of Comal County, Texas;

THENCE with the Southwesterly line of said 4.721 acre tract of land, N 37° 13' 01" W, at 24.77 feet passing the Southeasterly corner of Lot 1, and continuing a total distance of 611.06 feet to a ½" iron pin found in the Southeasterly line of said 15.033 acre tract of land, and being the most Westerly corner of said 4.721 acre tract of land;

THENCE departing said Westerly corner, and with the Southeasterly line of said 15.033 acre tract of land, S 53° 20' 53" W, a distance of 197.08 feet to the Southerly corner of said 15.033 acre tract of land, and being the Easterly corner of Lot 5, Block 1, T Bar M Ranch Estates Subdivision as recorded in Volume 5, Pages 277-278, of the Map and Plat Records of Comal County, Texas;

THENCE departing the Southeasterly corner of said Lot 5, and with the Northeasterly lines of Lot 5, Lot 4, Lot 3, Lot 2, of said T Bar M Ranch Estates, the following call:

N 47° 14' 30" W a distance of 1044.90 feet to a point for a corner;

THENCE departing the Northeasterly line of Lot 2, T Bar M Ranch Estates Subdivision, and across and through said 61.423 acre tract of land, the following calls:

N 44° 00' 03" E, a distance of 164.89 feet to a point for a corner;

N 60° 16' 34" E, a distance of 156.55 feet to a point for a corner;

N 04° 57' 46" E, a distance of 203.03 feet to a point for a corner;

N 47° 14' 41" W, a distance of 95.33 feet to a point for a corner;

N 41° 01' 13" E, a distance of 347.81 feet to a point found in the Southwesterly Right-of-Way line of State Highway 46 for the Northerly corner of this herein described tract of land;

THENCE departing said Northerly corner and with the Southwesterly lines of State Highway 46, the following calls:

S 48° 58' 47" E, a distance of 437.64 feet to a point for a corner and the beginning of a curve to the left;

With said curve to the left having a radius of 2924.79 feet, an arc length of 367.46 feet and a chord bearing and distance of S 52° 37' 04" E, 367.22 feet to a point and a compound curve to the left;

With said compound curve to the left having a radius of 2342.00 feet, an arc length of 620.93 feet and a chord bearing and distance of S 59° 29' 18" E, 619.12 feet to a point for the Northwesterly corner of a 0.356 of an acre tract of land as described in Document No. 202306030032, of the Official Public Records of Comal County, Texas, and being the Northeasterly corner of this herein described tract of land;

THENCE departing the Southwesterly line of State Highway 46, and with the common line of said 0.365 acre tract of land and the remainder of said 61.423 acre tract of land, S 20° 29' 27" W, a distance of 130.31 feet to a point in the Northeasterly line of a 2.404 acre tract of land conveyed to Trailblazer Management Ltd. as recorded in Document No. 200206027646, of the Official Public Records of Comal County, Texas, and being the Westerly corner of said 0.356 acre tract of land, a Southerly corner of this herein described tract of land;

THENCE with said Northeasterly line of the 2.404 acre tract of land, N 69° 19' 25" W, a distance of 80.53 feet to a point for the Northeast corner of said 2.404 acre tract and being the most Easterly corner of said 15.033 acre tract of land;

THENCE departing said Easterly corner, and with the Northwesterly lines of said 2.404 acre tract of land, the Northwesterly line of the remainder of said 4.0 acre tract of land, S 52° 22' 43" W, a distance of 38.48 feet,

THENCE continuing S 53° 20' 53" E, a distance of 290.14 feet to the most Northerly corner of said 4.721 acre tract of land;

THENCE departing said 15.033 acre tract of land, and with the common line of said 4.00 acre tract and said 4.721 acre tract of land, S 37° 10' 34" E, a distance of 602.05 feet to the POINT OF BEGINNING and containing 28.957 acres of land.

"This document was prepared under 22 TAC §663.21, does not reflect the results of an on the ground survey, and is not to be used to convey or establish interests in real property except those rights and interests implied or established by the creation or reconfiguration of the boundary of the political subdivision for which it was prepared."

Bearings based on the Texas State Plane Coordinate System, Texas South Central Zone (4204), N.A.D 1983.

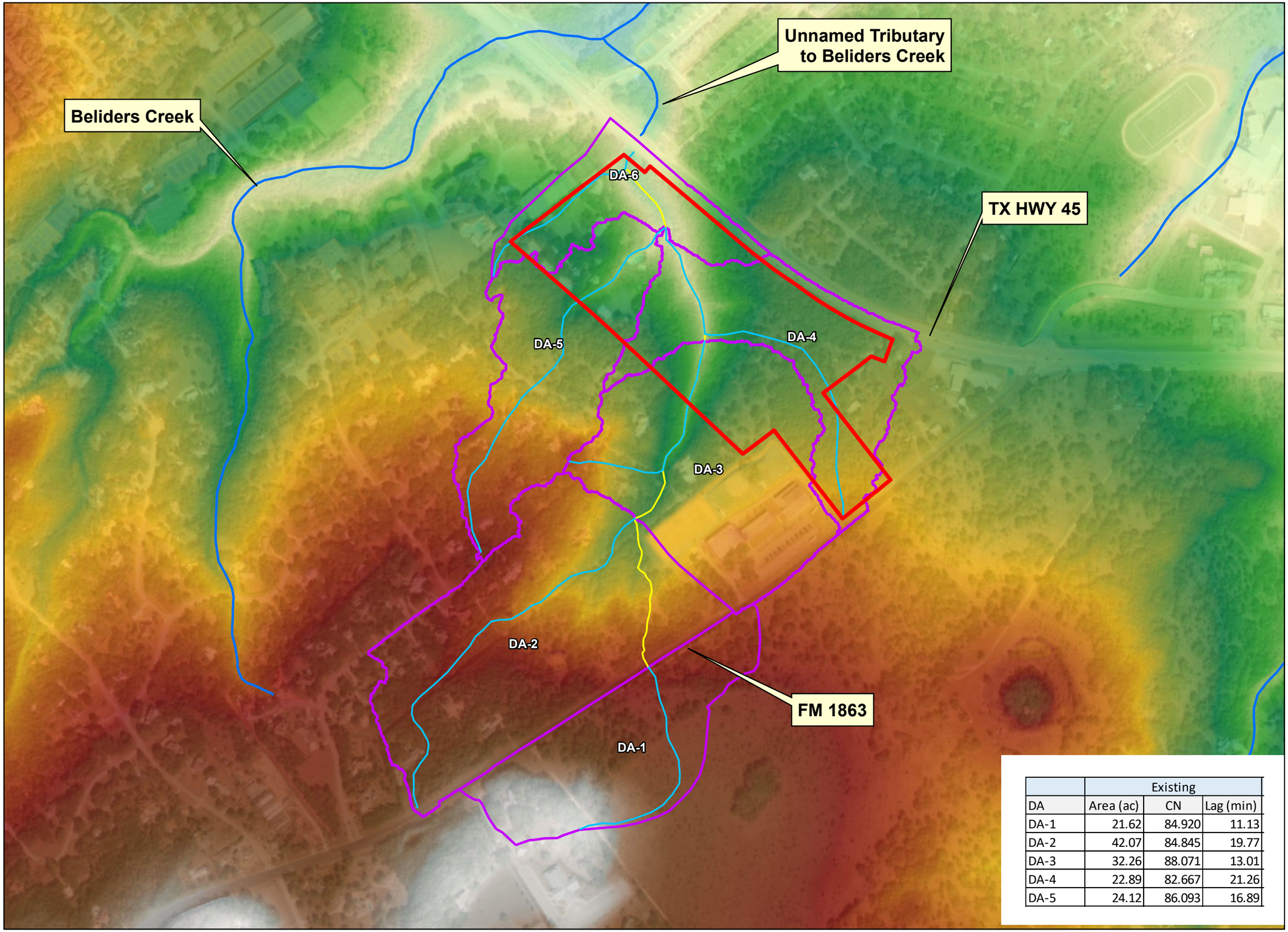
Surveyed on the ground this the 29th day of October, 2024.

Drew A. Mawyer
Registered Professional Land Surveyor No. 5348
TBPLS Firm Registration #10191500
132 Caddell, New Braunfels, TX 78130
QUI005 –28.957 AC M&B-WPAP



QUIDDITY

ADDITIONAL DOCUMENTS



	Existing		
DA	Area (ac)	CN	Lag (min)
DA-1	21.62	84.920	11.13
DA-2	42.07	84.845	19.77
DA-3	32.26	88.071	13.01
DA-4	22.89	82.667	21.26
DA-5	24.12	86.093	16.89



VICINITY MAP

Scale: 1 inch equals 10 miles

LEGEND

- Project Boundary
- Longest Flowpaths
- Existing Reaches
- Existing Drainage Areas

2019 LiDAR

Elevation (ft)

- High : 970
- Low : 810

*Imagery by ESRI Basemap flown 2018

Drainage Impact Analysis for
T Bar M Camp Expansion
COMAL COUNTY, TEXAS

QUIDDITY

Exhibit 2: Existing Drainage Area Map

N
W E
S

1 inch equals 500 feet

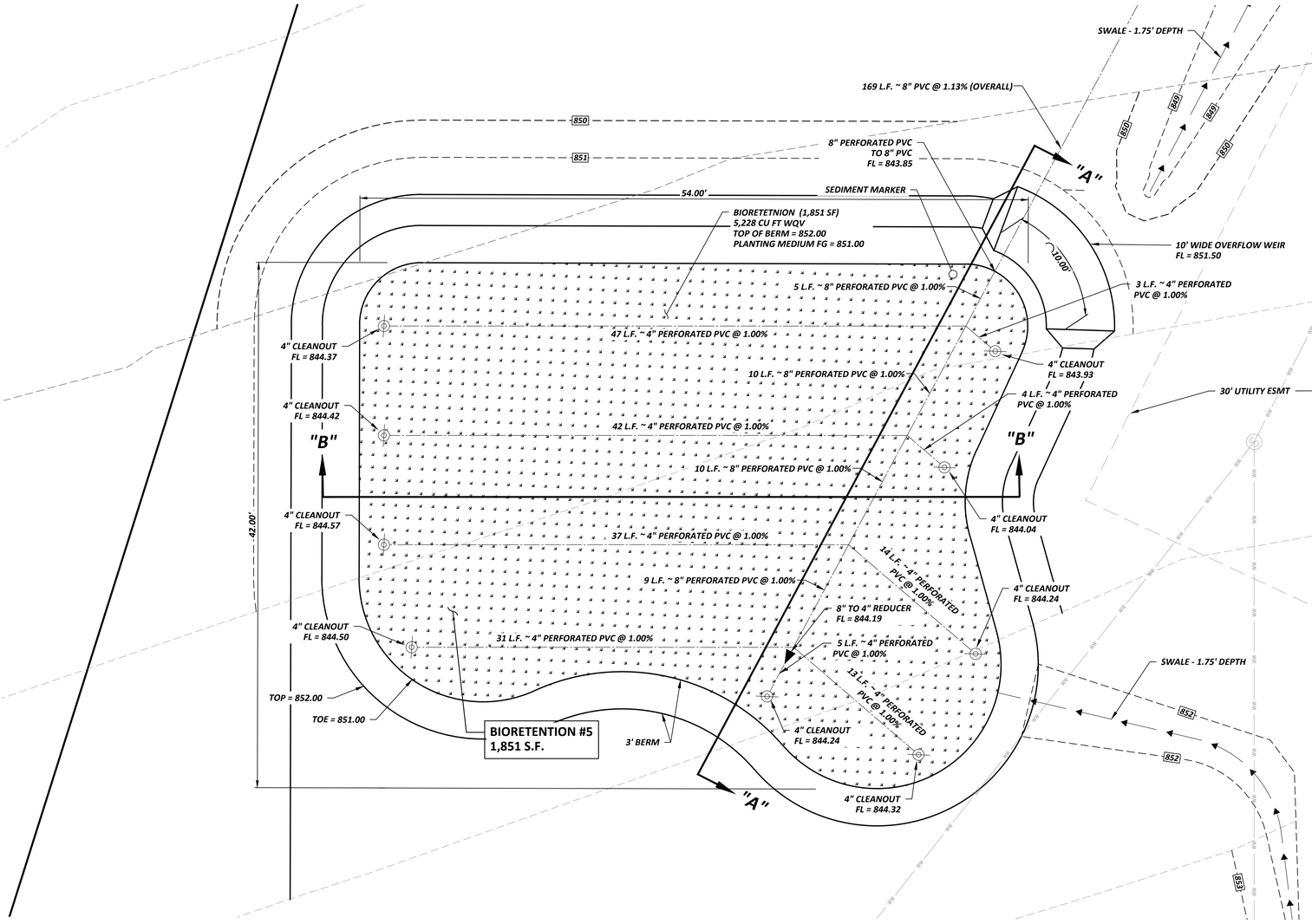
Disclaimer:
This product is offered for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property, governmental and/or political boundaries or related facilities to said boundary. No express warranties are made by Quiddity Engineering concerning the accuracy, completeness, reliability, or usability of the information included within this exhibit.

Coordinate System: NAD 83 TX CENTRAL 4203 FEET
Vertical Datum: NAVD 1988

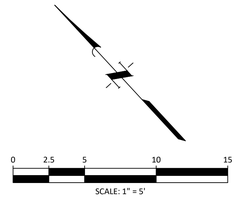
Path: K:\17758\17758-0001-00 T Bar M - Camp Expansion\2 Design Phase\Analysis\HH Analysis\GIS\Exhibits\EX 2 - Existing Drainage Area Map.mxd Project Number: 15681-0002-00 Date: 7/20/2023 User Name: JMB3

QUIDDITY

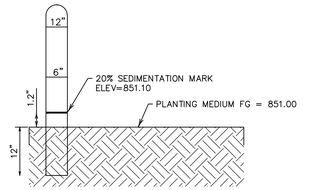
DETAILED BIORETENTION/CISTERN DESIGN SHEETS



EXISTING CONTOUR
PROPOSED CONTOUR
STORM DRAIN
ADA PATHWAY
BIORETENTION AREA
NATURAL VEGETATED FILTER STRIP
ENGINEERED VEGETATED FILTER STRIP



NOTES:
1. REFERENCE SHEET 3 OF THE TCEQ "ATTACHMENT F" CONSTRUCTION PLANS FOR THE TSS REMOVAL CALCULATIONS



VERTICAL SEDIMENT MARKER
SCALE: N.T.S.

Notes:
1. FILTRATION MEDIA SHALL HAVE A MINIMUM THICKNESS OF 3 FT. SOIL MIXTURE OF 50–60% SAND; 20–30% COMPOST; AND 20–30% TOPSOIL.
2. ALL PIPING TO BE SCHEDULE 40 PVC.
3. PERFORATED PVC PIPE SHALL HAVE 1/4" TO 1/2" INCH OPENINGS SPACED 6 INCHES CENTER TO CENTER.
4. IMPERMEABLE GEOMEMBRANE LINER SHALL HAVE A MINIMUM THICKNESS OF 30 MILS AND BE ULTRAVIOLET RESISTANT.

10' MAX SPACING

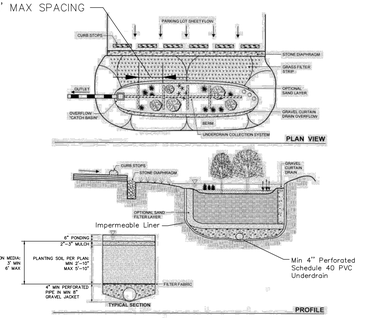
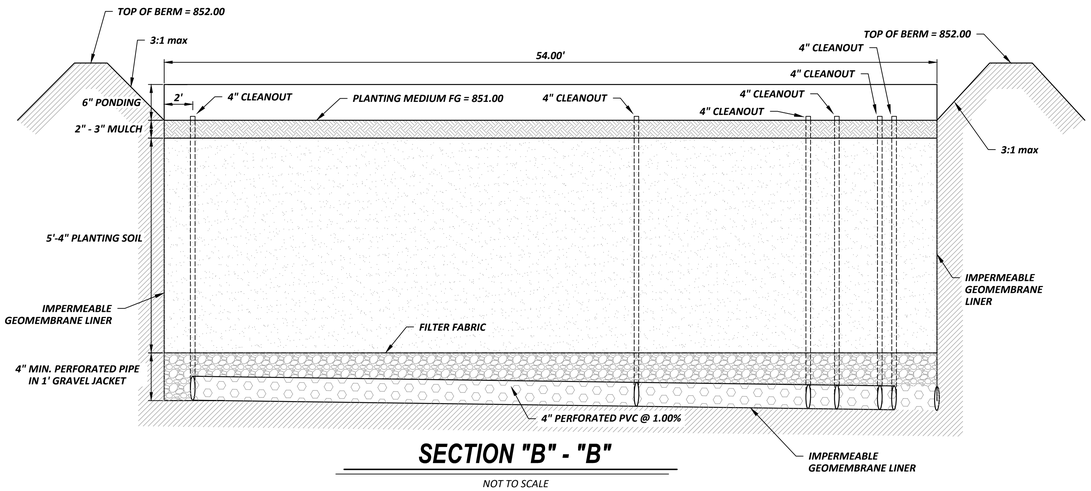
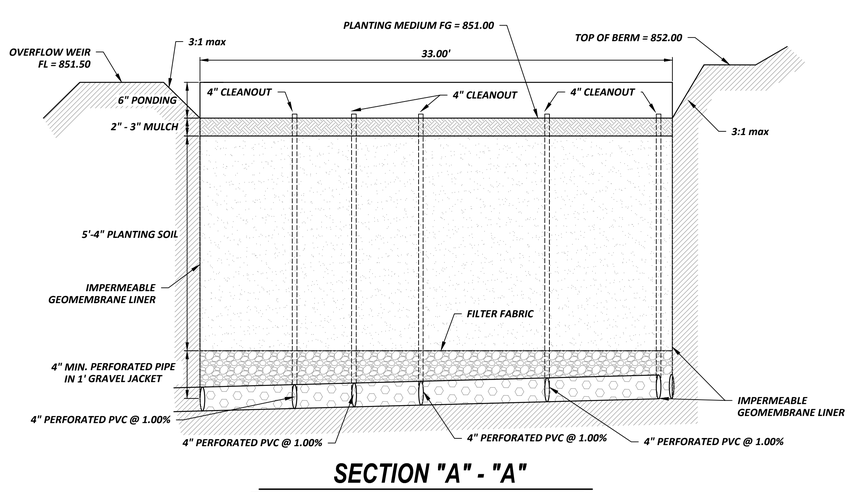


Figure 3-5 Schematic of a Bioretention Facility (MDE, 2000)

BIORETENTION DETAIL
COMPLYING WITH THE EDWARDS AQUIFER RULES TECHNICAL GUIDANCE ON BEST MANAGEMENT PRACTICES



SECTION "B" - "B"
NOT TO SCALE



SECTION "A" - "A"
NOT TO SCALE

Total Art Design & Architecture
Brett Davidson, AIA
193-1/2 West San Antonio St.
New Braunfels, TX 78130
(210) 885-7954

Structural: **Lehmann Engineering**
1006 Beckett
San Antonio, TX 78213
(210) 308-9905

MEP: **Cleary Zimmermann**
1344 S Flores St Suite 101
San Antonio, TX 78204
(210) 447-6100

Landscape: **Campbell Landscape Architecture**
608 W Monroe St
Austin, TX 78704
(512) 354-8288

Civil: **Quiddity Engineering**
2967 Oak Run Pkwy Suite 215
New Braunfels, TX 78132
(830)203-6630

BIORETENTION #5
EXHIBIT

REVISIONS

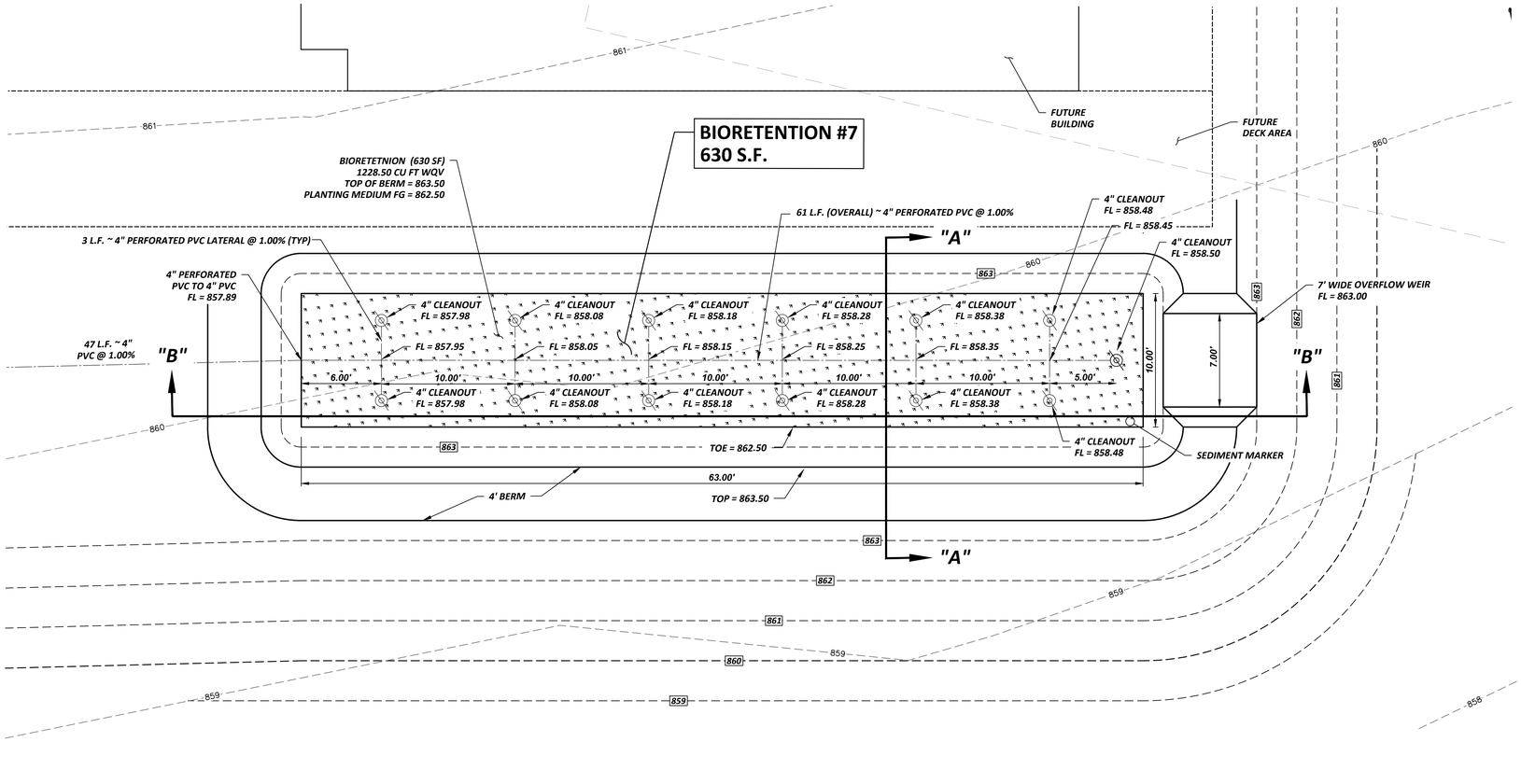
NO.	DATE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/16/2025

OWNER:
T Bar M

PROJECT NUMBER: 17758-0001-01
DATE September 2025

K:\17758\17758-0001-00 T Bar M - Camp Expansion\2 Design Phase\CAD\WPAP\VOID Addendum 1 - Never Submitted\17758-0001 T Bar M Bioretention 5 Addendum 1.dwg cj: September 15, 2025



EXISTING CONTOUR 850

PROPOSED CONTOUR 850

STORM DRAIN

ADA PATHWAY

BIORETENTION AREA

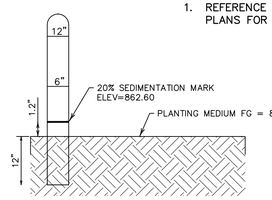
NATURAL VEGETATED FILTER STRIP

ENGINEERED VEGETATED FILTER STRIP

0 2.5 5 10 15

SCALE: 1" = 5'

NOTES:
1. REFERENCE SHEET 4 OF THE TCEQ "ATTACHMENT F" CONSTRUCTION PLANS FOR THE TSS REMOVAL CALCULATIONS



VERTICAL SEDIMENT MARKER

SCALE: N.T.S.

Notes:

1. FILTRATION MEDIA SHALL HAVE A MINIMUM THICKNESS OF 3 FT. SOIL MIXTURE OF 50–60% SAND; 20–30% COMPOST; AND 20–30% TOPSOIL.
2. ALL PIPING TO BE SCHEDULE 40 PVC.
3. PERFORATED PVC PIPE SHALL HAVE 1/4" TO 1/2" INCH OPENINGS SPACED 6 INCHES CENTER TO CENTER.
4. IMPERMEABLE GEOMEMBRANE LINER SHALL HAVE A MINIMUM THICKNESS OF 30 MILS AND BE ULTRAVIOLET RESISTANT.

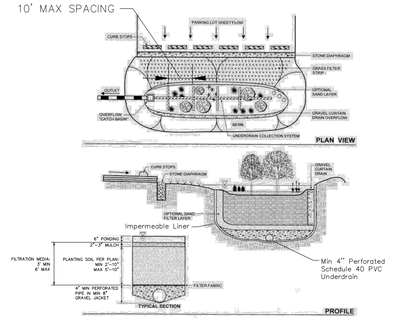
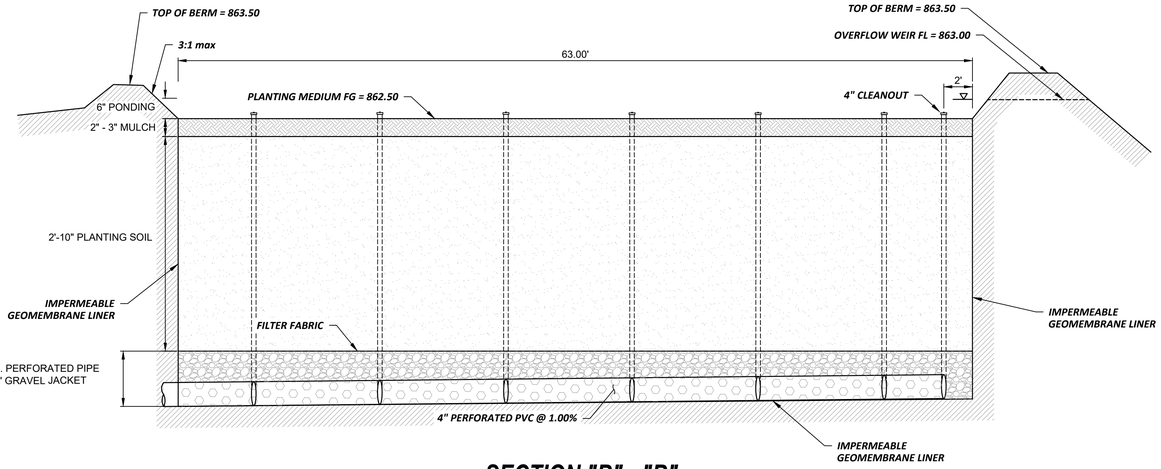


Figure 3-5 Schematic of a Bioretention Facility (MDE, 2000)

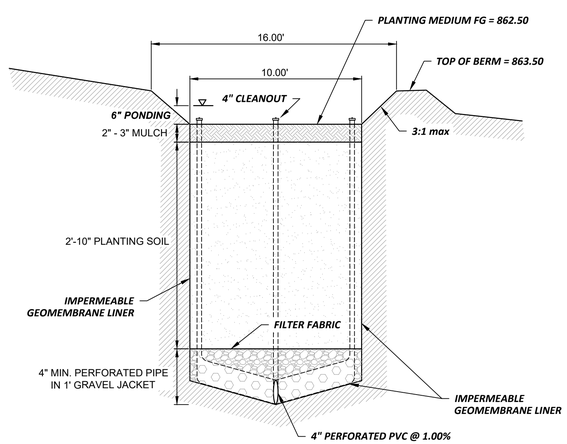
BIORETENTION DETAIL

COMPLYING WITH THE EDWARDS AQUIFER RULES TECHNICAL GUIDANCE ON BEST MANAGEMENT PRACTICES



SECTION "B" - "B"

NOT TO SCALE



SECTION "A" - "A"

NOT TO SCALE

Total Art Design & Architecture
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2967 Oak Run Pkwy Suite 215
New Braunfels, TX 78132
(830)203-6630

BIORETENTION #7 EXHIBIT

REVISIONS

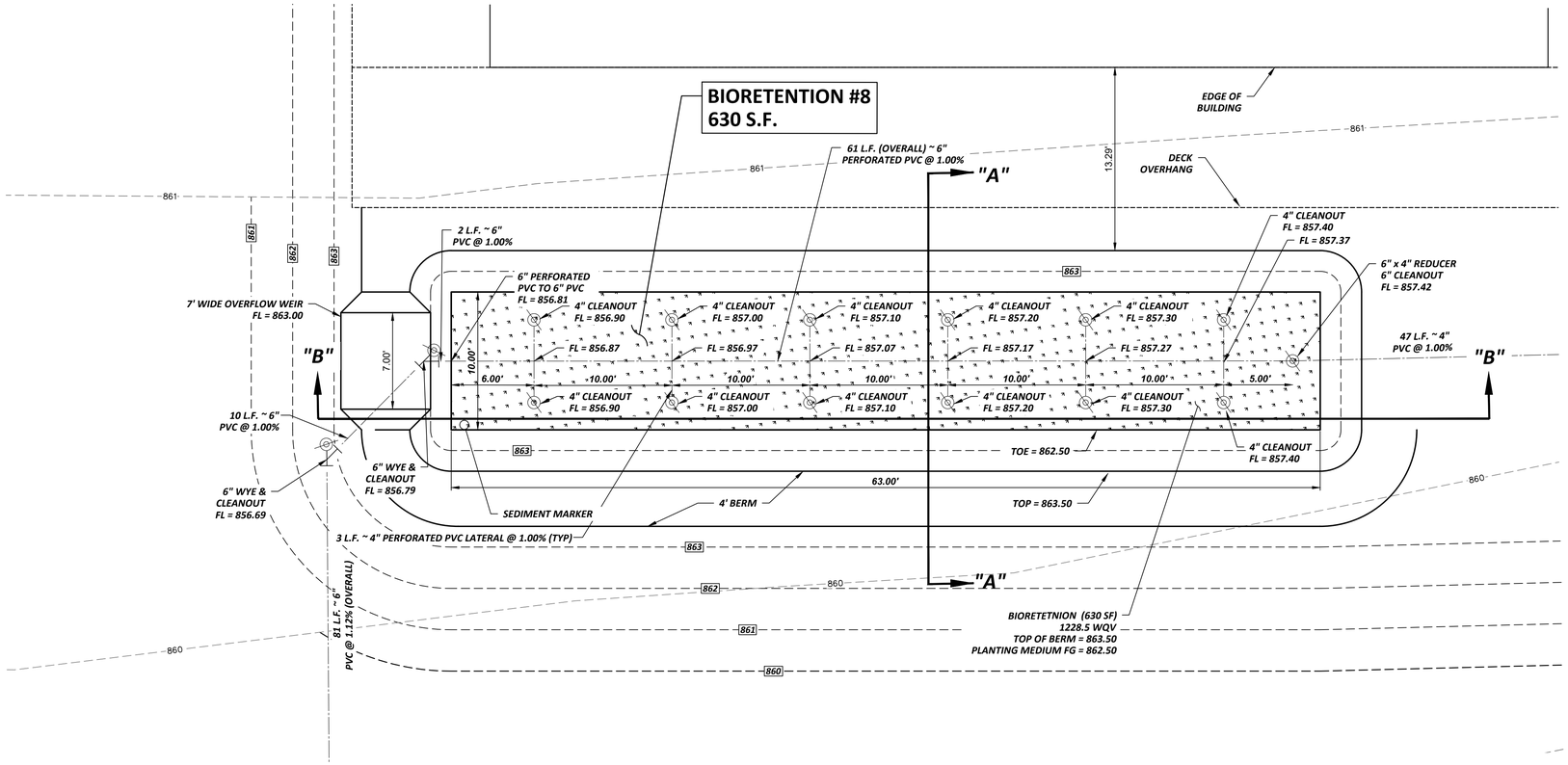
NO.	DATE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/18/2024

OWNER:
T Bar M

PROJECT NUMBER: 17758-0001-01
DATE 18 September 2024

K:\17758\17758-0001-01 Bar M - Camp Expansion\2 Design Phase\CAD\WIP\17758-0001 1 Bar M Bioretention 7.dwg maxvalo: September 18, 2024



EXISTING CONTOUR 850

PROPOSED CONTOUR 850

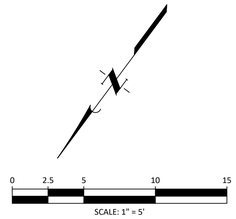
STORM DRAIN

ADA PATHWAY

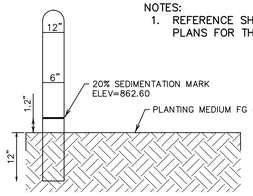
BIORETENTION AREA

NATURAL VEGETATED FILTER STRIP

ENGINEERED VEGETATED FILTER STRIP



NOTES:
1. REFERENCE SHEET 4 OF THE TCEQ "ATTACHMENT F" CONSTRUCTION PLANS FOR THE TSS REMOVAL CALCULATIONS



VERTICAL SEDIMENT MARKER

SCALE: N.T.S.

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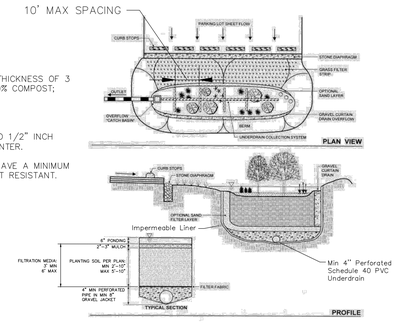
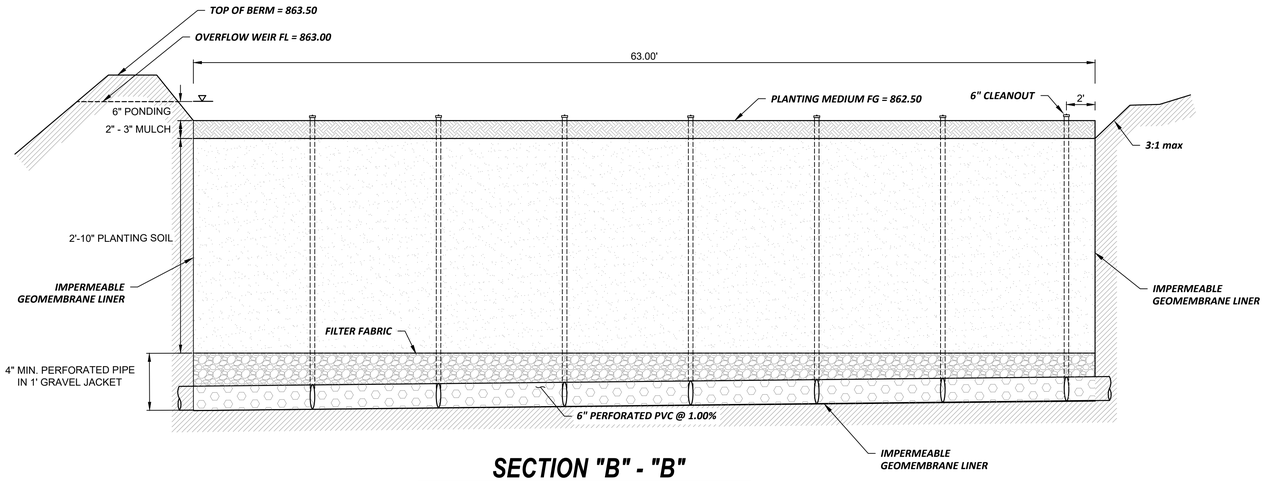


Figure 3-5 Schematic of a Bioretention Facility (MDE, 2000)

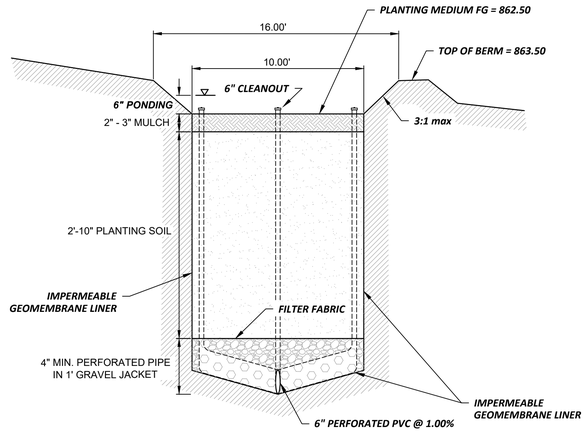
BIORETENTION DETAIL

COMPLIYING WITH THE EDWARDS AQUIFER RULES TECHNICAL GUIDANCE ON BEST MANAGEMENT PRACTICES



SECTION "B" - "B"

NOT TO SCALE



SECTION "A" - "A"

NOT TO SCALE

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2967 Oak Run Pkwy Suite 215
New Braunfels, TX 78132
(830)203-6630

BIORETENTION #8 EXHIBIT

REVISIONS

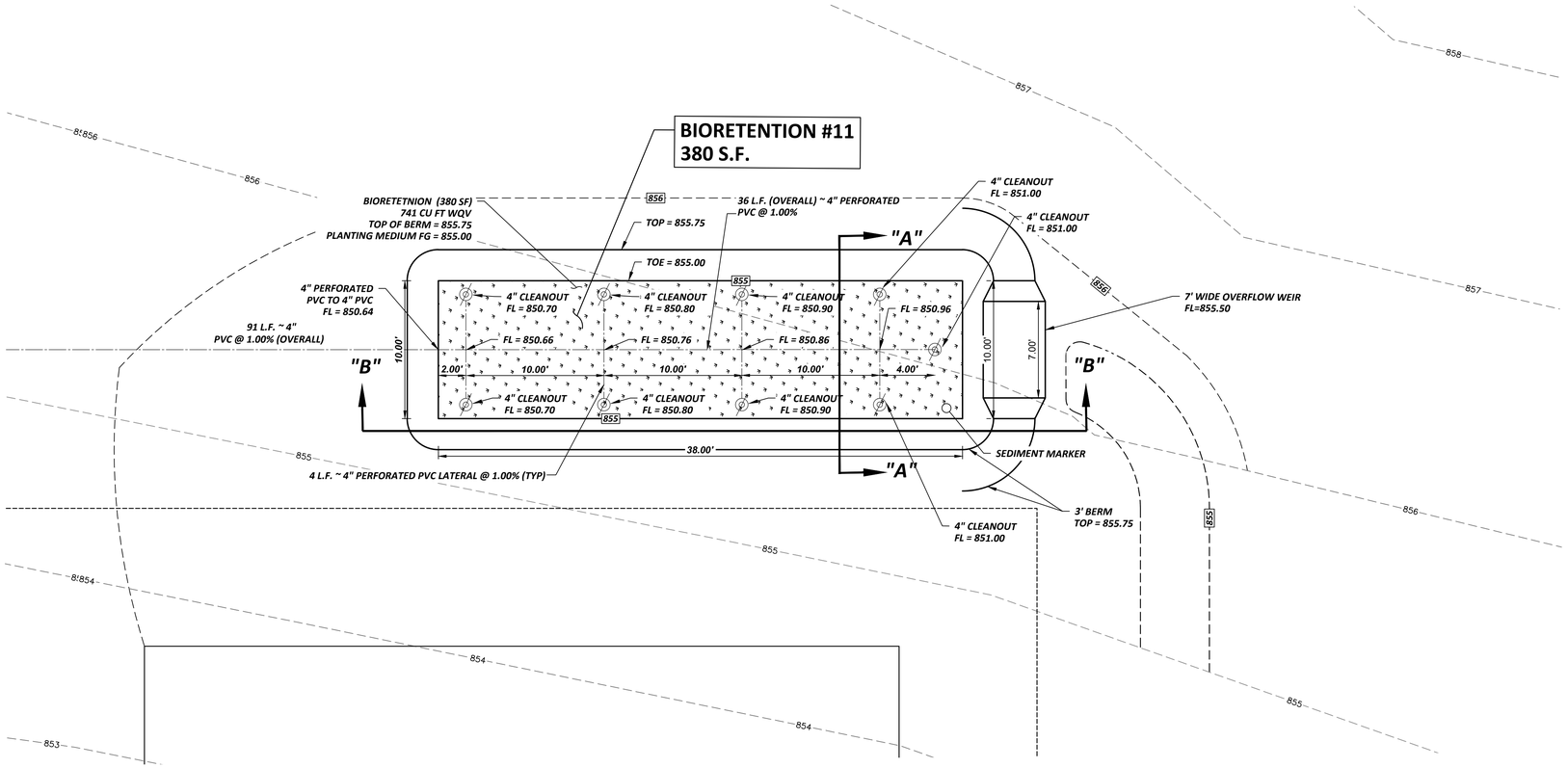
NO.	DATE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/18/2024

OWNER:
T Bar M

PROJECT NUMBER: 17758-0001-01
DATE 18 September 2024

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EXISTING CONTOUR 850

PROPOSED CONTOUR 850

STORM DRAIN

ADA PATHWAY

BIORETENTION AREA

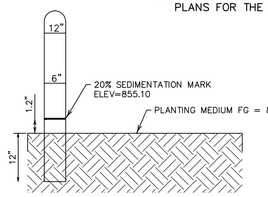
NATURAL VEGETATED FILTER STRIP

ENGINEERED VEGETATED FILTER STRIP

0 2.5 5 10 15

SCALE: 1" = 5'

NOTES:
1. REFERENCE SHEET 5 OF THE TCEQ "ATTACHMENT F" CONSTRUCTION PLANS FOR THE TSS REMOVAL CALCULATIONS



VERTICAL SEDIMENT MARKER

SCALE: N.T.S.

Notes:

1. FILTRATION MEDIA SHALL HAVE A MINIMUM THICKNESS OF 3 FT. SOIL MIXTURE OF 50–60% SAND; 20–30% COMPOST; AND 20–30% TOPSOIL.
2. ALL PIPING TO BE SCHEDULE 40 PVC.
3. PERFORATED PVC PIPE SHALL HAVE 1/4" TO 1/2" INCH OPENINGS SPACED 6 INCHES CENTER TO CENTER.
4. IMPERMEABLE GEOMEMBRANE LINER SHALL HAVE A MINIMUM THICKNESS OF 30 MILS AND BE ULTRAVIOLET RESISTANT.

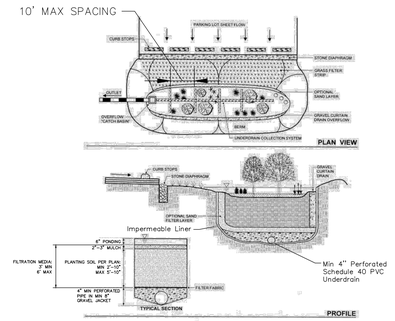
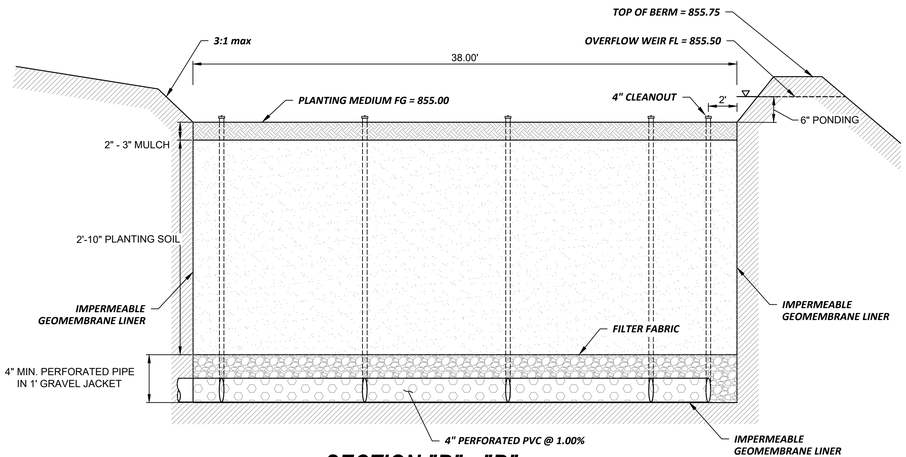


Figure 3-5 Schematic of a Bioretention Facility (MDE, 2000)

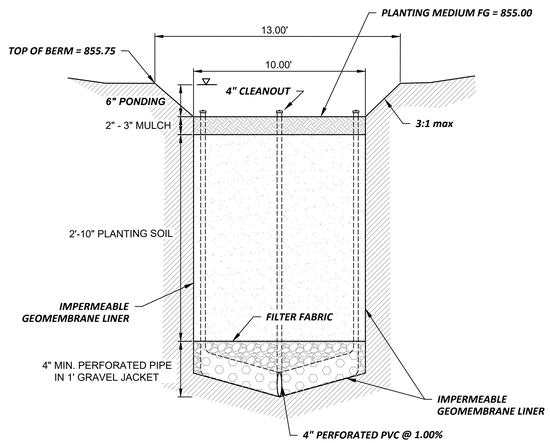
BIORETENTION DETAIL

COMPLYING WITH THE EDWARDS AQUIFER RULES TECHNICAL GUIDANCE ON BEST MANAGEMENT PRACTICES



SECTION "B" - "B"

NOT TO SCALE



SECTION "A" - "A"

NOT TO SCALE

Total Art Design & Architecture
Brett Davidson, AIA
193-1/2 West San Antonio St.
New Braunfels, TX 78130
(210) 885-7954

Structural: **Lehmann Engineering**
1006 Beckett
San Antonio, TX 78213
(210) 308-9905

MEP: **Cleary Zimmermann**
1344 S Flores St Suite 101
San Antonio, TX 78204
(210) 447-6100

Landscape: **Campbell Landscape Architecture**
608 W Monroe St
Austin, TX 78704
(512) 354-8288

Civil: **Quiddity Engineering**
2967 Oak Run Pkwy Suite 215
New Braunfels, TX 78132
(830)203-6630

BIORETENTION #11
EXHIBIT

REVISIONS

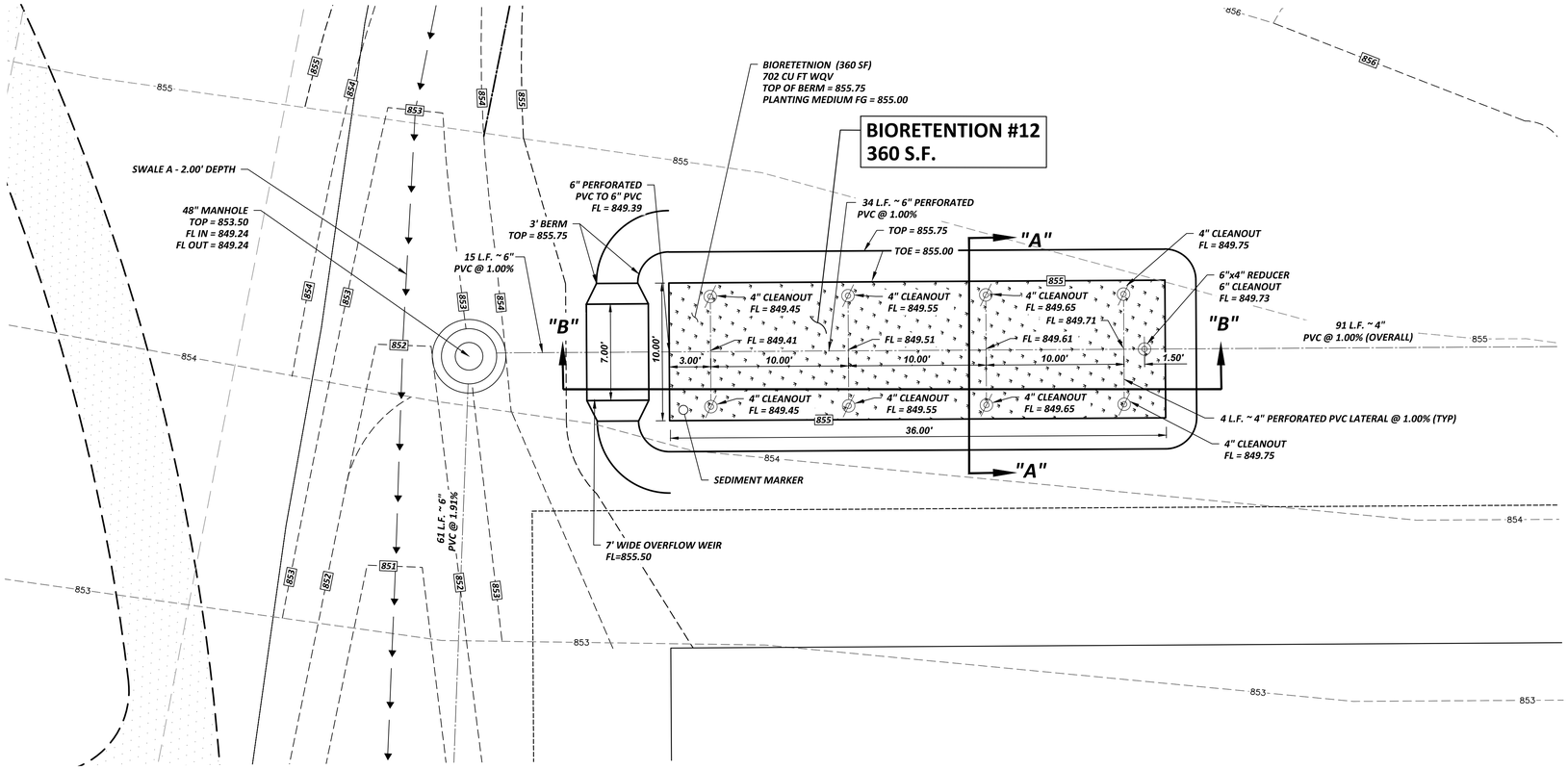
NO.	DATE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/18/2024

OWNER:
T Bar M

PROJECT NUMBER: 17758-0001-01
DATE 18 September 2024

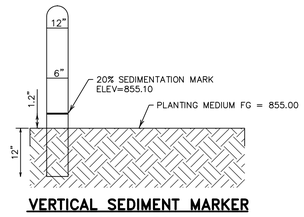
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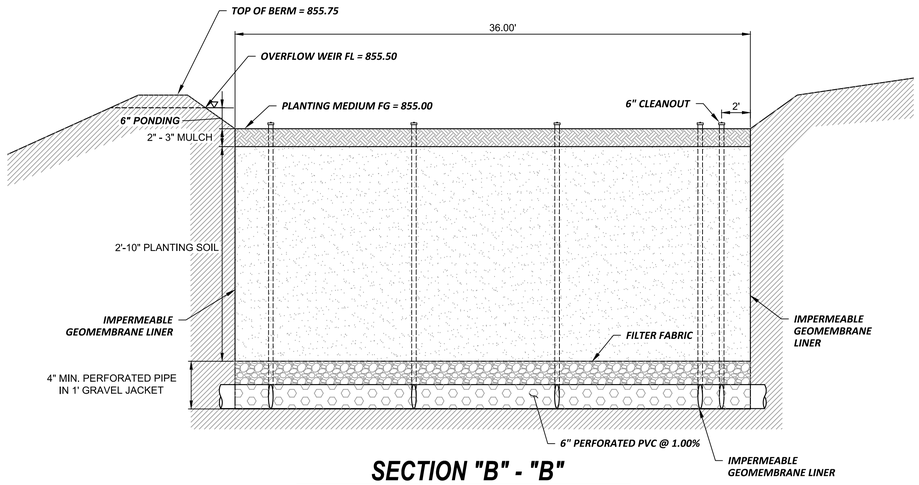
EXISTING CONTOUR
PROPOSED CONTOUR
STORM DRAIN
ADA PATHWAY
BIORETENTION AREA
NATURAL VEGETATED FILTER STRIP
ENGINEERED VEGETATED FILTER STRIP

0 2.5 5 10 15
SCALE: 1" = 5'

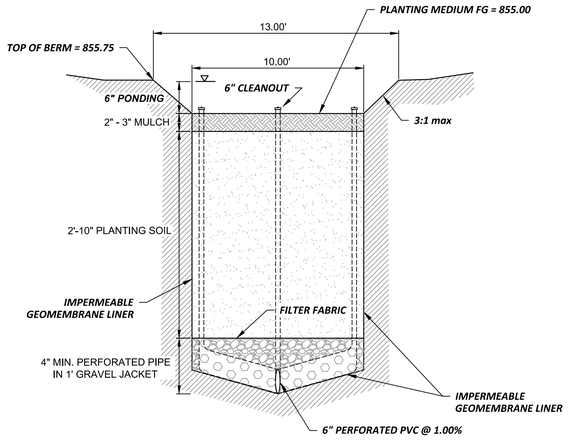
NOTES:
1. REFERENCE SHEET 6 OF THE TCEQ "ATTACHMENT F" CONSTRUCTION PLANS FOR THE TSS REMOVAL CALCULATIONS



VERTICAL SEDIMENT MARKER
SCALE: N.T.S.



SECTION "B" - "B"
NOT TO SCALE



SECTION "A" - "A"
NOT TO SCALE

Notes:
1. FILTRATION MEDIA SHALL HAVE A MINIMUM THICKNESS OF 3 FT. SOIL MIXTURE OF 50–60% SAND; 20–30% COMPOST; AND 20–30% TOPSOIL.
2. ALL PIPING TO BE SCHEDULE 40 PVC.
3. PERFORATED PVC PIPE SHALL HAVE 1/4" TO 1/2" INCH OPENINGS SPACED 6 INCHES CENTER TO CENTER.
4. IMPERMEABLE GEOMEMBRANE LINER SHALL HAVE A MINIMUM THICKNESS OF 30 MILS AND BE ULTRAVIOLET RESISTANT.

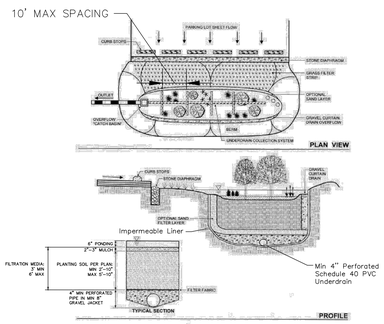


Figure 3-5 Schematic of a Bioretention Facility (MDE, 2000)

BIORETENTION DETAIL
COMPLYING WITH THE EDWARDS AQUIFER RULES TECHNICAL GUIDANCE ON BEST MANAGEMENT PRACTICES

Total Art Design & Architecture
Brett Davidson, AIA
193-1/2 West San Antonio St.
New Braunfels, TX 78130
(210) 885-7954

Structural: **Lehmann Engineering**
1006 Beckett
San Antonio, TX 78213
(210) 308-9905

MEP: **Cleary Zimmermann**
1344 S Flores St Suite 101
San Antonio, TX 78204
(210) 447-6100

Landscape: **Campbell Landscape Architecture**
608 W Monroe St
Austin, TX 78704
(512) 354-8288

Civil: **Quiddity Engineering**
2967 Oak Run Pkwy Suite 215
New Braunfels, TX 78132
(830)203-6630

BIORETENTION #12 EXHIBIT

REVISIONS

NO.	DATE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED
PROFESSIONAL ENGINEER
9/18/2024

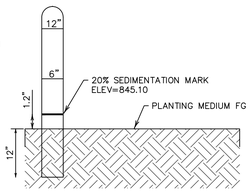
OWNER:
T Bar M

PROJECT NUMBER: 17758-0001-01
DATE 18 September 2024

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Notes:

1. FILTRATION MEDIA SHALL HAVE A MINIMUM THICKNESS OF 3 FT. SOIL MIXTURE OF 50-60% SAND; 20-30% COMPOST; AND 20-30% TOPSOIL.
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4. IMPERMEABLE GEOMEMBRANE LINER SHALL HAVE A MINIMUM THICKNESS OF 30 MILS AND BE ULTRAVIOLET RESISTANT.



VERTICAL SEDIMENT MARKER

SCALE: N.T.S.

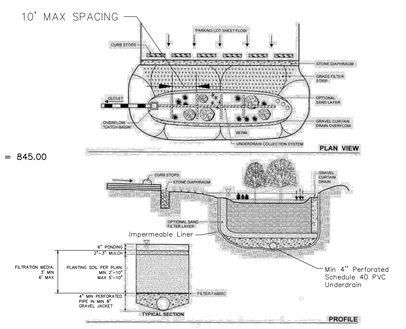
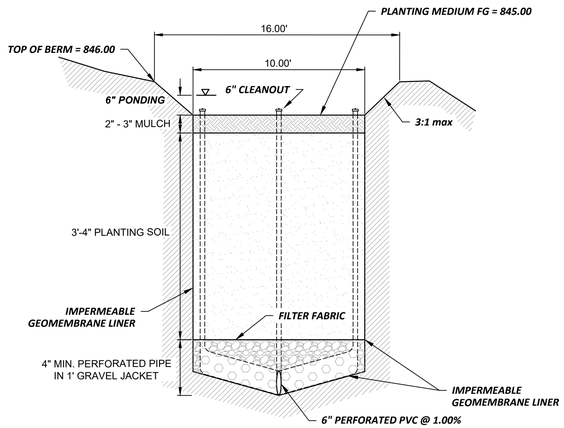


Figure 3-5 Schematic of a Bioretention Facility (MDE, 2000)

BIORETENTION DETAIL

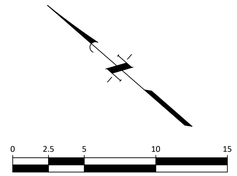
COMPLYING WITH THE EDWARDS AQUIFER RULES TECHNICAL GUIDANCE ON BEST MANAGEMENT PRACTICES



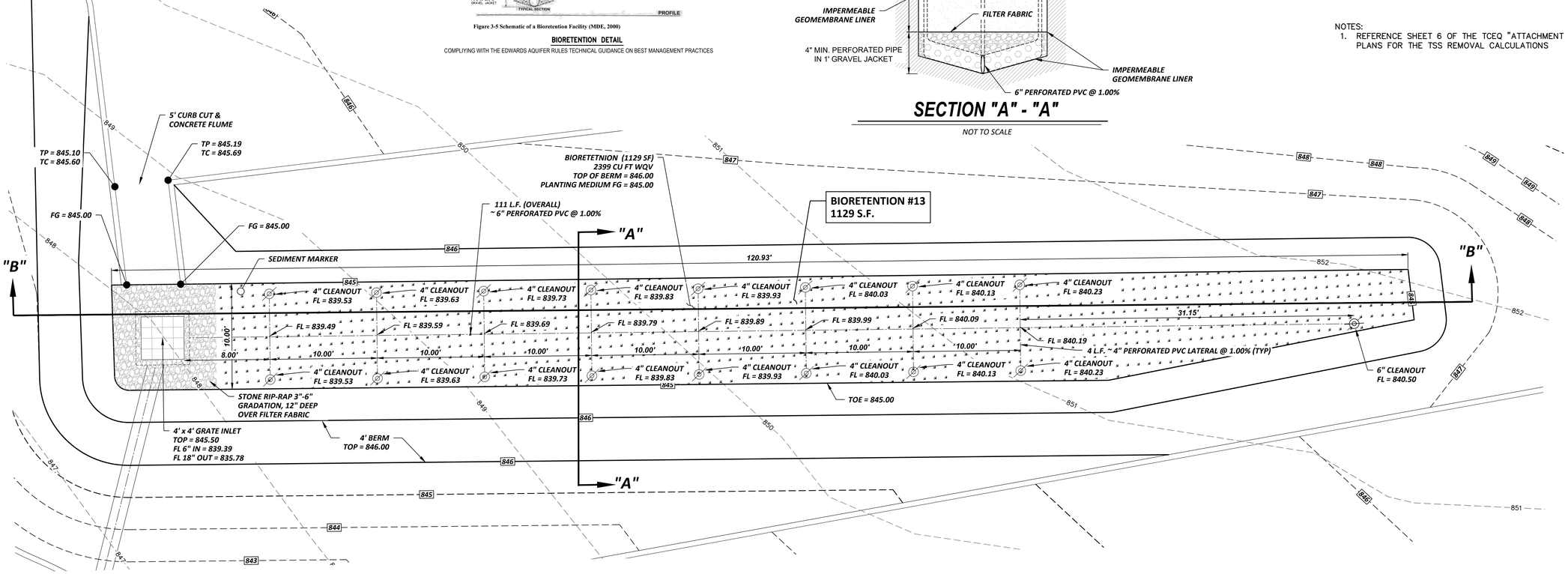
SECTION "A" - "A"

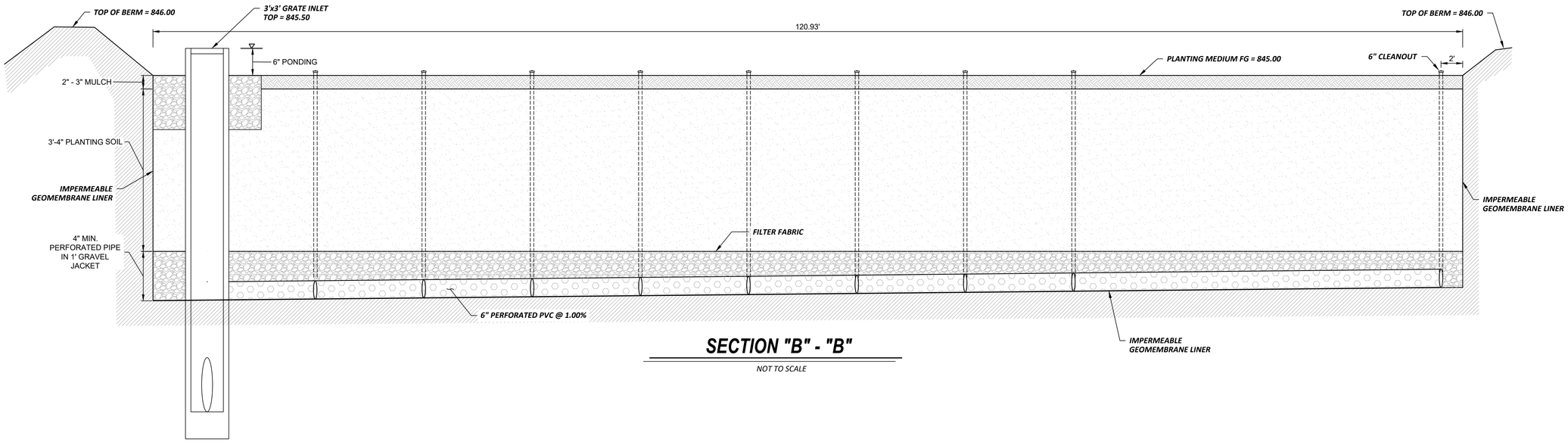
NOT TO SCALE

EXISTING CONTOUR 850
PROPOSED CONTOUR 850
STORM DRAIN
ADA PATHWAY
BIORETENTION AREA
NATURAL VEGETATED FILTER STRIP
ENGINEERED VEGETATED FILTER STRIP



NOTES:
1. REFERENCE SHEET 6 OF THE TCEQ "ATTACHMENT F" CONSTRUCTION PLANS FOR THE TSS REMOVAL CALCULATIONS





SECTION "B" - "B"

NOT TO SCALE

Total Art Design & Architecture
Brett Davidson, AIA
193-1/2 West San Antonio St.
New Braunfels, TX 78130
(210) 885-7954

Structural: **Lehmann Engineering**
1006 Beckett
San Antonio, TX 78213
(210) 308-9905

MEP: **Cleary Zimmermann**
1344 S Flores St Suite 101
San Antonio, TX 78204
(210) 447-6100

Landscape: **Campbell Landscape Architecture**
608 W Monroe St
Austin, TX 78704
(512) 354-8288

Civil: **Quiddity Engineering**
2967 Oak Run Pkwy Suite 215
New Braunfels, TX 78132
(830)203-6630

BIORETENTION #13
EXHIBIT

REVISIONS

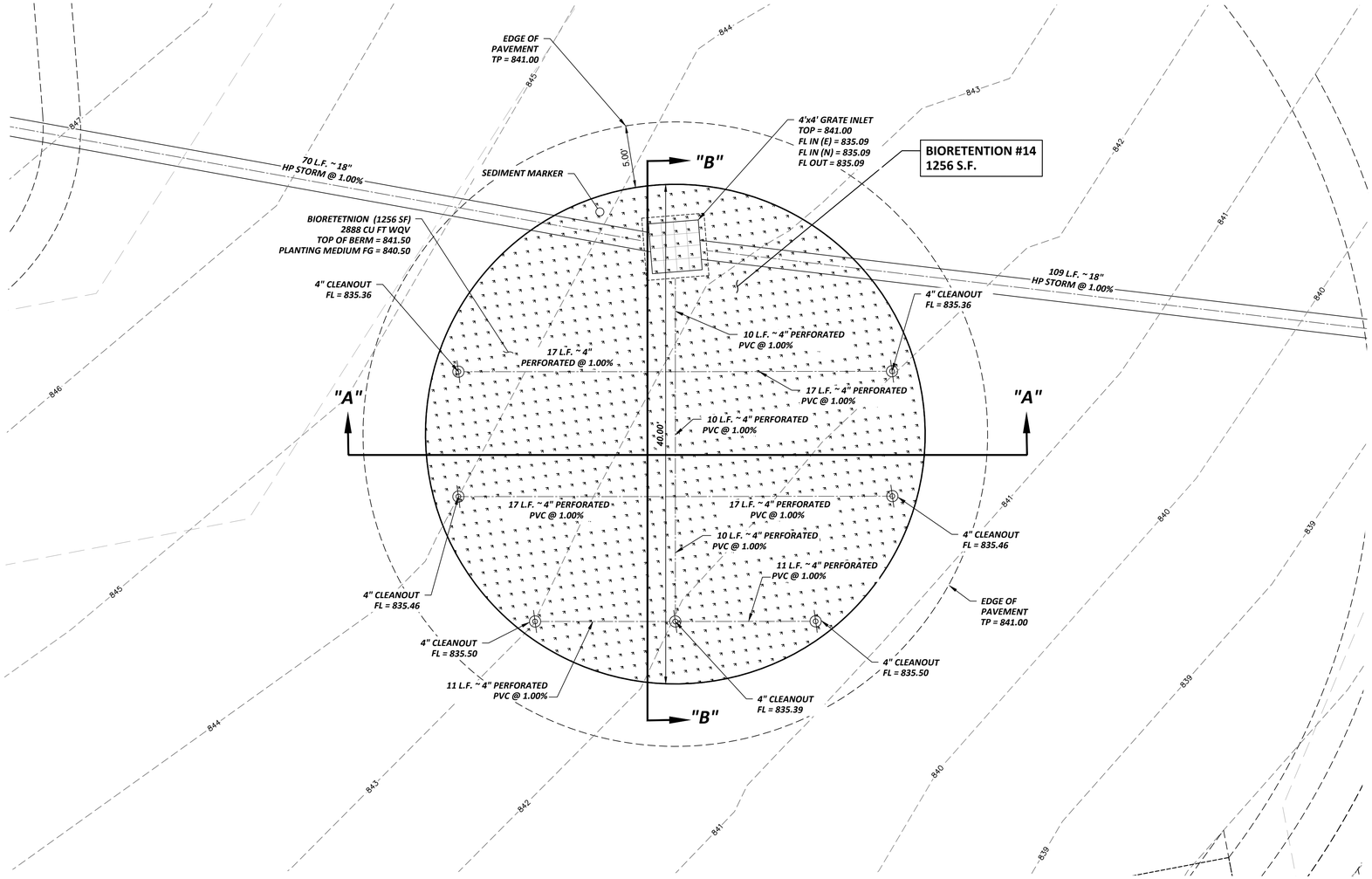
NO.	DATE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/18/2024

OWNER:
T Bar M

PROJECT NUMBER: 17758-0001-01
DATE 18 September 2024

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EXISTING CONTOUR 850

PROPOSED CONTOUR 850

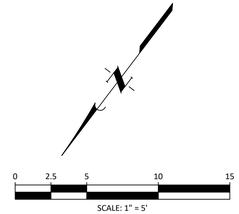
STORM DRAIN

ADA PATHWAY

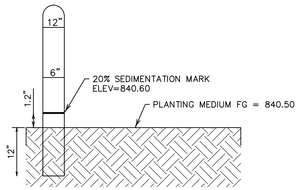
BIORETENTION AREA

NATURAL VEGETATED FILTER STRIP

ENGINEERED VEGETATED FILTER STRIP



NOTES:
1. REFERENCE SHEET 6 OF THE TCEQ "ATTACHMENT F" CONSTRUCTION PLANS FOR THE TSS REMOVAL CALCULATIONS



VERTICAL SEDIMENT MARKER

SCALE: N.T.S.

Notes:

1. FILTRATION MEDIA SHALL HAVE A MINIMUM THICKNESS OF 3 FT. SOIL MIXTURE OF 50–60% SAND; 20–30% COMPOST; AND 20–30% TOPSOIL.
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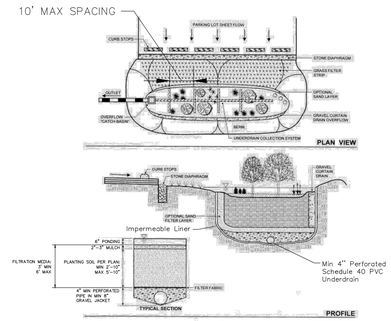
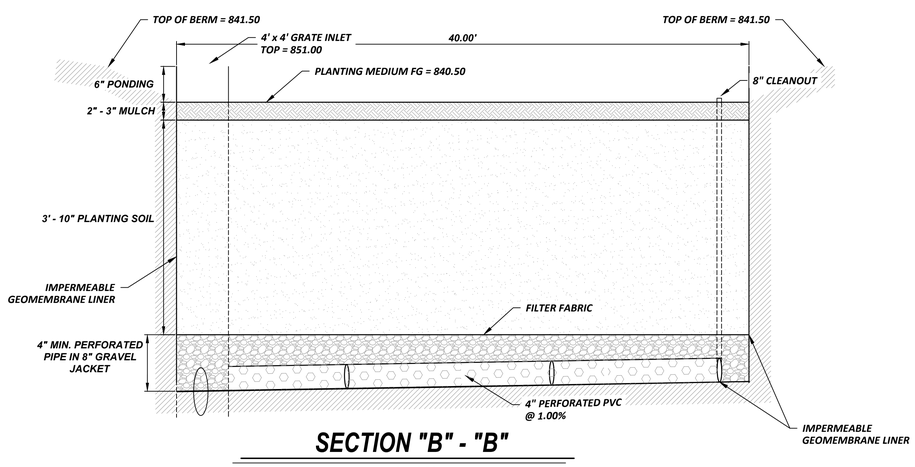


Figure 3-5 Schematic of a Bioretention Facility (MDE, 2000)

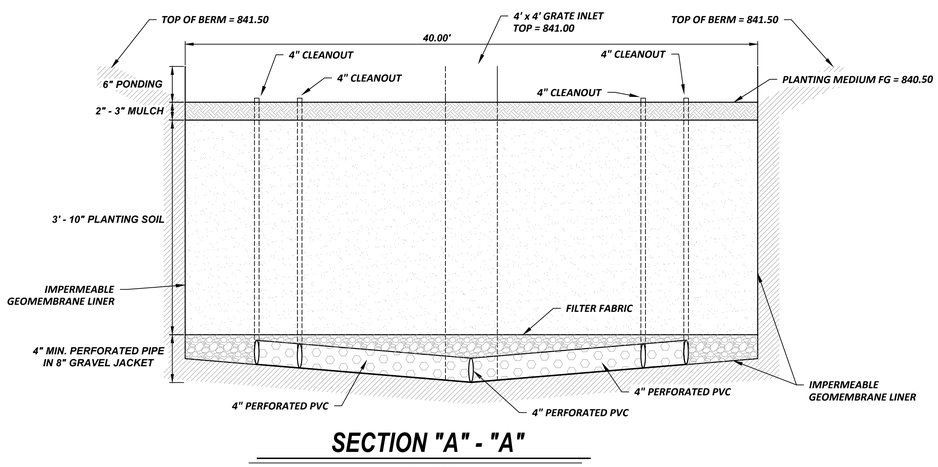
BIORETENTION DETAIL

COMPLYING WITH THE EDWARDS AQUIFER RULES TECHNICAL GUIDANCE ON BEST MANAGEMENT PRACTICES



SECTION "B" - "B"

NOT TO SCALE



SECTION "A" - "A"

NOT TO SCALE

Total Art Design & Architecture
Brett Davidson, AIA
193-1/2 West San Antonio St.
New Braunfels, TX 78130
(210) 885-7954

Structural: **Lehmann Engineering**
1006 Beckett
San Antonio, TX 78213
(210) 308-9905

MEP: **Cleary Zimmermann**
1344 S Flores St Suite 101
San Antonio, TX 78204
(210) 447-6100

Landscape: **Campbell Landscape Architecture**
608 W Monroe St
Austin, TX 78704
(512) 354-8288

Civil: **Quiddity Engineering**
2967 Oak Run Pkwy Suite 215
New Braunfels, TX 78132
(830)203-6630

BIORETENTION #14 EXHIBIT

REVISIONS

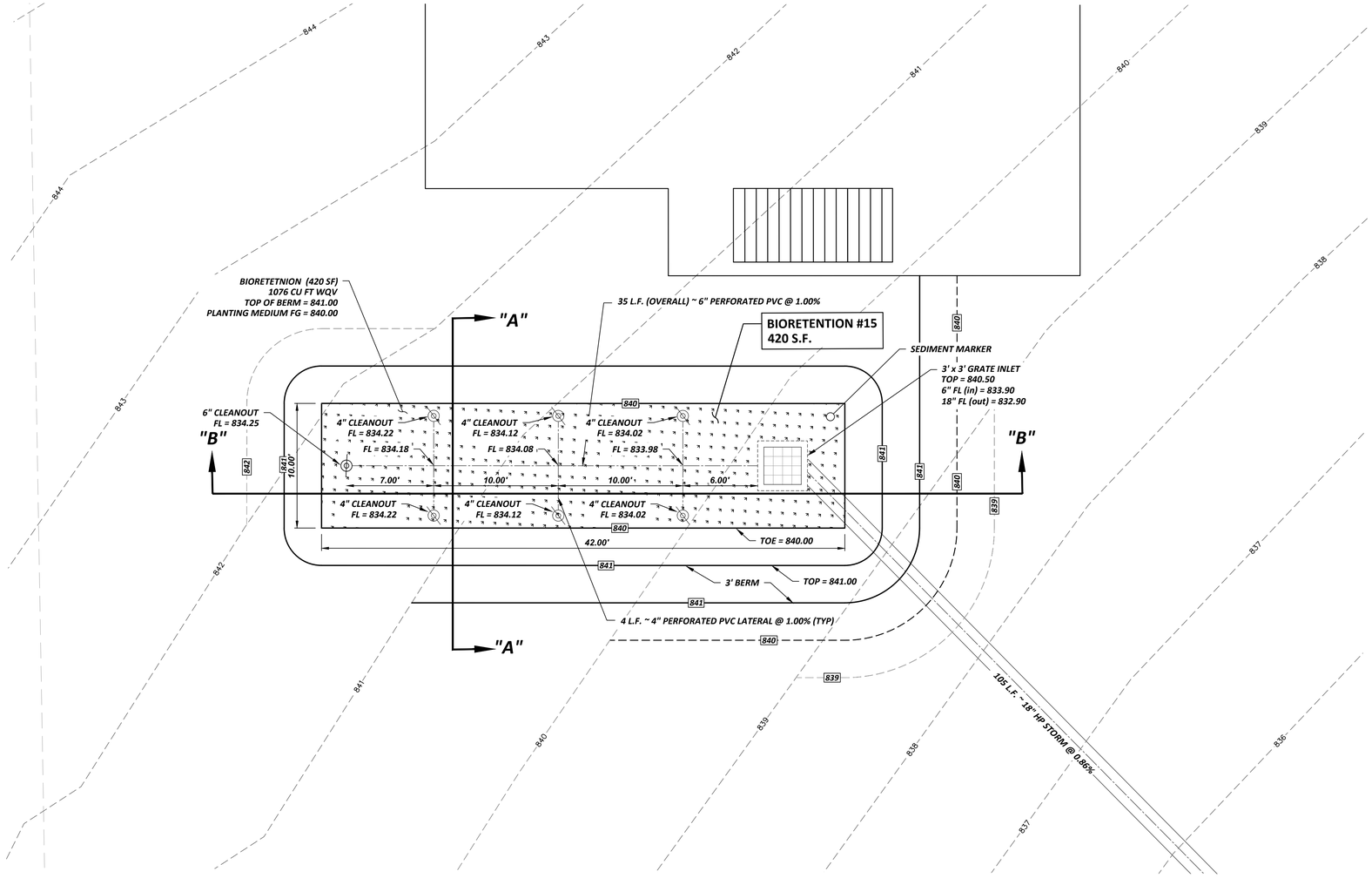
NO.	DATE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/18/2024

OWNER:
T Bar M

PROJECT NUMBER: 17758-0001-01
DATE 18 September 2024

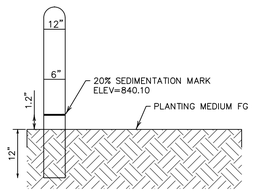
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EXISTING CONTOUR
PROPOSED CONTOUR
STORM DRAIN
ADA PATHWAY
BIORETENTION AREA
NATURAL VEGETATED FILTER STRIP
ENGINEERED VEGETATED FILTER STRIP

0 2.5 5 10 15
SCALE: 1" = 5'

NOTES:
1. REFERENCE SHEET 7 OF THE TCEQ "ATTACHMENT F" CONSTRUCTION PLANS FOR THE TSS REMOVAL CALCULATIONS



VERTICAL SEDIMENT MARKER
SCALE: N.T.S.

Notes:
1. FILTRATION MEDIA SHALL HAVE A MINIMUM THICKNESS OF 3 FT. SOIL MIXTURE OF 50-60% SAND; 20-30% COMPOST; AND 20-30% TOPSOIL.
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3. PERFORATED PVC PIPE SHALL HAVE 1/4" TO 1/2" INCH OPENINGS SPACED 6 INCHES CENTER TO CENTER.
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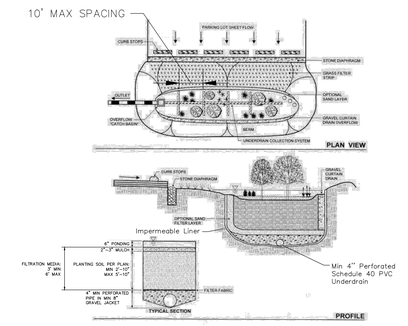
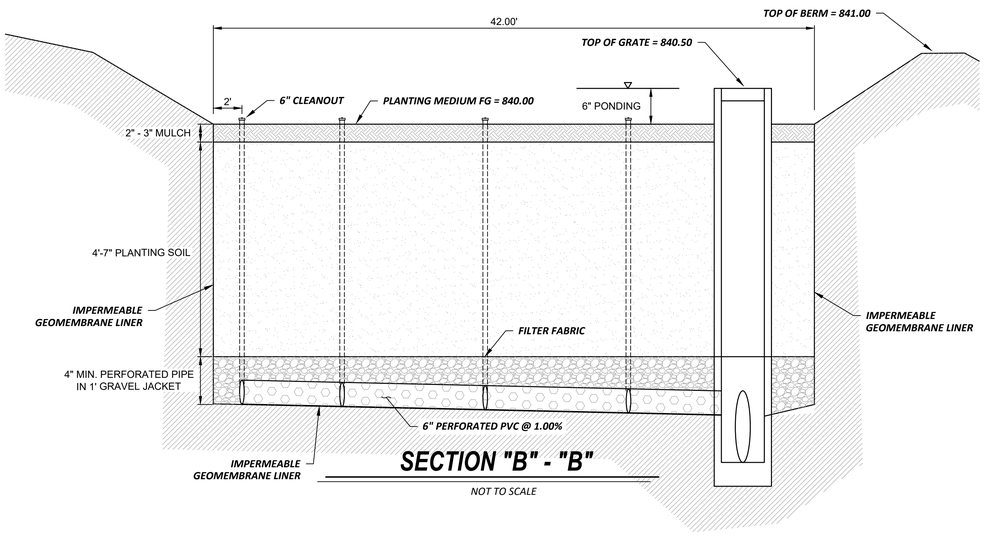
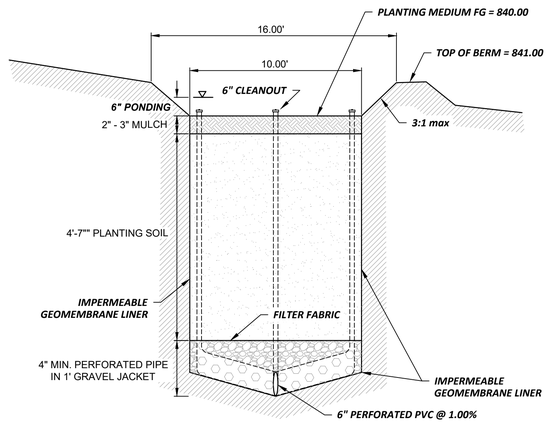


Figure 3-5 Schematic of a Bioretention Facility (MDE, 2000)

BIORETENTION DETAIL
COMPLIYING WITH THE EDWARDS AQUIFER RULES TECHNICAL GUIDANCE ON BEST MANAGEMENT PRACTICES



SECTION "B" - "B"
NOT TO SCALE



SECTION "A" - "A"
NOT TO SCALE

Total Art Design & Architecture
Brett Davidson, AIA
193-1/2 West San Antonio St.
New Braunfels, TX 78130
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Austin, TX 78704
(512) 354-8288

Civil: **Quiddity Engineering**
2967 Oak Run Pkwy Suite 215
New Braunfels, TX 78132
(830)203-6630

BIORETENTION #15
EXHIBIT

REVISIONS

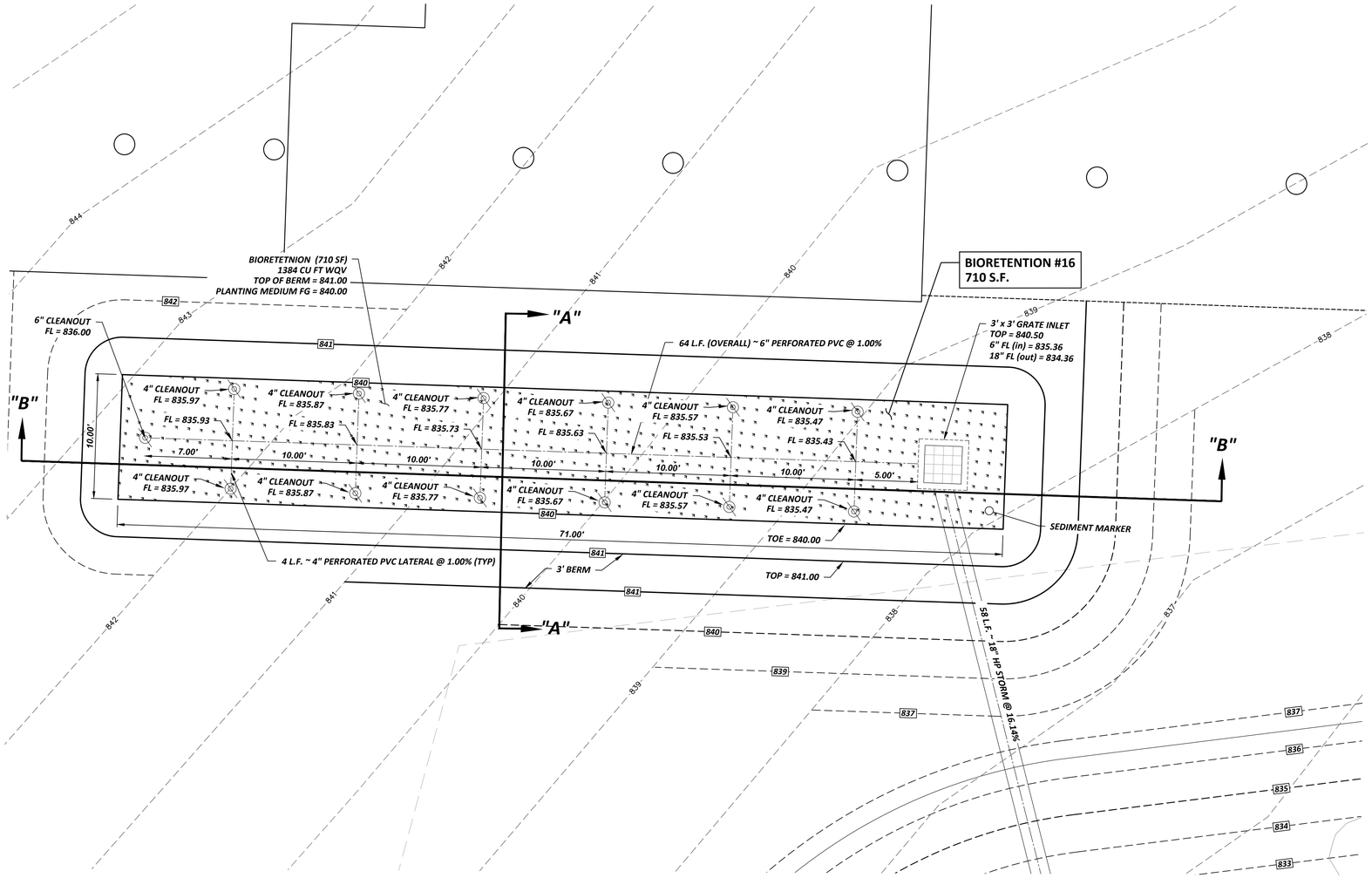
NO.	DATE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/18/2024

OWNER:
T Bar M

PROJECT NUMBER: 17758-0001-01
DATE 18 September 2024

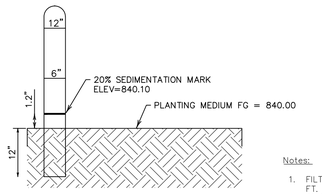
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EXISTING CONTOUR
PROPOSED CONTOUR
STORM DRAIN
ADA PATHWAY
BIORETENTION AREA
NATURAL VEGETATED FILTER STRIP
ENGINEERED VEGETATED FILTER STRIP

0 2.5 5 10 15
SCALE: 1" = 5'

NOTES:
1. REFERENCE SHEET 7 OF THE TCEQ "ATTACHMENT F" CONSTRUCTION PLANS FOR THE TSS REMOVAL CALCULATIONS



VERTICAL SEDIMENT MARKER
SCALE: N.T.S.

Notes:
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3. PERFORATED PVC PIPE SHALL HAVE 1/4" TO 1/2" INCH OPENINGS SPACED 6 INCHES CENTER TO CENTER.
4. IMPERMEABLE GEOMEMBRANE LINER SHALL HAVE A MINIMUM THICKNESS OF 30 MILS AND BE ULTRAVIOLET RESISTANT.

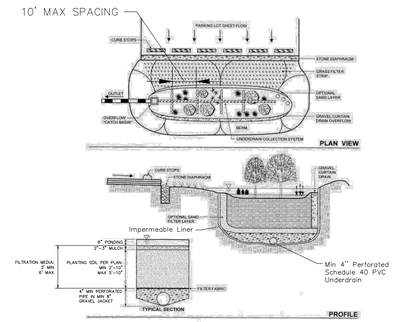
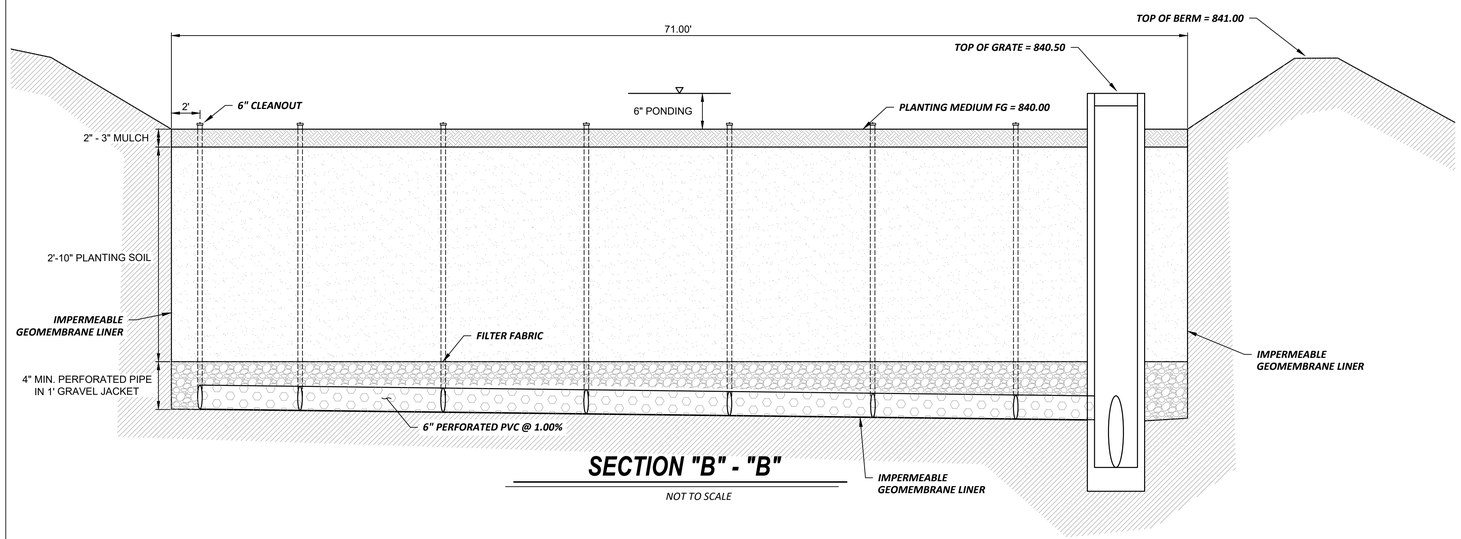
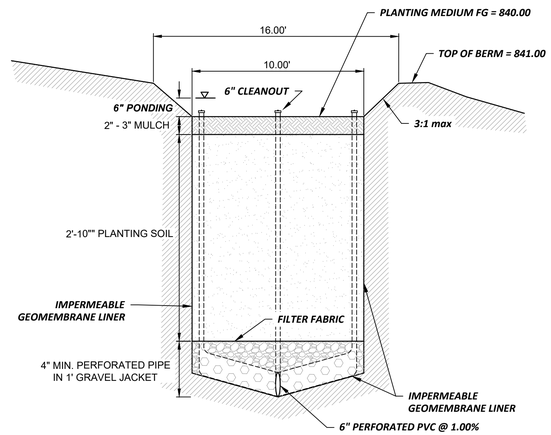


Figure 3-5 Schematic of a Bioretention Facility (MDE, 2000)

BIORETENTION DETAIL
COMPLYING WITH THE EDWARDS AQUIFER RULES TECHNICAL GUIDANCE ON BEST MANAGEMENT PRACTICES



SECTION "B" - "B"
NOT TO SCALE



SECTION "A" - "A"
NOT TO SCALE

Total Art Design & Architecture
Brett Davidson, AIA
193-1/2 West San Antonio St.
New Braunfels, TX 78130
(210) 885-7954

Structural: **Lehmann Engineering**
1006 Beckett
San Antonio, TX 78213
(210) 308-9905

MEP: **Cleary Zimmermann**
1344 S Flores St Suite 101
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Landscape: **Campbell Landscape Architecture**
608 W Monroe St
Austin, TX 78704
(512) 354-8288

Civil: **Quiddity Engineering**
2967 Oak Run Pkwy Suite 215
New Braunfels, TX 78132
(830)203-6630

BIORETENTION #16 EXHIBIT

REVISIONS

NO.	DATE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/18/2024

OWNER:
T Bar M

PROJECT NUMBER: 17758-0001-01
DATE 18 September 2024

K:\17758\17758-0001-001 Bar M - Camp Expansion\2 Design Phase\CAD\.WPAP\.17758-0001 T Bar M Bioretention 16.dwg mayala September 18, 2024

Tc (Post Development)

Note

*Minimum Time of Concentration is 10 min per City of New Braunfels Drainage and Erosion Control Design Manual

				T_t (up to 100 ft)			T_{ch} (L > 100 ft)			
DA	Area (ac.)	Slope (ft/ft)	L_{total} (ft)	L_1 (ft)	n	T_t	L_2 (ft)	K	T_{ch}	$T_{c,total}$
A-5	2.20	0.014	519	100	0.015	10.00	419	20.328	2.91	12.91
A-7	0.18	0.020	104	100	0.015	10.00	4	20.328	0.02	10.02
A-8	0.18	0.020	112	100	0.015	10.00	12	20.328	0.07	10.07
A-11	0.20	0.020	113	100	0.015	10.00	13	20.328	0.08	10.08
A-12	0.23	0.020	107	100	0.015	10.00	7	20.328	0.04	10.04
A-13	0.68	0.054	259	100	0.015	10.00	159	20.328	0.56	10.56
A-14	0.64	0.054	332	100	0.015	10.00	232	20.328	0.82	10.82
A-15	0.30	0.020	207	100	0.015	10.00	107	20.328	0.62	10.62
A-16	0.34	0.020	155	100	0.015	10.00	55	20.328	0.32	10.32

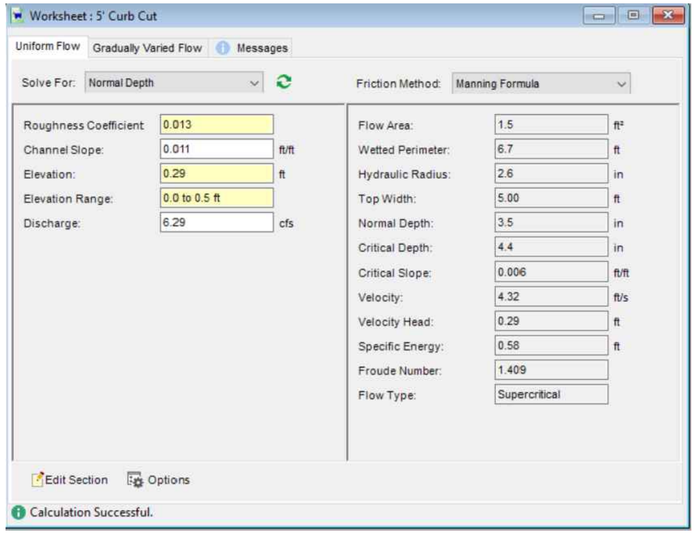
C Values	2-yr	25-yr	50-yr	100-yr
C undevloped Pasture Average Slope	0.33	0.42	0.45	0.49
C asphalt	0.73	0.86	0.90	0.97

FLOWS (Post Development)

* C pervious = C undeveloped pasture average slope per Table 4-2 in the City of New Bruanfels Drainage and Erosion Control Design Manual

* C impervious = C asphalt

DA	Area (ac.)	T_c	Impervious Cover %	C 2-yr	C 25-yr	C 50-yr	C 100-yr	I 2-yr, in/hr	I 25-yr, in/hr	I 50-yr, in/hr	I 100-yr, in/hr	Q_2, CFS	Q_{25}, CFS	Q_{50}, CFS	Q_{100}, CFS
A-5	2.20	12.91	47.27	0.53	0.64	0.67	0.73	4.58	8.13	9.24	10.39	5.32	11.40	13.67	16.63
A-7	0.18	10.02	77.78	0.64	0.76	0.80	0.86	5.05	9.01	10.29	11.59	0.58	1.24	1.48	1.80
A-8	0.18	10.07	77.78	0.64	0.76	0.80	0.86	5.04	9.00	10.27	11.57	0.58	1.23	1.48	1.80
A-11	0.20	10.08	75.00	0.63	0.75	0.79	0.85	5.04	9.00	10.27	11.57	0.63	1.35	1.62	1.97
A-12	0.23	10.04	65.22	0.59	0.71	0.74	0.80	5.04	9.01	10.29	11.58	0.69	1.46	1.76	2.14
A-13	0.68	10.56	72.06	0.62	0.74	0.77	0.84	4.96	8.85	10.09	11.37	2.08	4.43	5.31	6.46
A-14	0.64	10.82	84.38	0.67	0.79	0.83	0.90	4.92	8.77	10.00	11.26	2.10	4.44	5.31	6.45
A-15	0.30	10.62	73.33	0.62	0.74	0.78	0.84	4.95	8.83	10.07	11.34	0.93	1.97	2.36	2.86
A-16	0.34	10.32	79.41	0.65	0.77	0.81	0.87	5.00	8.92	10.18	11.47	1.10	2.33	2.80	3.40



GRATE INLETS

Weir coefficient = 3

Clogging Factor = 50.00%

	Inlet Area (Sq.Ft.)						
L	4.0	5.0	7.0	8.0	10.0	3.0	3-GRATE
P	16.00	20.00	28.00	32.00	40.00	12.00	16
Depth (ft.)	Inlet Capacity in CFS						
0.05	0.27	0.34	0.47	0.54	0.67	0.20	0.27
0.10	0.76	0.95	1.33	1.52	1.90	0.57	0.76
0.15	1.39	1.74	2.44	2.79	3.49	1.05	1.39
0.20	2.15	2.68	3.76	4.29	5.37	1.61	2.15
0.25	3.00	3.75	5.25	6.00	7.50	2.25	3.00
0.30	3.94	4.93	6.90	7.89	9.86	2.96	3.94
0.35	4.97	6.21	8.70	9.94	12.42	3.73	4.97
0.40	6.07	7.59	10.63	12.14	15.18	4.55	6.07
0.45	7.24	9.06	12.68	14.49	18.11	5.43	7.24
0.50	8.49	10.61	14.85	16.97	21.21	6.36	8.49
0.55	9.79	12.24	17.13	19.58	24.47	7.34	9.79
0.60	11.15	13.94	19.52	22.31	27.89	8.37	11.15
0.65	12.58	15.72	22.01	25.15	31.44	9.43	12.58
0.70	14.06	17.57	24.60	28.11	35.14	10.54	14.06
0.75	15.59	19.49	27.28	31.18	38.97	11.69	15.59
0.80	17.17	21.47	30.05	34.35	42.93	12.88	17.17
0.85	18.81	23.51	32.91	37.62	47.02	14.11	18.81
0.90	20.49	25.61	35.86	40.98	51.23	15.37	20.49
0.95	22.22	27.78	38.89	44.45	55.56	16.67	22.22
1.00	24.00	30.00	42.00	48.00	60.00	18.00	24.00

Structure	Size	100 yr Q req (cfs)	100 yr prov Q req (cfs)
A-13	4' x 4'	6.46	8.49
A-14	4' x 4'	6.45	8.49
A-15	3' x 3'	2.86	6.36
A-16	3' x 3'	3.40	6.36

STORM WATER QUALITY DESIGN

Intensity = 1.10 in/hr

Drainage Area	Inlet / MH From	Inlet / MH To	Area (acres)	Total Area (acres)	Time Conc. (min)	Runoff C_{25}	C_{25} (Weighted)	Intensity I (in/hr)	Q_{25} (cfs)	Trunk Line Design: Mannings "n"	Length (ft)	Pipe Diameter (in)	Grade (ft/ft)	Full Flow Velocity (fps)	**Full Flow Capacity (cfs)**	Actual Velocity (out)	Hydraulic Gradient (ft/ft)	K (constant)	Junction/ MH Loss (ft)	Hydraulic Grade Elevation 25-yr (ft)	Dwnstm Flowline (ft)	Vert Adj (ft)	Upstrm Flowline (ft)	Rise in Pipe (ft)	Pipe Crown (ft)	Top of MH/Inlet Elevation (ft)
A-7	A-7	A-8	0.18	0.18	10.02	0.76	0.76	1.10	**0.15**	0.010	47	4	0.0100	2.83	**0.25**	1.73	0.0037	0.5	0.0232	858.22	857.42		857.89	0.47	858.22	862.50
A-8	A-8	N-6	0.18	0.36	10.30	0.76	0.76	1.10	**0.30**	0.010	63	6	0.0100	3.71	**0.73**	1.54	0.0017	0.5	0.0183	857.92	856.79		857.42	0.63	857.92	862.50
	N-6	N-7		0.36	10.58		0.76	1.10	**0.30**	0.010	10	6	0.0100	3.71	**0.73**	1.54	0.0017	0.37	0.0136	857.29	856.69		856.79	0.10	857.29	
	N-7	N-8		0.36	10.63		0.76	1.10	**0.30**	0.010	81	6	0.0112	3.93	**0.77**	1.54	0.0017	0.37	0.0136	857.19	855.78		856.69	0.91	857.19	
	N-8	OUTFALL 2		0.36	10.97		0.76	1.10	**0.30**	0.010	33	6	0.0100	3.71	**0.73**	1.54	0.0017	0.37	0.0136	856.28	855.45		855.78	0.33	856.28	
																				855.84						
A-11	A-11	A-12	0.20	0.20	10.08	0.75	0.75	1.10	**0.17**	0.010	91	4	0.0100	2.83	**0.25**	1.89	0.0044	0.5	0.0278	850.98	849.73		850.64	0.91	850.98	855.00
A-12	A-12	MH-3	0.23	0.43	10.61	0.73	0.74	1.10	**0.35**	0.010	49	6	0.0100	3.71	**0.73**	1.78	0.0023	0.5	0.0245	850.23	849.24		849.73	0.49	850.23	855.00
	MH-3	N-9		0.43	10.83		0.74	1.10	**0.35**	0.010	61	6	0.0191	5.13	**1.01**	1.78	0.0023	0.5	0.0245	849.74	848.08		849.24	1.16	849.74	853.50
	N-9	OUTFALL 3		0.43	11.03		0.74	1.10	**0.35**	0.010	4	6	0.0191	5.13	**1.01**	1.78	0.0023	0.37	0.0181	848.58	848.00		848.08	0.08	848.58	
																				846.56						
A-5	A-5	OUTFALL 4	2.20	2.20	12.91	0.64	0.64	1.10	**1.54**	0.010	169	8	0.0113	4.79	**1.67**	4.42	0.0095	0.5	0.1519	843.58	841.00		842.91	1.91	843.58	851.00
																				841.62						
A-13	A-13	A-14	0.68	0.68	10.56	0.74	0.74	1.10	**0.55**	0.010	70	18	0.0100	7.73	**13.65**	0.31	0.0000	0.5	0.0008	837.28	835.09		835.78	0.70	837.28	845.50
A-14	A-14	OUTFALL 6	0.64	1.32	10.82	0.79	0.76	1.10	**1.11**	0.010	109	18	0.0100	7.73	**13.65**	0.63	0.0001	0.37	0.0023	836.59	834.00		835.09	1.09	836.59	841.00
																				834.95						
A-15	A-15	OUTFALL 7	0.30	0.30	10.62	0.74	0.74	1.10	**0.25**	0.010	105	18	0.0086	7.17	**12.66**	0.14	0.0000	0.5	0.0001	834.40	832.00		832.90	0.90	834.40	840.50
																				832.84						
A-16	A-16	OUTFALL 8	0.34	0.34	10.32	0.77	0.77	1.10	**0.29**	0.010	58	18	0.1614	31.04	**54.86**	0.16	0.0000	0.5	0.0002	835.86	825.00		834.36	9.36	835.86	840.50
																				825.85						

STORM WATER 100-YR

Intensity = 1.10 in/hr

Drainage Area	Inlet / MH From	Inlet / MH To	Area (acres)	Total Area (acres)	Time Conc. (min)	Runoff C_{100}	C_{100} (Weighted)	Intensity I (in/hr)	Q_{100} (cfs)	Trunk Line Design: Mannings "n"	Length (ft)	Pipe Diameter (in)	Grade (ft/ft)	Full Flow Velocity (fps)	**Full Flow Capacity (cfs)**	Actual Velocity (out)	Hydraulic Gradient (ft/ft)	K (constant)	Junction/ MH Loss (ft)	Hydraulic Grade Elevation 100-yr (ft)	Dwnstm Flowline (ft)	Vert Adj (ft)	Upstrm Flowline (ft)	Rise in Pipe (ft)	Pipe Crown (ft)	Top of MH/Inlet Elevation (ft)
A-13	A-13	A-14	0.68	0.68	10.56	0.74	0.74	1.10	**0.55**	0.010	70	18	0.0100	7.73	**13.65**	0.31	0.0000	0.5	0.0008	837.28	835.09		835.78	0.70	837.28	845.50
A-14	A-14	OUTFALL 6	0.64	1.32	10.82	0.79	0.76	1.10	**1.11**	0.010	109	18	0.0100	7.73	**13.65**	0.63	0.0001	0.37	0.0023	836.59	834.00		835.09	1.09	836.59	841.00
																				834.95						
A-15	A-15	OUTFALL 7	0.30	0.30	10.62	0.74	0.74	1.10	**0.25**	0.010	105	18	0.0086	7.17	**12.66**	0.14	0.0000	0.5	0.0001	834.40	832.00		832.90	0.90	834.40	840.50
																				832.84						
A-16	A-16	OUTFALL 8	0.34	0.34	10.32	0.77	0.77	1.10	**0.29**	0.010	58	18	0.1614	31.04	**54.86**	0.16	0.0000	0.5	0.0002	835.86	825.00		834.36	9.36	835.86	840.50
																				825.85						

Total Art Design & Architecture
Brett Davidson, AIA
193-1/2 West San Antonio St.
New Braunfels, TX 78130
(210) 885-7954

Structural: **Lehmann Engineering**
1006 Beckett
San Antonio, TX 78213
(210) 308-9905

MEP: **Cleary Zimmermann**
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Austin, TX 78704
(512) 354-8288

Civil: **Quiddity Engineering**
2967 Oak Run Pkwy Suite 215
New Braunfels, TX 78132
(830)203-6630

BMP STORM CALCULATIONS

REVISIONS

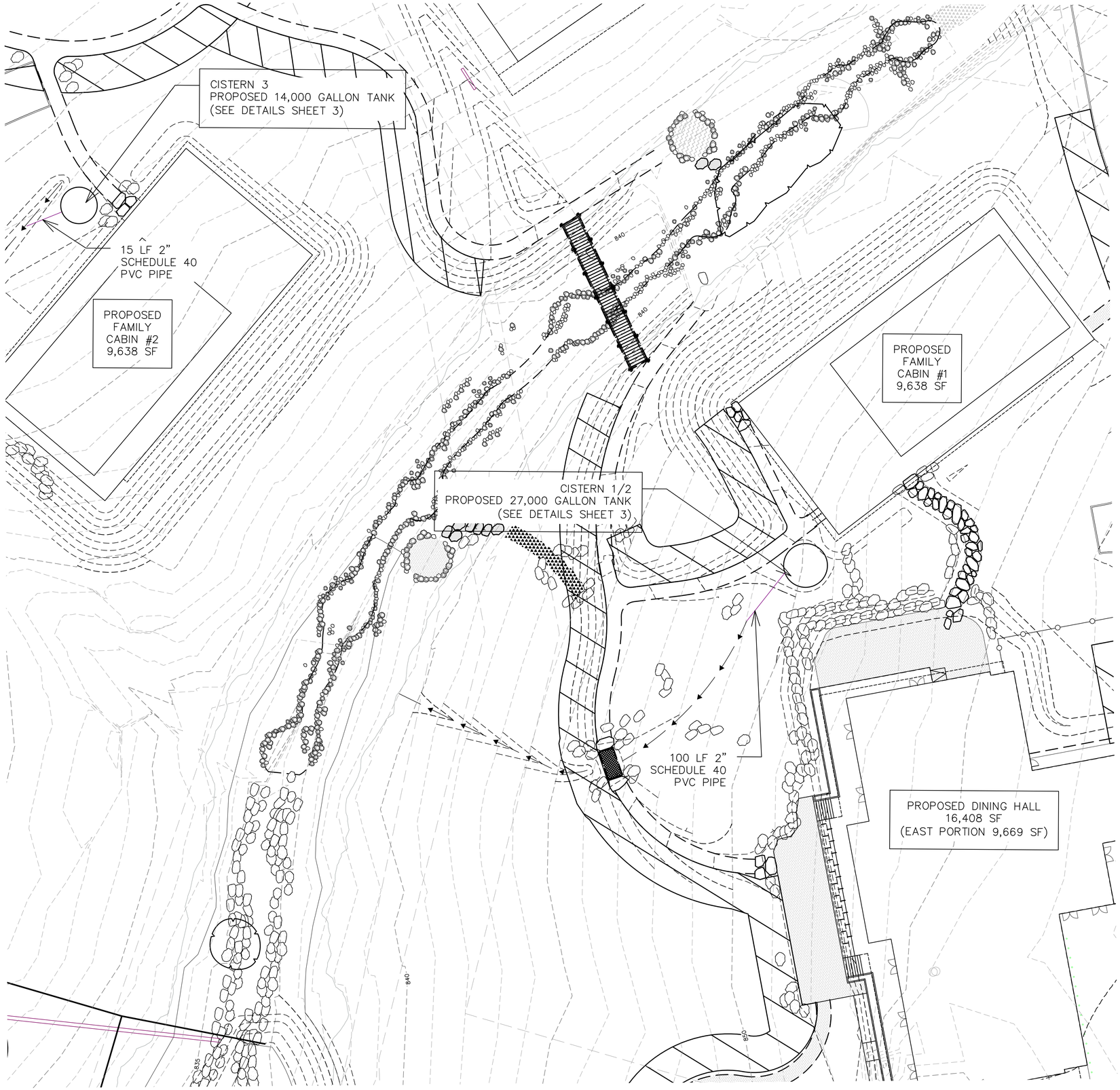
NO.	DATE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED PROFESSIONAL ENGINEER
9/16/2025

OWNER:
T Bar M

PROJECT NUMBER: 17758-0001-01
DATE: September 2025

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EXISTING CONTOUR 850

PROPOSED CONTOUR 850

STORM DRAIN

ADA PATHWAY

BIORETENTION AREA

NATURAL VEGETATED FILTER STRIP

ENGINEERED VEGETATED FILTER STRIP

0 5 10 20 40 60

SCALE: 1" = 20'

Total Art Design & Architecture
Brett Davidson, AIA
193-1/2 West San Antonio St.
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New Braunfels, TX 78132
(830)203-6630

CISTERN #1/2, #3 EXHIBIT

REVISIONS

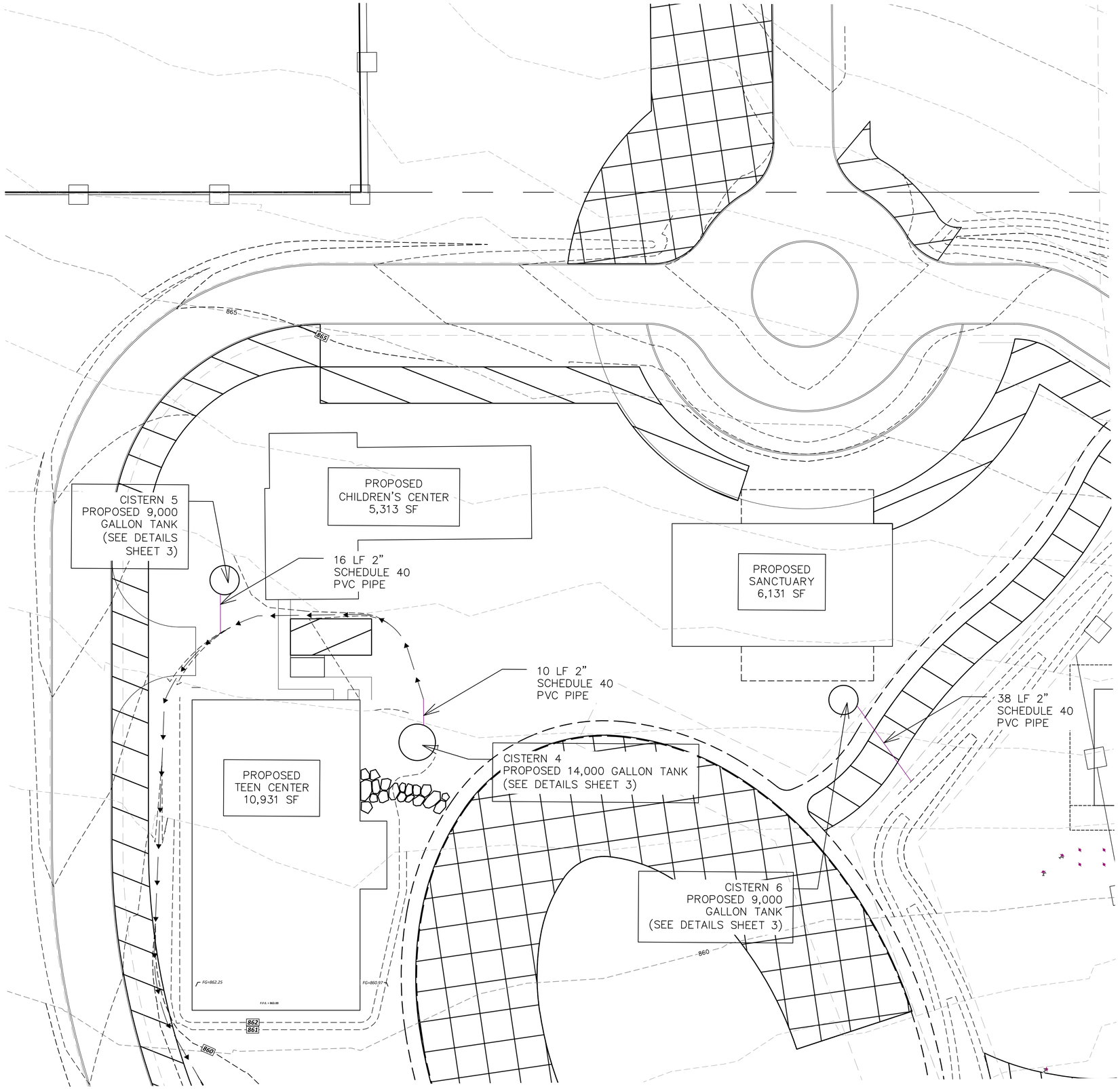
NO.	DATE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED
PROFESSIONAL ENGINEER
9/16/2025

OWNER:
T Bar M

PROJECT NUMBER: 17758-0001-01
DATE September 2025

K:\17758\17758-0001-001 Bar M - Camp Expansion\2 Design Phase\CAD\WIP\AP\Addendum 1\17758-0001 T Bar M Cisterns Addendum 1.dwg cj, September 16, 2025



EXISTING CONTOUR 850

PROPOSED CONTOUR 850

STORM DRAIN

ADA PATHWAY

BIORETENTION AREA

NATURAL VEGETATED FILTER STRIP

ENGINEERED VEGETATED FILTER STRIP

0 5 10 20 40 60

SCALE: 1" = 20'

Total Art Design & Architecture
Brett Davidson, AIA
193-1/2 West San Antonio St.
New Braunfels, TX 78130
(210) 885-7954

Structural: **Lehmann Engineering**
1006 Beckett
San Antonio, TX 78213
(210) 308-9905

MEP: **Cleary Zimmermann**
1344 S Flores St Suite 101
San Antonio, TX 78204
(210) 447-6100

Landscape: **Campbell Landscape Architecture**
608 W Monroe St
Austin, TX 78704
(512) 354-8288

Civil: **Quiddity Engineering**
2967 Oak Run Pkwy Suite 215
New Braunfels, TX 78132
(830)203-6630

CISTERN #4, #5, #6 EXHIBIT

REVISIONS

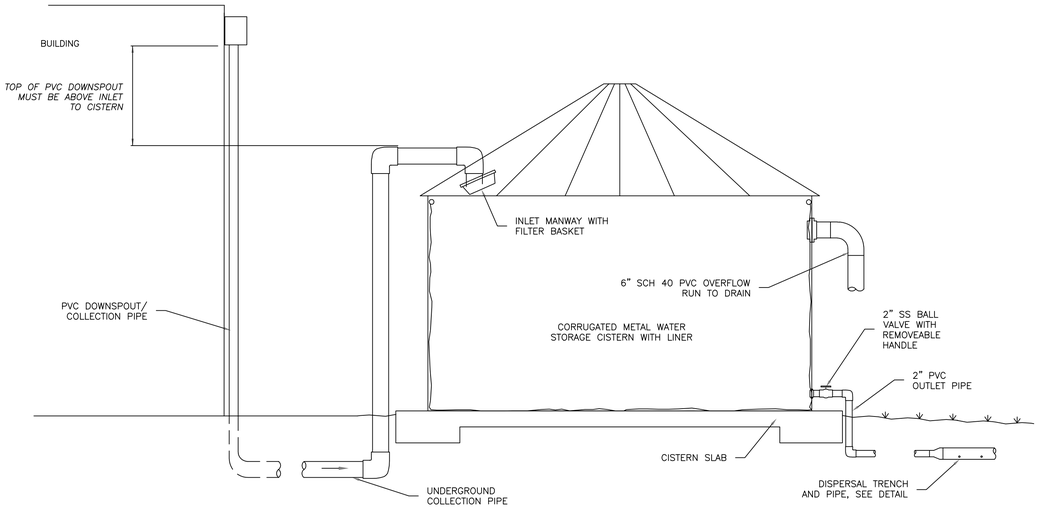
NO.	DATE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED
PROFESSIONAL ENGINEER
9/16/2025

OWNER:
T Bar M

PROJECT NUMBER: 17758-0001-01
DATE September 2025

K:\17758\17758-0001-01 T Bar M - Camp Expansion\2 Design Phase\CAD\WIP\AP-Addendum 1\17758-0001 T Bar M Cisterns Addendum 1.dwg cj: September 14, 2025



SYSTEM DRAWING

NTS

RAINWATER HARVESTING SYSTEM
FOR WATER QUALITY
T BAR M CAMP
NEW BRAUNFELS, TX 78123

NO.	BY	DATE	REVISION

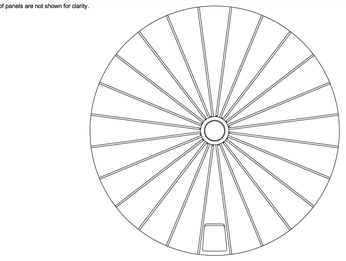
PROJECT NO. T BAR M RANCH			DESIGNED BY: CMG
FILE NO:	RWHS SITE PLAN-T BAR M		DRAWN BY: CMG
DATE:	SEPTEMBER 2025		CHECKED BY: BLW
SCALE:	AS SHOWN		

Innovative Water Solutions
RAINWATER HARVESTING, GRAYWATER RECOVERY, & WATER CONSERVATION CONSULTING
P.O. Box 9963
Austin, TX 78766
512-490-0932 or 1-866-IWS-RAIN
http://www.watercache.com

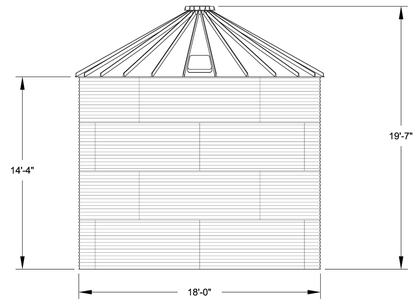
Cistern #	Building	Roof Area (sq ft)	Volume to be Captured (cu ft) [includes 20% for solids]	Volume to be Captured (gal) [includes 20% for solids]	Outfall Pipe Diameter (in.)
1/2	east portion of dining hall	9,669	2,896	21,663	2"
	family cabin 1	9,638			
3	family cabin 2	9,638	1,446	10,814	2"
4	children's center	5,313	797	5,962	2"
5	Sanctuary	6,131	920	6,880	2"
6	Teen Center	10,931	1,640	12,265	2"

* volume to be captured is assuming a 1.5 in rainfall depth
* outfall pipe size is to ensure time to empty is within 168 hrs (7 days)

Corrugations on roof panels are not shown for clarity.



PLAN



ELEVATION

	BY	DATE
DWN	IU	2/18/2013
CKD	JH	2/18/2013
ENG	JH	2/18/2013

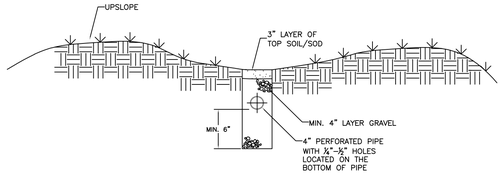
CORGAL WATER TANKS
WATER STORAGE TANKS, INC.
1-800-463-1898
www.corgaltanks.com

TITLE: MODEL 1804-WT-CHR
CORGAL STEEL WATER STORAGE TANK
NOMINAL CAPACITY - 27,000 GALLONS (U.S.)

DWG. NO. 1804-WT-CHR | REV. NO. B

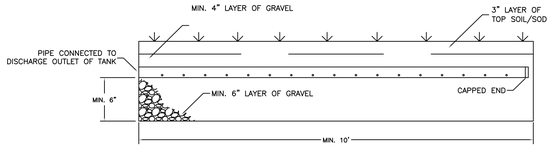
SIZE A | SCALE 3/16"=1'-0" | SHEET 1 OF 1

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INFILTRATION TRENCH

SECTION VIEW



NOTES:

1) TRENCH MUST BE NO LESS THAN 12" WIDE & 12" DEEP
2) MINIMUM SLOPE TO VARY AS REQUIRED TO PROVIDE POSITIVE DRAINAGE
3) GRAVEL TRENCH MUST BE WRAPPED IN A GEOTEXTILE FILTER FABRIC.

INFILTRATION TRENCH

NTS

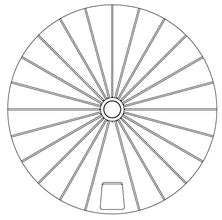
RAINWATER HARVESTING SYSTEM
FOR WATER QUALITY
T BAR M CAMP
NEW BRAUNFELS, TX 78123

NO.	BY	DATE	REVISION

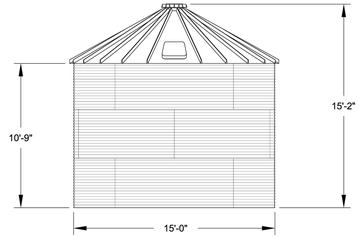
PROJECT NO. T BAR M RANCH			DESIGNED BY: CMG
FILE NO:	RWHS SITE PLAN-T BAR M		DRAWN BY: CMG
DATE:	SEPTEMBER 2025		CHECKED BY: BLW
SCALE:	AS SHOWN		

Innovative Water Solutions
RAINWATER HARVESTING, GRAYWATER RECOVERY, & WATER CONSERVATION CONSULTING
P.O. Box 9963
Austin, TX 78766
512-490-0932 or 1-866-IWS-RAIN
http://www.watercache.com

Corrugations on roof panels are not shown for clarity.



PLAN



ELEVATION

	BY	DATE
DWN	IU	2/18/2013
CKD	JH	2/18/2013
ENG	JH	2/18/2013

CORGAL WATER TANKS
WATER STORAGE TANKS, INC.
1-800-463-1898
www.corgaltanks.com

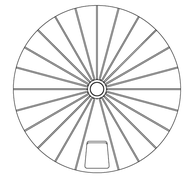
TITLE: MODEL 1503-WT-CHR
CORGAL STEEL WATER STORAGE TANK
NOMINAL CAPACITY - 14,000 GALLONS (U.S.)

DWG. NO. 1503-WT-CHR | REV. NO. B

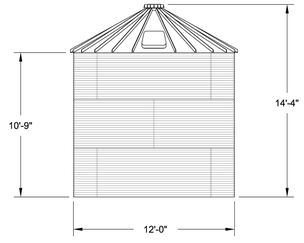
SIZE A | SCALE 3/16"=1'-0" | SHEET 1 OF 1

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Corrugations on roof panels are not shown for clarity.



PLAN



ELEVATION

	BY	DATE
DWN	IU	2/15/13
CKD	JH	2/15/13
ENG	JH	2/15/13

CORGAL WATER TANKS
WATER STORAGE TANKS, INC.
1-800-463-1898
www.corgaltanks.com

TITLE: MODEL 1203-WT-CHR
CORGAL STEEL WATER STORAGE TANK
NOMINAL CAPACITY - 9,000 GALLONS (U.S.)

DWG. NO. 1203-WT-CHR | REV. NO. B

SIZE A | SCALE 3/16"=1'-0" | SHEET 1 OF 1

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Total Art Design & Architecture
Brett Davidson, AIA
193-1/2 West San Antonio St.
New Braunfels, TX 78130
(210) 885-7954

Structural: **Lehmann Engineering**
1006 Beckett
San Antonio, TX 78213
(210) 308-9905

MEP: **Cleary Zimmermann**
1344 S Flores St Suite 101
San Antonio, TX 78204
(210) 447-6100

Landscape: **Campbell Landscape Architecture**
608 W Monroe St
Austin, TX 78704
(512) 354-8288

Civil: **Quiddity Engineering**
2967 Oak Run Pkwy Suite 215
New Braunfels, TX 78132
(830)203-6630

CISTERN DETAILS
EXHIBIT

REVISIONS

NO.	DATE

STATE OF TEXAS
DARREN J. MCAFEE
137808
LICENSED
PROFESSIONAL ENGINEER
9/16/2025

OWNER:
T Bar M

PROJECT NUMBER: 17758-0001-01
DATE September 2025

K:\17758\17758-0001-00 T Bar M - Camp Expansion\2 Design Phase\CAD\WIP\Addendum 1\17758-0001 T Bar M Cisterns Addendum 1.dwg cj: September 16, 2025