**WATER POLLUTION ABATEMENT PLAN**
**(WPAP)**

**FOR**

Hope Family Fellowship of Georgetown
2920 FM 971
Georgetown, TX 78626

# City of Georgetown ETJ
# Williamson County, Texas

**SUBMITTED TO:**
**Austin Region TCEQ Office**

**PREPARED BY:**

**Highland Development & Engineering Co, LLC**
**155 Glass Ln**
**Bastrop, Texas 78602**
**(815) 674-4945**
**Firm Registration #F-19450**

**September 25, 2024**



## Water Pollution Abatement Plan Checklist/Table of Contents

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

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

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

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

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

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

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

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

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

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

- **Agent Authorization Form (TCEQ-0599), if application submitted by agent**

- **Application Fee Form (TCEQ-0574)**
- **Check Payable to the "Texas Commission on Environmental Quality"**
- **Core Data Form (TCEQ-10400)**

## 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: Hope Family Fellowship of Georgetown** | | | | | | **2. Regulated Entity No.:** | | | |
| **3. Customer Name: Steve Damman** | | | | | | **4. Customer No.:** | | | |
| **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):** | | | 5.70 |
| **9. Application Fee:** | $5,000 | | **10. Permanent BMP(s):** | | | Sand filter (sed/filt pond); Bioretention | | | |
| **11. SCS (Linear Ft.):** | 0 | | **12. AST/UST (No. Tanks):** | | | 0 | | | |
| **13. County:** | Williamson | | **14. Watershed:** | | | San Gabriel | | | |

# Application Distribution

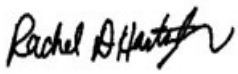
Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which 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.) | ___ | ___ | _1_ |
| Region (1 req.) | ___ | ___ | _1_ |
| County(ies) | ___ | ___ | _1_ |
| Groundwater Conservation District(s) | ___Edwards Aquifer Authority<br>___Barton Springs/ Edwards Aquifer<br>___Hays Trinity<br>___Plum Creek | ___Barton Springs/ Edwards Aquifer | NA |
| City(ies) Jurisdiction | ___Austin<br>___Buda<br>___Dripping Springs<br>___Kyle<br>___Mountain City<br>___San Marcos<br>___Wimberley<br>___Woodcreek | ___Austin<br>___Bee Cave<br>___Pflugerville<br>___Rollingwood<br>___Round Rock<br>___Sunset Valley<br>___West Lake Hills | ___Austin<br>___Cedar Park<br>___Florence<br>_1_Georgetown<br>___Jerrell<br>___Leander<br>___Liberty Hill<br>___Pflugerville<br>___Round Rock |

| **San Antonio Region** | | | | | |
|---|---|---|---|---|---|
| **County:** | **Bexar** | **Comal** | **Kinney** | **Medina** | **Uvalde** |
| Original (1 req.) | ___ | ___ | ___ | ___ | ___ |
| Region (1 req.) | ___ | ___ | ___ | ___ | ___ |
| County(ies) | ___ | ___ | ___ | ___ | ___ |
| Groundwater Conservation District(s) | ___ Edwards Aquifer Authority<br>___Trinity-Glen Rose | ___Edwards Aquifer Authority | ___Kinney | ___EAA<br>___Medina | ___EAA<br>___Uvalde |
| City(ies) Jurisdiction | ___Castle Hills<br>___Fair Oaks Ranch<br>___Helotes<br>___Hill Country Village<br>___Hollywood Park<br>___San Antonio (SAWS)<br>___Shavano Park | ___Bulverde<br>___Fair Oaks Ranch<br>___Garden Ridge<br>___New Braunfels<br>___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.<br><br>Rachel Hartzler, P.E. |
| Print Name of Customer/Authorized Agent<br><br> 08/09/2024 |
| Signature of Customer/Authorized Agent Date |

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

# General Information Form

**Texas Commission on Environmental Quality**

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

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

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

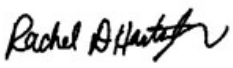
## *Signature*

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

Print Name of Customer/Agent: Rachel D. Hartzler, P.E.

Date: 08/09/2024

Signature of Customer/Agent:



## *Project Information*

1. Regulated Entity Name: Hope Family Fellowship of Georgetown
2. County: Williamson
3. Stream Basin: San Gabriel River
4. Groundwater Conservation District (If applicable): Edwards Aquifer
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☐ Transition Zone

6. Plan Type:

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

7. Customer (Applicant):

   Contact Person: Steve Damman
   Entity: Hope Family Fellowship of Georgetown
   Mailing Address: 303 E Morrow St.
   City, State: Georgetown, TX Zip: 78626
   Telephone: 512-296-5765 FAX: _____
   Email Address: Steve@QuantumDigital.com

8. Agent/Representative (If any):

   Contact Person: Rachel D. Hartzler, P.E.
   Entity: Highland Development & Engineering Co, LLC
   Mailing Address: 155 Glass Ln
   City, State: Bastrop, TX Zip: 78602
   Telephone: 815-674-4945 FAX: _____
   Email Address: Rachel@HighlandDevTX.com

9. Project Location:

   ☐ The project site is located inside the city limits of _____.
   ☒ The project site is located outside the city limits but inside the ETJ (extra-territorial jurisdiction) of Georgetown.
   ☐ 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.

    2920 FM 971, Georgetown, TX; from SH 130, travel east one mile on FM 971, the site is on the south side of the road, there are mailboxes with addresses

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: August 1, 2024

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.

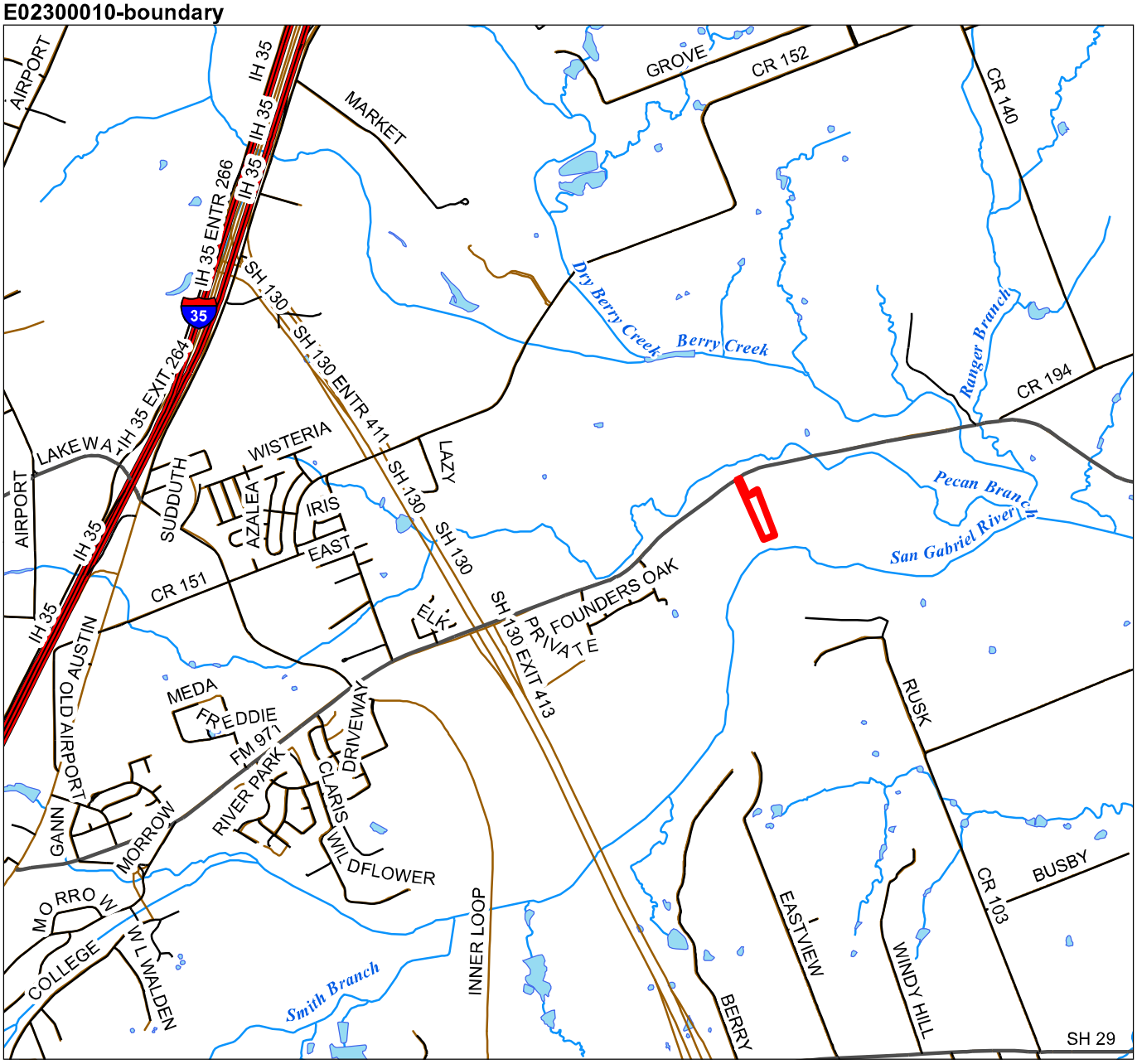
# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## General Information Form

## Attachment A

## Road Map

E02300010-boundary




USGS Topographic Map, Georgetown Quad

**Legend**

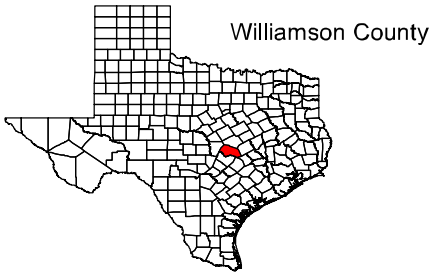
Project Boundary

N

1 inch = 3,000 feet

0 1,500 3,000

Feet




ESCARPMENT ENVIRONMENTAL

Geologic & Environmental Consulting for Land Development

**General Location Map**
**5.7-acre property**
**Hope Family Fellowship**
**2920 FM 971**
**Georgetown, Williamson County, Texas**

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

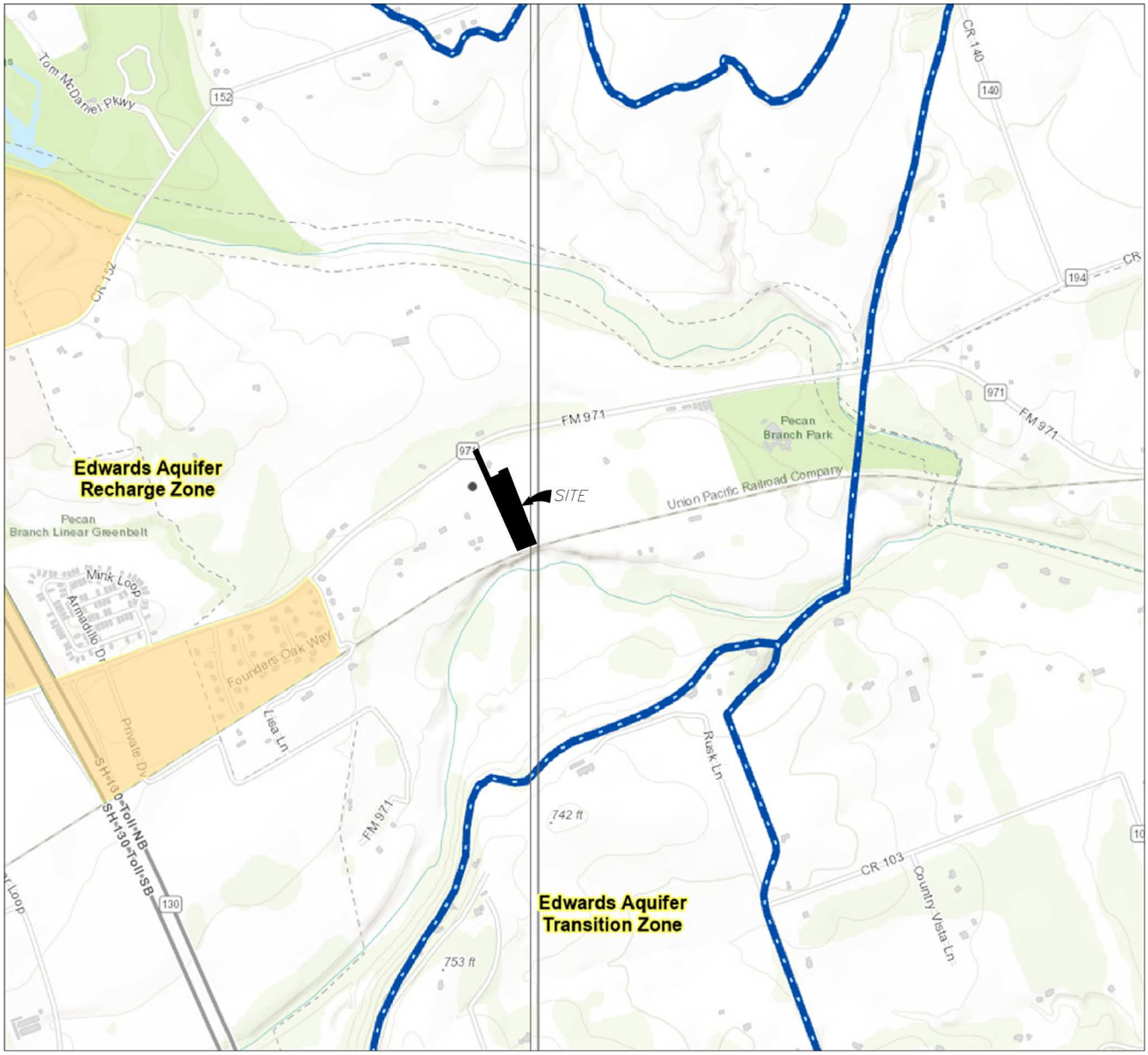
## General Information Form

## Attachment B

## USGS/Edwards Recharge Zone Map

SCALE: 1"= 1800'

0' 1800' 3600' 5400'




USGS/Edwards Recharge Zone Map


Highland Development & ENGINEERING COMPANY

hd+e

FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945


I Rachel D. Hartzler, P.E. do hereby certify that this plan was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer in the State of Texas, and that the information provided herein is correct and complete to the best of my knowledge.

Rachel D Hartzler

08/09/2024

Rachel D. Hartzler, P.E. Date
Professional Engineer #117344

STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED
PROFESSIONAL ENGINEER

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## General Information Form

## Attachment C

## Project Description

The proposed project is located on a 5.70-acre site in Williamson County, Texas at 2920 FM 971. This property is located within the Extraterritorial Jurisdiction (ETJ) of the City of Georgetown. The entire site is located over the Edwards Aquifer Recharge Zone.

The owner proposes to build an approximate 7,500-sf church building with associated parking, driveway, utilities, water quality and drainage improvements. There are two existing buildings that will be converted to office space, and an existing single-family home that will remain in place. There is an on-site sewage facility proposed to dispose of wastewater, and water service will be provided by an on-site well. There is an 80,000-gallon water tank proposed for fire protection. The proposed permanent BMP(s) include one bioretention pond and one sand filter pond. The proposed bioretention pond will add landscaping and aesthetic value, and the sand filter pond will additionally provide stormwater detention for the site.

The site is located in a relatively flat area, and there are no offsite areas that drain toward the site. In the existing condition, there is an existing single-family home and some associated outbuidings and a driveway. The site is covered with a mixture of pasture and an orchard.
There is 0.693 acres of existing impervious cover on the site. Historically, this property has been used for single-family residential and agricultural use. None of the existing improvements will be demolished.

# 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: Kristin M. Miller Telephone: 512-415-6986

Date: 12/19/2023 Fax: _____

Representing: Escarpment Environmental (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:

Kristin M. Miller Digitally signed by Kristin M. Miller Date: 2023.12.19 11:24:27 -06'00'

**Regulated Entity Name:** 5.9 acres Hope Family Fellowship of Georgetown, 2910 FM 971, Georgetown, Texas

## *Project Information*

1. Date(s) Geologic Assessment was performed: December 19, 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) |
|---|---|---|
| KsA - Krum silty clay, 0 to 1% slopes | C | up to 4.2 |
| KsB - Krum silty clay, 1 to 3% slopes | C | up to 4.0 |
| | | |
| | | |

| Soil Name | Group* | Thickness(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 thicknesses is attached. The outcropping unit, if present, should be at the top of the stratigraphic column. Otherwise, the uppermost unit should be at the top of the stratigraphic column.

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

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

   Applicant's Site Plan Scale: 1" = n/a'
   Site Geologic Map Scale: 1" = 60'
   Site Soils Map Scale (if more than 1 soil type): 1" = 300'

9. Method of collecting positional data:

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

10. ☒ The project site and boundaries are clearly shown and labeled on the Site Geologic Map.
11. ☒ Surface geologic units are shown and labeled on the Site Geologic Map.
12. ☐ Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.

    ☒ Geologic or manmade features were not discovered on the project site during the field investigation.
13. ☒ The Recharge Zone boundary is shown and labeled, if appropriate.
14. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If applicable, the information must agree with Item No. 20 of the WPAP Application Section.

    ☐ There are 2 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
    - ☐ The wells are not in use and have been properly abandoned.
    - ☐ The wells are not in use and will be properly abandoned.
    - ☒ The wells are in use and comply with 16 TAC Chapter 76.

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

## *Administrative Information*

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

Attachment A

Geologic Assessment Table

Ga

**GEOLOGIC ASSESSMENT TABLE** **PROJECT NAME: 5.7 acres, Hope Fellowship. 2920 FM 971** JOB NUMBER: E230010

| 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 | NOT SENSITIVE | SENSITIVE | CATCHMENT AREAS (ACRES) | TOPOGRAPHY |
| | *DATUM: HDD/ WGS 84 | | | | | X | Y | Z | | 10 | | | | | | <40 | >40 | <1.6 | >1.6 | |
| | | | | | | | | | | | | | | | | | | | |
| **S-1 Well** | **30.672493°** | **-97.626274°** | **MB** | **30** | **Kgt** | | | | | | | | | 5 | 35 | | | 0 | 0 | hilltop |
| **S-2 Well** | **30.671411°** | **-97.626352°** | **MB** | **30** | **Kgt** | | | | | | | | | 5 | 35 | | | 0 | 0 | hilltop |
| **S-3 Boring** | **30.672422°** | **-97.626855°** | **MB** | **30** | **Kgt** | **0.5** | **0.5** | **4** | | | | | | C | 35 | | | 0 | 0 | hilltop |
| | | | | | | | | | | | | | | | | | | | |

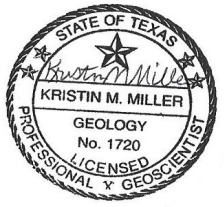
*DATUM: Decimal Degrees/ WGS 84

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

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

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

| 8B RELATIVE INFILTRATION RATE | |
|---|---|
| HIGH | > 35 |
| INTERMEDIATE | 20 TO 34 |
| LOW | 5 TO 19 |




I have read, I understood, and I have followed the Texas Commission on Environmental Quality's Instructions to Geologists. The information presented here complies with that document and is a true representation of the conditions observed in the field.
My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.
The seal appearing on this document was authorized by Kristin M. White, P.G. 1720 on: 19-Dec-2022

For Escarpment Environmental,

Kristin M. Miller
Signature

19-Dec-2023
Date

# Attachment B

## Geologic Description

## Geology

Field investigation and review of existing literature shows the site is underlain by Quaternary Alluvial Terrace (Qt) and Quaternary Alluvial (Qal) deposits that appear to overlie Del Rio Clay and Georgetown based on the rock outcrop along the San Gabriel River to the south.

Qt deposits consist of unconsolidated gravel, sand, silt, and clay. Qal deposits consist of unconsolidated sand, silt, gravel, clay, and cobbles.

No evidence of potential recharge features or faults were present on the subject property. Two water wells with electric pump are present on the property (S-1 and S-2). They appear to be in use for private domestic and agricultural purposes. One 6-inch in diameter and 5-foot deep geotechnical boring was discovered it is partially collapsed with alluvial terrace materials. Any unused water wells or geotechnical borings must be permanently sealed before construction by a licensed water well driller. The boring may be backfilled with gravel and capped with concrete within 18 inches of the surface to prevent run off or silt from entering it.

References

Collins, E.W and J.A. Ranay, 2002, *Geology of the West Half of the Taylor, Texas 30 x 60 Minute Quadrangle: Central Texas Urban Corridor Encompassing Round Rock, Georgetown, Salado, Briggs, Liberty Hill, and Leander,* The University of Texas at Austin, Bureau of Economic Geology, Open-File Map.

Attachment C

Geologic Stratigraphic Column

ESCARPMENT ENVIRONMENTAL
Geologic & Environmental Consulting for Land Development

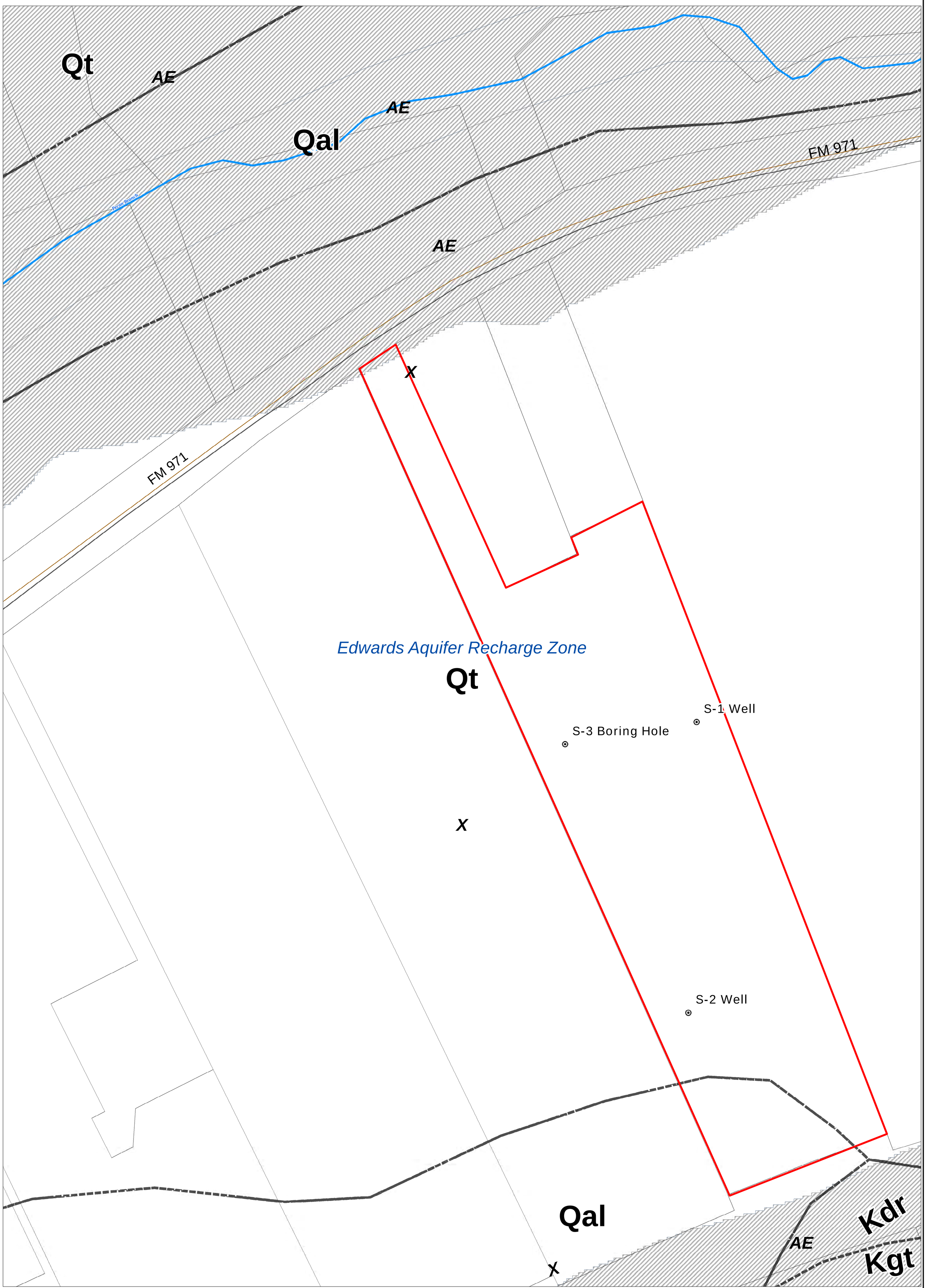
**GEOLOGIC STRATIGRAPHIC COLUMN**
**Southern Travis and Northwerstern Hays Counties.**

| System | Hydrologic Subdivision | Group or Formation | Member | Thickness in feet | Symbol | Description |
|---|---|---|---|---|---|---|
| Quaternary | | Alluvium | | up to 10 | Qal | Unconsolidated, sand, silt, gravel, clay, and cobbles. |
| Quaternary | | High Terrace | | up to 20, on average | Qt | Unconsolidated gravel, sand, silt, and clay. |
| Cretaceous | Upper Confining Unit | Del Rio Clay | | 50 to 60 | Kdr | Dark gray to olive brown clay, pyritic, gypsiferous, calcareous clay with abundant "rams horns", a fossilized oyster *Ilymatogyra arietina* (formerly *Exogyra arietina*). |
| Cretaceous | I | Georgetown Formation | | 40 to 60 | Kgt | Reddish-brown, gray to light tan, interbedded, nodular-weathering, hard, fine-grained limestone, marly limestone, and marl, containing abundant fossil shells *Waconella wacoensis*. |

Attachment D

Site Geologic Map

E0230010-soils




Geology: Collins, E.W and J.A. Ranay, 2002, Geology of the West Half of the Taylor, Texas 30 x 60 Minute Quadrangle: Central Texas Urban Corridor Encompassing Round Rock, Georgetown, Salado, Briggs, Liberty Hill, and Leander, The University of Texas at Austin, Bureau of Economic Geology, Open-File Map.

**Legend**

- Project Boundary
- Wells and Test Boring
- Topographic Contour (feet)
- Topographic Contour (feet)
- Recharge Zone
- Property Boundary (WCAD, 2006)
- Collins Fault
- Qal - Quaternary Alluvium
- Qt - Quaternary Terrace
- Kdr - Del Rio Clay
- Kgt - Georgetown limestone
- Zone AE - !% or 100-year Floodplain

1 inch = 60 feet
0 30 60
Feet
N

STATE OF TEXAS
KRISTIN M. MILLER
GEOLOGY
No. 1720
LICENSED
PROFESSIONAL GEOSCIENTIST

The seal appearing on this document was authorized by Kristin M. Miller, P.G. # 1720
December 19. 2023

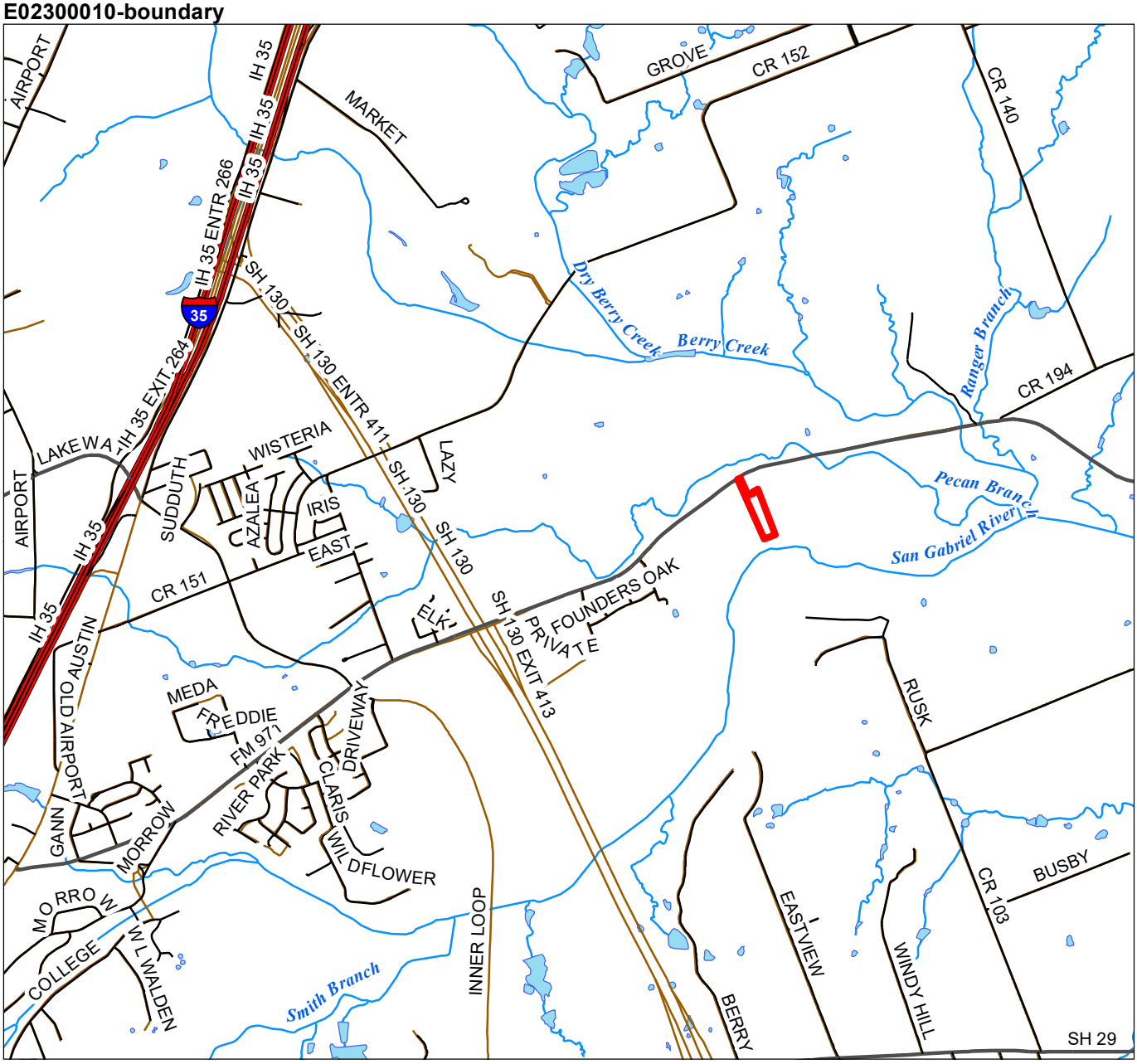
**Site Geologic Map**
**5.7-acre property**
**Hope Family Fellowship**
**2920 FM 971**
**Georgetown, Williamson County, Texas**

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Attachment E

Maps

E02300010-boundary




USGS Topographic Map, Georgetown Quad

**Legend**

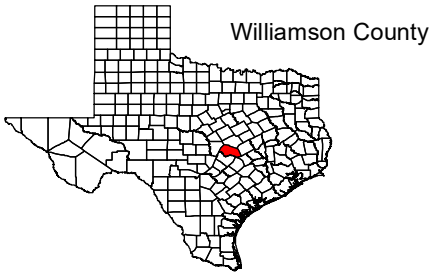
Project Boundary

N

1 inch = 3,000 feet

0 1,500 3,000

Feet

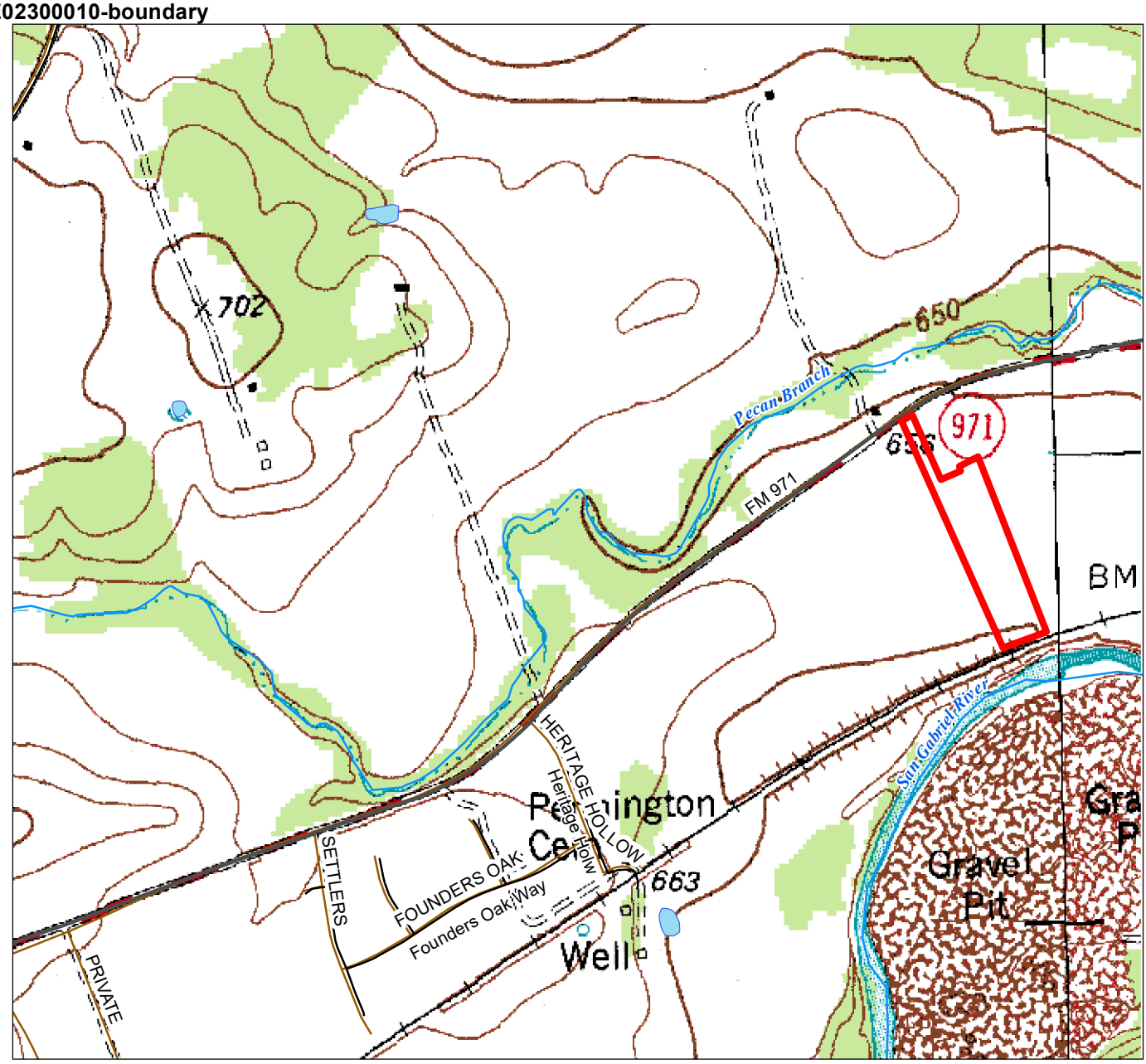



ESCARPMENT ENVIRONMENTAL

Geologic & Environmental Consulting for Land Development

**General Location Map**
**5.7-acre property**
**Hope Family Fellowship**
**2920 FM 971**
**Georgetown, Williamson County, Texas**

E02300010-boundary




USGS Topographic Map, Georgetown Quad

**Legend**

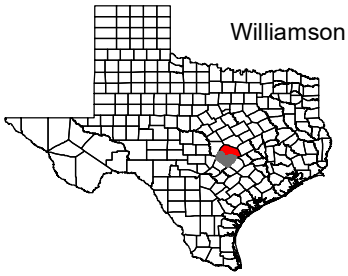
Project Boundary

1 inch = 800 feet

0 400 800

Feet

N




ESCARPMENT ENVIRONMENTAL

Geologic & Environmental Consulting for Land Development

**Boundary Map**
**5.7-acre property**
**Hope Family Fellowship**
**2920 FM 971**
**Georgetown, Williamson County, Texas**

E02200001-soils

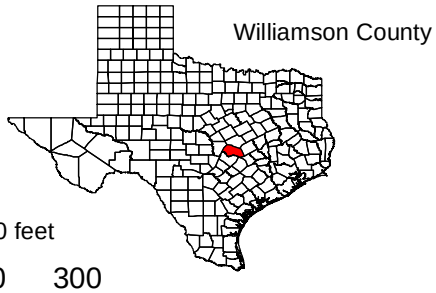


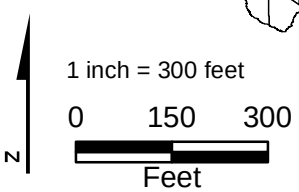

Aerial Photograph: Strategic Mapping Program (StratMap).
CapArea, Brazos & Kerr Imagery, 2021.
Soil: NRCS Soil Survey Staff, 2006

**Legend**

- Project Boundary
- Soil Association (NRCS, 1994)
- Soil Type (NRCS, 2006)

NRCS Soil Types:
SuB -Sunev silty clay loam, 1 to 3% slopes
KsA - Krum silty clay, 0 to 1% slopes
KsB - Krum silty clay, 1 to 3% slopes
HuB - Houston Black clay, 1 to 3%
Of - Oakalla soils, frequently flooded
QuC = Queeny clay loam, 1 to 5% slopes

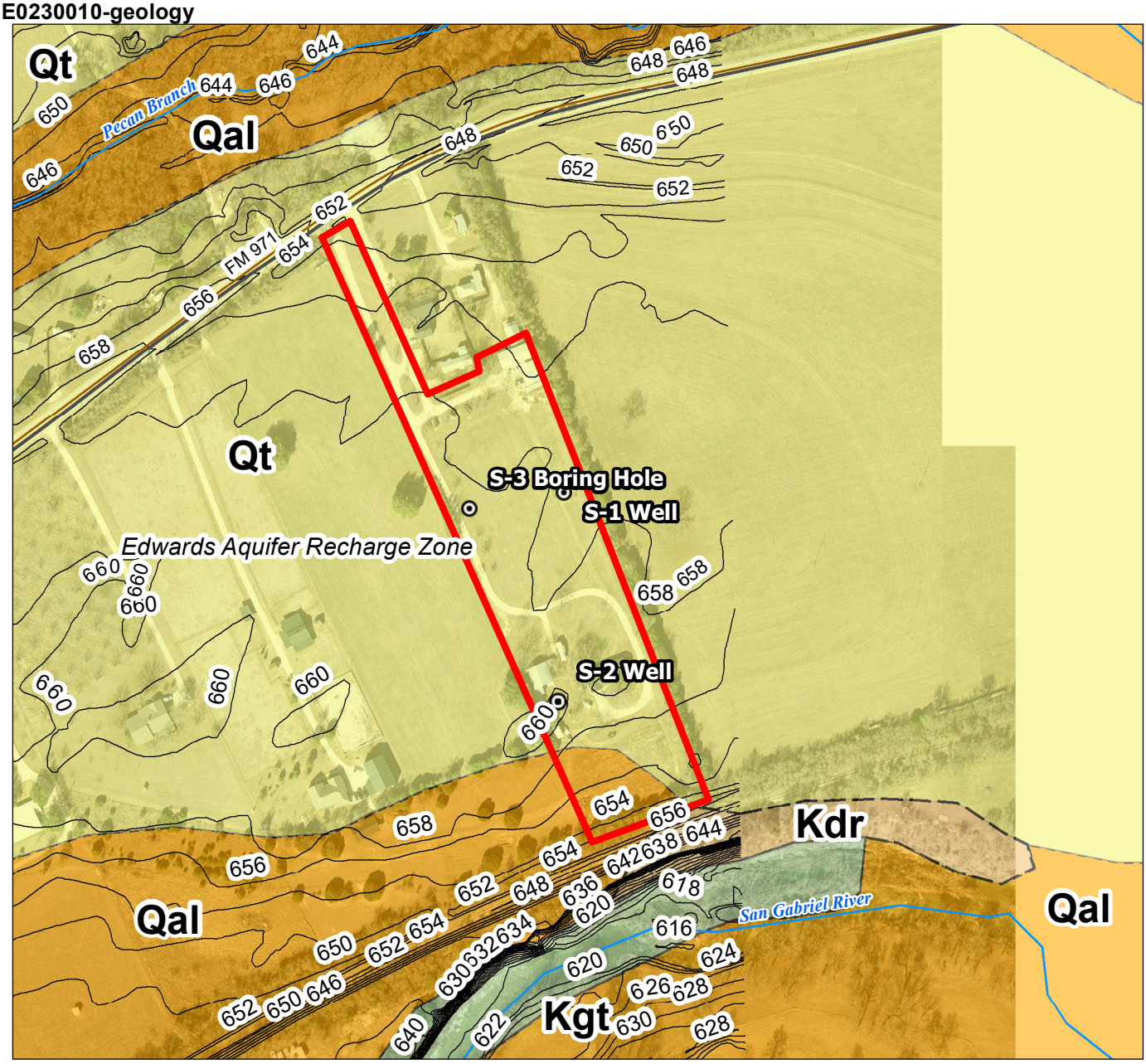



ESCARPMENT ENVIRONMENTAL
Geologic & Environmental Consulting for Land Development

**Figure 3**
**Soils Map**
**5.7-acre property**
**Hope Family Fellowship**
**2920 FM 971**
**Georgetown, Williamson County, Texas**

E0230010-geology




Aerial Photograph: Strategic Mapping Program (StratMap). CapArea, Brazos & Kerr Imagery, 2021.
Geology: Collins et. all, UT-BEG.

1 inch = 300 feet

0 150 300

Feet

The seal appearing on this document was authorized by Kristin M. Miller, P.G. # 1720 December 18, 2023

STATE OF TEXAS
KRISTIN M. MILLER
GEOLOGY
No. 1720
LICENSED
PROFESSIONAL GEOSCIENTIST

## Legend

- Project Boundary
- Recharge Zone
- Topography (in feet)
- Wells and Test Boring
- Qal - Quaternary Alluvium
- Qt - Quaternary Terrace
- Kdr - Del Rio Clay
- Kgt - Georgetown limestone

ESCARPMENT ENVIRONMENTAL
Geologic & Environmental Consulting for Land Development

**Area Geologic Map**
**5.7-acre property**
**Hope Family Fellowship**
**2920 FM 971**
**Georgetown, Williamson County, Texas**

Attachment F

City of Georgetown Salamander Ordinance

ESCARPMENT ENVIRONMENTAL

Geologic & Environmental Consulting for Land Development

**Georgetown Salamander Ordinance**
**Code§ 213.5, the City Ordinance 2015-14**
**7.96-acre property**
**2910 FM 971**
**Georgetown, Williamson County, Texas**

In addition to the Geologic Assessment standards required by Title 30, Texas Administrative Code§ 213.5, the City Ordinance 2015-14 requires that a professional geologist identify all springs and/or streams on a site or certify that no springs or streams exist on the site;

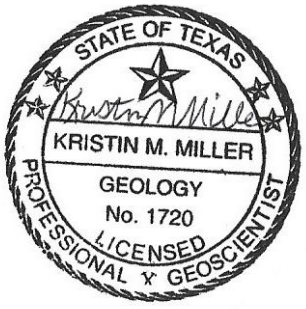
No springs or streams are present on the subject property that would be expected to provide habitat for protected salamanders such as the Georgetown Salamander (*Eurycea naufragia*), Jollyville Salamander (*Eurycea tonkawae*),, or Salado Salamander (*Eurycea chisolmensis*) which were all listed as threatened by the US Fish and Wildlife Service in 2015. The nearest known location of the Georgetown salamander is approximately 3.5 miles upgradient from the property toward the southwest in spring water that emerges from the subsurface into the San Gabriel River. Surface runoff from the property flows to the south and into the San Gabriel River, which flows toward the east and away from known salamander habitat.

No caves were identified on the property that would be expected to provide habitat for any federally protected cave-adapted invertebrates.

The defined channel of the San Gabriel River is approximately 100 feet south of the property boundary. The 100-year floodplain of the San Gabriel River and the corresponding protected stream buffer zones are present on the adjacent property to the south (shown on the Site Geologic Map in Appendix A).. No 100-year floodplain is present on the subject property; however it is found between the property and the San Gabriel River to the south. Railroad tracks run between the property and the river.

For Escarpment Environmental,

Kristin M. Miller, PG[1]
Professional Geologist




19 December 2023
Date

The seal appearing on this document was authorized by

[1] Certified Professional Geologist, State of Texas

Appendix G

Site Photographs

Photo 1View of property and on-site single family home and agriculture-related structures (facing south)..

.



Photo 2: Facing south from the subject property facting southwest..



Photo 3: Geotecnical boring.




Photo 4: S-1 water wel



Photo 5: S-2 Water Well




Photos 6: Outdated black electric transformer in front of the house.



# 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.***

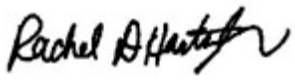
## *Signature*

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: Rachel D. Hartzler, P.E.

Date: 08/09/2024

Signature of Customer/Agent:



**Regulated Entity Name:** Hope Family Fellowship of Georgetown

## *Regulated Entity Information*

1. The type of project is:

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

2. Total site acreage (size of property):5.70 acres

3. Estimated projected population: No full time residents

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 | 14,777 | ÷ 43,560 = | 0.339 |
| Parking | 61,505 | ÷ 43,560 = | 1.412 |
| Other paved surfaces | 10,853 | ÷ 43,560 = | 0.249 |
| Total Impervious Cover | 87,135 | ÷ 43,560 = | 2.000 |

**Total Impervious Cover** 2.000 **÷ Total Acreage** 5.70 **X 100 =** 35.1**% 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 | _____Gallons/day |
| _____% Industrial | _____Gallons/day |
| _____% Commingled | _____Gallons/day |
| TOTAL gallons/day 4960 | |

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 _____ (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" = 50'.

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, Flood Insurance Rate Map for Williamson County, Texas, Panel Number 48491C0292F, effective December 20, 2019

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

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

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

☒ There are 2 (#) 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.

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## WPAP Attachment A

## Factors Affecting Water Quality

Water quality is affected by activities during and after construction. During construction, temporary controls will be in place to minimize the effects of construction. After construction, permanent controls will function to reduce the impact of the proposed development.

Construction activities that could affect water quality include sediment in stormwater runoff after the clearing of vegetation, vehicular traffic, handling of construction equipment and materials, fuels, etc. Silt fences, sediment traps, and a stabilized construction entrance and exit will be used during construction to prevent sediment pollution. Any spills or leaks will be cleaned up in a timely manner and will be disposed of properly. A trash receptacle will be placed on-site for use by employees and visitors. Guidelines for these activities are specified in accordance to the TCEQ Construction General Permit (TXR150000) Stormwater Pollution Prevention Plan.

Permanent factors that impact water quality include future construction, landscape practices, runoff from on-site impervious cover, etc. One proposed bioretention ponds and one sedimentation/filtration pond will capture and removed 85% or more of the total suspended solids loading anticipated by increases in impervious cover, per the Edwards Aquifer Rules as presented in the design calculations (Permanent Stormwater Section).

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## WPAP Attachment B

## Volume and Character of Stormwater

The project site is fully located within the Edwards Aquifer Recharge Zone. In the fully developed condition, there is one bioretention pond proposed and one pond with sand filter proposed to provide water quality treatment for the site. This site is located in the Edwards Aquifer Recharge Zone, therefore the bioretention pond is fully lined with a network of underdrain pipes to drain the ponds. An overflow catch basin is included in each pond. Outfall from both ponds is conveyed toward the FM 971 right-of-way to match the existing conditions.

Drainage area maps and water quality calculations are attached.

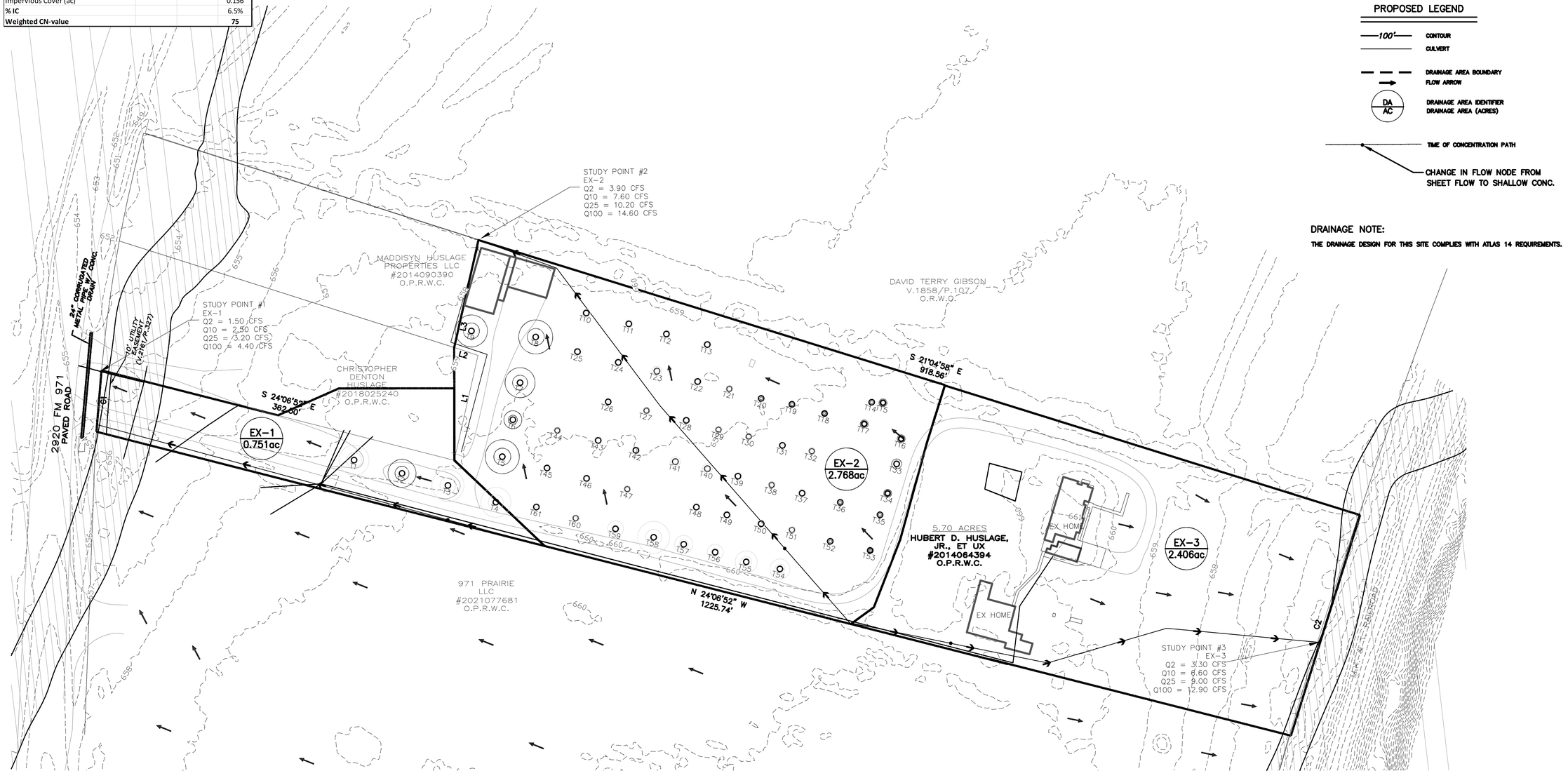
| EXISTING IMPERVIOUS COVER (IC) TABLE | | | |
|---|---|---|---|
| **Ground Cover Description** | **AREA (ft²)** | **AREA (AC)** | **CN** |
| **Drainage Area 1 (EX-1)** | | | |
| Offsite: Existing gravel driveway | 4,747 | 0.109 | 89 |
| Offsite: Existing building | 901 | 0.021 | 98 |
| Offsite: Existing lawn, HSG C | 2,184 | 0.050 | 74 |
| Existing gravel driveway | 7,623 | 0.175 | 89 |
| Pasture or range, good condition, HSG C | 17,271 | 0.396 | 74 |
| **TOTAL** | **32,726** | **0.751** | |
| Gross Site Area | | | 0.751 |
| Impervious Cover (ac) | | | 0.305 |
| **% IC** | | | 40.6% |
| **Weighted CN-value** | | | **80** |
| **Drainage Area 2 (EX-2)** | | | |
| Existing structures and sidewalks | 6,240 | 0.143 | 98 |
| Existing gravel driveway | 9,528 | 0.219 | 89 |
| Pasture or range, good condition, HSG C | 104,814 | 2.406 | 74 |
| **TOTAL** | **120,582** | **2.768** | |
| Gross Site Area | | | 2.768 |
| Impervious Cover (ac) | | | 0.362 |
| **% IC** | | | 13.1% |
| **Weighted CN-value** | | | **76** |
| **Drainage Area 3 (EX-3)** | | | |
| Existing structures and sidewalks | 3,146 | 0.072 | 98 |
| Existing gravel driveway | 3,669 | 0.084 | 89 |
| Pasture or range, good condition, HSG C | 97,979 | 2.249 | 74 |
| **TOTAL** | **104,794** | **2.406** | |
| Gross Site Area | | | 2.406 |
| Impervious Cover (ac) | | | 0.156 |
| **% IC** | | | 6.5% |
| **Weighted CN-value** | | | **75** |

Time of Concentration ($t_c$) Calculation Table

Existing Condition — $P_2$(in): 3.94

| OUTFALL: | Type of Flow | "n" | b (ft) | y (ft) | ss (V/H) | A (ft²) | P (ft) | R (ft) | s (ft/ft) | V (ft/s) | L (ft) | $T_t$ (min) | $T_t$ (hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EX-1 | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.0080 | 0.1 | 100 | 28.5 | 0.47 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.0100 | 1.6 | 362 | 3.7 | 0.06 |
| | | | | | | | | | | **OUTFALL EX-1 Total** | | **32.2** | **0.54** |
| EX-2 | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.007 | 0.1 | 100 | 30.0 | 0.50 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.005 | 1.1 | 443 | 6.5 | 0.11 |
| | | | | | | | | | | **OUTFALL EX-2 Total** | | **36.5** | **0.61** |
| EX-3 | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.006 | 0.1 | 100 | 31.9 | 0.53 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.030 | 2.8 | 368 | 2.2 | 0.04 |
| | | | | | | | | | | **OUTFALL EX-3 Total** | | **34.1** | **0.57** |

| EXISTING CONDITIONS PEAK DISCHARGE (CFS) - NRCS METHOD | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **DRAINAGE AREA / ANALYSIS POINT** | **ACREAGE (AC)** | **PERVIOUS COV (%)** | **Tc (mins.)** | **BASE CN** | **2-YR (CFS)** | **5-YR (CFS)** | **10-YR (CFS)** | **25-YR (CFS)** | **50-YR (CFS)** | **100-YR (CFS)** |
| EX-1 | 0.751 | 40.6 | 32.2 | 74 | 1.50 | 2.00 | 2.50 | 3.20 | 3.80 | 4.40 |
| EX-2 | 2.768 | 13.1 | 36.5 | 74 | 3.90 | 5.90 | 7.60 | 10.20 | 12.30 | 14.60 |
| EX-3 | 2.406 | 6.5 | 34.1 | 74 | 3.30 | 5.00 | 6.60 | 9.00 | 10.90 | 12.90 |




**DRAINAGE NOTE:**

THE DRAINAGE DESIGN FOR THIS SITE COMPLIES WITH ATLAS 14 REQUIREMENTS.

SCALE: 1"= 50'

0' 50' 100' 150'

## LEGEND

- △ = CALCULATED POINT
- ● = FND 1/2" IRON ROD
- ( ) = RECORD INFORMATION
- B.S. = BUILDING SETBACK
- R.D. = RECORD DIGNITY MONUMENT
- = FIRE HYDRANT
- Ⓜ = SANITARY SEWER MANHOLE
- —x— = WIRE FENCE
- = POWER POLE
- —E— = OVERHEAD ELECTRIC

## PROPOSED LEGEND

- 100' = CONTOUR
- = CULVERT
- = DRAINAGE AREA BOUNDARY
- = FLOW ARROW
- DA / AC = DRAINAGE AREA IDENTIFIER / DRAINAGE AREA (ACRES)
- = TIME OF CONCENTRATION PATH
- = CHANGE IN FLOW NODE FROM SHEET FLOW TO SHALLOW CONC.

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626

EXISTING CONDITIONS DRAINAGE AREA MAP


Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED
PROFESSIONAL ENGINEER
Rachel D Hartzler
09/25/2024

SHEET 6 OF 29

CASE NO: 2023-25-SWP

| Time of Concentration ($t_c$) Calculation Table | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fully Developed Condition | | | | | | | | | | | | | $P_2$(in): | 3.94 |
| **OUTFALL:** | **Type of Flow** | **"n"** | **b (ft)** | **y (ft)** | **ss (V/H)** | **A ($ft^2$)** | **P (ft)** | **R (ft)** | **s (ft/ft)** | **V (ft/s)** | **L (ft)** | **$T_t$ (min)** | **$T_t$ (hr)** |
| PR-1a | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.010 | 0.1 | 100 | 26.0 | 0.43 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.010 | 1.6 | 195 | 2.0 | 0.03 |
| | | | | | | | | | | | **OUTFALL PR-1a Total** | **28.1** | **0.47** |
| PR-1b | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.010 | 0.1 | 100 | 26.0 | 0.43 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.010 | 1.6 | 273 | 2.8 | 0.05 |
| | | | | | | | | | | | **OUTFALL PR-1b Total** | **28.9** | **0.48** |
| PR-2a | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.006 | 0.1 | 100 | 31.9 | 0.53 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.010 | 1.6 | 50 | 0.5 | 0.01 |
| | | | | | | | | | | | **OUTFALL PR-2a Total** | **32.5** | **0.54** |
| PR-2b | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.006 | 0.1 | 100 | 31.9 | 0.53 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.010 | 1.6 | 388 | 4.0 | 0.07 |
| | | | | | | | | | | | **OUTFALL PR-2b Total** | **36.0** | **0.60** |
| PR-3 | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.006 | 0.1 | 100 | 31.9 | 0.53 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.030 | 2.8 | 368 | 2.2 | 0.04 |
| | | | | | | | | | | | **OUTFALL PR-3 Total** | **34.1** | **0.57** |

**FULLY DEVELOPED CONDITIONS PEAK DISCHARGE (CFS) - NRCS METHOD**

| DRAINAGE AREA / ANALYSIS POINT | ACREAGE (AC) | PERVIOUS COV (%) | Tc (mins.) | BASE CN | 2-YR (CFS) | 5-YR (CFS) | 10-YR (CFS) | 25-YR (CFS) | 50-YR (CFS) | 100-YR (CFS) |
|---|---|---|---|---|---|---|---|---|---|---|
| PR-1a | 0.184 | 56.7% | 28.1 | 74* | 0.50 | 0.60 | 0.70 | 0.90 | 1.10 | 1.20 |
| PR-1b | 0.566 | 63.1% | 28.9 | 74* | 1.40 | 1.80 | 2.20 | 2.80 | 3.20 | 3.70 |
| PR-2a | 1.831 | 72.6% | 32.5 | 74* | 4.60 | 5.90 | 7.10 | 8.80 | 10.20 | 11.60 |
| PR-2b | 0.939 | 19.6% | 36.0 | 74* | 1.50 | 2.10 | 2.70 | 3.60 | 4.30 | 5.10 |
| PR-3 | 2.406 | 6.5% | 34.1 | 74* | 3.30 | 5.00 | 6.60 | 9.00 | 10.90 | 12.90 |

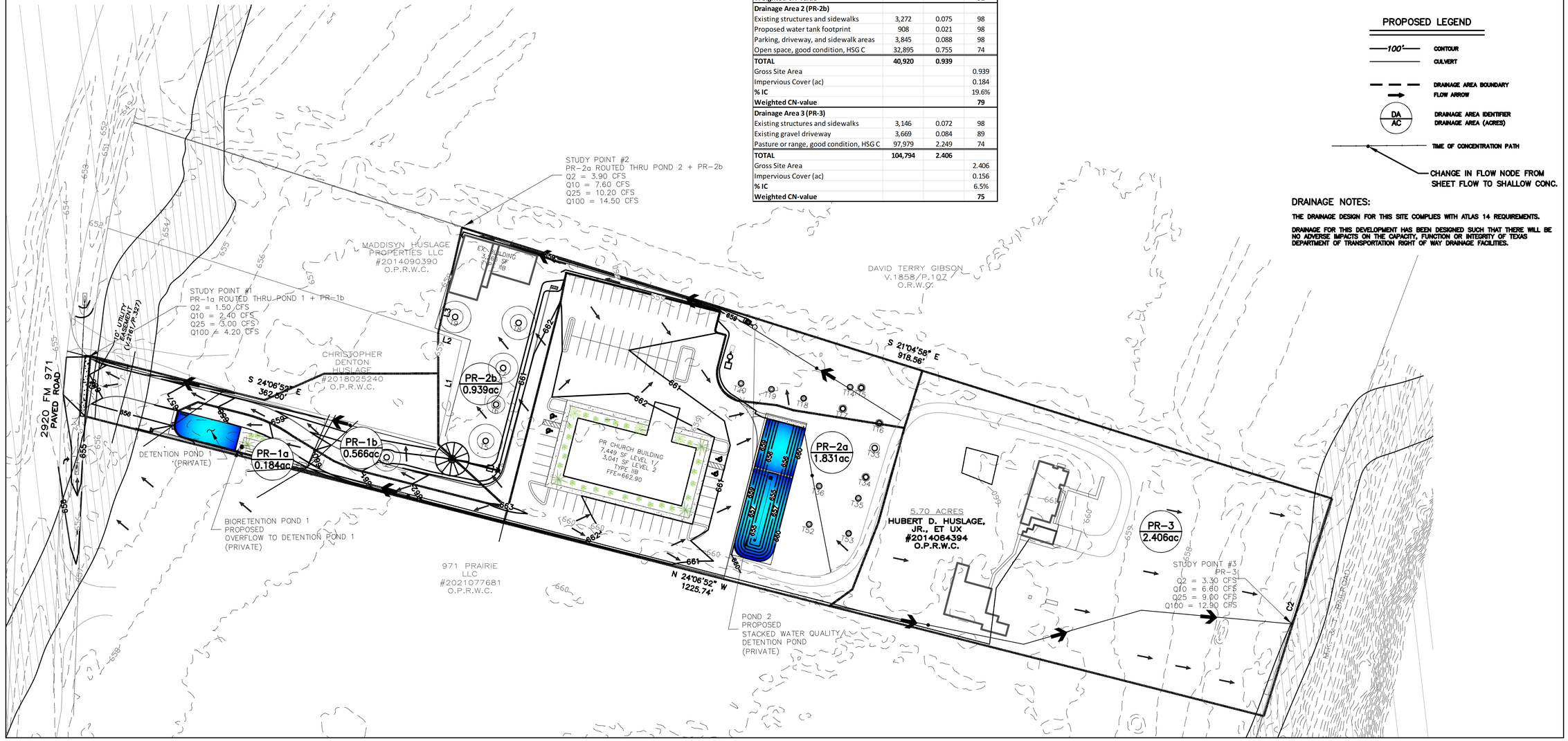
*Use pre-development runoff curve number in post-development model, existing and proposed percentage of impervious cover shall be input individually for each condition

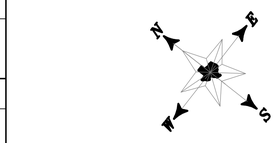
**PROPOSED IMPERVIOUS COVER (IC) TABLE**

| Ground Cover Description | AREA ($ft^2$) | AREA (AC) | CN |
|---|---|---|---|
| **Drainage Area 1 (PR-1a)** | | | |
| Open space, good condition, HSG C | 3,458 | 0.079 | 74 |
| Parking, driveway, and sidewalk areas | 4,536 | 0.104 | 98 |
| **TOTAL** | **7,994** | **0.184** | |
| Gross Site Area | | | 0.184 |
| Impervious Cover (ac) | | | 0.104 |
| **% IC** | | | 56.7% |
| **Weighted CN-value** | | | **88** |
| **Drainage Area 1 (PR-1b)** | | | |
| Offsite: Existing gravel driveway | 4,747 | 0.109 | 89 |
| Offsite: Existing building | 901 | 0.021 | 98 |
| Offsite: Existing lawn, HSG C | 2,184 | 0.050 | 74 |
| Open space, good condition, HSG C | 6,913 | 0.159 | 74 |
| Existing gravel driveway | 2,665 | 0.061 | 89 |
| Parking, driveway, and sidewalk areas | 7,234 | 0.166 | 98 |
| **TOTAL** | **24,644** | **0.566** | |
| Gross Site Area | | | 0.566 |
| Impervious Cover (ac) | | | 0.357 |
| **% IC** | | | 63.1% |
| **Weighted CN-value** | | | **86** |
| **Drainage Area 2 (PR-2a)** | | | |
| Additional impervious cover from ROW | 3611 | 0.083 | 98 |
| Proposed church building footprint | 8,359 | 0.192 | 98 |
| Parking, driveway, and sidewalk areas | 45,890 | 1.053 | 98 |
| Open space, good condition, HSG C | 21,890 | 0.503 | 74 |
| **TOTAL** | **79,750** | **1.831** | |
| Gross Site Area | | | 1.831 |
| Impervious Cover (ac) | | | 1.328 |
| **% IC** | | | 72.6% |
| **Weighted CN-value** | | | **91** |
| **Drainage Area 2 (PR-2b)** | | | |
| Existing structures and sidewalks | 3,272 | 0.075 | 98 |
| Proposed water tank footprint | 908 | 0.021 | 98 |
| Parking, driveway, and sidewalk areas | 3,845 | 0.088 | 98 |
| Open space, good condition, HSG C | 32,895 | 0.755 | 74 |
| **TOTAL** | **40,920** | **0.939** | |
| Gross Site Area | | | 0.939 |
| Impervious Cover (ac) | | | 0.184 |
| **% IC** | | | 19.6% |
| **Weighted CN-value** | | | **79** |
| **Drainage Area 3 (PR-3)** | | | |
| Existing structures and sidewalks | 3,146 | 0.072 | 98 |
| Existing gravel driveway | 3,669 | 0.084 | 89 |
| Pasture or range, good condition, HSG C | 97,979 | 2.249 | 74 |
| **TOTAL** | **104,794** | **2.406** | |
| Gross Site Area | | | 2.406 |
| Impervious Cover (ac) | | | 0.156 |
| **% IC** | | | 6.5% |
| **Weighted CN-value** | | | **75** |

**Pre- and Post-Development Comparison Table**

| DRAINAGE AREA | Condition | Description | ACREAGE (AC) | 2-YR (CFS) | 10-YR (CFS) | 25-YR (CFS) | 100-YR (CFS) |
|---|---|---|---|---|---|---|---|
| EX-1 | Pre-Development | **Drains to FM 971 Right-of-way** | 0.751 | 1.50 | 2.50 | 3.20 | 4.40 |
| PR-1a (routed thru pond) + PR-1b | Post-Development | **Drains to FM 971 Right-of-way** | 0.749 | 1.50 | 2.40 | 3.00 | 4.20 |
| EX-2 | Pre-Development | **Drains to eastern side of site** | 2.768 | 3.90 | 7.60 | 10.20 | 14.60 |
| PR-2a (routed thru pond) + PR-2b | Post-Development | **Drains to eastern side of site** | 2.770 | 3.90 | 7.60 | 10.20 | 14.50 |
| EX-3 | Pre-Development | **Drains to San Gabriel River** | 2.406 | 3.30 | 6.60 | 9.00 | 12.90 |
| PR-3 | Post-Development | **Drains to San Gabriel River** | 2.406 | 3.30 | 6.60 | 9.00 | 12.90 |




SCALE: 1"= 50'

0' 50' 100' 150'

## LEGEND

- Δ = CALCULATED POINT
- ● = FND 1/2" IRON ROD
- ( ) = RECORD INFORMATION
- B.S. = BUILDING SETBACK
- R.D. = RECORD DIGNITY MONUMENT
- = FIRE HYDRANT
- M = SANITARY SEWER MANHOLE
- = WIRE FENCE
- = POWER POLE
- —E— = OVERHEAD ELECTRIC

## PROPOSED LEGEND

- 100' = CONTOUR
- = CULVERT
- = DRAINAGE AREA BOUNDARY
- = FLOW ARROW
- DA / AC = DRAINAGE AREA IDENTIFIER / DRAINAGE AREA (ACRES)
- = TIME OF CONCENTRATION PATH
- CHANGE IN FLOW NODE FROM SHEET FLOW TO SHALLOW CONC.

## DRAINAGE NOTES:

THE DRAINAGE DESIGN FOR THIS SITE COMPLIES WITH ATLAS 14 REQUIREMENTS.

DRAINAGE FOR THIS DEVELOPMENT HAS BEEN DESIGNED SUCH THAT THERE WILL BE NO ADVERSE IMPACTS ON THE CAPACITY, FUNCTION OR INTEGRITY OF TEXAS DEPARTMENT OF TRANSPORTATION RIGHT OF WAY DRAINAGE FACILITIES.

CASE NO: 2023-25-SWP

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626

FULLY DEVELOPED CONDITIONS DRAINAGE AREA MAP


Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED
PROFESSIONAL ENGINEER
09/25/2024

SHEET 7 OF 29

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

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

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

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

| | | |
|---|---|---|
| County = | Williamson | |
| Total project area included in plan * = | 5.93 | acres |
| Predevelopment impervious area within the limits of the plan * = | 0.82 | acres |
| Total post-development impervious area within the limits of the plan* = | 2.13 | acres |
| Total post-development impervious cover fraction * = | 0.36 | |
| P = | 32 | inches |
| $L_{M\ TOTAL\ PROJECT}$ = | 1140 | lbs. |

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

Number of drainage basins / outfalls areas leaving the plan area = 3

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

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

| | | |
|---|---|---|
| Total drainage basin/outfall area = | 0.18 | acres |
| Predevelopment impervious area within drainage basin/outfall area = | 0.07 | acres |
| Post-development impervious area within drainage basin/outfall area = | 0.10 | acres |
| Post-development impervious fraction within drainage basin/outfall area = | 0.56 | |
| $L_{M\ THIS\ BASIN}$ = | 30 | 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 |
| $A_I$ = | 0.10 | acres |
| $A_P$ = | 0.08 | acres |
| $L_R$ = | 100 | lbs |

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

| | | |
|---|---|---|
| Desired $L_{M\ THIS\ BASIN}$ = | 50 | lbs. |
| F = | 0.50 | |

**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 = | 0.42 | inches |
| Post Development Runoff Coefficient = | 0.39 | |
| On-site Water Quality Volume = | 108 | 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 = | 22 | |
| **Total Capture Volume (required water quality volume(s) x 1.20) =** | 129 | 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.

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

Required Water Quality Volume for Bioretention Basin = 129 cubic feet

**TSS REMOVAL CALCULATIONS**

| DRAINAGE AREA / ANALYSIS POINT | ACREAGE (AC) | IMPERVIOUS COVER (ac) | $L_M$ |
|---|---|---|---|
| PR-1a | 0.184 | 0.104 | 50 |
| PR-1b | 0.566 | 0.357 | 0 |
| PR-2a | 1.831 | 1.328 | 1090 |
| PR-2b | 0.939 | 0.184 | 0 |
| PR-3 | 2.406 | 0.156 | 0 |
| Total Site | 5.925 | 2.130 | $L_R$=1,140 lbs |
| | | LM total project = | 1140 lbs |

Biofiltration Bed #1

(2) 0.12-inch Orifice: Orifice (sf) = 0.0098; Center Elev = 656.12; Coef. = 0.60

24-foot weir: Weir (ft) = 24.00; Elevation = 658.60; Coef. = 3.22

**Biofiltration Bed - Elevation - Area - Stage - Storage - Discharge Table**

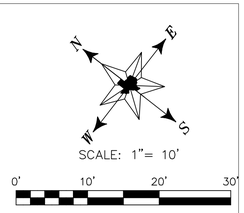
| Elevation (Mean Sea Level) | Area (SF) | Area (ac) | Storage (Cubic Feet) | | Outflow (CFS) | Outflow (CFS) | Total Outflow (CFS) |
|---|---|---|---|---|---|---|---|
| 658.00 | 1,000 | 0.023 | 0 | WQ Vol | 0.06 | 0.00 | 0.06 |
| 658.60 | 1,000 | 0.023 | 600 | WQ Vol Elev | 0.07 | 0.00 | 0.07 |
| 659.00 | 1,000 | 0.023 | 1,000 | Freeboard | 0.08 | 19.55 | 19.63 |

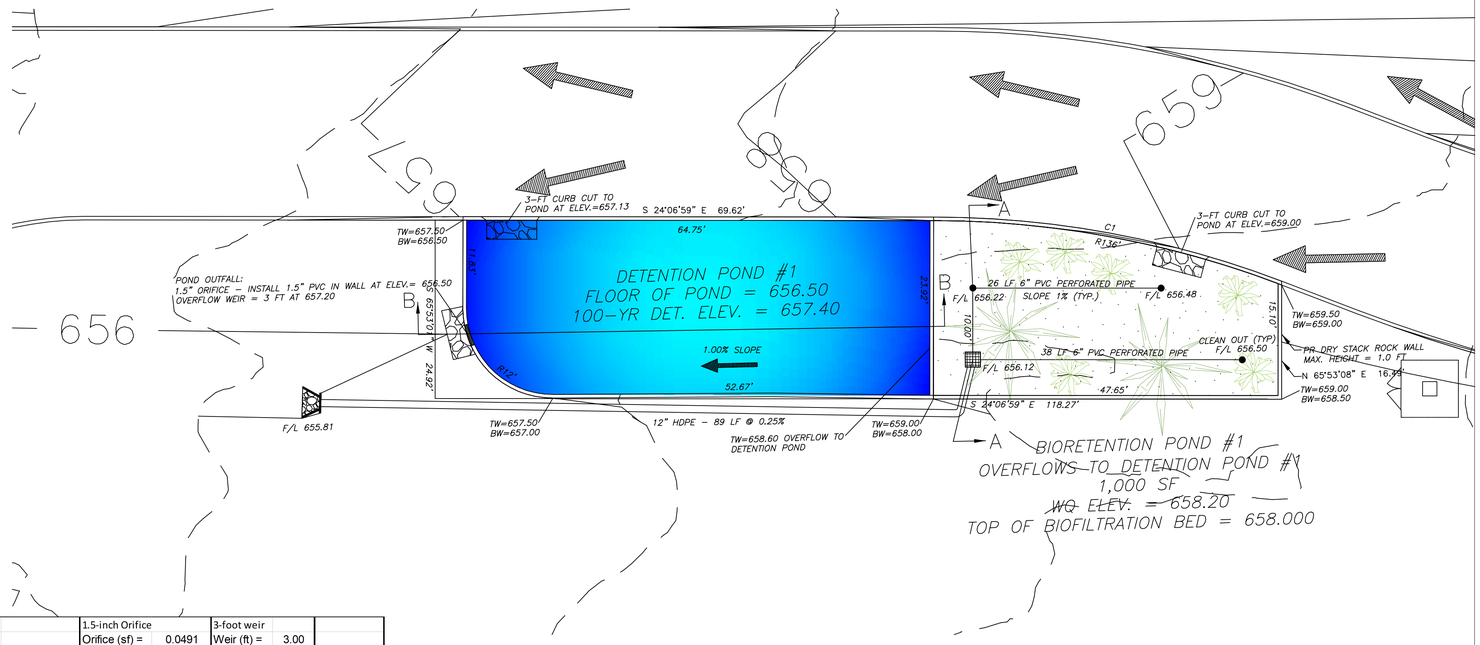
Water Quality Elevation = 658.2
Water Quality Volume Required = 129 CF
Water Quality Volume Provided = 200 CF

**WATER QUALITY 48-HR DRAWDOWN CALCULATIONS**

| | | |
|---|---|---|
| 48 hour release rate (average) = WQv provided/48-hrs = | Q = | 0.00116 cfs |
| Outfall Orifice flow line = | | 656.12 ft msl |
| Head on the Outfall Orifice = | H = | 2.58 feet |
| Orifice equation = $Q = CA(2gH)^{0.5}$ Thus, $A=Q/(C(2gH)^{0.5})$ = | A = | 0.00015 sf |
| Number of Orifices = | N = | 2 |
| Orifice diameter in Outfall Cap for Avg. 48 Hr release rate = $(4A/pi)^{0.5}$ = | D = | 0.0098 feet |
| | = | 0.12 inches |

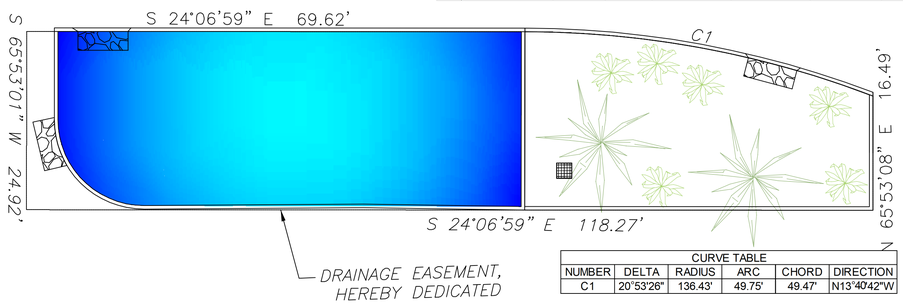
where
A = area of the orifice
Q = average flow rate
C = coefficient of discharge (0.6 for sharp-edged orifice)
g = acceleration of gravity (32.2 ft/sec$^2$)
H = the difference in elevation between the WQ surface elevation and the center elevation of the outfall orifice



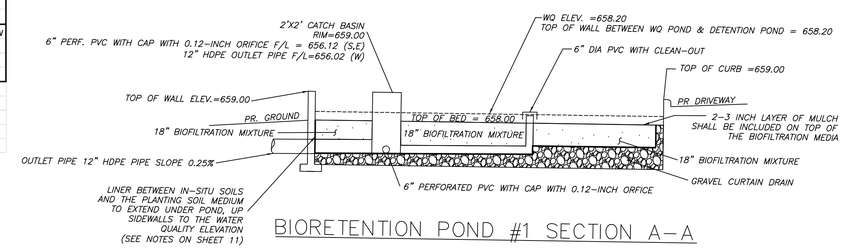

| Detention Pond #1 | | | | | 1.5-inch Orifice | | 3-foot weir | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Orifice (sf) = | 0.0491 | Weir (ft) = | 3.00 | |
| | | | | | Center Elev = | 656.56 | Elevation = | 657.30 | |
| **Detention Pond #1 - Elevation - Area - Stage - Storage - Discharge Tab** | | | | | Coef. = | 0.60 | Coef. = | 3.22 | |
| Elevation (Mean Sea Level) | Area (SF) | Area (ac) | Storage (Cubic Feet) | | Outflow (CFS) | | Outflow (CFS) | | Total Outflow (CFS) |
| 656.50 | 1,540 | 0.035 | 0 | Det. Vol. | 0.00 | | 0.00 | | 0.00 |
| 657.50 | 1,627 | 0.037 | 1,584 | Det. Vol. | 0.23 | | 0.86 | | 1.09 |

| WSE |
|---|
| 2 yr: 657.0 |
| 10 yr: 657.3 |
| 25-yr: 657.4 |
| 100-yr: 657.5 |

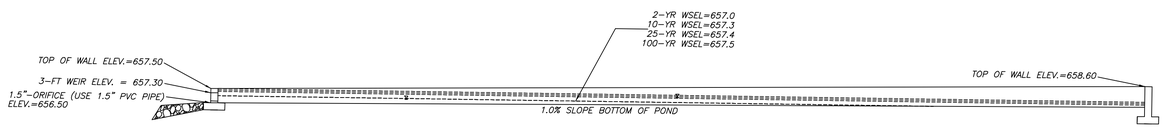



DRAINAGE EASEMENT DIMENSIONS

| CURVE TABLE | | | | | |
|---|---|---|---|---|---|
| NUMBER | DELTA | RADIUS | ARC | CHORD | DIRECTION |
| C1 | 20°53'26" | 136.43' | 49.75' | 49.47' | N13°40'42"W |




BIORETENTION POND #1 SECTION A-A




DETENTION POND #1 SECTION B-B

CASE NO: 2023-25-SWP

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626

BIORETENTION POND & DETENTION POND 1 PLAN


Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Grass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED
PROFESSIONAL ENGINEER
09/25/2024

SHEET 8 OF 29

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

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

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

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

| | | |
|---|---|---|
| County = | Williamson | |
| Total project area included in plan * = | 5.93 | acres |
| Predevelopment impervious area within the limits of the plan * = | 0.82 | acres |
| Total post-development impervious area within the limits of the plan* = | 2.13 | acres |
| Total post-development impervious cover fraction * = | 0.36 | |
| P = | 32 | inches |
| $L_{M\ TOTAL\ PROJECT}$ = | 1140 | lbs. |

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

Number of drainage basins / outfalls areas leaving the plan area = 3

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

**Drainage Basin/Outfall Area No. = 2a**

| | | |
|---|---|---|
| Total drainage basin/outfall area = | 1.83 | acres |
| Predevelopment impervious area within drainage basin/outfall area = | 0.12 | acres |
| Post-development impervious area within drainage basin/outfall area = | 1.33 | acres |
| Post-development impervious fraction within drainage basin/outfall area = | 0.73 | |
| $L_{M\ THIS\ BASIN}$ = | 1053 | lbs. |

**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = Sand Filter

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

| | | |
|---|---|---|
| $A_C$ = | 1.83 | acres |
| $A_I$ = | 1.33 | acres |
| $A_P$ = | 0.50 | acres |
| $L_R$ = | 1318 | lbs |

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

Desired $L_{M\ THIS\ BASIN}$ = 1090 lbs.

F = 0.83

**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 = | 1.20 | inches |
| Post Development Runoff Coefficient = | 0.53 | |
| On-site Water Quality Volume = | 4254 | 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 = | 851 | |
| **Total Capture Volume (required water quality volume(s) x 1.20) =** | 5105 | cubic feet |

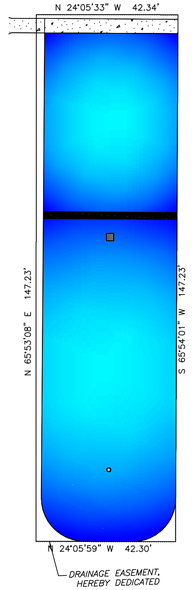
**9. Filter area for Sand Filters** Designed as Required in RG-348 Pages 3-58 to 3-63

**9B. Partial Sedimentation and Filtration System**

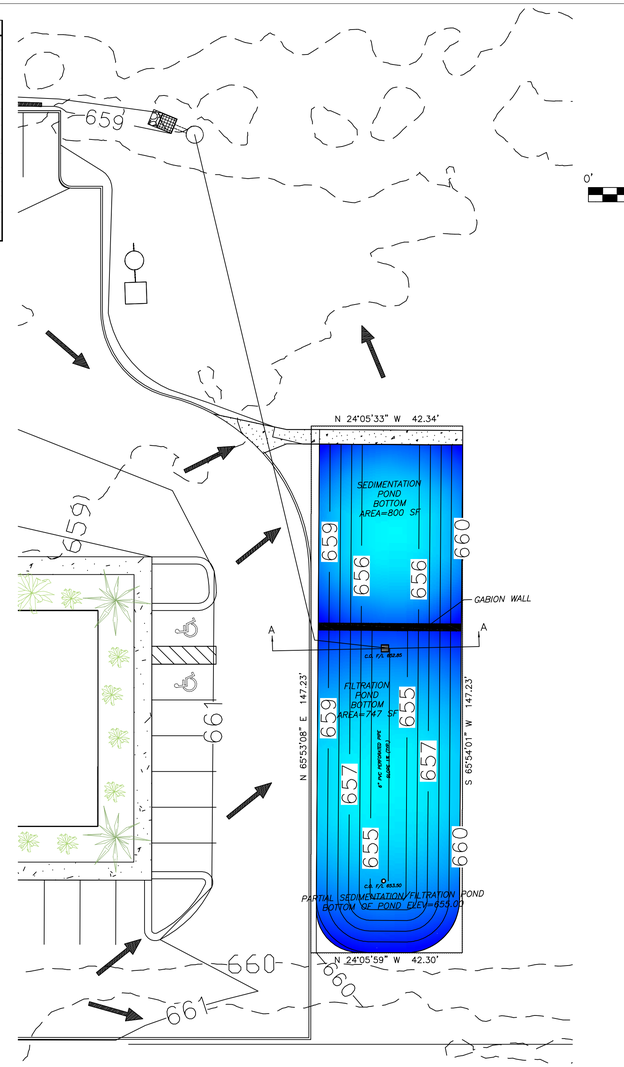
| | | | |
|---|---|---|---|
| Water Quality Volume for combined basins = | 5105 | cubic feet | |
| Minimum filter basin area = | 425 | square feet | |
| Maximum sedimentation basin area = | 1702 | square feet | For minimum water depth of 2 feet |
| Minimum sedimentation basin area = | 106 | square feet | For maximum water depth of 8 feet |

| WATER QUALITY 48-HR DRAWDOWN CALCULATIONS | | |
|---|---|---|
| 48 hour release rate (average) = WQv provided/48-hrs = | Q = | 0.03317 cfs |
| Outfall Orifice flow line = | | 652.85 ft msl |
| Head on the Outfall Orifice = | H = | 5.05 feet |
| Orifice equation = $Q = CA(2gH)^{0.5}$ Thus, $A=Q/(C(2gH)^{0.5})$ = | A = | 0.00307 sf |
| Number of Orifices = | N = | 1 |
| Orifice diameter in Outfall Cap for Avg. 48 Hr release rate = $(4A/pi)^{0.5}$ = | D = | 0.06248 feet |
| | = | 0.75 inches |

where
A = area of the orifice
Q = average flow rate
C = coefficient of discharge (0.6 for sharp-edged orifice)
g = acceleration of gravity (32.2 ft/sec$^2$)
H = the difference in elevation between the WQ surface elevation and the center elevation of the outfall orifice



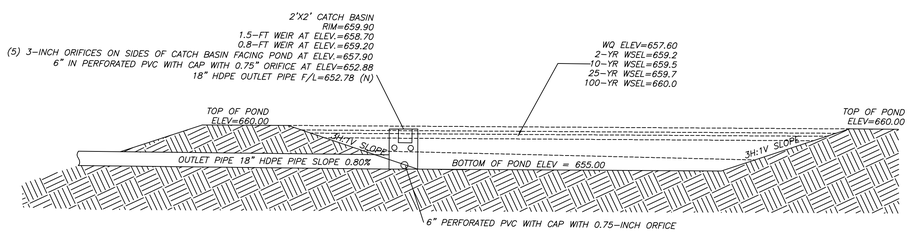

DRAINAGE EASEMENT DIMENSIONS




SEDIMENTATION/FILTRATION POND WITH STACKED DETENTION

| Stacked WQ/Detention Pond #2 | | | | | 0.75-inch Orifice | (5) 3-inch Orifice | 1.5-foot weir | 0.8-foot weir | 8-foot weir (top of catch basin) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Orifice (sf) = 0.0031 | Orifice (sf) = 0.0873 | Weir (ft) = 1.50 | Weir (ft) = 0.80 | Weir (ft) = 8.00 | |
| | | | | | Center Elev = 652.88 | Center Elev = 658.03 | Elevation = 658.70 | Elevation = 659.20 | Elevation = 659.90 | |
| **Sed/Filt Pond - Elevation - Area - Stage - Storage - Discharge Tab** | | | | | Coef. = 0.60 | Coef. = 0.60 | Coef. = 3.22 | Coef. = 3.22 | Coef. = 3.22 | |
| Elevation | Area | | Storage | | Outflow | Outflow | Outflow | Outflow | Outflow | Total Outflow |
| (Mean Sea Level) | (SF) | (ac) | (Cubic Feet) | | (CFS) | (CFS) | (CFS) | (CFS) | (CFS) | (CFS) |
| 655.00 | 747 | 0.017 | 0 | WQ Vol | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 |
| 656.00 | 2,075 | 0.048 | 1,356 | WQ Vol | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 |
| 657.00 | 2,910 | 0.067 | 3,836 | WQ Vol | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 |
| 657.60 | 3,414 | 0.078 | 5,732 | WQ Vol | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 |
| | | | | WQ Elev/Base | | | | | | |
| 657.60 | 3,414 | 0.078 | 0 | of Det. Pond | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 |
| 658.00 | 3,772 | 0.087 | 542 | WQ Vol | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 |
| 659.00 | 4,662 | 0.107 | 3,023 | WQ Vol | 0.04 | 0.41 | 0.79 | 0.00 | 0.00 | 1.24 |
| 660.00 | 5,582 | 0.128 | 6,182 | Det. Vol. | 0.04 | 0.59 | 7.16 | 1.84 | 0.81 | 10.45 |

Water Quality Elevation = 657.60
Water Quality Volume Required = 5105 CF
Water Quality Volume Provided = 5732 CF
WSE
2 yr: 659.2
10 yr: 659.5
25-yr: 659.7
100-yr: 660.0




SEDIMENTATION/FILTRATION POND SECTION A-A

SCALE 1"=5'-0"

CASE NO: 2023-25-SWP

BY | NO. | DATE | REVISIONS

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626

PARTIAL SEDIMENTATION/FILTRATION POND #2


Highland Development & ENGINEERING COMPANY
hd+e
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED PROFESSIONAL ENGINEER
09/25/2024

SHEET 9 OF 29

| TSS REMOVAL CALCULATIONS | | | |
|---|---|---|---|
| **DRAINAGE AREA / ANALYSIS POINT** | **ACREAGE (AC)** | **IMPERVIOUS COVER (ac)** | **$L_M$** |
| PR-1a | 0.184 | 0.104 | 50 |
| PR-1b | 0.566 | 0.357 | 0 |
| PR-2a | 1.831 | 1.328 | 1090 |
| PR-2b | 0.939 | 0.184 | 0 |
| PR-3 | 2.406 | 0.156 | 0 |
| Total Site | 5.925 | 2.130 | $L_R$=1,140 lbs |
| | | LM total project = | 1140 lbs |

Removal efficiency = 89 for Biofiltration Beds

Exceeds required removal efficiency of 85 for City of Georgetown

**1. The Required Load Reduction for the total project:** Calculations from RG-348

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

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resul
$A_N$ = Net increase in impervious a
P = Average annual precipitation

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

| | | |
|---|---|---|
| County = | Williamson | |
| Total project area included in plan * = | 5.93 | acres |
| Predevelopment impervious area within the limits of the plan * = | 0.82 | acres |
| Total post-development impervious area within the limits of the plan* = | 2.13 | acres |
| Total post-development impervious cover fraction * = | 0.36 | |
| P = | 32 | inches |
| $L_{M\ TOTAL\ PROJECT}$ = | 1140 | lbs. |

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

Number of drainage basins / outfalls areas leaving the plan area = 3

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

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

| | | |
|---|---|---|
| Total drainage basin/outfall area = | 0.18 | acres |
| Predevelopment impervious area within drainage basin/outfall area = | 0.07 | acres |
| Post-development impervious area within drainage basin/outfall area = | 0.10 | acres |
| Post-development impervious fraction within drainage basin/outfall area = | 0.56 | |
| $L_{M\ THIS\ BASIN}$ = | 30 | 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 3

where:

$A_C$ = Total On-Site drainage area
$A_I$ = Impervious area proposed in
$A_P$ = Pervious area remaining in tl
$L_R$ = TSS Load removed from this

| | | |
|---|---|---|
| $A_C$ = | 0.18 | acres |
| $A_I$ = | 0.10 | acres |

| | | |
|---|---|---|
| $A_P$ = | **0.08** | acres |
| $L_R$ = | **100** | lbs |

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

| | | |
|---|---|---|
| Desired $L_{M\ THIS\ BASIN}$ = | **50** | lbs. |
| F = | **0.50** | |

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

| | | |
|---|---|---|
| Rainfall Depth = | **0.42** | inches |
| Post Development Runoff Coefficient = | **0.39** | |
| On-site Water Quality Volume = | **108** | cubic feet |

Calculations from RG-348

| | | |
|---|---|---|
| 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 = | **22** | |
| **Total Capture Volume (required water quality volume(s) x 1.20) =** | **129** | 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.**

**10. Bioretention System**

Designed as Required in RG

| | | |
|---|---|---|
| Required Water Quality Volume for Bioretention Basin = | **129** | cubic feet |

| Biofiltration Bed #1 | | | | | (2) 0.12-inch Orifice | 24-foot weir | |
|---|---|---|---|---|---|---|---|
| | | | | | Orifice (sf) = 0.0098 | Weir (ft) = 24.00 | |
| | | | | | Center Elev = 656.12 | Elevation = 658.60 | |
| **Biofiltration Bed - Elevation - Area - Stage - Storage - Discharge Table** | | | | | Coef. = 0.60 | Coef. = 3.22 | |
| Elevation | Area | | Storage | | Outflow | Outflow | Total Outflow |
| (Mean Sea Level) | (SF) | (ac) | (Cubic Feet) | | (CFS) | (CFS) | (CFS) |
| 658.00 | 1,000 | 0.023 | 0 | WQ Vol | 0.06 | 0.00 | 0.06 |
| 658.60 | 1,000 | 0.023 | 600 | WQ Vol Elev | 0.07 | 0.00 | 0.07 |
| 659.00 | 1,000 | 0.023 | 1,000 | Freeboard | 0.08 | 19.55 | 19.63 |

Water Quality Elevation = 658.2
Water Quality Volume Required = 129 CF
Water Quality Volume Provided = 200 CF

| WATER QUALITY 48-HR DRAWDOWN CALCULATIONS | | | |
|---|---|---|---|
| 48 hour release rate (average) = WQv provided/48-hrs = | Q = | 0.00116 | cfs |
| Outfall Orifice flow line = | | 656.12 | ft msl |
| Head on the Outfall Orifice = | H = | 2.58 | feet |
| Orifice equation = $Q = CA(2gH)^{0.5}$ Thus, $A=Q/(C(2gH)^{0.5})$ = | A = | 0.00015 | sf |
| Number of Orifices = | N = | 2 | |
| Orifice diameter in Outfall Cap for Avg. 48 Hr release rate = $(4A/pi)^{0.5}$ = | D = | 0.0098 | feet |
| | = | 0.12 | inches |

where
A = area of the orifice
Q = average flow rate
C = coefficient of discharge (0.6 for sharp-edged orifice)
g = acceleration of gravity (32.2 ft/sec $^2$)
H = the difference in elevation between the WQ surface elevation and the center elevation of the outfall orifice

**1. The Required Load Reduction for the total project:** Calculations from RG-348

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

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resul
$A_N$ = Net increase in impervious a
P = Average annual precipitation

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

| | | |
|---|---|---|
| County = | Williamson | |
| Total project area included in plan * = | 5.93 | acres |
| Predevelopment impervious area within the limits of the plan * = | 0.82 | acres |
| Total post-development impervious area within the limits of the plan* = | 2.13 | acres |
| Total post-development impervious cover fraction * = | 0.36 | |
| P = | 32 | inches |

$L_{M\ TOTAL\ PROJECT}$ = **1140** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **3**

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

**Drainage Basin/Outfall Area No. =** **2a**

| | | |
|---|---|---|
| Total drainage basin/outfall area = | 1.83 | acres |
| Predevelopment impervious area within drainage basin/outfall area = | 0.12 | acres |
| Post-development impervious area within drainage basin/outfall area = | 1.33 | acres |
| Post-development impervious fraction within drainage basin/outfall area = | 0.73 | |
| $L_{M\ THIS\ BASIN}$ = | 1053 | lbs. |

**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = **Sand Filter**
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 3

where:

$A_C$ = Total On-Site drainage area
$A_I$ = Impervious area proposed in
$A_P$ = Pervious area remaining in tl
$L_R$ = TSS Load removed from this

| | | |
|---|---|---|
| $A_C$ = | 1.83 | acres |
| $A_I$ = | 1.33 | acres |
| $A_P$ = | 0.50 | acres |
| $L_R$ = | 1318 | lbs |

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

| | | |
|---|---|---|
| Desired $L_{M\ THIS\ BASIN}$ = | 1090 | lbs. |
| F = | **0.83** | |

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

| | | |
|---|---|---|
| Rainfall Depth = | **1.20** | inches |
| Post Development Runoff Coefficient = | **0.53** | |
| On-site Water Quality Volume = | **4254** | cubic feet |

Calculations from RG-348

| | | |
|---|---|---|
| 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 = | **851** | |
| **Total Capture Volume (required water quality volume(s) x 1.20) =** | **5105** | cubic feet |

**9. Filter area for Sand Filters** Designed as Required in RG

**9B. Partial Sedimentation and Filtration System**

| | | |
|---|---|---|
| Water Quality Volume for combined basins = | **5105** | cubic feet |
| Minimum filter basin area = | **425** | square feet |
| Maximum sedimentation basin area = | **1702** | square feet |
| Minimum sedimentation basin area = | **106** | square feet |

| Stacked WQ/Detention Pond #2 | | | | | 0.75-inch Orifice | (5) 3-inch Orifice | 1.5-foot weir | 0.8-foot weir | 8-foot weir (top of catch basin) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Orifice (sf) = 0.0031 | Orifice (sf) = 0.0873 | Weir (ft) = 1.50 | Weir (ft) = 0.80 | Weir (ft) = 8.00 | |
| | | | | | Center Elev = 652.88 | Center Elev = 658.03 | Elevation = 658.70 | Elevation = 659.20 | Elevation = 659.90 | |
| **Sed/Filt Pond - Elevation - Area - Stage - Storage - Discharge Table** | | | | | Coef. = 0.60 | Coef. = 0.60 | Coef. = 3.22 | Coef. = 3.22 | Coef. = 3.22 | |
| Elevation | Area | | Storage | | Outflow | Outflow | Outflow | Outflow | Outflow | Total Outflow |
| (Mean Sea Level) | (SF) | (ac) | (Cubic Feet) | | (CFS) | (CFS) | (CFS) | (CFS) | (CFS) | (CFS) |
| 655.00 | 747 | 0.017 | 0 | WQ Vol | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 |
| 656.00 | 2,075 | 0.048 | 1,356 | WQ Vol | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 |
| 657.00 | 2,910 | 0.067 | 3,836 | WQ Vol | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 |
| 657.60 | 3,414 | 0.078 | 5,732 | WQ Vol | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 |
| | | | | WQ Elev/Base | | | | | | |
| 657.60 | 3,414 | 0.078 | 0 | of Det. Pond | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 |
| 658.00 | 3,772 | 0.087 | 542 | WQ Vol | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 |
| 659.00 | 4,662 | 0.107 | 3,023 | WQ Vol | 0.04 | 0.41 | 0.79 | 0.00 | 0.00 | 1.24 |
| 660.00 | 5,582 | 0.128 | 6,182 | Det. Vol. | 0.04 | 0.59 | 7.16 | 1.84 | 0.81 | 10.45 |

Water Quality Elevation = 657.60
Water Quality Volume Required = 5105 CF
Water Quality Volume Provided = 5732 CF
WSE
2 yr: 659.2
10 yr: 659.5
25-yr: 659.7
100-yr: 660.0

| WATER QUALITY 48-HR DRAWDOWN CALCULATIONS | | | |
|---|---|---|---|
| 48 hour release rate (average) = WQv provided/48-hrs = | Q = | 0.03317 | cfs |
| Outfall Orifice flow line = | | 652.85 | ft msl |
| Head on the Outfall Orifice = | H = | 5.05 | feet |
| Orifice equation = $Q = CA(2gH)^{0.5}$ Thus, $A=Q/(C(2gH)^{0.5})$ = | A = | 0.00307 | sf |
| Number of Orifices = | N = | 1 | |
| Orifice diameter in Outfall Cap for Avg. 48 Hr release rate = $(4A/pi)^{0.5}$ = | D = | 0.06248 | feet |
| | = | 0.75 | inches |

where
A = area of the orifice
Q = average flow rate
C = coefficient of discharge (0.6 for sharp-edged orifice)
g = acceleration of gravity (32.2 ft/sec$^2$)
H = the difference in elevation between the WQ surface elevation and the center elevation of the outfall orifice

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## WPAP Attachment B

## Site Plan

Site Plan
Grading Plan (1-3)
Erosion and Sedimentation Control Plan
Fully Developed Drainage Area Map and Calculations

| CURVE TABLE | | | | | |
|---|---|---|---|---|---|
| NUMBER | DELTA | RADIUS | ARC | CHORD | DIRECTION |
| C1 | 2°31'34" | 1392.39' | 61.39' | 61.38' | N 56°20'11" E |
| C2 | 2°17'21" | 5779.58' | 230.90' | 230.89' | S 69°06'52" W |

| LINE TABLE | | |
|---|---|---|
| NUMBER | DIRECTION | DISTANCE |
| L1 | N 64°21'38" E | 10713' |
| L2 | N 20°06'48" W | 25.05' |
| L3 | N 64°18'37" E | 109.78' |

## SIGHT DISTANCE:

**POSTED SPEED LIMIT: 55 MPH/45 MPH**

**REQUIRED SIGHT DISTANCE: 495 FT / 360 FT**
**SIGHT DISTANCE PROVIDED IN EAST DIRECTION: 467 FT (45 MPH AT CURVE – 360 FT SIGHT DISTANCE REQUIRED)**
**SIGHT DISTANCE PROVIDED IN WEST DIRECTION: OVER 1,000 FT**

## SITE DATA:

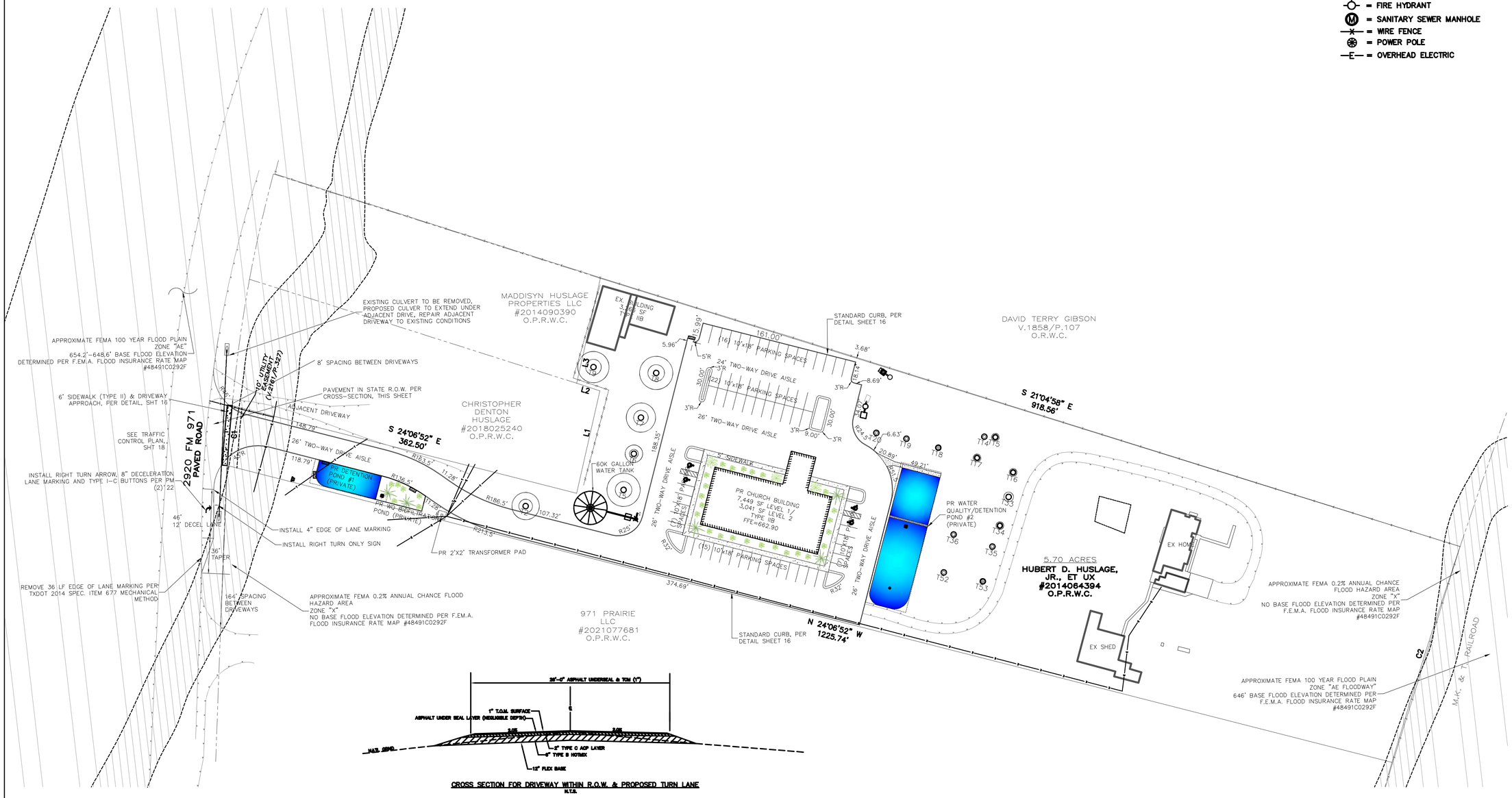
**LAND AREA: 5.70 ACRES**

**LEGAL DESCRIPTION: BEING 5.70 ACRES OF LAND, MORE OR LESS, OUT OF THE JOHN BERRY SURVEY, ABSTRACT NO. 51, WILLIAMSON COUNTY, TEXAS.**

**TOTAL IMPERVIOUS COVER: 87,135 SF (2.000 ACRES) – 35.09% I.C.**

**THIS PROPERTY IS LOCATED OVER THE EDWARDS AQUIFER RECHARGE ZONE. THERE ARE NO SPRINGS OR STREAM BUFFERS ON THE SITE.**

**A PORTION OF THIS PROPERTY IS WITHIN A FLOOD HAZARD AREA AS SHOWN ON THE FLOOD INSURANCE RATE MAP PANEL #48491C0292F, FOR WILLIAMSON COUNTY, EFFECTIVE DECEMBER 20, 2019, COMMUNITY NUMBER 481079 AND IS ON ZONE AE.**




CASE NO: 2023-25-SWP

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626
DIMENSIONAL SITE PLAN


Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED
PROFESSIONAL ENGINEER
09/25/2024

SHEET 2 OF 29

# CALCULATIONS FOR DRIVEWAY CULVERT IN TX-DOT R.O.W

| CULVERT GROUND COVER TABLE | | | |
|---|---|---|---|
| **Ground Cover Description** | **AREA (ft²)** | **AREA (AC)** | **C** |
| Existing Pavement (asphalt) | 11,364 | 0.261 | 0.95 |
| Grass, 50-75% Cover, 2-7% slopes | 62,735 | 1.440 | 0.49 |
| **TOTAL** | **74,099** | **1.701** | |
| **Gross Site Area** | | | **1.701** |
| **Impervious Cover** | | | **15.3%** |

| RATIONAL METHOD RAINFALL RUNOFF CULVERT | | | | | | |
|---|---|---|---|---|---|---|
| **STORM** | **AREA (AC)** | **TIME OF CONC. (MINS.)** | **SCALING FACTOR** | **WEIGHTED C-VALUE** | **RAINFALL INTENSITY, I** | **RUNOFF (CFS)** |
| 2-YR | 1.701 | 35.3 | 0.67 | 0.42 | 1.99 | 1.43 |
| 5-YR | 1.701 | 35.3 | 0.73 | 0.45 | 2.72 | 2.08 |
| 10-YR | 1.701 | 35.3 | 0.78 | 0.47 | 3.30 | 2.63 |
| 25-YR | 1.701 | 35.3 | 0.86 | 0.50 | 4.12 | 3.52 |
| 50-YR | 1.701 | 35.3 | 0.92 | 0.53 | 4.78 | 4.29 |
| 100-YR | 1.701 | 35.3 | 1.00 | 0.56 | 5.51 | 5.25 |

**Time of Concentration ($t_c$) Calculation Table**

**Culvert** — $P_2$(in): 3.80

| OUTFALL: | Type of Flow | "n" | b (ft) | y (ft) | ss (V/H) | A (ft²) | P (ft) | R (ft) | s (ft/ft) | V (ft/s) | L (ft) | $T_t$ (min) | $T_t$ (hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Culvert | Sheet Flow | 0.200 | - | - | - | - | - | - | 0.005 | 0.1 | 100 | 19.7 | 0.33 |
| | Shallow Conc. | 0.200 | - | - | - | - | - | - | 0.010 | 0.5 | 143 | 5.0 | 0.08 |
| | Open Channel | 0.200 | 8 | 1.5 | 7 | 27.75 | 29.213 | 0.950 | 0.004 | 0.5 | 818 | 10.6 | 0.18 |
| | | | | | | | | | **OUTFALL Culvert Total** | | | **35.3** | **0.59** |

| Impervious Cover Table |
|---|
| **Allowable Impervious Cover** |
| 70% x 5 acres = 3.50 acres |
| 55% x (5.70 ac - 5 acres) = 0.385 acres |
| Total = 3.89 acres (68.2%) |
| **Proposed Impervious Cover** |
| Proposed Impervious Cover = 2.000 acres (35.1%) |

FLOOD HAZARD AREA NOTE:

A PORTION OF THIS PROPERTY IS WITHIN A FLOOD HAZARD AREA AS SHOWN ON THE FLOOD INSURANCE RATE MAP PANEL #48491C0292F, FOR WILLIAMSON COUNTY, EFFECTIVE DECEMBER 20, 2019, COMMUNITY NUMBER 481079 AND IS ON ZONE AE.
THE CURRENT EFFECTIVE FLOODPLAIN MODEL IS BASED ON PRE-ATLAS 14 MODELS, SO THE 500-YR WATER SURFACE ELEVATION SHALL BE USED FOR THE BFE FOR THIS SITE. THE 500-YR WSEL FOR PECAN BRANCH AT THE NORTH SIDE OF THE SITE IS 655.50.
THE 500-YR WSEL FOR THE SAN GABRIEL RIVER AT THE SOUTH SIDE OF THE SITE IS 650.50.
THE BASE FLOOD ELEVATION (BFE) FOR THE SITE SHALL BE ESTABLISHED AT 655.50.
ALL EXISTING AND PROPOSED STRUCTURES ON SITE ARE GREATER THAN 1 FT ABOVE THE BFE.

SCALE: 1"= 50'

0' 50' 100' 150'

LEGEND

- △ = CALCULATED POINT
- ● = FND 1/2" IRON ROD
- ( ) = RECORD INFORMATION
- B.S. = BUILDING SETBACK
- R.D. = RECORD DIGNITY MONUMENT
- = FIRE HYDRANT
- Ⓜ = SANITARY SEWER MANHOLE
- —x— = WIRE FENCE
- = POWER POLE
- —E— = OVERHEAD ELECTRIC

EXISTING CULVERT TO BE REMOVED AND REPLACED
PROPOSED CULVERT TO EXTEND UNDER ADJACENT DRIVEWAY

SET WITH 6:1 SLOPE (TYP.) PER DETAIL SHT 19

18" CMP CULVERT - 177 LF @ 1.82% SLOPE

STUDY POINT #2
PR-2a ROUTED THRU POND 2 + PR-2b
Q2 = 4.00 CFS
Q10 = 7.40 CFS
Q25 = 9.90 CFS
Q100 = 14.10 CFS

DRAINAGE AREA TO PROPOSED CULVERT = 1.701 AC

2920 FM 971 PAVED ROAD

PR-DETENTION POND #1 (PRIVATE)

PR-WQ BIOFILTRATION POND (PRIVATE)

POND 2 PROPOSED STACKED WATER QUALITY / DETENTION POND (PRIVATE)

MADDISYN HUSLAGE PROPERTIES LLC #2014090390 O.P.R.W.C.

CHRISTOPHER DENTON HUSLAGE #2018025240 O.P.R.W.C.

DAVID TERRY GIBSON V.1858/P.107 O.R.W.C.

971 PRAIRIE LLC #2021077681 O.P.R.W.C.

5.70 ACRES HUBERT D. HUSLAGE, JR., ET UX #2014064394 O.P.R.W.C.

EX BUILDING 3,466 SF TYPE IIB

PR CHURCH BUILDING 7,449 SF LEVEL 1/ 3,041 SF LEVEL 2 TYPE IIB FFE=662.90

EX HOME

EX BARN

STANDARD CURB, PER DETAIL SHEET 16

S 24°06'52" E 362.50'

S 21°04'56" E 978.58'

N 24°06'52" W 1225.74'

APPROXIMATE FEMA 100 YEAR FLOOD PLAIN ZONE "AE" 654.2'-648.6' BASE FLOOD ELEVATION DETERMINED PER F.E.M.A. FLOOD INSURANCE RATE MAP #48491C0292F

APPROXIMATE FEMA 0.2% ANNUAL CHANCE FLOOD HAZARD AREA ZONE "X" NO BASE FLOOD ELEVATION DETERMINED PER F.E.M.A. FLOOD INSURANCE RATE MAP #48491C0292F

APPROXIMATE FEMA 0.2% ANNUAL CHANCE FLOOD HAZARD AREA ZONE "X" NO BASE FLOOD ELEVATION DETERMINED PER F.E.M.A. FLOOD INSURANCE RATE MAP #48491C0292F

APPROXIMATE FEMA 100 YEAR FLOOD PLAIN ZONE "AE FLOODWAY" 646' BASE FLOOD ELEVATION DETERMINED PER F.E.M.A. FLOOD INSURANCE RATE MAP #48491C0292F

MARC AT FAIRROAD

## Culvert Report

Project filename: FM 971 Culvert.cst

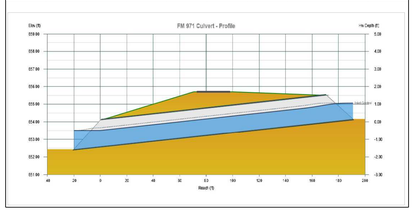
Culvert Studio v 2.0.0.29 — 09-12-2024

**FM 971 Culvert** — **Culvert 1**

| CULVERT | | EMBANKMENT | |
|---|---|---|---|
| Shape | = Circular | Top Width | = 30.00 ft |
| Inlet Edge | = Mitered to Slope | Top Elevation | = 655.70 ft |
| Material | = Corrugated Aluminum | Crest Length | = 30.00 ft |
| Manning's n | = 0.024 | | |
| Rise | = 18 in | DISCHARGE | |
| Span | = 18 in | Method | = User-defined |
| Invert Elev. Down | = 652.60 ft | | |
| Length | = 171 ft | MAXIMUM ALLOWABLE HEADWATER=655.40 | |
| Slope | = 0.008 ft/ft | | |
| Invert Elev. Up | = 654.00 ft | | |
| No. Barrels | = 1 | TAILWATER | |
| Plan Skew Angle | = 0 degrees | Tailwater Elevation | = Normal Depth |

**CALCULATION SAMPLE**

| Discharge | | | Velocity | | Depth | | HGL @ HwID = 0.71 | | |
|---|---|---|---|---|---|---|---|---|---|
| Total | Culvert | Over Top | Down | Up | Down | Up | Down | Up | Hw |
| (cfs) | (cfs) | (cfs) | (ft/s) | (ft/s) | (n) | (n) | (ft) | (ft) | (ft) |
| 3.52 | 3.52 | 0.00 | 3.13 | 3.14 | 11.0 | 10.9 | 653.51 | 654.91 | 655.06 |




## Culvert Report

Project filename: FM 971 Culvert.cst

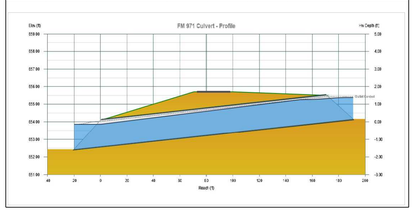
Culvert Studio v 2.0.0.29 — 09-12-2024

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| Length | = 171 ft | MAXIMUM ALLOWABLE HEADWATER=655.40 | |
| Slope | = 0.008 ft/ft | | |
| Invert Elev. Up | = 654.00 ft | | |
| No. Barrels | = 1 | TAILWATER | |
| Plan Skew Angle | = 0 degrees | Tailwater Elevation | = Normal Depth |

**CALCULATION SAMPLE**

| Discharge | | | Velocity | | Depth | | HGL @ HwID = 0.92 | | |
|---|---|---|---|---|---|---|---|---|---|
| Total | Culvert | Over Top | Down | Up | Down | Up | Down | Up | Hw |
| (cfs) | (cfs) | (cfs) | (ft/s) | (ft/s) | (n) | (n) | (ft) | (ft) | (ft) |
| 5.25 | 5.25 | 0.00 | 3.31 | 3.32 | 15.1 | 15.1 | 653.86 | 655.26 | 655.38 |




CASE NO: 2023-25-SWP

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|

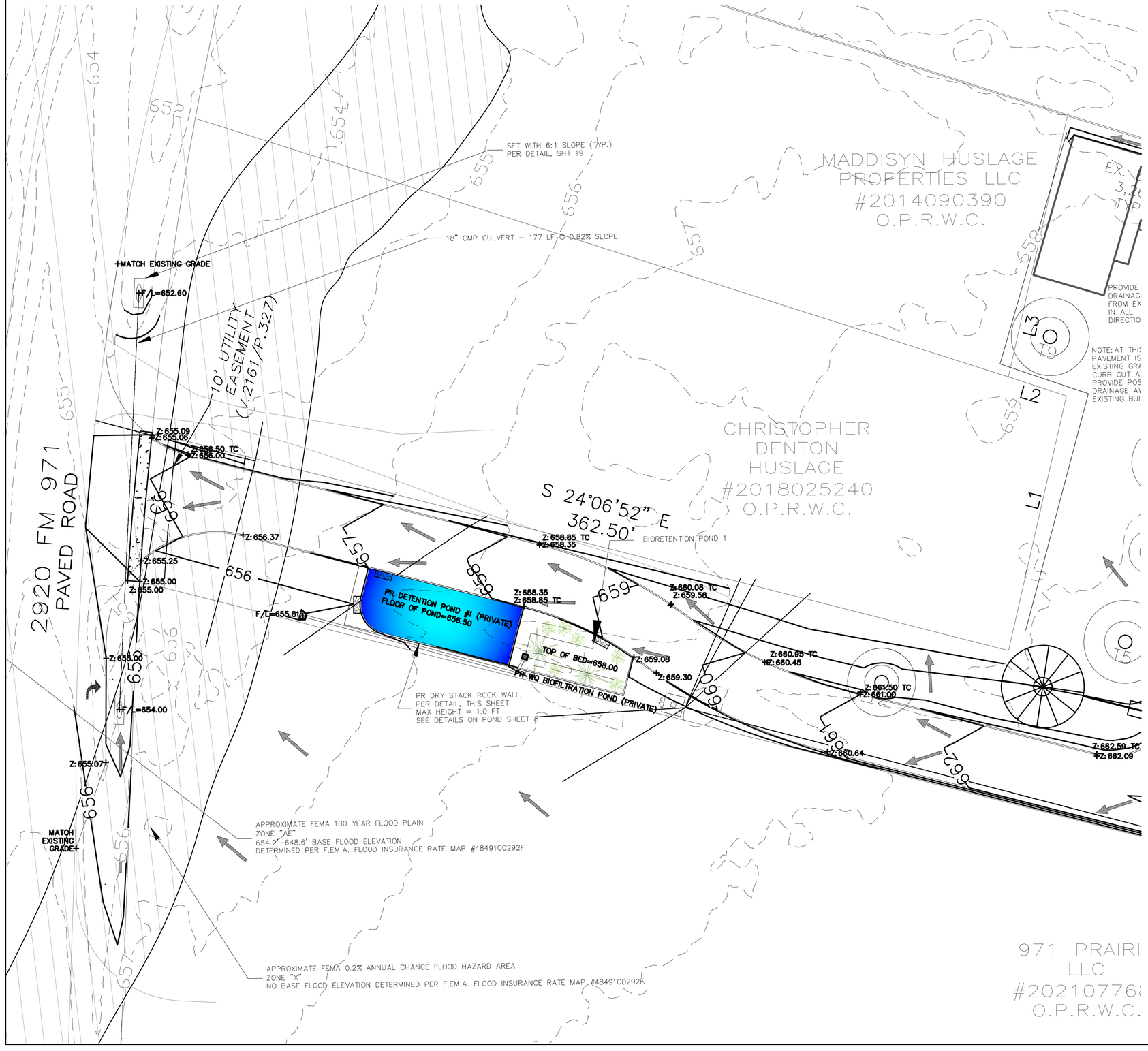
HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626

OVERALL GRADING PLAN


Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED PROFESSIONAL ENGINEER
Rachel D Hartzler
09/25/2024

SHEET 3 OF 29




SCALE: 1"= 20'

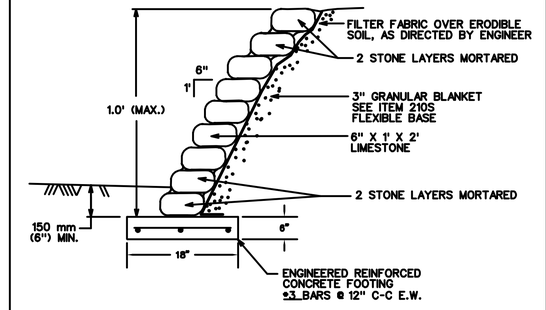
0' 20' 40' 60'

## LEGEND

- △ = CALCULATED POINT
- ● = FND 1/2" IRON ROD
- ( ) = RECORD INFORMATION
- B.S. = BUILDING SETBACK
- R.D. = RECORD DIGNITY MONUMENT
- = FIRE HYDRANT
- Ⓜ = SANITARY SEWER MANHOLE
- —x— = WIRE FENCE
- = POWER POLE
- —E— = OVERHEAD ELECTRIC

**FLOOD HAZARD AREA NOTE:**

A PORTION OF THIS PROPERTY IS WITHIN A FLOOD HAZARD AREA AS SHOWN ON THE FLOOD INSURANCE RATE MAP PANEL #48491C0292F, FOR WILLIAMSON COUNTY, EFFECTIVE DECEMBER 20, 2019, COMMUNITY NUMBER 481079 AND IS ON ZONE AE.
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THE 500-YR WSEL FOR THE SAN GABRIEL RIVER AT THE SOUTH SIDE OF THE SITE IS 650.50.
THE BASE FLOOD ELEVATION (BFE) FOR THE SITE SHALL BE ESTABLISHED AT 655.50.
ALL EXISTING AND PROPOSED STRUCTURES ON SITE ARE GREATER THAN 1 FT ABOVE THE BFE.




THIS STANDARD APPLIES ONLY UNDER THE FOLLOWING CONDITIONS:
A. GROUNDWATER IS NO HIGHER THAN THE BOTTOM OF THE FOOTING.
B. THE MATERIAL BELOW THE FOOTING IS FIRM AND STABLE.

DRY STACK ROCK WALL

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626

GRADING PLAN - NORTHERN PORTION OF SITE

Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Gloss Ln
Bastrop, Texas 78602
(815) 674-4945

STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED PROFESSIONAL ENGINEER
09/25/2024

SHEET 4 OF 29

CASE NO: 2023-25-SWP

SCALE: 1"= 20'

0' 20' 40' 60'

## LEGEND

- △ = CALCULATED POINT
- ● = FND 1/2" IRON ROD
- ( ) = RECORD INFORMATION
- B.S. = BUILDING SETBACK
- R.D. = RECORD DIGNITY MONUMENT
- = FIRE HYDRANT
- Ⓜ = SANITARY SEWER MANHOLE
- = WIRE FENCE
- = POWER POLE
- —E— = OVERHEAD ELECTRIC

### FLOOD HAZARD AREA NOTE:

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ALL EXISTING AND PROPOSED STRUCTURES ON SITE ARE GREATER THAN 1 FT ABOVE THE BFE.

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626
GRADING PLAN - MAIN BUILDING AREA


Highland Development
& ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZELL
117344
LICENSED
PROFESSIONAL ENGINEER
09/25/2024

SHEET 5 OF 29

CASE NO: 2023-25-SWP

## LEGEND

- △ = CALCULATED POINT
- ● = FND 1/2" IRON ROD
- ( ) = RECORD INFORMATION
- B.S. = BUILDING SETBACK
- R.D. = RECORD DIGNITY MONUMENT
- = FIRE HYDRANT
- Ⓜ = SANITARY SEWER MANHOLE
- —x— = WIRE FENCE
- = POWER POLE
- —E— = OVERHEAD ELECTRIC

## PROPOSED LEGEND

- 100' = CONTOUR
- CULVERT
- EDGE OF ASPHALT
- LIMITS OF DISTURBANCE
- FLOW ARROW
- SILT FENCE
- ROCK RIP RAP

= CRITICAL ROOT ZONE OF TREE TO BE REMOVED

= CRITICAL ROOT ZONE OF TREE TO REMAIN

TREE NUMBER (TYP.)

SCALE: 1"= 50'

0' 50' 100' 150'




CASE NO: 2023-25-SWP

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

2924 & 2926 FM 971
GEORGETOWN, TX 78626

# EROSION & SEDIMENTATION CONTROL PLAN


Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED
PROFESSIONAL ENGINEER
09/25/2024

SHEET
14
OF 29

| Time of Concentration ($t_c$) Calculation Table | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fully Developed Condition | | | | | | | | | | | | | $P_2$(in): | 3.94 |
| **OUTFALL:** | **Type of Flow** | **"n"** | **b (ft)** | **y (ft)** | **ss (V/H)** | **A ($ft^2$)** | **P (ft)** | **R (ft)** | **s (ft/ft)** | **V (ft/s)** | **L (ft)** | **$T_t$ (min)** | **$T_t$ (hr)** |
| PR-1a | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.010 | 0.1 | 100 | 26.0 | 0.43 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.010 | 1.6 | 195 | 2.0 | 0.03 |
| | | | | | | | | | | | **OUTFALL PR-1a Total** | **28.1** | **0.47** |
| PR-1b | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.010 | 0.1 | 100 | 26.0 | 0.43 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.010 | 1.6 | 273 | 2.8 | 0.05 |
| | | | | | | | | | | | **OUTFALL PR-1b Total** | **28.9** | **0.48** |
| PR-2a | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.006 | 0.1 | 100 | 31.9 | 0.53 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.010 | 1.6 | 50 | 0.5 | 0.01 |
| | | | | | | | | | | | **OUTFALL PR-2a Total** | **32.5** | **0.54** |
| PR-2b | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.006 | 0.1 | 100 | 31.9 | 0.53 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.010 | 1.6 | 388 | 4.0 | 0.07 |
| | | | | | | | | | | | **OUTFALL PR-2b Total** | **36.0** | **0.60** |
| PR-3 | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.006 | 0.1 | 100 | 31.9 | 0.53 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.030 | 2.8 | 368 | 2.2 | 0.04 |
| | | | | | | | | | | | **OUTFALL PR-3 Total** | **34.1** | **0.57** |

**FULLY DEVELOPED CONDITIONS PEAK DISCHARGE (CFS) - NRCS METHOD**

| DRAINAGE AREA / ANALYSIS POINT | ACREAGE (AC) | PERVIOUS COV (%) | Tc (mins.) | BASE CN | 2-YR (CFS) | 5-YR (CFS) | 10-YR (CFS) | 25-YR (CFS) | 50-YR (CFS) | 100-YR (CFS) |
|---|---|---|---|---|---|---|---|---|---|---|
| PR-1a | 0.184 | 56.7% | 28.1 | 74* | 0.50 | 0.60 | 0.70 | 0.90 | 1.10 | 1.20 |
| PR-1b | 0.566 | 63.1% | 28.9 | 74* | 1.40 | 1.80 | 2.20 | 2.80 | 3.20 | 3.70 |
| PR-2a | 1.831 | 72.6% | 32.5 | 74* | 4.60 | 5.90 | 7.10 | 8.80 | 10.20 | 11.60 |
| PR-2b | 0.939 | 19.6% | 36.0 | 74* | 1.50 | 2.10 | 2.70 | 3.60 | 4.30 | 5.10 |
| PR-3 | 2.406 | 6.5% | 34.1 | 74* | 3.30 | 5.00 | 6.60 | 9.00 | 10.90 | 12.90 |

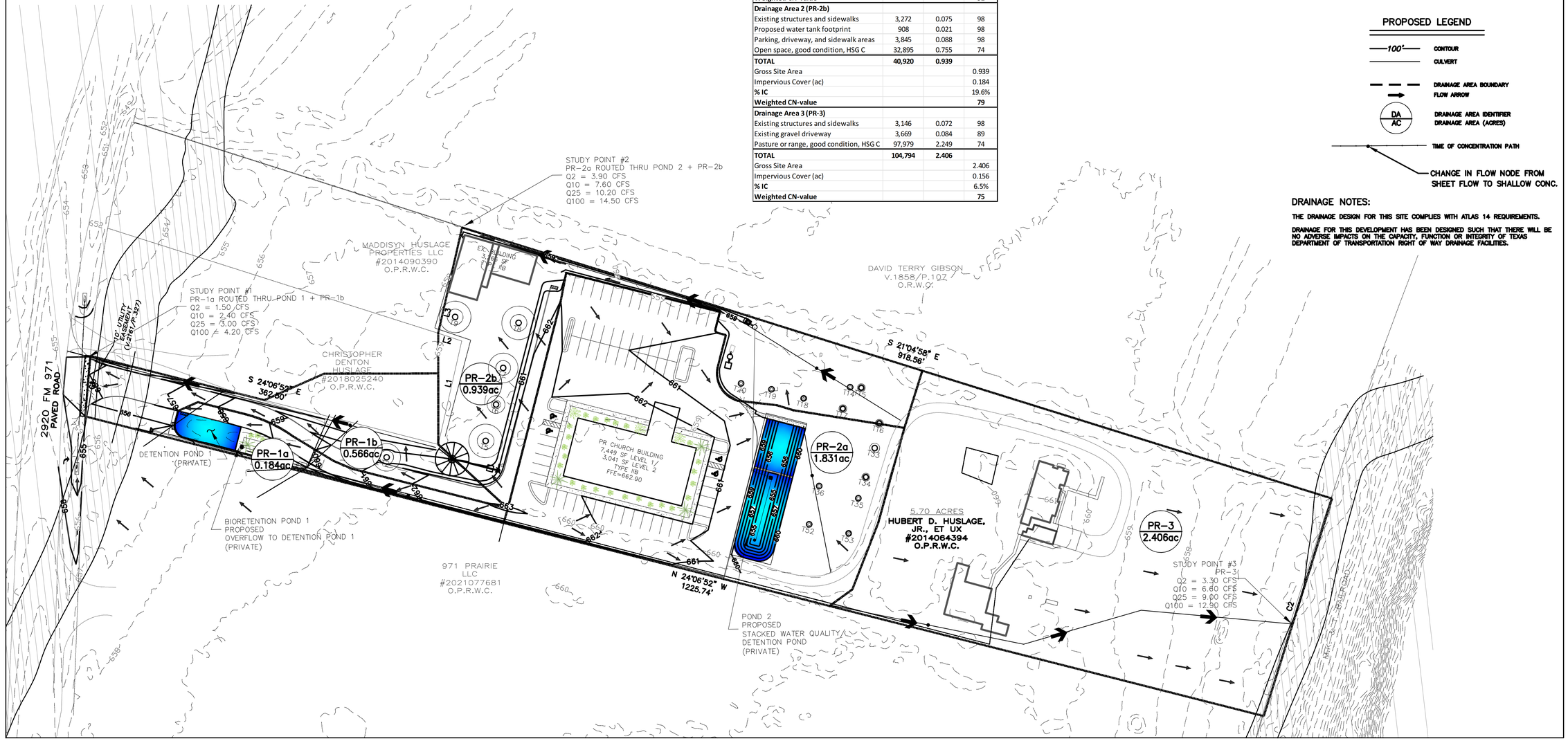
*Use pre-development runoff curve number in post-development model, existing and proposed percentage of impervious cover shall be input individually for each condition

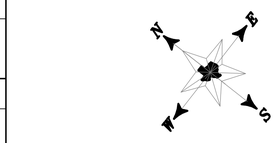
**PROPOSED IMPERVIOUS COVER (IC) TABLE**

| Ground Cover Description | AREA ($ft^2$) | AREA (AC) | CN |
|---|---|---|---|
| **Drainage Area 1 (PR-1a)** | | | |
| Open space, good condition, HSG C | 3,458 | 0.079 | 74 |
| Parking, driveway, and sidewalk areas | 4,536 | 0.104 | 98 |
| **TOTAL** | **7,994** | **0.184** | |
| Gross Site Area | | | 0.184 |
| Impervious Cover (ac) | | | 0.104 |
| **% IC** | | | 56.7% |
| **Weighted CN-value** | | | **88** |
| **Drainage Area 1 (PR-1b)** | | | |
| Offsite: Existing gravel driveway | 4,747 | 0.109 | 89 |
| Offsite: Existing building | 901 | 0.021 | 98 |
| Offsite: Existing lawn, HSG C | 2,184 | 0.050 | 74 |
| Open space, good condition, HSG C | 6,913 | 0.159 | 74 |
| Existing gravel driveway | 2,665 | 0.061 | 89 |
| Parking, driveway, and sidewalk areas | 7,234 | 0.166 | 98 |
| **TOTAL** | **24,644** | **0.566** | |
| Gross Site Area | | | 0.566 |
| Impervious Cover (ac) | | | 0.357 |
| **% IC** | | | 63.1% |
| **Weighted CN-value** | | | **86** |
| **Drainage Area 2 (PR-2a)** | | | |
| Additional impervious cover from ROW | 3611 | 0.083 | 98 |
| Proposed church building footprint | 8,359 | 0.192 | 98 |
| Parking, driveway, and sidewalk areas | 45,890 | 1.053 | 98 |
| Open space, good condition, HSG C | 21,890 | 0.503 | 74 |
| **TOTAL** | **79,750** | **1.831** | |
| Gross Site Area | | | 1.831 |
| Impervious Cover (ac) | | | 1.328 |
| **% IC** | | | 72.6% |
| **Weighted CN-value** | | | **91** |
| **Drainage Area 2 (PR-2b)** | | | |
| Existing structures and sidewalks | 3,272 | 0.075 | 98 |
| Proposed water tank footprint | 908 | 0.021 | 98 |
| Parking, driveway, and sidewalk areas | 3,845 | 0.088 | 98 |
| Open space, good condition, HSG C | 32,895 | 0.755 | 74 |
| **TOTAL** | **40,920** | **0.939** | |
| Gross Site Area | | | 0.939 |
| Impervious Cover (ac) | | | 0.184 |
| **% IC** | | | 19.6% |
| **Weighted CN-value** | | | **79** |
| **Drainage Area 3 (PR-3)** | | | |
| Existing structures and sidewalks | 3,146 | 0.072 | 98 |
| Existing gravel driveway | 3,669 | 0.084 | 89 |
| Pasture or range, good condition, HSG C | 97,979 | 2.249 | 74 |
| **TOTAL** | **104,794** | **2.406** | |
| Gross Site Area | | | 2.406 |
| Impervious Cover (ac) | | | 0.156 |
| **% IC** | | | 6.5% |
| **Weighted CN-value** | | | **75** |

**Pre- and Post-Development Comparison Table**

| DRAINAGE AREA | Condition | Description | ACREAGE (AC) | 2-YR (CFS) | 10-YR (CFS) | 25-YR (CFS) | 100-YR (CFS) |
|---|---|---|---|---|---|---|---|
| EX-1 | Pre-Development | **Drains to FM 971 Right-of-way** | 0.751 | 1.50 | 2.50 | 3.20 | 4.40 |
| PR-1a (routed thru pond) + PR-1b | Post-Development | **Drains to FM 971 Right-of-way** | 0.749 | 1.50 | 2.40 | 3.00 | 4.20 |
| EX-2 | Pre-Development | **Drains to eastern side of site** | 2.768 | 3.90 | 7.60 | 10.20 | 14.60 |
| PR-2a (routed thru pond) + PR-2b | Post-Development | **Drains to eastern side of site** | 2.770 | 3.90 | 7.60 | 10.20 | 14.50 |
| EX-3 | Pre-Development | **Drains to San Gabriel River** | 2.406 | 3.30 | 6.60 | 9.00 | 12.90 |
| PR-3 | Post-Development | **Drains to San Gabriel River** | 2.406 | 3.30 | 6.60 | 9.00 | 12.90 |




SCALE: 1"= 50'

0' 50' 100' 150'

## LEGEND

- Δ = CALCULATED POINT
- ● = FND 1/2" IRON ROD
- ( ) = RECORD INFORMATION
- B.S. = BUILDING SETBACK
- R.D. = RECORD DIGNITY MONUMENT
- = FIRE HYDRANT
- M = SANITARY SEWER MANHOLE
- = WIRE FENCE
- = POWER POLE
- —E— = OVERHEAD ELECTRIC

## PROPOSED LEGEND

- 100' = CONTOUR
- = CULVERT
- = DRAINAGE AREA BOUNDARY
- = FLOW ARROW
- DA / AC = DRAINAGE AREA IDENTIFIER / DRAINAGE AREA (ACRES)
- = TIME OF CONCENTRATION PATH
- CHANGE IN FLOW NODE FROM SHEET FLOW TO SHALLOW CONC.

## DRAINAGE NOTES:

THE DRAINAGE DESIGN FOR THIS SITE COMPLIES WITH ATLAS 14 REQUIREMENTS.

DRAINAGE FOR THIS DEVELOPMENT HAS BEEN DESIGNED SUCH THAT THERE WILL BE NO ADVERSE IMPACTS ON THE CAPACITY, FUNCTION OR INTEGRITY OF TEXAS DEPARTMENT OF TRANSPORTATION RIGHT OF WAY DRAINAGE FACILITIES.

CASE NO: 2023-25-SWP

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626

FULLY DEVELOPED CONDITIONS DRAINAGE AREA MAP


Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED
PROFESSIONAL ENGINEER
09/25/2024

SHEET 7 OF 29

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## WPAP Attachment C

**Department of Infrastructure**
**County Engineer's Office**
3151 SE Inner Loop, Ste B
Georgetown, TX 78626
T: 512.943.3330
F: 512.943.3335

J. Terron Evertson, PE, DR, CFM

WILLIAMSON COUNTY
1848

February 3, 2023

RE: 2910 FM 971; AW0051 – Berry, J. Sur., Acres 7.62, Williamson County, Texas

The above referenced property is located within the Edwards Aquifer Recharge Zone.

Based on the surrounding subdivisions and the soil survey for Williamson County and planning material received, this office is able to determine that the soil and site conditions of this lot is suitable to allow the use of on-site sewage facilities (OSSF). It should be noted that this office has not actually studied the physical properties of this site. Site specific conditions such as OSSF setbacks, recharge features, drainage, soil conditions, etc…, will need taken into account in planning any OSSF.

These OSSF's will have to be designed by a professional engineer or a registered sanitarian. An Edwards Aquifer protection plan shall be approved by the appropriate TCEQ regional office before an authorization to construct an OSSF may be issued. The owner will be required to inform each prospective buyer, lessee or renter of the following in writing:

- That an authorization to construct shall be required before an OSSF can be constructed in the subdivision;
- That a notice of approval shall be required for the operation of an OSSF;
- Whether an application for a water pollution abatement plan as defined in Chapter 213 has been made, whether it has been approved and if any restrictions or conditions have been placed on the approval.

If this office can be of further assistance, please do not hesitate to call.

Sincerely,

Christoper Moreno, OS 35962
Williamson County - OSSF

# 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.***

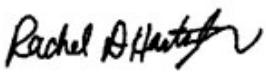
## *Signature*

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: Rachel D. Hartzler, P.E.

Date: 08/09/2024

Signature of Customer/Agent:



**Regulated Entity Name:** Hope Family Fellowship of Georgetown

## *Project Information*

## *Potential Sources of Contamination*

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

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

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

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

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

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

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

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

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

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

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

## *Sequence of Construction*

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

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

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

6. ☒ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: San Gabriel River, a portion of the site drains directly to the San Gabriel River, which is adjacent to the property to the south, additionally a portion of the site drains to the Pecan Branch, a tributary that drains to the San Gabriel River

## *Temporary Best Management Practices (TBMPs)*

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

7. ☒ **Attachment D – Temporary Best Management Practices and Measures**. TBMPs and measures will prevent pollution of surface water, groundwater, and stormwater. The

construction-phase BMPs for erosion and sediment controls have been designed to retain sediment on site to the extent practicable. The following information is attached:

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

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

☐ **Attachment E - Request to Temporarily Seal a Feature**. A request to temporarily seal a feature is attached. The request includes justification as to why no reasonable and practicable alternative exists for each feature.
☒ There will be no temporary sealing of naturally-occurring sensitive features on the site.

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

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

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

used in combination with other erosion and sediment controls within each disturbed drainage area.

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

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

☒ N/A

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

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

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

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

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

## *Soil Stabilization Practices*

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

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

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

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

## *Administrative Information*

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

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

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

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## Temporary Stormwater Section Attachment A

## Spill Response Actions

The construction contractor will be capable of responding at any time to a spill. Onsite personnel will be trained to perform and be knowledgeable of the spill response actions. The contractor will have the tools available to dike, boom, or block off inlets to contain and prevent a spill that may occur on the site. The contractor will have contact information available for additional contractors to support larger spills.

"Reportable spills" will be reported to the TCEQ at the Austin Region Call Number 512-339-2929 or Spill Reporting [24 Hour] at 800-832-8224 within 24 hours of the spill event. A reportable spill is one that meets any of the following criteria:

- 25 gallons of oil, fuel, and other hydrocarbon onto the ground.
- Any amount of hydrocarbon and/or crude oil that causes a visible sheen on waters of the United States including, but not limited to, stormwater runoff.

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## Temporary Stormwater Section Attachment B

## Potential Sources of Contamination

The anticipated primary potential pollutant is sediment. Other potential pollutants are vehicle fluids, trash, and bacteria.

Potential sources of sediment to stormwater runoff:

- Soil disturbing activities will include clearing, preparation of the ROW, grading, and excavation for inlets, storm sewers, utilities, and the water quality ponds.

Potential pollutants and sources, other than sediment, to stormwater runoff:

| **Material** | **Storm Water Pollutants** | **Location** |
|---|---|---|
| Lubricant | Hydrocarbons | Equipment parking area |
| Fuel | Hydrocarbons | Equipment parking area |
| Coolant | Organic compounds | Equipment parking area |
| Trash | Floatables | Project ROW |
| Portable toilet fluids | Bacteria | Break station |
| Cleaning supplies/solvents | Detergents, organic compounds | Equipment washing areas |
| Fertilizers | Nutrients | Storage areas/ seeding locations |
| Wood | Floatables | Fence Lines |

Any unanticipated hazardous materials and/or petroleum contamination encountered during construction within the subject property will be handled according to applicable rules and regulations.

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## Temporary Stormwater Section Attachment C

## Sequence of Major Activities

1. Send Notice of Intent to the Texas Commission on Environmental Quality (TCEQ) at least 48 hours prior to commencement of construction (no site acreage disturbed).
2. The contractor shall post site notice at the project site and install erosion/sedimentation controls (silt fences, a stabilized construction entrance/exit), tree/natural area protective fencing, and conduct “pre-construction” tree fertilization (if applicable) prior to any site preparation work (no site acreage disturbed).
3. The erosion sedimentation control plan (ESC) and stormwater pollution prevention plan (SWPPP) will be followed by the site supervisor, the designated responsible party, and the general contractor. The temporary erosion and sedimentation controls will be revised (if needed) to comply with City/County inspectors’ directives, and revised construction schedule relative to the water quality plan requirements and the erosion plan (no site acreage disturbed).
4. The bioretention pond and sand filter pond will be roughly graded at 100% proposed capacity. The pond liner shall be installed for the bioretention pond. The permanent outlet must be constructed prior to the development of embankment or excavation that leads to ponding. No filter media will be placed into the bioretention pond until specified in this sequence of major activities. The outlet system will contain a sump, outlet (a surface outlet during the construction phase), and an emergency spillway. The outlet system shall be protected from erosion and will be maintained throughout the course of construction until installation of the permanent water quality ponds. (3.0 acres disturbed in this step.)
5. Inspect and maintain the temporary erosion and sedimentation controls. (3.0 acres on the site are disturbed at this step)
6. Begin site clearing/construction activities. (3.0 acres on the site are disturbed at this step)
7. The permanent water quality ponds will be cleaned out and filter media will be installed prior to/concurrently with revegetation of site. (3.0 acres on the site are disturbed at this step, no additional acreage disturbed.)

8. Complete construction, begin revegetating the site, and start the installation of landscaping. (3.0 acres on the site are disturbed at this step, no additional acreage disturbed.)
9. Upon completion of the site construction and revegetation, the design engineer will submit an engineer's letter of concurrence bearing their engineer's seal, their signature, and date to the development services department indicating that construction and revegetation is complete and in substantial compliance with the approved plans. A final inspection will be scheduled by the appropriate City/County inspector. (3.0 acres on the site are disturbed at this step and moving toward final vegetation.)
10. After the final inspections have been conducted and approved by the appropriate City/County inspectors, the temporary erosion and sedimentation controls will be removed. Any necessary revegetation resulting from the removal of the control will be completed. Maintenance and rehabilitation of the water quality ponds are to be performed. (No acreage disturbed.)

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## Temporary Stormwater Section Attachment D

## Temporary Best Management Practices and Measures

The following temporary BMPs and measures will prevent pollution of surface water or groundwater that originate onsite or flows offsite, including pollution caused by contaminated stormwater runoff from the site:

- Temporary silt fences
- Tree protection fences
- Tree protection wood slats
- Stabilized construction entrance and exit
- Construction sequencing to reduce disturbance
- Temporary dewatering filter bags
- Temporary vegetative stabilization
- Concrete Clean Out Area

Details pertaining to quantities, placement, maintenance, and inspection of the temporary BMPs and practices are outlined in the Construction Plan Set.

The temporary BMPs described above will prevent pollutants from entering surface streams or the Aquifer.

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## Temporary Stormwater Section Attachment F

## Structural Practices

A catch basin is proposed in both the bioretention pond and sand filter pond. Inlet protection is proposed at each catch basin. Silt fence is proposed on all downgradient perimeters of the site.

The bioretention and sand filter ponds will be used as sediment traps during construction. If necessary, a dewatering will occur utilizing a dewatering filter bag.

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## Temporary Stormwater Section Attachment G

## Drainage Area Map

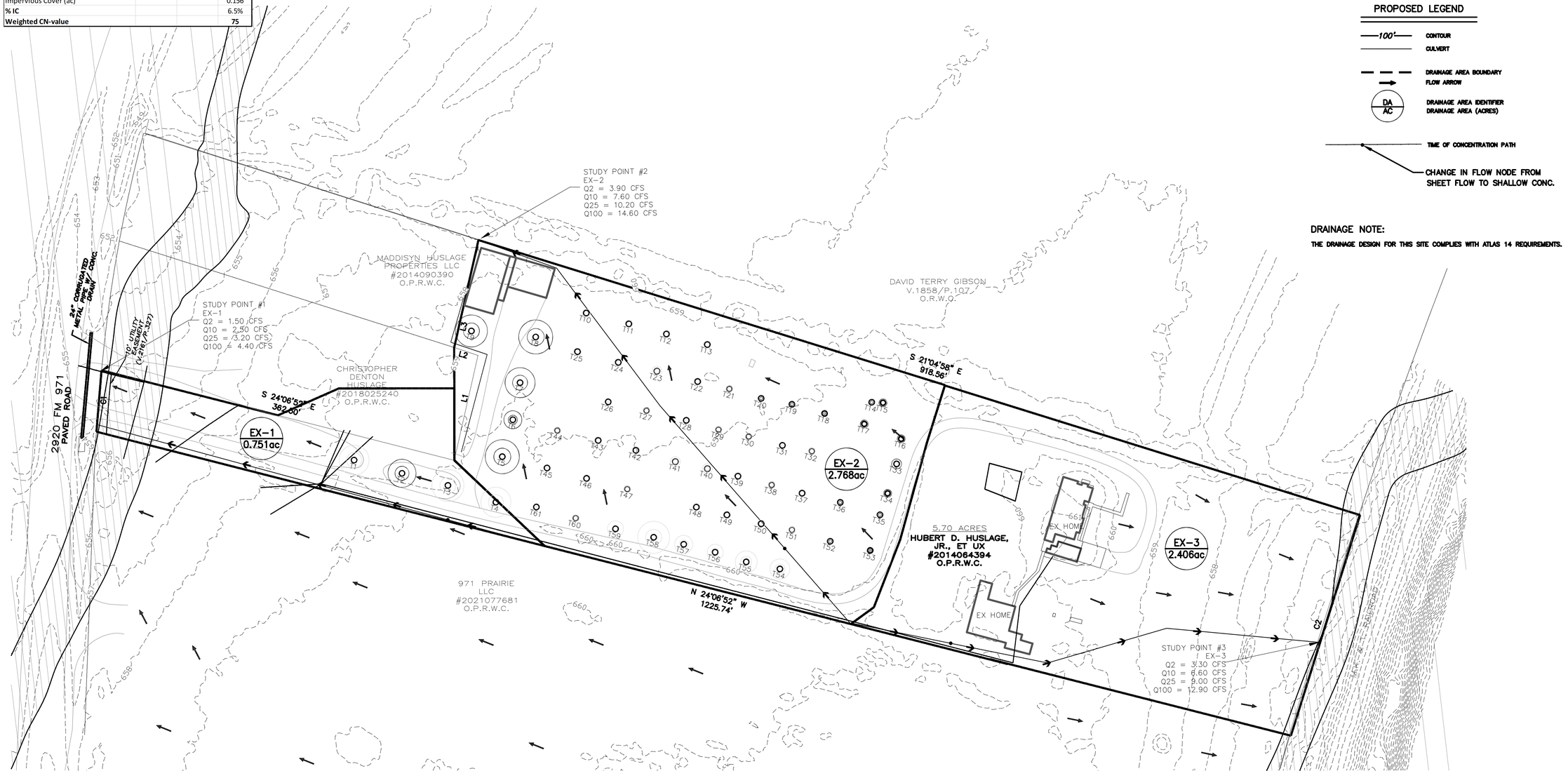
| EXISTING IMPERVIOUS COVER (IC) TABLE | | | |
|---|---|---|---|
| **Ground Cover Description** | **AREA (ft²)** | **AREA (AC)** | **CN** |
| **Drainage Area 1 (EX-1)** | | | |
| Offsite: Existing gravel driveway | 4,747 | 0.109 | 89 |
| Offsite: Existing building | 901 | 0.021 | 98 |
| Offsite: Existing lawn, HSG C | 2,184 | 0.050 | 74 |
| Existing gravel driveway | 7,623 | 0.175 | 89 |
| Pasture or range, good condition, HSG C | 17,271 | 0.396 | 74 |
| **TOTAL** | **32,726** | **0.751** | |
| Gross Site Area | | | 0.751 |
| Impervious Cover (ac) | | | 0.305 |
| **% IC** | | | 40.6% |
| **Weighted CN-value** | | | **80** |
| **Drainage Area 2 (EX-2)** | | | |
| Existing structures and sidewalks | 6,240 | 0.143 | 98 |
| Existing gravel driveway | 9,528 | 0.219 | 89 |
| Pasture or range, good condition, HSG C | 104,814 | 2.406 | 74 |
| **TOTAL** | **120,582** | **2.768** | |
| Gross Site Area | | | 2.768 |
| Impervious Cover (ac) | | | 0.362 |
| **% IC** | | | 13.1% |
| **Weighted CN-value** | | | **76** |
| **Drainage Area 3 (EX-3)** | | | |
| Existing structures and sidewalks | 3,146 | 0.072 | 98 |
| Existing gravel driveway | 3,669 | 0.084 | 89 |
| Pasture or range, good condition, HSG C | 97,979 | 2.249 | 74 |
| **TOTAL** | **104,794** | **2.406** | |
| Gross Site Area | | | 2.406 |
| Impervious Cover (ac) | | | 0.156 |
| **% IC** | | | 6.5% |
| **Weighted CN-value** | | | **75** |

Time of Concentration ($t_c$) Calculation Table

Existing Condition — $P_2$(in): 3.94

| OUTFALL: | Type of Flow | "n" | b (ft) | y (ft) | ss (V/H) | A (ft²) | P (ft) | R (ft) | s (ft/ft) | V (ft/s) | L (ft) | $T_t$ (min) | $T_t$ (hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EX-1 | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.0080 | 0.1 | 100 | 28.5 | 0.47 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.0100 | 1.6 | 362 | 3.7 | 0.06 |
| | | | | | | | | | | **OUTFALL EX-1 Total** | | **32.2** | **0.54** |
| EX-2 | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.007 | 0.1 | 100 | 30.0 | 0.50 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.005 | 1.1 | 443 | 6.5 | 0.11 |
| | | | | | | | | | | **OUTFALL EX-2 Total** | | **36.5** | **0.61** |
| EX-3 | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.006 | 0.1 | 100 | 31.9 | 0.53 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.030 | 2.8 | 368 | 2.2 | 0.04 |
| | | | | | | | | | | **OUTFALL EX-3 Total** | | **34.1** | **0.57** |

| EXISTING CONDITIONS PEAK DISCHARGE (CFS) - NRCS METHOD | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **DRAINAGE AREA / ANALYSIS POINT** | **ACREAGE (AC)** | **PERVIOUS COV (%)** | **Tc (mins.)** | **BASE CN** | **2-YR (CFS)** | **5-YR (CFS)** | **10-YR (CFS)** | **25-YR (CFS)** | **50-YR (CFS)** | **100-YR (CFS)** |
| EX-1 | 0.751 | 40.6 | 32.2 | 74 | 1.50 | 2.00 | 2.50 | 3.20 | 3.80 | 4.40 |
| EX-2 | 2.768 | 13.1 | 36.5 | 74 | 3.90 | 5.90 | 7.60 | 10.20 | 12.30 | 14.60 |
| EX-3 | 2.406 | 6.5 | 34.1 | 74 | 3.30 | 5.00 | 6.60 | 9.00 | 10.90 | 12.90 |




**DRAINAGE NOTE:**

THE DRAINAGE DESIGN FOR THIS SITE COMPLIES WITH ATLAS 14 REQUIREMENTS.

SCALE: 1"= 50'

0' 50' 100' 150'

## LEGEND

- △ = CALCULATED POINT
- ● = FND 1/2" IRON ROD
- ( ) = RECORD INFORMATION
- B.S. = BUILDING SETBACK
- R.D. = RECORD DIGNITY MONUMENT
- = FIRE HYDRANT
- Ⓜ = SANITARY SEWER MANHOLE
- —x— = WIRE FENCE
- = POWER POLE
- —E— = OVERHEAD ELECTRIC

## PROPOSED LEGEND

- 100' = CONTOUR
- = CULVERT
- = DRAINAGE AREA BOUNDARY
- = FLOW ARROW
- DA / AC = DRAINAGE AREA IDENTIFIER / DRAINAGE AREA (ACRES)
- = TIME OF CONCENTRATION PATH
- = CHANGE IN FLOW NODE FROM SHEET FLOW TO SHALLOW CONC.

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626

EXISTING CONDITIONS DRAINAGE AREA MAP


Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED
PROFESSIONAL ENGINEER
Rachel D Hartzler
09/25/2024

SHEET 6 OF 29

CASE NO: 2023-25-SWP

| Time of Concentration ($t_c$) Calculation Table | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fully Developed Condition | | | | | | | | | | | | | $P_2$(in): | 3.94 |
| **OUTFALL:** | **Type of Flow** | **"n"** | **b (ft)** | **y (ft)** | **ss (V/H)** | **A ($ft^2$)** | **P (ft)** | **R (ft)** | **s (ft/ft)** | **V (ft/s)** | **L (ft)** | **$T_t$ (min)** | **$T_t$ (hr)** |
| PR-1a | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.010 | 0.1 | 100 | 26.0 | 0.43 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.010 | 1.6 | 195 | 2.0 | 0.03 |
| | | | | | | | | | | | **OUTFALL PR-1a Total** | **28.1** | **0.47** |
| PR-1b | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.010 | 0.1 | 100 | 26.0 | 0.43 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.010 | 1.6 | 273 | 2.8 | 0.05 |
| | | | | | | | | | | | **OUTFALL PR-1b Total** | **28.9** | **0.48** |
| PR-2a | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.006 | 0.1 | 100 | 31.9 | 0.53 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.010 | 1.6 | 50 | 0.5 | 0.01 |
| | | | | | | | | | | | **OUTFALL PR-2a Total** | **32.5** | **0.54** |
| PR-2b | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.006 | 0.1 | 100 | 31.9 | 0.53 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.010 | 1.6 | 388 | 4.0 | 0.07 |
| | | | | | | | | | | | **OUTFALL PR-2b Total** | **36.0** | **0.60** |
| PR-3 | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.006 | 0.1 | 100 | 31.9 | 0.53 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.030 | 2.8 | 368 | 2.2 | 0.04 |
| | | | | | | | | | | | **OUTFALL PR-3 Total** | **34.1** | **0.57** |

**FULLY DEVELOPED CONDITIONS PEAK DISCHARGE (CFS) - NRCS METHOD**

| DRAINAGE AREA / ANALYSIS POINT | ACREAGE (AC) | PERVIOUS COV (%) | Tc (mins.) | BASE CN | 2-YR (CFS) | 5-YR (CFS) | 10-YR (CFS) | 25-YR (CFS) | 50-YR (CFS) | 100-YR (CFS) |
|---|---|---|---|---|---|---|---|---|---|---|
| PR-1a | 0.184 | 56.7% | 28.1 | 74* | 0.50 | 0.60 | 0.70 | 0.90 | 1.10 | 1.20 |
| PR-1b | 0.566 | 63.1% | 28.9 | 74* | 1.40 | 1.80 | 2.20 | 2.80 | 3.20 | 3.70 |
| PR-2a | 1.831 | 72.6% | 32.5 | 74* | 4.60 | 5.90 | 7.10 | 8.80 | 10.20 | 11.60 |
| PR-2b | 0.939 | 19.6% | 36.0 | 74* | 1.50 | 2.10 | 2.70 | 3.60 | 4.30 | 5.10 |
| PR-3 | 2.406 | 6.5% | 34.1 | 74* | 3.30 | 5.00 | 6.60 | 9.00 | 10.90 | 12.90 |

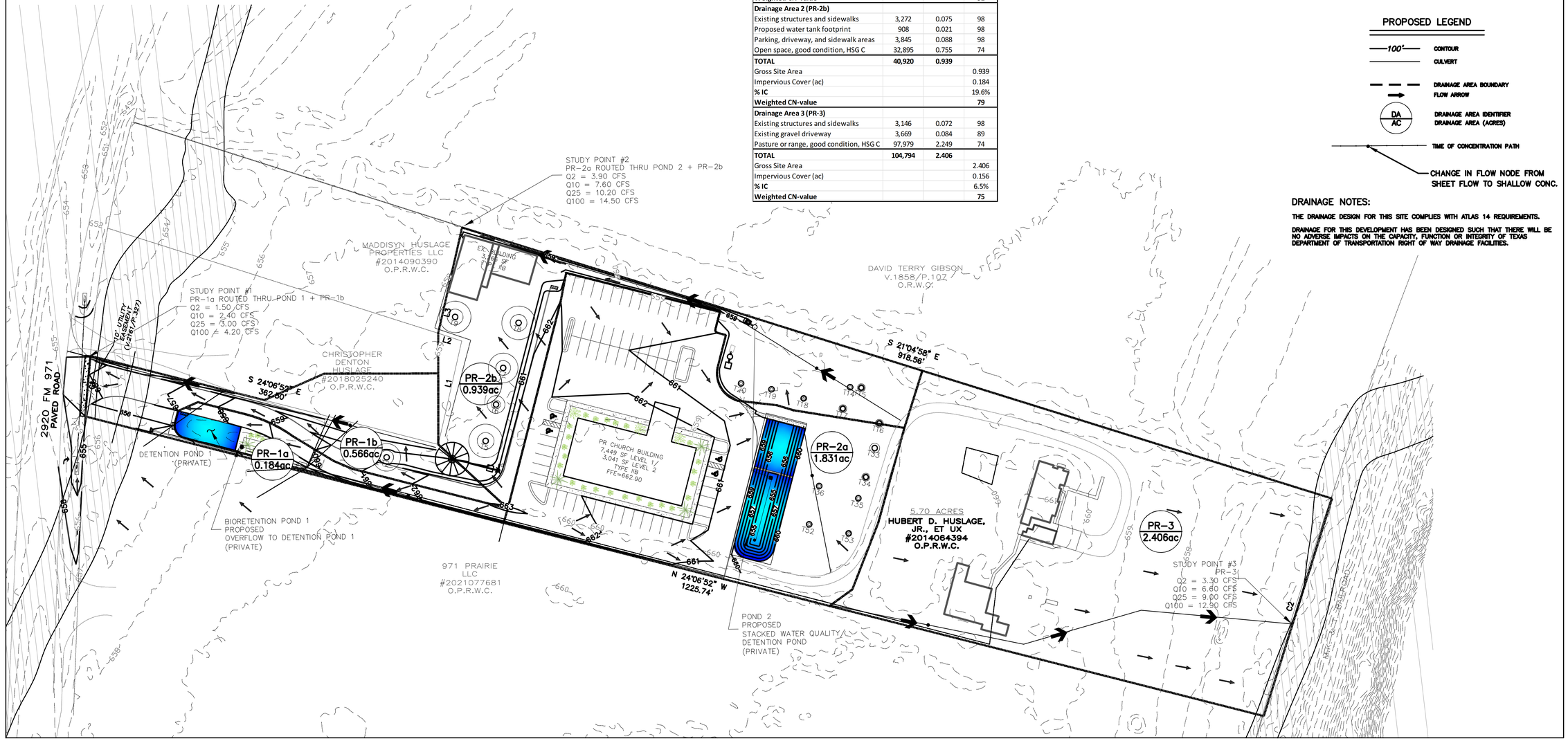
*Use pre-development runoff curve number in post-development model, existing and proposed percentage of impervious cover shall be input individually for each condition

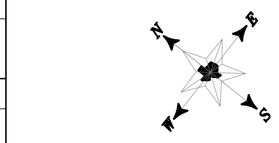
**PROPOSED IMPERVIOUS COVER (IC) TABLE**

| Ground Cover Description | AREA ($ft^2$) | AREA (AC) | CN |
|---|---|---|---|
| **Drainage Area 1 (PR-1a)** | | | |
| Open space, good condition, HSG C | 3,458 | 0.079 | 74 |
| Parking, driveway, and sidewalk areas | 4,536 | 0.104 | 98 |
| **TOTAL** | **7,994** | **0.184** | |
| Gross Site Area | | | 0.184 |
| Impervious Cover (ac) | | | 0.104 |
| **% IC** | | | 56.7% |
| **Weighted CN-value** | | | **88** |
| **Drainage Area 1 (PR-1b)** | | | |
| Offsite: Existing gravel driveway | 4,747 | 0.109 | 89 |
| Offsite: Existing building | 901 | 0.021 | 98 |
| Offsite: Existing lawn, HSG C | 2,184 | 0.050 | 74 |
| Open space, good condition, HSG C | 6,913 | 0.159 | 74 |
| Existing gravel driveway | 2,665 | 0.061 | 89 |
| Parking, driveway, and sidewalk areas | 7,234 | 0.166 | 98 |
| **TOTAL** | **24,644** | **0.566** | |
| Gross Site Area | | | 0.566 |
| Impervious Cover (ac) | | | 0.357 |
| **% IC** | | | 63.1% |
| **Weighted CN-value** | | | **86** |
| **Drainage Area 2 (PR-2a)** | | | |
| Additional impervious cover from ROW | 3611 | 0.083 | 98 |
| Proposed church building footprint | 8,359 | 0.192 | 98 |
| Parking, driveway, and sidewalk areas | 45,890 | 1.053 | 98 |
| Open space, good condition, HSG C | 21,890 | 0.503 | 74 |
| **TOTAL** | **79,750** | **1.831** | |
| Gross Site Area | | | 1.831 |
| Impervious Cover (ac) | | | 1.328 |
| **% IC** | | | 72.6% |
| **Weighted CN-value** | | | **91** |
| **Drainage Area 2 (PR-2b)** | | | |
| Existing structures and sidewalks | 3,272 | 0.075 | 98 |
| Proposed water tank footprint | 908 | 0.021 | 98 |
| Parking, driveway, and sidewalk areas | 3,845 | 0.088 | 98 |
| Open space, good condition, HSG C | 32,895 | 0.755 | 74 |
| **TOTAL** | **40,920** | **0.939** | |
| Gross Site Area | | | 0.939 |
| Impervious Cover (ac) | | | 0.184 |
| **% IC** | | | 19.6% |
| **Weighted CN-value** | | | **79** |
| **Drainage Area 3 (PR-3)** | | | |
| Existing structures and sidewalks | 3,146 | 0.072 | 98 |
| Existing gravel driveway | 3,669 | 0.084 | 89 |
| Pasture or range, good condition, HSG C | 97,979 | 2.249 | 74 |
| **TOTAL** | **104,794** | **2.406** | |
| Gross Site Area | | | 2.406 |
| Impervious Cover (ac) | | | 0.156 |
| **% IC** | | | 6.5% |
| **Weighted CN-value** | | | **75** |

**Pre- and Post-Development Comparison Table**

| DRAINAGE AREA | Condition | Description | ACREAGE (AC) | 2-YR (CFS) | 10-YR (CFS) | 25-YR (CFS) | 100-YR (CFS) |
|---|---|---|---|---|---|---|---|
| EX-1 | Pre-Development | **Drains to FM 971 Right-of-way** | 0.751 | 1.50 | 2.50 | 3.20 | 4.40 |
| PR-1a (routed thru pond) + PR-1b | Post-Development | **Drains to FM 971 Right-of-way** | 0.749 | 1.50 | 2.40 | 3.00 | 4.20 |
| EX-2 | Pre-Development | **Drains to eastern side of site** | 2.768 | 3.90 | 7.60 | 10.20 | 14.60 |
| PR-2a (routed thru pond) + PR-2b | Post-Development | **Drains to eastern side of site** | 2.770 | 3.90 | 7.60 | 10.20 | 14.50 |
| EX-3 | Pre-Development | **Drains to San Gabriel River** | 2.406 | 3.30 | 6.60 | 9.00 | 12.90 |
| PR-3 | Post-Development | **Drains to San Gabriel River** | 2.406 | 3.30 | 6.60 | 9.00 | 12.90 |




SCALE: 1"= 50'

0' 50' 100' 150'

## LEGEND

- Δ = CALCULATED POINT
- ● = FND 1/2" IRON ROD
- ( ) = RECORD INFORMATION
- B.S. = BUILDING SETBACK
- R.D. = RECORD DIGNITY MONUMENT
- = FIRE HYDRANT
- M = SANITARY SEWER MANHOLE
- = WIRE FENCE
- = POWER POLE
- —E— = OVERHEAD ELECTRIC

## PROPOSED LEGEND

- 100' = CONTOUR
- = CULVERT
- = DRAINAGE AREA BOUNDARY
- = FLOW ARROW
- DA / AC = DRAINAGE AREA IDENTIFIER / DRAINAGE AREA (ACRES)
- = TIME OF CONCENTRATION PATH
- CHANGE IN FLOW NODE FROM SHEET FLOW TO SHALLOW CONC.

## DRAINAGE NOTES:

THE DRAINAGE DESIGN FOR THIS SITE COMPLIES WITH ATLAS 14 REQUIREMENTS.

DRAINAGE FOR THIS DEVELOPMENT HAS BEEN DESIGNED SUCH THAT THERE WILL BE NO ADVERSE IMPACTS ON THE CAPACITY, FUNCTION OR INTEGRITY OF TEXAS DEPARTMENT OF TRANSPORTATION RIGHT OF WAY DRAINAGE FACILITIES.

CASE NO: 2023-25-SWP

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626

FULLY DEVELOPED CONDITIONS DRAINAGE AREA MAP


Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED
PROFESSIONAL ENGINEER
09/25/2024

SHEET 7 OF 29

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## Temporary Stormwater Section Attachment I

## Inspection and Maintenance for BMPs

Inspection requirements are outlined in the Stormwater Pollution Prevention Plan. For areas of the construction site that have not been finally stabilized, areas used for storage of materials, structural control measures, and locations where vehicles enter or exit the site, personnel provided by the permittee and familiar with the SWPPP will inspect disturbed areas at least once every 14 calendar days and within 24 hours of the end of a storm of 0.5 inch or greater. As an alternative to the above-described inspection schedule, these inspections will occur at least once every 7 calendar days.

The contractor shall designate a qualified person or persons to perform the following inspections. The inspections of the temporary BMPs shall be documented in an inspection report. Inspections reports shall document maintenance activities, sediment removal and modifications to the sediment and erosion controls.

- The location where vehicles enter or exit the site will be inspected to prevent tracking or flowing of sediment onto public roadways.
- The dewatering filter bags shall be replaced when the bag is half filled with sediment.
- Disturbed areas and areas used for storage of materials that are exposed to precipitation will be inspected for evidence of, or the potential for, pollutants entering the drainage system.
- Erosion and sediment control measures identified in the plan will be observed to ensure that they are operating correctly.
- Where discharge locations or points are accessible, they will be inspected for loss of aggregate, proper drainage, and proper maintenance of equipment.
- Silt fences should be inspected prior to forecast rain, daily during extended rain events, after rain events, or weekly. If a silt fence is damaged or inoperable, it shall be removed.
- The sediment traps shall be cleaned of sediment and restored to their original dimensions when the sediment has accumulated to one-half of the design depth or 1-foot, whichever is less.
- The concrete clean out area shall be inspected and maintained. Collect concrete waste and deliver offsite to a

designated disposal location. Upon termination of use of the washout site, accumulated solid waste, including concrete waste and any contaminated soils, must be removed from the site to prevent on-site disposal of solid waste.

After a portion of the site is finally stabilized, inspection will be conducted at least once every month.

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## Temporary Stormwater Section Attachment J

## Schedule of Interim and Permanent Soil Stabilization Practices

This schedule is as included in the site plans.

1. If portions of the site will have a temporary or permanent cease in construction activity lasting longer than 14 days, soil stabilization in those areas shall be initiated as soon as possible prior to the 14th day of inactivity. If activity will resume prior to the 21st day, stabilization measures are not required. If drought conditions or inclement weather prevent action by the 14th day, stabilization measures shall be initiated as soon as possible.
2. Install erosion/sediment controls, tree/natural area protective fencing, and conduct "pre-construction" tree fertilization (if applicable) prior to any site preparation work.
3. Stabilized construction exit shall be provided using coarse aggregate or approved substitute.
4. The on-site staging and parking area shall be stabilized using coarse aggregate or approved substitute.
5. All disturbed areas to be revegetated are required to place a minimum of 6-inches of topsoil. Topsoil is not to be added within the critical root zone of existing trees.
6. The establishment of temporary and permanent stabilization by seeding will be applied to disturbed areas.
7. All disturbed land within the ROW will be stabilized by seeding to minimize erosion and sedimentation as soon as possible.
8. Remove temporary erosion controls when the site is stabilized.

# 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: Rachel Hartzler, P.E.

Date: 08/09/2024

Signature of Customer/Agent

Rachel D Hartzler

**Regulated Entity Name**: Hope Family Fellowship of Georgetown

## *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

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## Permanent Stormwater Section Attachment B

## BMPs for Upgradient Stormwater

No surface water, groundwater or stormwater originates upgradient from the site and flows across the site. The site is on a high point and stormwater runoff drains offsite to the north and south boundaries of the property.

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## Permanent Stormwater Section Attachment C

## BMPs for On-site Stormwater

The water quality goal is to remove 85% (per City of Georgetown requirements) of the increased total suspended solids (TSS) from the proposed project. This will be accomplished using one proposed bioretention pond and one sedimentation/filtration pond with sand filter onsite. There is an existing driveway within the proposed limits of construction with 0.394 acres of existing impervious cover. The proposed project adds 2.000 acres of impervious cover requiring 1,140 lbs of TSS removal.

The proposed water quality bioretention pond and sand filter pond will remove 1,140 lbs of TSS. The proposed biofiltration pond and sand filter are sufficient for the removal of TSS on this project.

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## Permanent Stormwater Section Attachment F

## Construction Plans

# STORMWATER PERMIT PLAN

## FOR

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## CITY OF GEORGETOWN ETJ

## 2924 & 2926 FM 971

## GEORGETOWN, TX 78626

| Tree Schedule | | | | | |
|---|---|---|---|---|---|
| Key | Tree # | Size (Individual trunks) | Half Critical Root Zone (in feet) | Species | Status |
| PT | 1 | 15" | 7.5' | Pecan | To be removed |
| PT | 2 | 14" | 7' | Pecan | To remain |
| PT | 3 | 16" | 8' | Pecan | To be removed |
| PT | 4 | 15" | 7.5' | Pecan | To be removed |
| PT | 5 | 17" | 8.5' | Pecan | To remain |
| | 6 | 9" | 4.5' | Pecan | To remain |
| PT | 7 | 15" | 7.5' | Pecan | To remain |
| PT | 8 | 17" | 8.5' | Pecan | To remain |
| PT | 9 | 16" | 8' | Pecan | To remain |
| | 10 | 4" | 2' | Pecan | To be removed |
| | 11 | 4" | 2' | Pecan | To be removed |
| | 12 | 4" | 2' | Pecan | To be removed |
| | 13 | 4" | 2' | Pecan | To be removed |
| | 14 | 3" | 1.5' | Pecan | To remain |
| | 15 | 4" | 2' | Pecan | To remain |
| | 16 | 4" | 2' | Pecan | To remain |
| | 17 | 4" | 2' | Pecan | To remain |
| | 18 | 2" | 1' | Pecan (Damaged) | To remain |
| | 19 | 3" | 1.5' | Pecan | To remain |
| | 20 | 3" | 1.5' | Pecan | To remain |
| | 21 | 3" | 1.5' | Pecan | To be removed |
| | 22 | 4" | 2' | Pecan | To be removed |
| | 23 | 5" | 2.5' | Pecan | To be removed |
| | 24 | 4" | 2' | Pecan | To be removed |
| | 25 | 4" | 2' | Pecan | To be removed |
| | 26 | 2" | 1' | Pecan | To be removed |
| | 27 | 3" | 1.5' | Pecan | To be removed |
| | 28 | 2" | 1' | Pecan | To be removed |
| | 29 | 3" | 1.5' | Pecan | To be removed |
| | 30 | 3" | 1.5' | Pecan | To be removed |
| | 31 | 2" | 1' | Pecan (Damaged) | To be removed |
| | 32 | 3" | 1.5' | Pecan | To be removed |
| | 33 | 5" | 2.5' | Pecan | To remain |
| | 34 | 4" | 2' | Pecan | To remain |
| | 35 | 3" | 1.5' | Pecan | To remain |
| | 36 | 3" | 1.5' | Pecan | To remain |
| | 37 | 4" | 2' | Pecan | To be removed |
| | 38 | 3" | 1.5' | Pecan | To be removed |
| | 39 | 4" | 2' | Pecan | To be removed |
| | 40 | 5" | 2.5' | Pecan | To be removed |
| | 41 | 5" | 2.5' | Pecan | To be removed |
| | 42 | 4" | 2' | Pecan | To be removed |
| | 43 | 4" | 2' | Pecan | To be removed |
| | 44 | 3" | 1.5' | Pecan | To be removed |
| | 45 | 2" | 1' | Pecan | To be removed |
| | 46 | 4" | 2' | Pecan | To be removed |
| | 47 | 3" | 1.5' | Pecan | To be removed |
| | 48 | 4" | 2' | Pecan | To be removed |
| | 49 | 4" | 2' | Pecan | To be removed |
| | 50 | 4" | 2' | Pecan | To be removed |
| | 51 | 3" | 1.5' | Pecan | To be removed |
| | 52 | 3" | 1.5' | Pecan | To remain |
| | 53 | 2" | 1' | Pecan | To remain |
| | 54 | 10" | 5' | Pecan | To be removed |
| | 55 | 11" | 5.5' | Pecan | To be removed |
| | 56 | 8" | 4' | Pecan | To be removed |
| | 57 | 9" | 4.5' | Pecan | To be removed |
| | 58 | 16" (7", 6", 9") | 8' | Chinaberry | To be removed |
| | 59 | 8" | 4' | Pecan | To be removed |
| | 60 | 3" | 1.5' | Pecan | To be removed |
| | 61 | 2" | 1' | Pecan | To be removed |

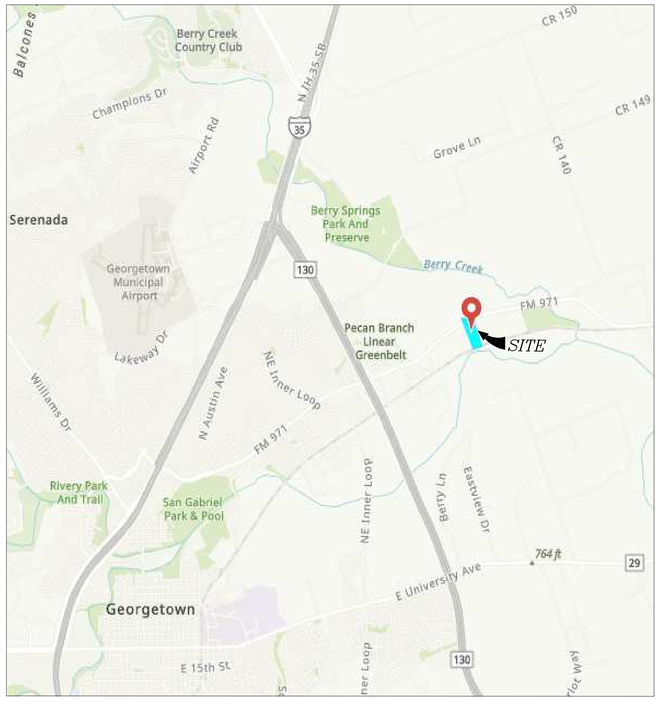
Legend
P = Protected Tree
HT = Heritage Tree

Total Number of Protected Trees: 8
Total Number of Protected Trees Required to Remain: 3
Total Number of Protected Trees to Remain per Site Plan: 5

Protected Tree Preservation Calculation (UDC Section 8.02.030.E.2):
Total # of Protected Trees / Total Acreage = Tree Density
8 trees / 5.70 acres = 1.40 trees/acre (Tree Density)

Total trees Density x (0.3) = Total Number of Protected Trees Required to Remain on Site
8.0 x 0.3 = 2.4 trees required to remain on site (3 trees)

Note: There are no Heritage Trees on site.




SITE LOCATION MAP
SCALE: 1"= 1000'
0' 1000' 2000' 3000'

LEGAL DESCRIPTION: BEING 5.70 ACRES OF LAND, MORE OR LESS, OUT OF THE JOHN BERRY SURVEY, ABSTRACT NO. 51, IN WILLIAMSON COUNTY, TEXAS. BEING THAT TRACT CONVEYED TO HUBERT D. HUSLAGE, JR., ET UX, BY DEED RECORDED IN DOCUMENT NO. 2014064394, OFFICIAL PUBLIC RECORDS, WILLIAMSON COUNTY, TEXAS.

REVISION BLOCK:

| NO. | REVISION DESCRIPTION | REVIEWED BY: | DATE |
|---|---|---|---|

## SHEET INDEX


1 – COVER SHEET
2 – DIMENSIONAL SITE PLAN
3 – OVERALL GRADING PLAN
4 – GRADING PLAN (1 OF 2)
5 – GRADING PLAN (2 OF 2)
6 – DRAINAGE PLAN – EXISTING CONDITIONS & CALCULATIONS
7 – DRAINAGE PLAN – FULLY DEVELOPED CONDITIONS & CALCULATIONS
8 – DRAINAGE PLAN – BIORETENTION POND
9 – DRAINAGE PLAN – SEDIMENTATION/FILTRATION POND
10– POND DETAILS
11– UTILITY PLAN
12– FIRE PROTECTION PLAN
13– TREE PRESERVATION PLAN
14– EROSION & SEDIMENTATION CONTROL PLAN
15– TURN LANE PLAN
16– DETAILS
17– EROSION CONTROL DETAILS
18– TRAFFIC CONTROL PLAN
19– WATER POLLUTION ABATEMENT PLAN (WPAP) GENERAL CONSTRUCTION NOTES
20– TxDOT SAFETY END TREATMENT DETAIL
21– TYPICAL STANDARD PAVEMENT MARKINGS PM(1)–22
22– POSITION GUIDANCE USING RAISED MARKERS REFLECTORIZED PROFILE MARKINGS PM(2)–22
23– TWO–WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3)–22
24–29 – SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS


GENERAL NOTES:

1. THESE PLANS WERE PREPARED, SEALED, SIGNED AND DATED BY A TEXAS LICENSED PROFESSIONAL ENGINEER. THEREFORE, BASED ON THE ENGINEER'S CONCURRENCE OF COMPLIANCE, THE PLANS FOR CONSTRUCTION OF THE PROPOSED PROJECT ARE HEREBY APPROVED SUBJECT TO THE STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS MANUAL AND ALL OTHER APPLICABLE CITY, STATE AND FEDERAL REQUIREMENTS AND CODES.
2. THIS PROJECT IS SUBJECT TO ALL CITY STANDARD SPECIFICATIONS AND DETAILS IN EFFECT AT THE TIME OF SUBMITTAL OF THE PROJECT TO THE CITY.
3. THIS PROJECT IS SUBJECT TO THE WATER QUALITY REGULATIONS OF THE CITY OF GEORGETOWN.
4. WHERE NO OVERHEAD INFRASTRUCTURE EXISTS, UNDERGROUND ELECTRIC UTILITY LINES SHALL BE LOCATED ALONG THE STREET AND WITHIN THE SITE. WHERE EXISTING OVERHEAD INFRASTRUCTURE IS TO BE RELOCATED, IT SHALL BE REINSTALLED UNDERGROUND AND THE EXISTING FACILITIES SHALL BE REMOVED AT THE DISCRETION OF THE DEVELOPMENT ENGINEER.
5. ALL ELECTRIC AND COMMUNICATION INFRASTRUCTURE SHALL COMPLY WITH UDC SECTION 13.06.
6. THE PROPERTY SUBJECT TO THIS APPLICATION IS SUBJECT TO THE WATER QUALITY REGULATIONS OF THE CITY OF GEORGETOWN.
7. A GEOLOGIC ASSESSMENT, IN ACCORDANCE WIH THE CITY OF GEORGETOWN WATER QUALITY REGULATIONS, WAS COMPLETED ON DECEMBER 19, 2023. ANY SPRINGS AND STREAMS AS IDENTIFIED IN THE GEOLOGIC ASSESSMENT ARE SHOWN HEREIN.

PROPOSED USE: CHURCH
PROJECTED AVERAGE DAILY TRIPS GENERATED BY THE DEVELOPMENT: 247 VEHICLE TRIPS/DAY
PROJECTED PEAK HOUR TRIPS GENERATED: 79 VEHICLE TRIPS/HR

CERTIFICATE OF COMPLIANCE NO: 2023-1700-COC

TxDOT DRIVEWAY PERMIT NO 24-45434

ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER WHO PREPARED THEM. IN ACCEPTING THESE PLANS, THE CITY OF BASTROP MUST RELY UPON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.

ACCEPTED FOR CONSTRUCTION:

CITY OF GEORGETOWN ENGINEER DATE

REVIEW OF THIS DOCUMENT IS FOR PUBLIC IMPROVEMENTS AND DRAINAGE, AND CONNECTION THEREWITH. ANY PRIVATE DESIGN IS PLACED ON THE RESPONSIBILITY OF THE DESIGN ENGINEER.

STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED PROFESSIONAL ENGINEER

SUBMITTED BY:
I CERTIFY THAT THESE ENGINEERING DOCUMENTS ARE COMPLETE, ACCURATE, AND ADEQUATE FOR THE INTENDED PURPOSES, INCLUDING CONSTRUCTION, BUT ARE NOT AUTHORIZED FOR CONSTRUCTION PRIOR TO FORMAL APPROVAL. ADDITIONALLY, I CERTIFY THAT THIS PROJECT WILL HAVE NO SIGNIFICANT IMPACT ON FUTURE FLOOD WATERS.

Rachel D. Hartzler P.E. 09/25/2024
Rachel D. Hartzler P.E. Date
Professional Engineer #117344

CASE NO: 2023-25-SWP

| CURVE TABLE | | | | | |
|---|---|---|---|---|---|
| NUMBER | DELTA | RADIUS | ARC | CHORD | DIRECTION |
| C1 | 2°31'34" | 1392.39' | 61.39' | 61.38' | N 56°20'11" E |
| C2 | 2°17'21" | 5779.58' | 230.90' | 230.89' | S 69°06'52" W |

| LINE TABLE | | |
|---|---|---|
| NUMBER | DIRECTION | DISTANCE |
| L1 | N 64°21'38" E | 10713' |
| L2 | N 20°06'48" W | 25.05' |
| L3 | N 64°18'37" E | 109.78' |

## SIGHT DISTANCE:

**POSTED SPEED LIMIT: 55 MPH/45 MPH**

**REQUIRED SIGHT DISTANCE: 495 FT / 360 FT**
**SIGHT DISTANCE PROVIDED IN EAST DIRECTION: 467 FT (45 MPH AT CURVE – 360 FT SIGHT DISTANCE REQUIRED)**
**SIGHT DISTANCE PROVIDED IN WEST DIRECTION: OVER 1,000 FT**

## SITE DATA:

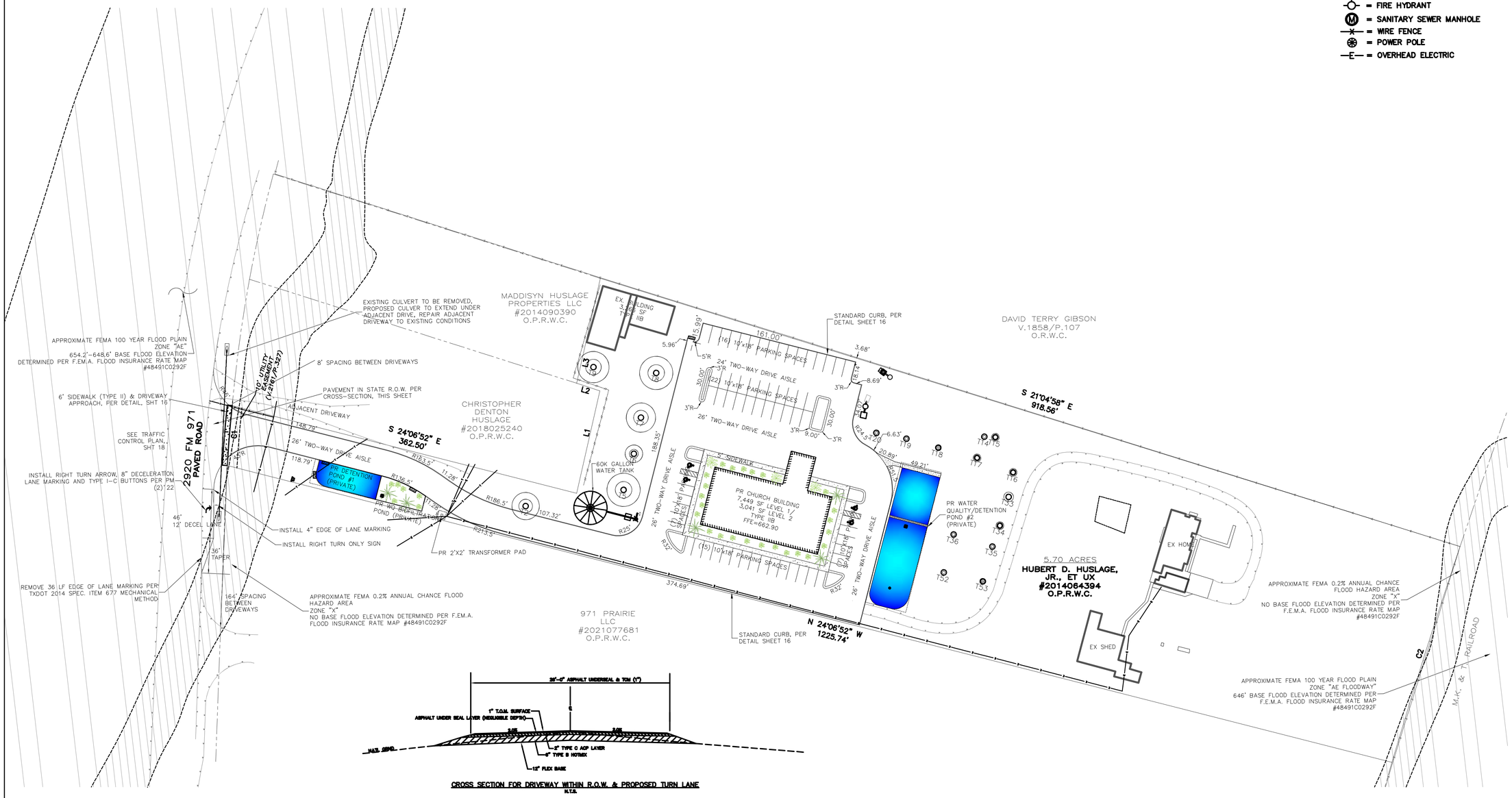
**LAND AREA: 5.70 ACRES**

**LEGAL DESCRIPTION: BEING 5.70 ACRES OF LAND, MORE OR LESS, OUT OF THE JOHN BERRY SURVEY, ABSTRACT NO. 51, WILLIAMSON COUNTY, TEXAS.**

**TOTAL IMPERVIOUS COVER: 87,135 SF (2.000 ACRES) – 35.09% I.C.**

**THIS PROPERTY IS LOCATED OVER THE EDWARDS AQUIFER RECHARGE ZONE. THERE ARE NO SPRINGS OR STREAM BUFFERS ON THE SITE.**

**A PORTION OF THIS PROPERTY IS WITHIN A FLOOD HAZARD AREA AS SHOWN ON THE FLOOD INSURANCE RATE MAP PANEL #48491C0292F, FOR WILLIAMSON COUNTY, EFFECTIVE DECEMBER 20, 2019, COMMUNITY NUMBER 481079 AND IS ON ZONE AE.**




CASE NO: 2023-25-SWP

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626
DIMENSIONAL SITE PLAN


Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED
PROFESSIONAL ENGINEER
09/25/2024

SHEET 2 OF 29

# CALCULATIONS FOR DRIVEWAY CULVERT IN TX-DOT R.O.W

| CULVERT GROUND COVER TABLE | | | |
|---|---|---|---|
| **Ground Cover Description** | **AREA (ft²)** | **AREA (AC)** | **C** |
| Existing Pavement (asphalt) | 11,364 | 0.261 | 0.95 |
| Grass, 50-75% Cover, 2-7% slopes | 62,735 | 1.440 | 0.49 |
| **TOTAL** | **74,099** | **1.701** | |
| **Gross Site Area** | | | **1.701** |
| **Impervious Cover** | | | **15.3%** |

| RATIONAL METHOD RAINFALL RUNOFF CULVERT | | | | | | |
|---|---|---|---|---|---|---|
| **STORM** | **AREA (AC)** | **TIME OF CONC. (MINS.)** | **SCALING FACTOR** | **WEIGHTED C-VALUE** | **RAINFALL INTENSITY, I** | **RUNOFF (CFS)** |
| 2-YR | 1.701 | 35.3 | 0.67 | 0.42 | 1.99 | 1.43 |
| 5-YR | 1.701 | 35.3 | 0.73 | 0.45 | 2.72 | 2.08 |
| 10-YR | 1.701 | 35.3 | 0.78 | 0.47 | 3.30 | 2.63 |
| 25-YR | 1.701 | 35.3 | 0.86 | 0.50 | 4.12 | 3.52 |
| 50-YR | 1.701 | 35.3 | 0.92 | 0.53 | 4.78 | 4.29 |
| 100-YR | 1.701 | 35.3 | 1.00 | 0.56 | 5.51 | 5.25 |

**Time of Concentration ($t_c$) Calculation Table**

**Culvert** — $P_2$(in): 3.80

| OUTFALL: | Type of Flow | "n" | b (ft) | y (ft) | ss (V/H) | A (ft²) | P (ft) | R (ft) | s (ft/ft) | V (ft/s) | L (ft) | $T_t$ (min) | $T_t$ (hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Culvert | Sheet Flow | 0.200 | - | - | - | - | - | - | 0.005 | 0.1 | 100 | 19.7 | 0.33 |
| | Shallow Conc. | 0.200 | - | - | - | - | - | - | 0.010 | 0.5 | 143 | 5.0 | 0.08 |
| | Open Channel | 0.200 | 8 | 1.5 | 7 | 27.75 | 29.213 | 0.950 | 0.004 | 0.5 | 818 | 10.6 | 0.18 |
| | | | | | | | | | **OUTFALL Culvert Total** | | | **35.3** | **0.59** |

| Impervious Cover Table |
|---|
| **Allowable Impervious Cover** |
| 70% x 5 acres = 3.50 acres |
| 55% x (5.70 ac - 5 acres) = 0.385 acres |
| Total = 3.89 acres (68.2%) |
| **Proposed Impervious Cover** |
| Proposed Impervious Cover = 2.000 acres (35.1%) |

FLOOD HAZARD AREA NOTE:

A PORTION OF THIS PROPERTY IS WITHIN A FLOOD HAZARD AREA AS SHOWN ON THE FLOOD INSURANCE RATE MAP PANEL #48491C0292F, FOR WILLIAMSON COUNTY, EFFECTIVE DECEMBER 20, 2019, COMMUNITY NUMBER 481079 AND IS ON ZONE AE.
THE CURRENT EFFECTIVE FLOODPLAIN MODEL IS BASED ON PRE-ATLAS 14 MODELS, SO THE 500-YR WATER SURFACE ELEVATION SHALL BE USED FOR THE BFE FOR THIS SITE. THE 500-YR WSEL FOR PECAN BRANCH AT THE NORTH SIDE OF THE SITE IS 655.50.
THE 500-YR WSEL FOR THE SAN GABRIEL RIVER AT THE SOUTH SIDE OF THE SITE IS 650.50.
THE BASE FLOOD ELEVATION (BFE) FOR THE SITE SHALL BE ESTABLISHED AT 655.50.
ALL EXISTING AND PROPOSED STRUCTURES ON SITE ARE GREATER THAN 1 FT ABOVE THE BFE.

SCALE: 1"= 50'

0' 50' 100' 150'

LEGEND

- △ = CALCULATED POINT
- ● = FND 1/2" IRON ROD
- ( ) = RECORD INFORMATION
- B.S. = BUILDING SETBACK
- R.D. = RECORD DIGNITY MONUMENT
- = FIRE HYDRANT
- Ⓜ = SANITARY SEWER MANHOLE
- —x— = WIRE FENCE
- = POWER POLE
- —E— = OVERHEAD ELECTRIC

EXISTING CULVERT TO BE REMOVED AND REPLACED
PROPOSED CULVERT TO EXTEND UNDER ADJACENT DRIVEWAY

SET WITH 6:1 SLOPE (TYP.) PER DETAIL SHT 19

18" CMP CULVERT - 177 LF @ 1.82% SLOPE

STUDY POINT #2
PR-2a ROUTED THRU POND 2 + PR-2b
Q2 = 4.00 CFS
Q10 = 7.40 CFS
Q25 = 9.90 CFS
Q100 = 14.10 CFS

DRAINAGE AREA TO PROPOSED CULVERT = 1.701 AC

2920 FM 971 PAVED ROAD

PR-DETENTION POND #1 (PRIVATE)

PR-WQ BIOFILTRATION POND (PRIVATE)

POND 2 PROPOSED STACKED WATER QUALITY / DETENTION POND (PRIVATE)

MADDISYN HUSLAGE PROPERTIES LLC #2014090390 O.P.R.W.C.

CHRISTOPHER DENTON HUSLAGE #2018025240 O.P.R.W.C.

DAVID TERRY GIBSON V.1858/P.107 O.R.W.C.

971 PRAIRIE LLC #2021077681 O.P.R.W.C.

5.70 ACRES HUBERT D. HUSLAGE, JR., ET UX #2014064394 O.P.R.W.C.

EX BUILDING 3,466 SF TYPE IIB

PR CHURCH BUILDING 7,449 SF LEVEL 1/ 3,041 SF LEVEL 2 TYPE IIB FFE=662.90

EX HOME

EX BARN

STANDARD CURB, PER DETAIL SHEET 16

S 24°06'52" E 362.50'

S 21°04'56" E 978.58'

N 24°06'52" W 1225.74'

APPROXIMATE FEMA 100 YEAR FLOOD PLAIN ZONE "AE" 654.2'-648.6' BASE FLOOD ELEVATION DETERMINED PER F.E.M.A. FLOOD INSURANCE RATE MAP #48491C0292F

APPROXIMATE FEMA 0.2% ANNUAL CHANCE FLOOD HAZARD AREA ZONE "X" NO BASE FLOOD ELEVATION DETERMINED PER F.E.M.A. FLOOD INSURANCE RATE MAP #48491C0292F

APPROXIMATE FEMA 0.2% ANNUAL CHANCE FLOOD HAZARD AREA ZONE "X" NO BASE FLOOD ELEVATION DETERMINED PER F.E.M.A. FLOOD INSURANCE RATE MAP #48491C0292F

APPROXIMATE FEMA 100 YEAR FLOOD PLAIN ZONE "AE FLOODWAY" 646' BASE FLOOD ELEVATION DETERMINED PER F.E.M.A. FLOOD INSURANCE RATE MAP #48491C0292F

MARC AT FAIRROAD

## Culvert Report

Project filename: FM 971 Culvert.cst

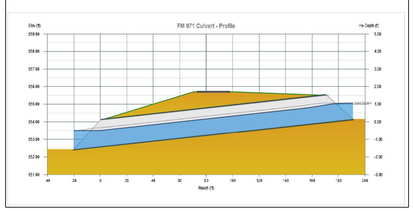
Culvert Studio v 2.0.0.29 — 09-12-2024

**FM 971 Culvert** — **Culvert 1**

| CULVERT | | EMBANKMENT | |
|---|---|---|---|
| Shape | = Circular | Top Width | = 30.00 ft |
| Inlet Edge | = Mitered to Slope | Top Elevation | = 655.70 ft |
| Material | = Corrugated Aluminum | Crest Length | = 30.00 ft |
| Manning's n | = 0.024 | | |
| Rise | = 18 in | DISCHARGE | |
| Span | = 18 in | Method | = User-defined |
| Invert Elev. Down | = 652.60 ft | | |
| Length | = 171 ft | MAXIMUM ALLOWABLE HEADWATER=655.40 | |
| Slope | = 0.008 ft/ft | | |
| Invert Elev. Up | = 654.00 ft | | |
| No. Barrels | = 1 | TAILWATER | |
| Plan Skew Angle | = 0 degrees | Tailwater Elevation | = Normal Depth |

**CALCULATION SAMPLE**

| Discharge | | | Velocity | | Depth | | HGL @ HwID = 0.71 | | |
|---|---|---|---|---|---|---|---|---|---|
| Total | Culvert | Over Top | Down | Up | Down | Up | Down | Up | Hw |
| (cfs) | (cfs) | (cfs) | (ft/s) | (ft/s) | (n) | (n) | (ft) | (ft) | (ft) |
| 3.52 | 3.52 | 0.00 | 3.13 | 3.14 | 11.0 | 10.9 | 653.51 | 654.91 | 655.06 |




## Culvert Report

Project filename: FM 971 Culvert.cst

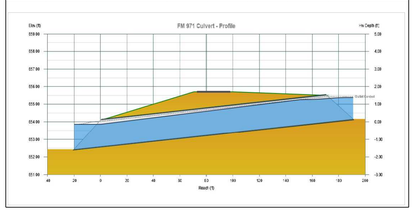
Culvert Studio v 2.0.0.29 — 09-12-2024

**FM 971 Culvert** — **Culvert 1**

| CULVERT | | EMBANKMENT | |
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| Shape | = Circular | Top Width | = 30.00 ft |
| Inlet Edge | = Mitered to Slope | Top Elevation | = 655.70 ft |
| Material | = Corrugated Aluminum | Crest Length | = 30.00 ft |
| Manning's n | = 0.024 | | |
| Rise | = 18 in | DISCHARGE | |
| Span | = 18 in | Method | = User-defined |
| Invert Elev. Down | = 652.60 ft | | |
| Length | = 171 ft | MAXIMUM ALLOWABLE HEADWATER=655.40 | |
| Slope | = 0.008 ft/ft | | |
| Invert Elev. Up | = 654.00 ft | | |
| No. Barrels | = 1 | TAILWATER | |
| Plan Skew Angle | = 0 degrees | Tailwater Elevation | = Normal Depth |

**CALCULATION SAMPLE**

| Discharge | | | Velocity | | Depth | | HGL @ HwID = 0.92 | | |
|---|---|---|---|---|---|---|---|---|---|
| Total | Culvert | Over Top | Down | Up | Down | Up | Down | Up | Hw |
| (cfs) | (cfs) | (cfs) | (ft/s) | (ft/s) | (n) | (n) | (ft) | (ft) | (ft) |
| 5.25 | 5.25 | 0.00 | 3.31 | 3.32 | 15.1 | 15.1 | 653.86 | 655.26 | 655.38 |




CASE NO: 2023-25-SWP

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|

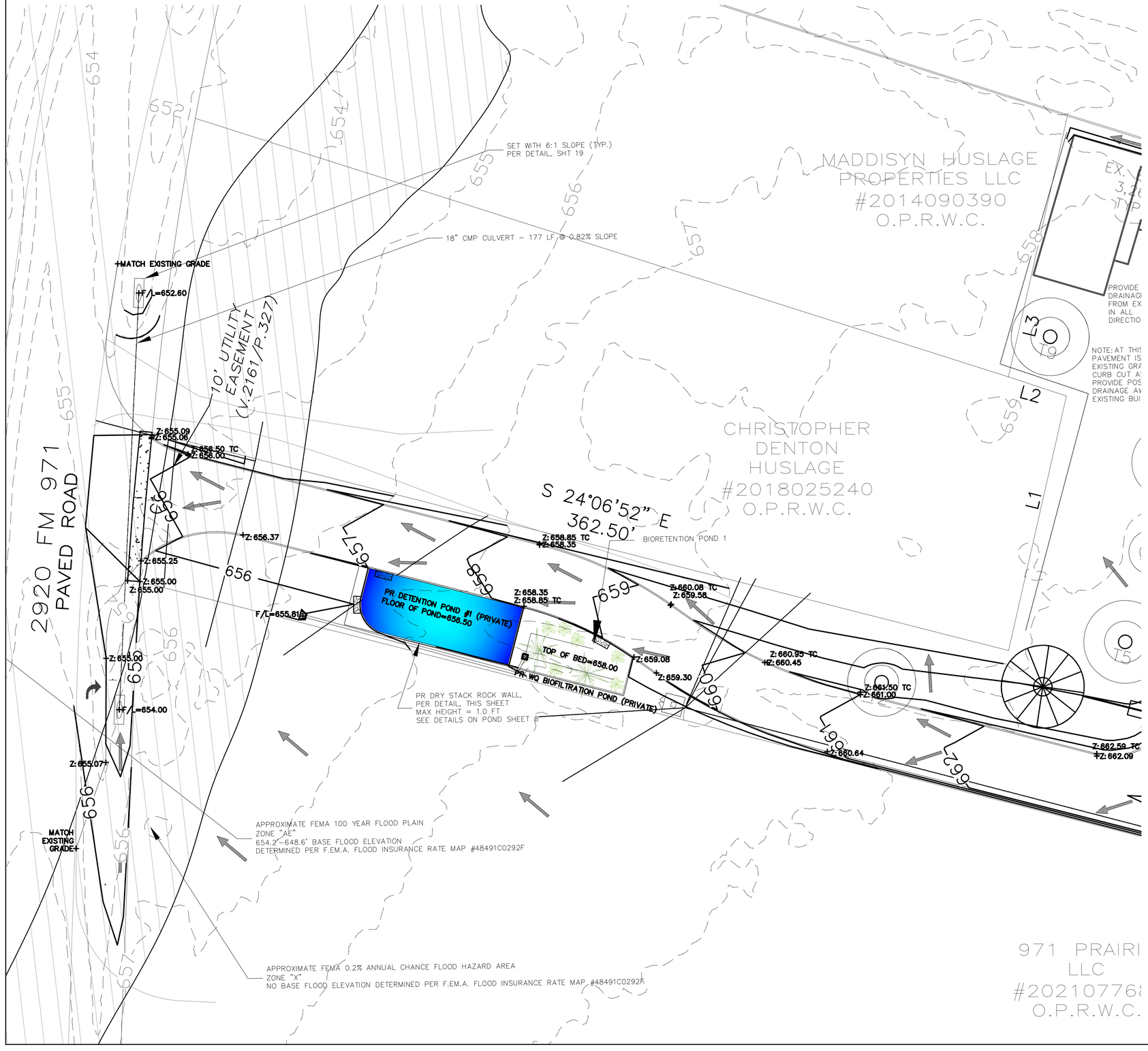
HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626

OVERALL GRADING PLAN


Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED PROFESSIONAL ENGINEER
Rachel D Hartzler
09/25/2024

SHEET 3 OF 29




SCALE: 1"= 20'

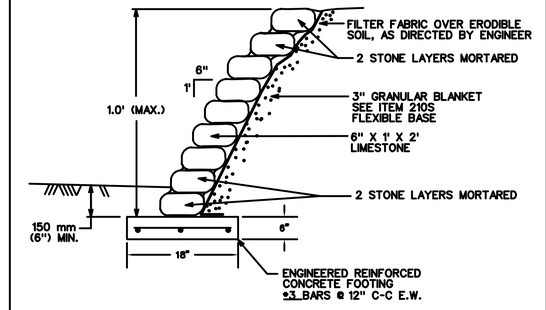
0' 20' 40' 60'

## LEGEND

- △ = CALCULATED POINT
- ● = FND 1/2" IRON ROD
- ( ) = RECORD INFORMATION
- B.S. = BUILDING SETBACK
- R.D. = RECORD DIGNITY MONUMENT
- = FIRE HYDRANT
- Ⓜ = SANITARY SEWER MANHOLE
- —x— = WIRE FENCE
- = POWER POLE
- —E— = OVERHEAD ELECTRIC

**FLOOD HAZARD AREA NOTE:**

A PORTION OF THIS PROPERTY IS WITHIN A FLOOD HAZARD AREA AS SHOWN ON THE FLOOD INSURANCE RATE MAP PANEL #48491C0292F, FOR WILLIAMSON COUNTY, EFFECTIVE DECEMBER 20, 2019, COMMUNITY NUMBER 481079 AND IS ON ZONE AE.
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THE 500-YR WSEL FOR PECAN BRANCH AT THE NORTH SIDE OF THE SITE IS 655.50.
THE 500-YR WSEL FOR THE SAN GABRIEL RIVER AT THE SOUTH SIDE OF THE SITE IS 650.50.
THE BASE FLOOD ELEVATION (BFE) FOR THE SITE SHALL BE ESTABLISHED AT 655.50.
ALL EXISTING AND PROPOSED STRUCTURES ON SITE ARE GREATER THAN 1 FT ABOVE THE BFE.




THIS STANDARD APPLIES ONLY UNDER THE FOLLOWING CONDITIONS:
A. GROUNDWATER IS NO HIGHER THAN THE BOTTOM OF THE FOOTING.
B. THE MATERIAL BELOW THE FOOTING IS FIRM AND STABLE.

DRY STACK ROCK WALL

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626

GRADING PLAN - NORTHERN PORTION OF SITE

Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Gloss Ln
Bastrop, Texas 78602
(815) 674-4945

STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED PROFESSIONAL ENGINEER
09/25/2024

SHEET 4 OF 29

CASE NO: 2023-25-SWP

SCALE: 1"= 20'

0' 20' 40' 60'

## LEGEND

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- ● = FND 1/2" IRON ROD
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### FLOOD HAZARD AREA NOTE:

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| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626
GRADING PLAN - MAIN BUILDING AREA


Highland Development
& ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZELL
117344
LICENSED
PROFESSIONAL ENGINEER
09/25/2024

SHEET 5 OF 29

CASE NO: 2023-25-SWP

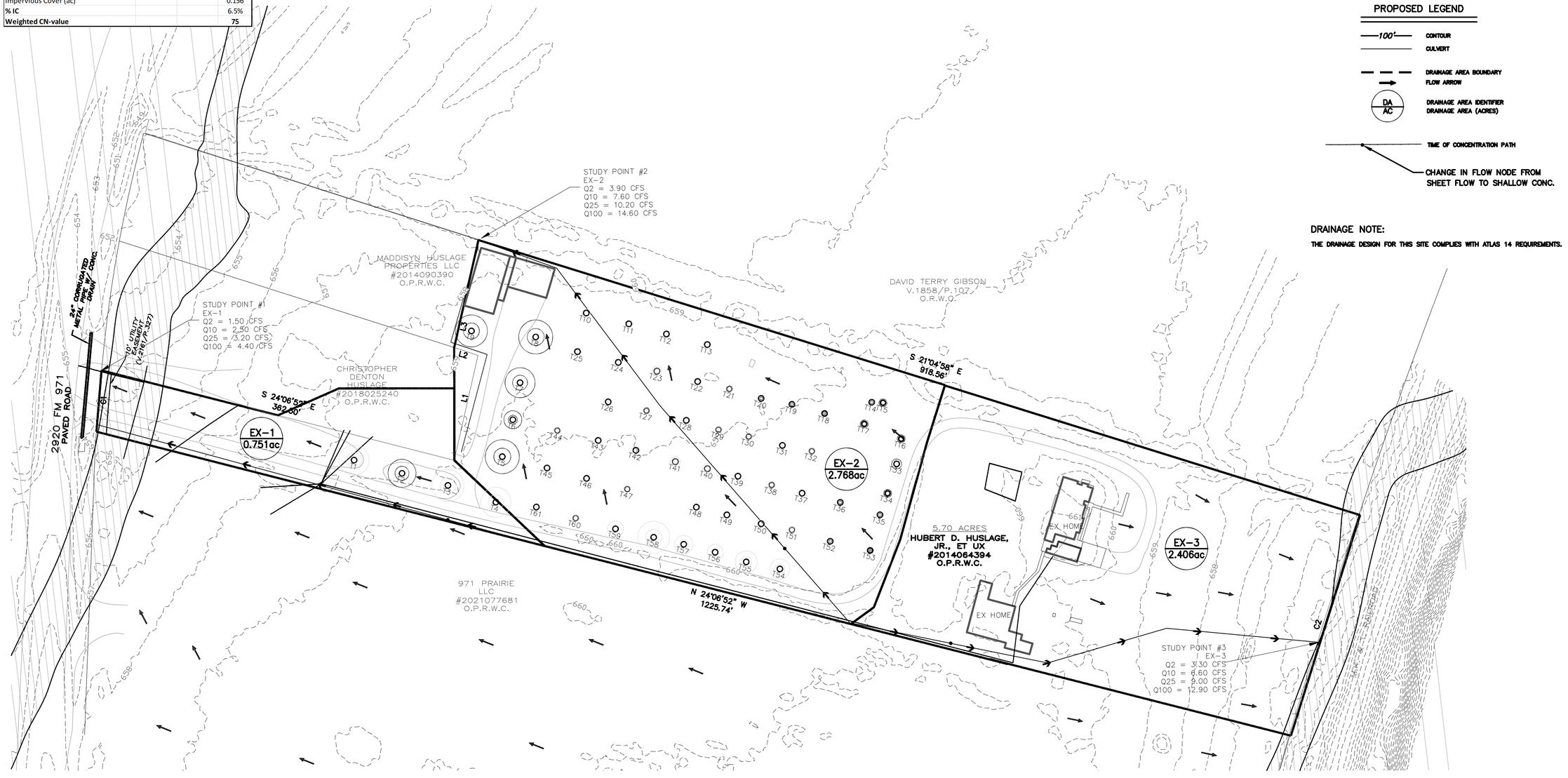
| EXISTING IMPERVIOUS COVER (IC) TABLE | | | |
|---|---|---|---|
| **Ground Cover Description** | **AREA (ft²)** | **AREA (AC)** | **CN** |
| **Drainage Area 1 (EX-1)** | | | |
| Offsite: Existing gravel driveway | 4,747 | 0.109 | 89 |
| Offsite: Existing building | 901 | 0.021 | 98 |
| Offsite: Existing lawn, HSG C | 2,184 | 0.050 | 74 |
| Existing gravel driveway | 7,623 | 0.175 | 89 |
| Pasture or range, good condition, HSG C | 17,271 | 0.396 | 74 |
| **TOTAL** | **32,726** | **0.751** | |
| Gross Site Area | | | 0.751 |
| Impervious Cover (ac) | | | 0.305 |
| **% IC** | | | 40.6% |
| **Weighted CN-value** | | | **80** |
| **Drainage Area 2 (EX-2)** | | | |
| Existing structures and sidewalks | 6,240 | 0.143 | 98 |
| Existing gravel driveway | 9,528 | 0.219 | 89 |
| Pasture or range, good condition, HSG C | 104,814 | 2.406 | 74 |
| **TOTAL** | **120,582** | **2.768** | |
| Gross Site Area | | | 2.768 |
| Impervious Cover (ac) | | | 0.362 |
| **% IC** | | | 13.1% |
| **Weighted CN-value** | | | **76** |
| **Drainage Area 3 (EX-3)** | | | |
| Existing structures and sidewalks | 3,146 | 0.072 | 98 |
| Existing gravel driveway | 3,669 | 0.084 | 89 |
| Pasture or range, good condition, HSG C | 97,979 | 2.249 | 74 |
| **TOTAL** | **104,794** | **2.406** | |
| Gross Site Area | | | 2.406 |
| Impervious Cover (ac) | | | 0.156 |
| **% IC** | | | 6.5% |
| **Weighted CN-value** | | | **75** |

Time of Concentration ($t_c$) Calculation Table

Existing Condition — $P_2$(in): 3.94

| OUTFALL: | Type of Flow | "n" | b (ft) | y (ft) | ss (V/H) | A (ft²) | P (ft) | R (ft) | s (ft/ft) | V (ft/s) | L (ft) | $T_t$ (min) | $T_t$ (hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EX-1 | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.0080 | 0.1 | 100 | 28.5 | 0.47 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.0100 | 1.6 | 362 | 3.7 | 0.06 |
| | | | | | | | | | | **OUTFALL EX-1 Total** | | **32.2** | **0.54** |
| EX-2 | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.007 | 0.1 | 100 | 30.0 | 0.50 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.005 | 1.1 | 443 | 6.5 | 0.11 |
| | | | | | | | | | | **OUTFALL EX-2 Total** | | **36.5** | **0.61** |
| EX-3 | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.006 | 0.1 | 100 | 31.9 | 0.53 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.030 | 2.8 | 368 | 2.2 | 0.04 |
| | | | | | | | | | | **OUTFALL EX-3 Total** | | **34.1** | **0.57** |

| EXISTING CONDITIONS PEAK DISCHARGE (CFS) - NRCS METHOD | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **DRAINAGE AREA / ANALYSIS POINT** | **ACREAGE (AC)** | **PERVIOUS COV (%)** | **Tc (mins.)** | **BASE CN** | **2-YR (CFS)** | **5-YR (CFS)** | **10-YR (CFS)** | **25-YR (CFS)** | **50-YR (CFS)** | **100-YR (CFS)** |
| EX-1 | 0.751 | 40.6 | 32.2 | 74 | 1.50 | 2.00 | 2.50 | 3.20 | 3.80 | 4.40 |
| EX-2 | 2.768 | 13.1 | 36.5 | 74 | 3.90 | 5.90 | 7.60 | 10.20 | 12.30 | 14.60 |
| EX-3 | 2.406 | 6.5 | 34.1 | 74 | 3.30 | 5.00 | 6.60 | 9.00 | 10.90 | 12.90 |




**DRAINAGE NOTE:**

THE DRAINAGE DESIGN FOR THIS SITE COMPLIES WITH ATLAS 14 REQUIREMENTS.

SCALE: 1"= 50'

0' 50' 100' 150'

## LEGEND

- △ = CALCULATED POINT
- ● = FND 1/2" IRON ROD
- ( ) = RECORD INFORMATION
- B.S. = BUILDING SETBACK
- R.D. = RECORD DIGNITY MONUMENT
- = FIRE HYDRANT
- Ⓜ = SANITARY SEWER MANHOLE
- —x— = WIRE FENCE
- = POWER POLE
- —E— = OVERHEAD ELECTRIC

## PROPOSED LEGEND

- 100' = CONTOUR
- = CULVERT
- = DRAINAGE AREA BOUNDARY
- = FLOW ARROW
- DA / AC = DRAINAGE AREA IDENTIFIER / DRAINAGE AREA (ACRES)
- = TIME OF CONCENTRATION PATH
- = CHANGE IN FLOW NODE FROM SHEET FLOW TO SHALLOW CONC.

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626

EXISTING CONDITIONS DRAINAGE AREA MAP


Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED
PROFESSIONAL ENGINEER
Rachel D Hartzler
09/25/2024

SHEET 6 OF 29

CASE NO: 2023-25-SWP

| Time of Concentration ($t_c$) Calculation Table | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fully Developed Condition | | | | | | | | | | | | | $P_2$(in): | 3.94 |
| **OUTFALL:** | **Type of Flow** | **"n"** | **b (ft)** | **y (ft)** | **ss (V/H)** | **A ($ft^2$)** | **P (ft)** | **R (ft)** | **s (ft/ft)** | **V (ft/s)** | **L (ft)** | **$T_t$ (min)** | **$T_t$ (hr)** |
| PR-1a | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.010 | 0.1 | 100 | 26.0 | 0.43 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.010 | 1.6 | 195 | 2.0 | 0.03 |
| | | | | | | | | | | | **OUTFALL PR-1a Total** | **28.1** | **0.47** |
| PR-1b | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.010 | 0.1 | 100 | 26.0 | 0.43 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.010 | 1.6 | 273 | 2.8 | 0.05 |
| | | | | | | | | | | | **OUTFALL PR-1b Total** | **28.9** | **0.48** |
| PR-2a | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.006 | 0.1 | 100 | 31.9 | 0.53 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.010 | 1.6 | 50 | 0.5 | 0.01 |
| | | | | | | | | | | | **OUTFALL PR-2a Total** | **32.5** | **0.54** |
| PR-2b | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.006 | 0.1 | 100 | 31.9 | 0.53 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.010 | 1.6 | 388 | 4.0 | 0.07 |
| | | | | | | | | | | | **OUTFALL PR-2b Total** | **36.0** | **0.60** |
| PR-3 | Sheet Flow | 0.410 | - | - | - | - | - | - | 0.006 | 0.1 | 100 | 31.9 | 0.53 |
| | Shallow Conc. | 0.050 | - | - | - | - | - | - | 0.030 | 2.8 | 368 | 2.2 | 0.04 |
| | | | | | | | | | | | **OUTFALL PR-3 Total** | **34.1** | **0.57** |

**FULLY DEVELOPED CONDITIONS PEAK DISCHARGE (CFS) - NRCS METHOD**

| DRAINAGE AREA / ANALYSIS POINT | ACREAGE (AC) | PERVIOUS COV (%) | Tc (mins.) | BASE CN | 2-YR (CFS) | 5-YR (CFS) | 10-YR (CFS) | 25-YR (CFS) | 50-YR (CFS) | 100-YR (CFS) |
|---|---|---|---|---|---|---|---|---|---|---|
| PR-1a | 0.184 | 56.7% | 28.1 | 74* | 0.50 | 0.60 | 0.70 | 0.90 | 1.10 | 1.20 |
| PR-1b | 0.566 | 63.1% | 28.9 | 74* | 1.40 | 1.80 | 2.20 | 2.80 | 3.20 | 3.70 |
| PR-2a | 1.831 | 72.6% | 32.5 | 74* | 4.60 | 5.90 | 7.10 | 8.80 | 10.20 | 11.60 |
| PR-2b | 0.939 | 19.6% | 36.0 | 74* | 1.50 | 2.10 | 2.70 | 3.60 | 4.30 | 5.10 |
| PR-3 | 2.406 | 6.5% | 34.1 | 74* | 3.30 | 5.00 | 6.60 | 9.00 | 10.90 | 12.90 |

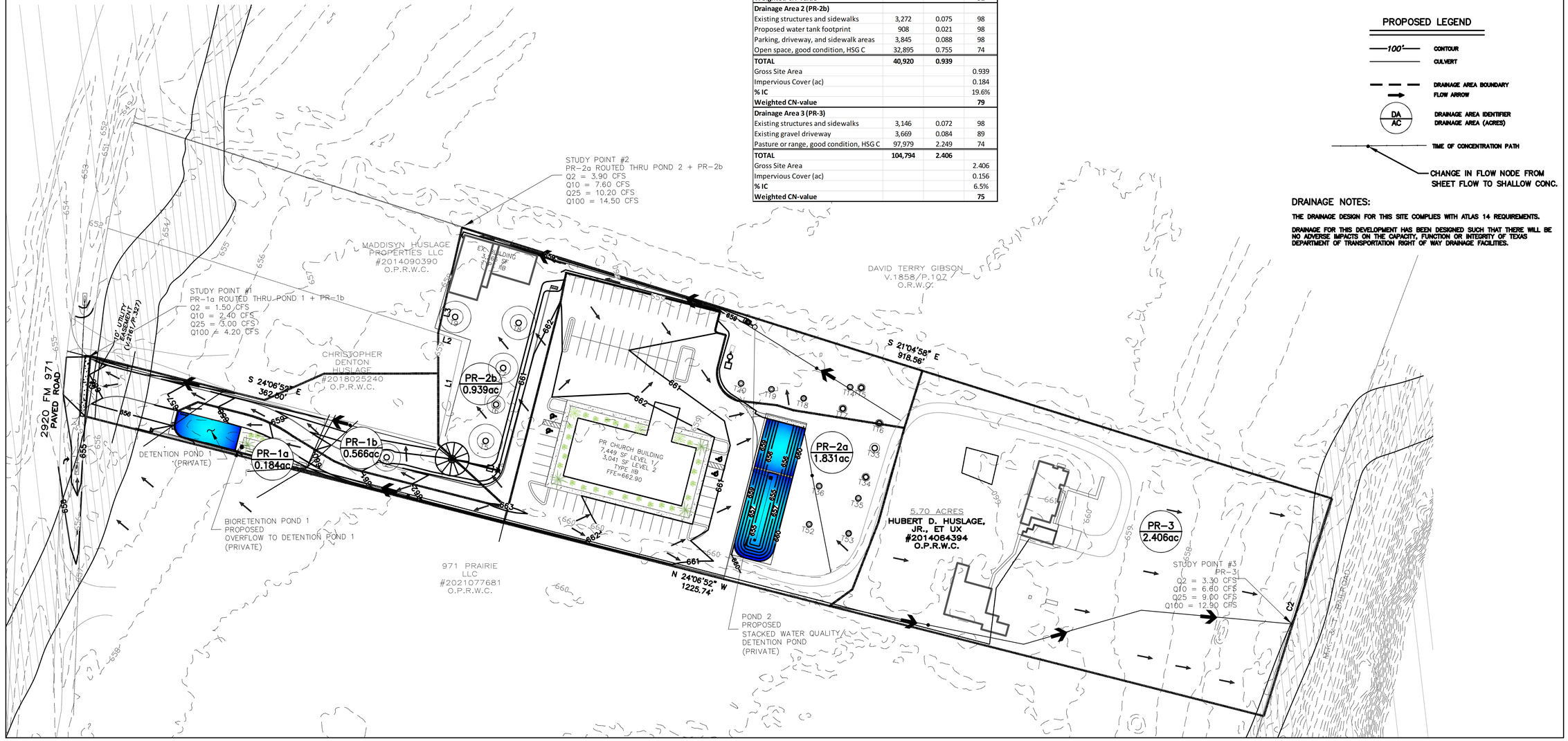
*Use pre-development runoff curve number in post-development model, existing and proposed percentage of impervious cover shall be input individually for each condition

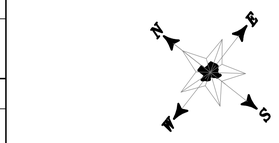
**PROPOSED IMPERVIOUS COVER (IC) TABLE**

| Ground Cover Description | AREA ($ft^2$) | AREA (AC) | CN |
|---|---|---|---|
| **Drainage Area 1 (PR-1a)** | | | |
| Open space, good condition, HSG C | 3,458 | 0.079 | 74 |
| Parking, driveway, and sidewalk areas | 4,536 | 0.104 | 98 |
| **TOTAL** | **7,994** | **0.184** | |
| Gross Site Area | | | 0.184 |
| Impervious Cover (ac) | | | 0.104 |
| **% IC** | | | 56.7% |
| **Weighted CN-value** | | | **88** |
| **Drainage Area 1 (PR-1b)** | | | |
| Offsite: Existing gravel driveway | 4,747 | 0.109 | 89 |
| Offsite: Existing building | 901 | 0.021 | 98 |
| Offsite: Existing lawn, HSG C | 2,184 | 0.050 | 74 |
| Open space, good condition, HSG C | 6,913 | 0.159 | 74 |
| Existing gravel driveway | 2,665 | 0.061 | 89 |
| Parking, driveway, and sidewalk areas | 7,234 | 0.166 | 98 |
| **TOTAL** | **24,644** | **0.566** | |
| Gross Site Area | | | 0.566 |
| Impervious Cover (ac) | | | 0.357 |
| **% IC** | | | 63.1% |
| **Weighted CN-value** | | | **86** |
| **Drainage Area 2 (PR-2a)** | | | |
| Additional impervious cover from ROW | 3611 | 0.083 | 98 |
| Proposed church building footprint | 8,359 | 0.192 | 98 |
| Parking, driveway, and sidewalk areas | 45,890 | 1.053 | 98 |
| Open space, good condition, HSG C | 21,890 | 0.503 | 74 |
| **TOTAL** | **79,750** | **1.831** | |
| Gross Site Area | | | 1.831 |
| Impervious Cover (ac) | | | 1.328 |
| **% IC** | | | 72.6% |
| **Weighted CN-value** | | | **91** |
| **Drainage Area 2 (PR-2b)** | | | |
| Existing structures and sidewalks | 3,272 | 0.075 | 98 |
| Proposed water tank footprint | 908 | 0.021 | 98 |
| Parking, driveway, and sidewalk areas | 3,845 | 0.088 | 98 |
| Open space, good condition, HSG C | 32,895 | 0.755 | 74 |
| **TOTAL** | **40,920** | **0.939** | |
| Gross Site Area | | | 0.939 |
| Impervious Cover (ac) | | | 0.184 |
| **% IC** | | | 19.6% |
| **Weighted CN-value** | | | **79** |
| **Drainage Area 3 (PR-3)** | | | |
| Existing structures and sidewalks | 3,146 | 0.072 | 98 |
| Existing gravel driveway | 3,669 | 0.084 | 89 |
| Pasture or range, good condition, HSG C | 97,979 | 2.249 | 74 |
| **TOTAL** | **104,794** | **2.406** | |
| Gross Site Area | | | 2.406 |
| Impervious Cover (ac) | | | 0.156 |
| **% IC** | | | 6.5% |
| **Weighted CN-value** | | | **75** |

**Pre- and Post-Development Comparison Table**

| DRAINAGE AREA | Condition | Description | ACREAGE (AC) | 2-YR (CFS) | 10-YR (CFS) | 25-YR (CFS) | 100-YR (CFS) |
|---|---|---|---|---|---|---|---|
| EX-1 | Pre-Development | **Drains to FM 971 Right-of-way** | 0.751 | 1.50 | 2.50 | 3.20 | 4.40 |
| PR-1a (routed thru pond) + PR-1b | Post-Development | **Drains to FM 971 Right-of-way** | 0.749 | 1.50 | 2.40 | 3.00 | 4.20 |
| EX-2 | Pre-Development | **Drains to eastern side of site** | 2.768 | 3.90 | 7.60 | 10.20 | 14.60 |
| PR-2a (routed thru pond) + PR-2b | Post-Development | **Drains to eastern side of site** | 2.770 | 3.90 | 7.60 | 10.20 | 14.50 |
| EX-3 | Pre-Development | **Drains to San Gabriel River** | 2.406 | 3.30 | 6.60 | 9.00 | 12.90 |
| PR-3 | Post-Development | **Drains to San Gabriel River** | 2.406 | 3.30 | 6.60 | 9.00 | 12.90 |




SCALE: 1"= 50'

0' 50' 100' 150'

## LEGEND

- Δ = CALCULATED POINT
- ● = FND 1/2" IRON ROD
- ( ) = RECORD INFORMATION
- B.S. = BUILDING SETBACK
- R.D. = RECORD DIGNITY MONUMENT
- = FIRE HYDRANT
- M = SANITARY SEWER MANHOLE
- = WIRE FENCE
- = POWER POLE
- —E— = OVERHEAD ELECTRIC

## PROPOSED LEGEND

- 100' = CONTOUR
- = CULVERT
- = DRAINAGE AREA BOUNDARY
- = FLOW ARROW
- DA / AC = DRAINAGE AREA IDENTIFIER / DRAINAGE AREA (ACRES)
- = TIME OF CONCENTRATION PATH
- CHANGE IN FLOW NODE FROM SHEET FLOW TO SHALLOW CONC.

## DRAINAGE NOTES:

THE DRAINAGE DESIGN FOR THIS SITE COMPLIES WITH ATLAS 14 REQUIREMENTS.

DRAINAGE FOR THIS DEVELOPMENT HAS BEEN DESIGNED SUCH THAT THERE WILL BE NO ADVERSE IMPACTS ON THE CAPACITY, FUNCTION OR INTEGRITY OF TEXAS DEPARTMENT OF TRANSPORTATION RIGHT OF WAY DRAINAGE FACILITIES.

CASE NO: 2023-25-SWP

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626

FULLY DEVELOPED CONDITIONS DRAINAGE AREA MAP


Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED
PROFESSIONAL ENGINEER
09/25/2024

SHEET 7 OF 29

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

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

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

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

| | | |
|---|---|---|
| County = | Williamson | |
| Total project area included in plan * = | 5.93 | acres |
| Predevelopment impervious area within the limits of the plan * = | 0.82 | acres |
| Total post-development impervious area within the limits of the plan* = | 2.13 | acres |
| Total post-development impervious cover fraction * = | 0.36 | |
| P = | 32 | inches |
| $L_{M\ TOTAL\ PROJECT}$ = | 1140 | lbs. |

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

Number of drainage basins / outfalls areas leaving the plan area = 3

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

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

| | | |
|---|---|---|
| Total drainage basin/outfall area = | 0.18 | acres |
| Predevelopment impervious area within drainage basin/outfall area = | 0.07 | acres |
| Post-development impervious area within drainage basin/outfall area = | 0.10 | acres |
| Post-development impervious fraction within drainage basin/outfall area = | 0.56 | |
| $L_{M\ THIS\ BASIN}$ = | 30 | 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 |
| $A_I$ = | 0.10 | acres |
| $A_P$ = | 0.08 | acres |
| $L_R$ = | 100 | lbs |

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

| | | |
|---|---|---|
| Desired $L_{M\ THIS\ BASIN}$ = | 50 | lbs. |
| F = | 0.50 | |

**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 = | 0.42 | inches |
| Post Development Runoff Coefficient = | 0.39 | |
| On-site Water Quality Volume = | 108 | 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 = | 22 | |
| **Total Capture Volume (required water quality volume(s) x 1.20) =** | 129 | 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.

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

Required Water Quality Volume for Bioretention Basin = 129 cubic feet

**TSS REMOVAL CALCULATIONS**

| DRAINAGE AREA / ANALYSIS POINT | ACREAGE (AC) | IMPERVIOUS COVER (ac) | $L_M$ |
|---|---|---|---|
| PR-1a | 0.184 | 0.104 | 50 |
| PR-1b | 0.566 | 0.357 | 0 |
| PR-2a | 1.831 | 1.328 | 1090 |
| PR-2b | 0.939 | 0.184 | 0 |
| PR-3 | 2.406 | 0.156 | 0 |
| Total Site | 5.925 | 2.130 | $L_R$=1,140 lbs |
| | | LM total project = | 1140 lbs |

Biofiltration Bed #1

(2) 0.12-inch Orifice: Orifice (sf) = 0.0098; Center Elev = 656.12; Coef. = 0.60

24-foot weir: Weir (ft) = 24.00; Elevation = 658.60; Coef. = 3.22

**Biofiltration Bed - Elevation - Area - Stage - Storage - Discharge Table**

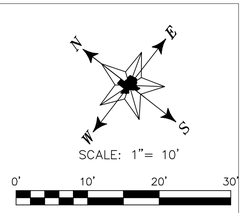
| Elevation (Mean Sea Level) | Area (SF) | Area (ac) | Storage (Cubic Feet) | | Outflow (CFS) | Outflow (CFS) | Total Outflow (CFS) |
|---|---|---|---|---|---|---|---|
| 658.00 | 1,000 | 0.023 | 0 | WQ Vol | 0.06 | 0.00 | 0.06 |
| 658.60 | 1,000 | 0.023 | 600 | WQ Vol Elev | 0.07 | 0.00 | 0.07 |
| 659.00 | 1,000 | 0.023 | 1,000 | Freeboard | 0.08 | 19.55 | 19.63 |

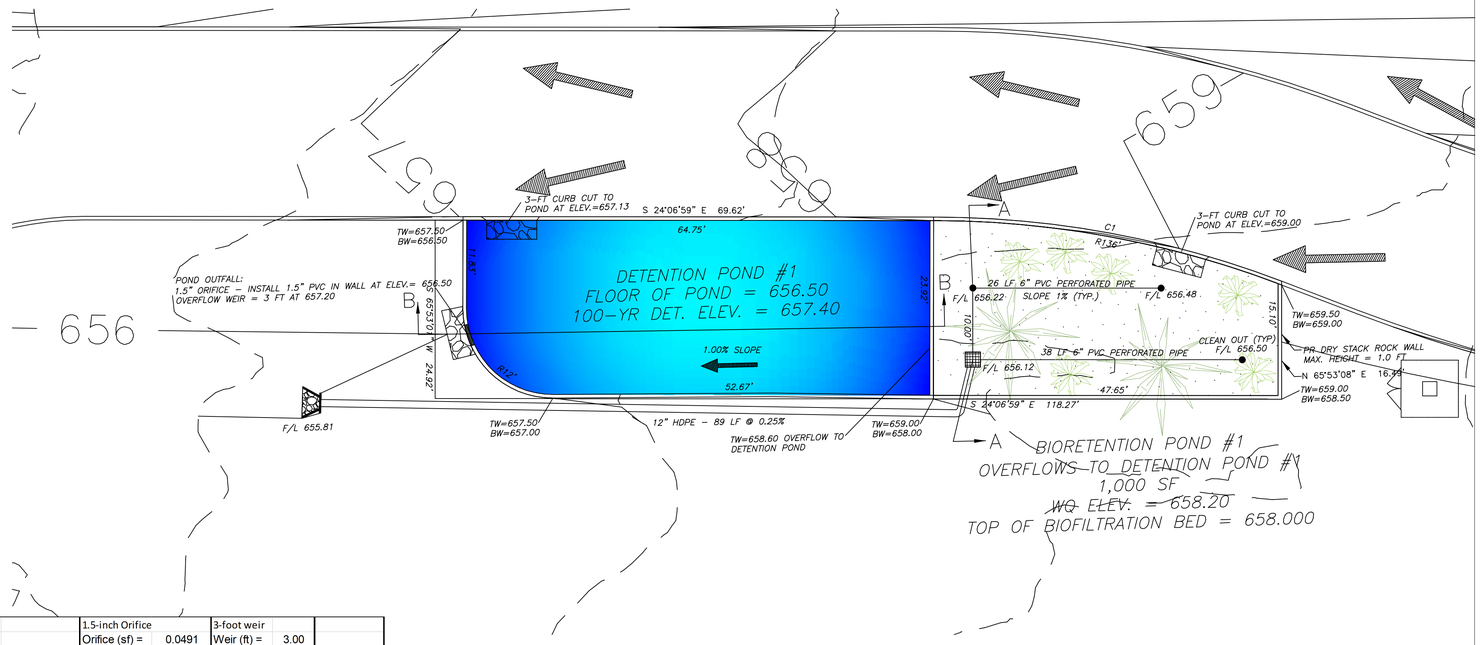
Water Quality Elevation = 658.2
Water Quality Volume Required = 129 CF
Water Quality Volume Provided = 200 CF

**WATER QUALITY 48-HR DRAWDOWN CALCULATIONS**

| | | |
|---|---|---|
| 48 hour release rate (average) = WQv provided/48-hrs = | Q = | 0.00116 cfs |
| Outfall Orifice flow line = | | 656.12 ft msl |
| Head on the Outfall Orifice = | H = | 2.58 feet |
| Orifice equation = $Q = CA(2gH)^{0.5}$ Thus, $A=Q/(C(2gH)^{0.5})$ = | A = | 0.00015 sf |
| Number of Orifices = | N = | 2 |
| Orifice diameter in Outfall Cap for Avg. 48 Hr release rate = $(4A/pi)^{0.5}$ = | D = | 0.0098 feet |
| | = | 0.12 inches |

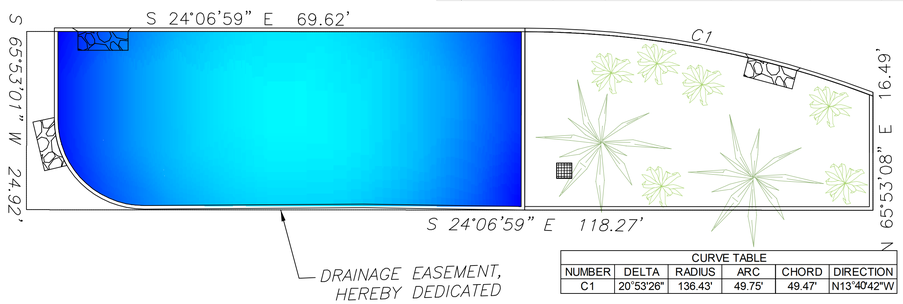
where
A = area of the orifice
Q = average flow rate
C = coefficient of discharge (0.6 for sharp-edged orifice)
g = acceleration of gravity (32.2 ft/sec$^2$)
H = the difference in elevation between the WQ surface elevation and the center elevation of the outfall orifice



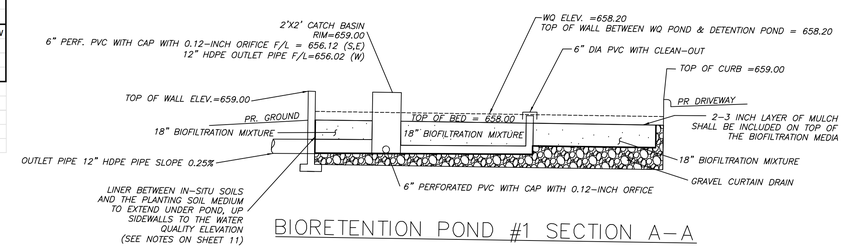

| Detention Pond #1 | | | | | 1.5-inch Orifice | | 3-foot weir | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Orifice (sf) = | 0.0491 | Weir (ft) = | 3.00 | |
| | | | | | Center Elev = | 656.56 | Elevation = | 657.30 | |
| **Detention Pond #1 - Elevation - Area - Stage - Storage - Discharge Tab** | | | | | Coef. = | 0.60 | Coef. = | 3.22 | |
| Elevation (Mean Sea Level) | Area (SF) | Area (ac) | Storage (Cubic Feet) | | Outflow (CFS) | | Outflow (CFS) | | Total Outflow (CFS) |
| 656.50 | 1,540 | 0.035 | 0 | Det. Vol. | 0.00 | | 0.00 | | 0.00 |
| 657.50 | 1,627 | 0.037 | 1,584 | Det. Vol. | 0.23 | | 0.86 | | 1.09 |

| WSE |
|---|
| 2 yr: 657.0 |
| 10 yr: 657.3 |
| 25-yr: 657.4 |
| 100-yr: 657.5 |

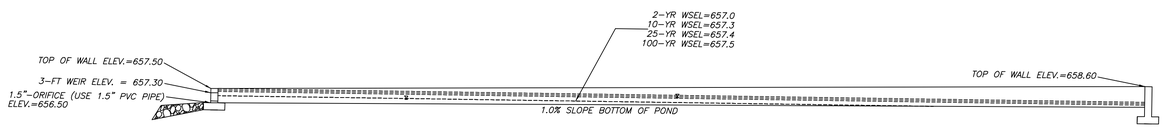



DRAINAGE EASEMENT DIMENSIONS

| CURVE TABLE | | | | | |
|---|---|---|---|---|---|
| NUMBER | DELTA | RADIUS | ARC | CHORD | DIRECTION |
| C1 | 20°53'26" | 136.43' | 49.75' | 49.47' | N13°40'42"W |




BIORETENTION POND #1 SECTION A-A




DETENTION POND #1 SECTION B-B

CASE NO: 2023-25-SWP

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626

BIORETENTION POND & DETENTION POND 1 PLAN


Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Grass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED
PROFESSIONAL ENGINEER
09/25/2024

SHEET 8 OF 29

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

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

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

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

| | | |
|---|---|---|
| County = | Williamson | |
| Total project area included in plan * = | 5.93 | acres |
| Predevelopment impervious area within the limits of the plan * = | 0.82 | acres |
| Total post-development impervious area within the limits of the plan* = | 2.13 | acres |
| Total post-development impervious cover fraction * = | 0.36 | |
| P = | 32 | inches |
| $L_{M\ TOTAL\ PROJECT}$ = | 1140 | lbs. |

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

Number of drainage basins / outfalls areas leaving the plan area = 3

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

**Drainage Basin/Outfall Area No. = 2a**

| | | |
|---|---|---|
| Total drainage basin/outfall area = | 1.83 | acres |
| Predevelopment impervious area within drainage basin/outfall area = | 0.12 | acres |
| Post-development impervious area within drainage basin/outfall area = | 1.33 | acres |
| Post-development impervious fraction within drainage basin/outfall area = | 0.73 | |
| $L_{M\ THIS\ BASIN}$ = | 1053 | lbs. |

**3. Indicate the proposed BMP Code for this basin.**

Proposed BMP = Sand Filter

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

| | | |
|---|---|---|
| $A_C$ = | 1.83 | acres |
| $A_I$ = | 1.33 | acres |
| $A_P$ = | 0.50 | acres |
| $L_R$ = | 1318 | lbs |

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

Desired $L_{M\ THIS\ BASIN}$ = 1090 lbs.

F = 0.83

**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 = | 1.20 | inches |
| Post Development Runoff Coefficient = | 0.53 | |
| On-site Water Quality Volume = | 4254 | 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 = | 851 | |
| **Total Capture Volume (required water quality volume(s) x 1.20) =** | 5105 | cubic feet |

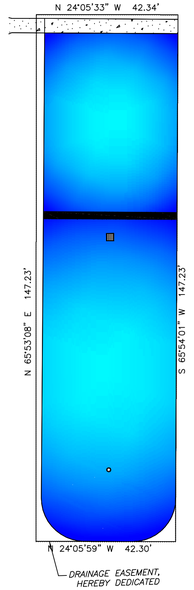
**9. Filter area for Sand Filters** Designed as Required in RG-348 Pages 3-58 to 3-63

**9B. Partial Sedimentation and Filtration System**

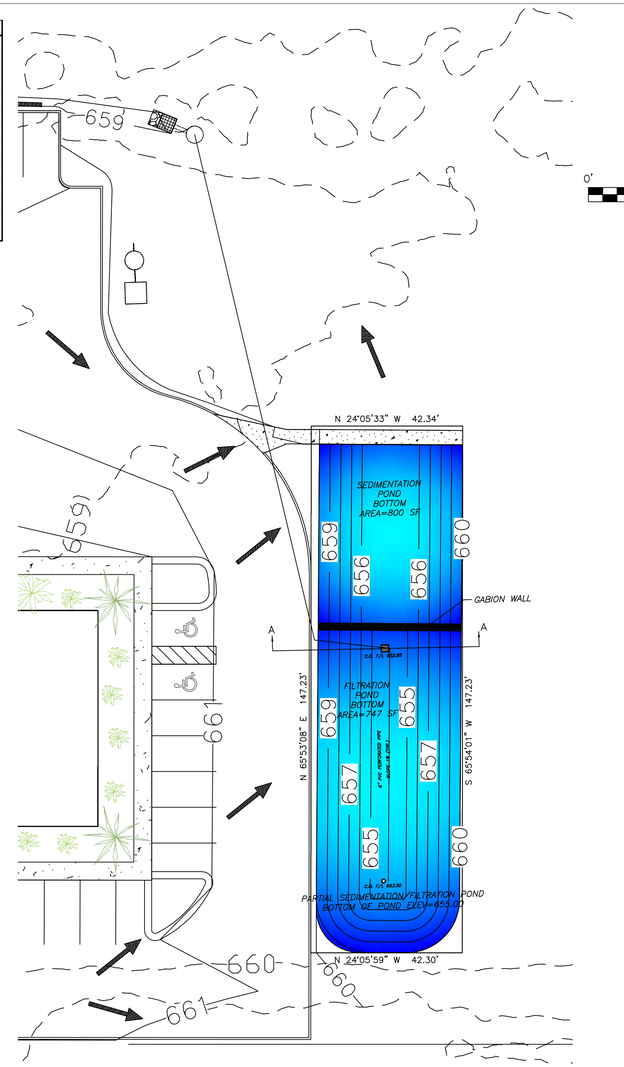
| | | | |
|---|---|---|---|
| Water Quality Volume for combined basins = | 5105 | cubic feet | |
| Minimum filter basin area = | 425 | square feet | |
| Maximum sedimentation basin area = | 1702 | square feet | For minimum water depth of 2 feet |
| Minimum sedimentation basin area = | 106 | square feet | For maximum water depth of 8 feet |

| WATER QUALITY 48-HR DRAWDOWN CALCULATIONS | | |
|---|---|---|
| 48 hour release rate (average) = WQv provided/48-hrs = | Q = | 0.03317 cfs |
| Outfall Orifice flow line = | | 652.85 ft msl |
| Head on the Outfall Orifice = | H = | 5.05 feet |
| Orifice equation = $Q = CA(2gH)^{0.5}$ Thus, $A=Q/(C(2gH)^{0.5})$ = | A = | 0.00307 sf |
| Number of Orifices = | N = | 1 |
| Orifice diameter in Outfall Cap for Avg. 48 Hr release rate = $(4A/pi)^{0.5}$ = | D = | 0.06248 feet |
| | = | 0.75 inches |

where
A = area of the orifice
Q = average flow rate
C = coefficient of discharge (0.6 for sharp-edged orifice)
g = acceleration of gravity (32.2 ft/sec$^2$)
H = the difference in elevation between the WQ surface elevation and the center elevation of the outfall orifice



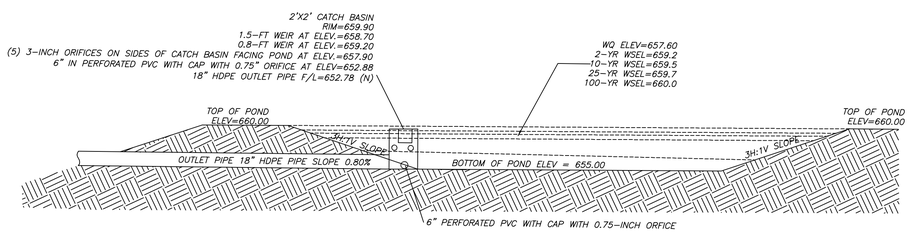

DRAINAGE EASEMENT DIMENSIONS




SEDIMENTATION/FILTRATION POND WITH STACKED DETENTION

| Stacked WQ/Detention Pond #2 | | | | | 0.75-inch Orifice | (5) 3-inch Orifice | 1.5-foot weir | 0.8-foot weir | 8-foot weir (top of catch basin) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Orifice (sf) = 0.0031 | Orifice (sf) = 0.0873 | Weir (ft) = 1.50 | Weir (ft) = 0.80 | Weir (ft) = 8.00 | |
| | | | | | Center Elev = 652.88 | Center Elev = 658.03 | Elevation = 658.70 | Elevation = 659.20 | Elevation = 659.90 | |
| **Sed/Filt Pond - Elevation - Area - Stage - Storage - Discharge Tab** | | | | | Coef. = 0.60 | Coef. = 0.60 | Coef. = 3.22 | Coef. = 3.22 | Coef. = 3.22 | |
| Elevation | Area | | Storage | | Outflow | Outflow | Outflow | Outflow | Outflow | Total Outflow |
| (Mean Sea Level) | (SF) | (ac) | (Cubic Feet) | | (CFS) | (CFS) | (CFS) | (CFS) | (CFS) | (CFS) |
| 655.00 | 747 | 0.017 | 0 | WQ Vol | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 |
| 656.00 | 2,075 | 0.048 | 1,356 | WQ Vol | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 |
| 657.00 | 2,910 | 0.067 | 3,836 | WQ Vol | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 |
| 657.60 | 3,414 | 0.078 | 5,732 | WQ Vol | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 |
| | | | | WQ Elev/Base | | | | | | |
| 657.60 | 3,414 | 0.078 | 0 | of Det. Pond | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 |
| 658.00 | 3,772 | 0.087 | 542 | WQ Vol | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 |
| 659.00 | 4,662 | 0.107 | 3,023 | WQ Vol | 0.04 | 0.41 | 0.79 | 0.00 | 0.00 | 1.24 |
| 660.00 | 5,582 | 0.128 | 6,182 | Det. Vol. | 0.04 | 0.59 | 7.16 | 1.84 | 0.81 | 10.45 |

Water Quality Elevation = 657.60
Water Quality Volume Required = 5105 CF
Water Quality Volume Provided = 5732 CF
WSE
2 yr: 659.2
10 yr: 659.5
25-yr: 659.7
100-yr: 660.0




SEDIMENTATION/FILTRATION POND SECTION A-A

SCALE 1"=5'-0"

CASE NO: 2023-25-SWP

BY | NO. | DATE | REVISIONS

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626

PARTIAL SEDIMENTATION/FILTRATION POND #2

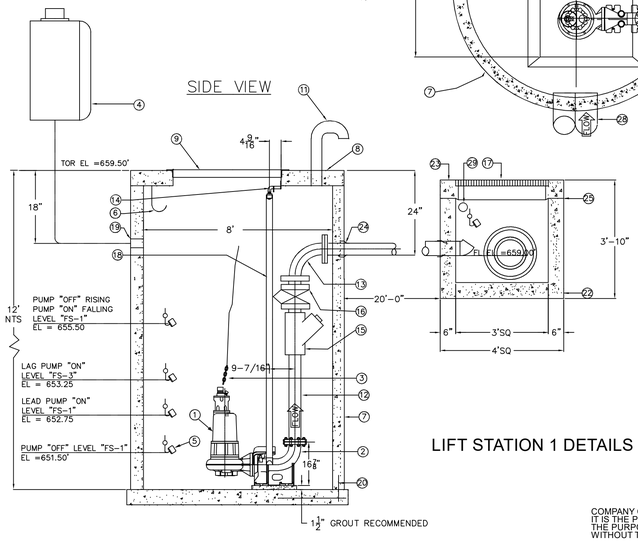

Highland Development & ENGINEERING COMPANY
hd+e
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945

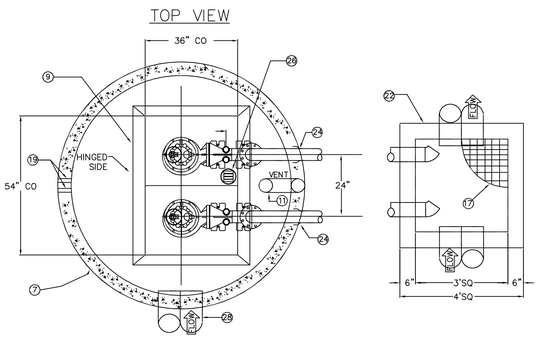

STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED PROFESSIONAL ENGINEER
09/25/2024

SHEET 9 OF 29

| STATION OPERATION LEVEL | | |
|---|---|---|
| RISIING LEVEL CYCLE | | |
| WATER LEVEL ELEVATION | ACTION | PUMPS IN OPERATION |
| 652.75 | LEAD PUMP TURNS "ON", FS-2 | LEAD PUMP "ON" |
| 653.25 | LAG PUMP TURNS "ON", FS-3 | LEAD & LAG PUMPS "ON" |
| 655.50 | PUMPS "OFF" LEVEL, FS-4 | PUMPS "OFF" GRAVITY FLOW |
| | HIGH WATER IN DITCH, FS-4 | ALL PUMPS "OFF" |
| FALLING LEVEL CYCLE | | |
| 655.50 | PUMPS "ON" LEVEL, FS-4 | PUMPS "ON" PUMPED DISCHARGE |
| | DITCH FLOAT HIGH WATER. FS-5 | ALL PUMPS "ON" |
| 651.50 | PUMPS "OFF" LEVEL, FS-1 | ALL PUMPS "OFF" LAG PUMP SWITCHES TO LEAD PUMP |

19










HIGH WATER "ALARM" LEVEL "FS-5"
EL = 658.50'

ELEVATIONS OF FLOAT SWITCHES TO BE DETERMINED BY THE ENGINEER.

| KEYED NOTES | | |
|---|---|---|
| MARK | QTY | DESCRIPTION |
| 1 | 2 | LIBERTY PUMP M/N LE41M-2 |
| 2 | 2 | 2" BASE ELBOWS |
| 3 | 2 | STAINLESS STEEL LIFTING CHAIN |
| 4 | 1 | DUPLEX CONTROL PANEL NEMA 4X (MOUNTED & WIRED BY CONTRACTOR) |
| 5 | 4 | FLOAT SWITCH |
| 6 | 1 | SS FLOAT HANGER |
| 7 | 1 | 48" DIA x 12' DEEP CONCRETE WET WELL |
| 8 | 1 | 6" THK FLAT CONCRETE TOP |
| 9 | 1 | 30"x36" SINGLE LEAF ALUMINIUM HATCHWAY 300 PSF) |
| 11 | 1 | 4" GALVANIZED VENT |
| 12 | 2 | 2" SCH 80 PVC PIPE |
| 13 | 2 | 2" SCH 80 PVC 90° ELBOW |
| 14 | 2 | SS UPPER GUIDE BRACKETS |
| 15 | | BALL CHECK VALVE |
| 16 | | TRUE UNION BALL VALVE |
| 17 | 2 | 36" SQ GALV STEEL BAR GRATE |
| 18 | 4 | SS GUIDE RAILS |
| 19 | 2 | 3" CONDUIT |
| 20 | - | REBAR AS REQ'D |
| 22 | 1 | 36" x 36" x 3'-6" DEEP PRECAST CONCRETE DISCHARGE STRUCTURE |
| 23 | 1 | 6" THK DISCHARGE STRUCTURE LID |
| 24 | 2 | RESILIENT RUBBER BOOT |
| 25 | - | ALL JOINTS MADE WATER-TIGHT w/ PLASTIC FLEXIBLE GASKET (RAM-NEX) |
| 26 | 1 | NAMEPLATE INDICATING: MFG SMITHPUMP 254-776-0377 WWW.SMITHPUMP.COM MODEL: LE41M-2 DATE MANUFACTURED |
| 27 | 1 | REMOTE MOUNT DITCH FLOAT (MOUNTED & WIRED BY OTHERS) |
| 28 | 1 | STORM INLET PIPING SEAL w/ NON-SHRINK GROUT (BY OTHERS) |
| 29 | 1 | 2" ELECTRICAL COUPLING |

SPECIFICATIONS

ALUMINIUM HATCH:
300 PSF RATED, 1/4" ALUMINIUM SKID-RESISTANT FLOOR PLATE, STAINLESS STEEL TAMPERPROOF BOLTING & HINGES & SLAMLOCK.

PUMPS:
PUMPS SHALL BE CENTRIFUGAL SOLIDS HANDLING TYPE WITH SUBMERSIBLE TYPE MOTOR. PUMPS SHALL HAVE A CAPACITY AS FOLLOWS:

| Pump No. | Type | GPM | TDH | RPM | Electrical HP | V | PH | Hz |
|---|---|---|---|---|---|---|---|---|
| P-1 | NON CLOG | | | | | | | 60 |
| P-2 | NON CLOG | | | | | | | 60 |

CONTROLS:
PUMP CONTROLS SHALL BE MOUNTED INSIDE A UL LISTED NEMA-4X ENCLOSURE AND INCLUDE CIRCUIT BREAKERS, ALARM CIRCUIT FUSE, IEC RATED MOTOR STARTER, PUMP HOA, AND ALTERNATOR RELAY. PANEL SHALL HAVE A VISUAL ALARM BEACON. PANEL IS DESIGNED FOR REMOTE MOUNTING.

LIFT STATION 1 DETAILS

COMPANY CONFIDENTIAL: INFORMATION CONTAINED HEREIN IS CONFIDENTIAL. IT IS THE PROPERTY OF SMITH PUMP CO. IT IS TO BE USED SOLELY FOR THE PURPOSES PROVIDED, AND IT IS NOT TO BE DISCLOSED TO OTHERS WITHOUT THE PRIOR WRITTEN CONSENT OF SMITH PUMP COMPANY.

| REV. | DATE | DESCRIPTION |
|---|---|---|

SMITH PUMP COMPANY
Duplex Lift Station

| | |
|---|---|
| PRODUCT | |
| PROJECT | |
| OWNER | |
| CONTRACTOR | |
| ENG. | |
| | |
| DWG. NO. | |

| DATE | SCALE | BY | CK | REV |
|---|---|---|---|---|
| | NONE | JTM | JSM | --- |

# GEOMEMBRANE LINER SPECIFICATIONS

GEOMEMBRANE LAYER SHALL HAVE MINIMUM THICKNESS OF 30 MILLS AND BE ULTRAVIOLET RESISTANT. SUITABLE GEOTEXTILE FABRIC SHALL BE PLACED ON TOP AND BOTTOM OF THE MEMBRANE FOR PUNCTURE PROTECTION AND THE LINERS COVERED WITH A MINIMUM OF 6 INCHES OF COMPACTED TOPSOIL. THE GEOTEXTILE FABRIC (FOR PROTECTION OF GEOMEMBRANE) SHALL BE NONWOVEN GEOTEXTILE FABRIC AND MEET THE SPECIFICATIONS IN TABLE 3-7. THE TOPSOIL SHALL BE STABILIZED FWITH APPROPRIATE VEGETATION.

TABLE 3-7 GEOTEXTILE FABRIC SPECIFICATIONS (COA, 2004)

| Property | Test Method | Unit | Specification (min) |
|---|---|---|---|
| Unit Weight | ASTM D-5261 | oz/yd² | 8 |
| Filtration Rate | ASTM D-4491 | cm/sec | 0.20 |
| Puncture Strength | ASTM D-4833 | lb | 125 |
| Mullen Burst Strength | ASTM D-3786 | psi | 400 |
| Tensile Strength | ASTM D-4632 | lb | 200 |
| Equiv. Opening Size | US Standard Sieve | No. | 80 |

Installation methods for GCLs and geomembrane liners vary according to the site requirements. Figure 3-14 shows a typical installation on an earthen slope with the top of the liner keyed in above the maximum water level of the basin. Figure 3-15 presents an example of geomembrane liner attached to the exterior of a concrete or rock wall. The "liquid membrane" shown in the figure is a hot fluid-applied, rubberized asphalt typically used for waterproofing and roofing applications, such as Hydrotech 6125 or equivalent.

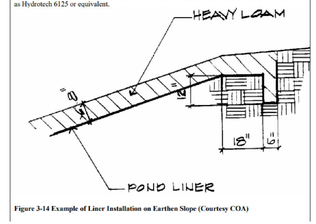
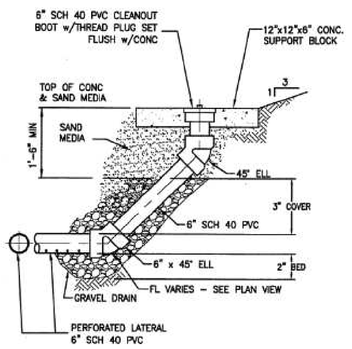
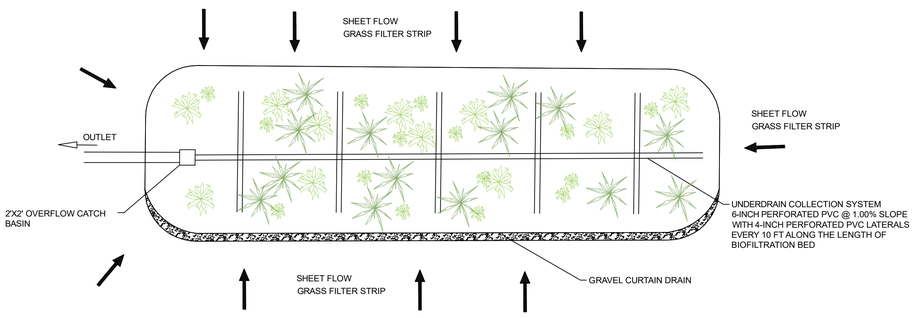


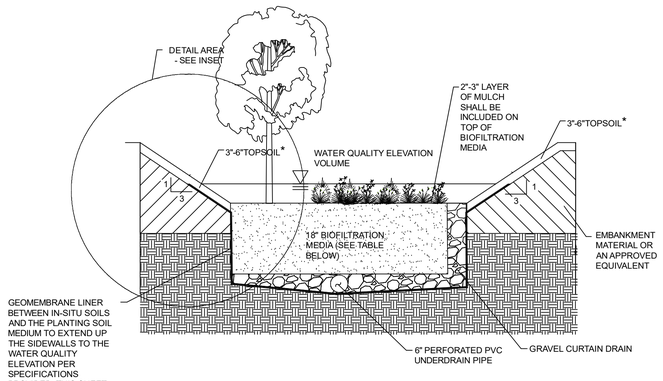

**Figure 3-14 Example of Liner Installation on Earthen Slope (Courtesy COA)**



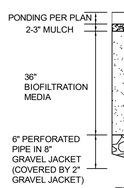

## FILTRATION BED CLEANOUT
NTS



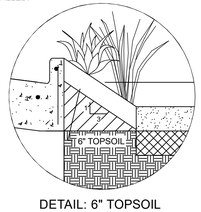

PLAN VIEW




NOTE:
* TOPSOIL DEPTH SHALL BE 3" UNDER TURF AND 6" WHERE CONTAINER PLANTS ARE INSTALLED.




TYPICAL SECTION




DETAIL: 6" TOPSOIL PLANTING
N.T.S.

| BIOFILTRATION MEDIUM CHARACTERISTICS | |
|---|---|
| PARAMETER | CRITERIA |
| SAND | 75-90% |
| ORGANIC MATTER | 0-4% |
| SCREENED BULK TOPSOIL | 10-25% |
| CLAY | Maximum 5% |

THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS, OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE BIORETENTION THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVIDE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. PROVIDE CLEAN SAND, FREE OF DELETERIOUS MATERIALS. SAND SHALL BE ASTM C-33 (CONCRETE SAND) OR ASTM C-144 (MASONRY SAND). THE ORGANIC MATTER SHALL NOT INCLUDE COMPOST, BUT MATERIAL SUCH AS PEAT MOSS OR SHREDDED BARK MULCH IS ACCEPTABLE.

BIORETENTION FACILITY WITH UNDERDRAIN & LINER

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626
WATER QUALITY & DETENTION POND NOTES & DETAILS

Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945

STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED PROFESSIONAL ENGINEER
09/25/2024

SHEET 10 OF 29

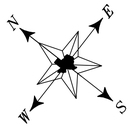
CASE NO: 2023-25-SWP

## FIRE PROTECTION NOTES:

1. APPROVAL OF THIS SITE PLAN DOES NOT IMPLY APPROVAL TO INSTALL UNDERGROUND FIRE LINES. PRIOR TO INSTALLATION OF UNDERGROUND FIRE LINES, A SEPARATE PERMIT SHALL BE SUBMITTED, UNDER GROUND FIRE LINE SUPPLY.
2. BACKFLOW PREVENTION WILL BE PROVIDED IN ACCORDANCE WITH THE CITY OF GEORGETOWN REQUIREMENTS WHEN REQUIRED. BACKFLOW PROTECTION WILL BE INSTALLED IN ACCORDANCE WITH THE DETAIL PROVIDED IN THE UTILITY DRAWINGS.
3. ALL PRIVATE FIRE LINES AND WHAT THEY PROVIDE SERVICE TO WILL BE INSTALLED IN ACCORDANCE WITH NFPA 24 INSTALLATION OF PRIVATE SERVICE MAINS AND THEIR APPURTENANCES.
4. ALL TEES, PLUGS, CAPS, BENDS, REDUCERS, VALVES SHALL BE RESTRAINED AGAINST MOVEMENT. THRUST BLOCKING AND JOINT RESTRAINED WILL BE INSTALLED IN ACCORDANCE WITH NFPA 24.
5. ALL UNDERGROUND SHALL REMAIN UNCOVERED UNTIL A VISUAL INSPECTION IS CONDUCTED BY THE GEORGETOWN FIRE MARSHAL'S OFFICE (FMO). ALL JOINT RESTRAINTS AND THRUST BLOCKING SHALL BE UNCOVERED FOR VISUAL INSPECTION.
6. ALL UNDERGROUND SHALL BE FLUSHED PER THE REQUIREMENTS OF NFPA STANDARD 24 AND WITNESSED BY GEORGETOWN FMO.
7. ALL UNDERGROUND SHALL PASS A HYDROSTATIC TEST WITNESSED BY GEORGETOWN FMO. ALL JOINTS SHALL BE UNCOVERED FOR HYDROSTATIC TESTING. ALL PIPING AND ATTACHMENTS SUBJECTED TO SYSTEM WORKING PRESSURE SHALL BE TESTED AT 200 PSI OR 50 PSI MORE THAN THE SYSTEM WORKING PRESSURE, WHICHEVER IS GREATER, AND SHALL MAINTAIN THAT PRESSURE + OF – 5 PSI FOR 2 HOURS.
8. FENCES, LANDSCAPING, AND OTHER ITEMS WILL NOT BE INSTALLED WITHIN 3 FT, AND WHERE THEY WILL OBSTRUCT THE VISIBILITY OR ACCESS TO HYDRANTS OR REMOTE FDCs.
9. LICENSE REQUIREMENTS OF EITHER RME–U OR G. WHEN CONNECTING BY UNDERGROUND TO THE WATER PURVEYOR'S MAIN FROM THE POINT OF CONNECTION OR VALVE WHERE THE PRIMARY PURPOSE OF WATER IS FOR FIRE PROTECTION SPRINKLER SYSTEM.

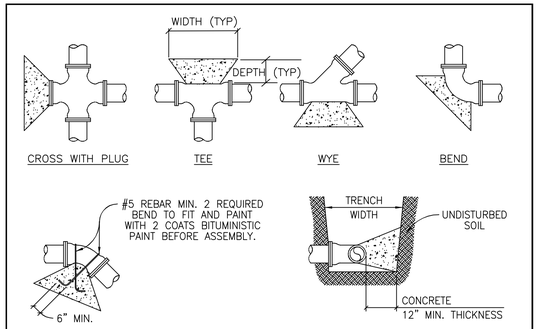
## LEGEND

- △ = CALCULATED POINT
- ● = FND 1/2" IRON ROD
- ( ) = RECORD INFORMATION
- B.S. = BUILDING SETBACK
- R.D. = RECORD DIGNITY MONUMENT
- = FIRE HYDRANT
- Ⓜ = SANITARY SEWER MANHOLE
- —x— = WIRE FENCE
- = POWER POLE
- —E— = OVERHEAD ELECTRIC




SCALE: 1"= 50'

0' 50' 100' 150'




*DEADMAN TYPICAL SECTION

ALL THRUST BLOCKS SHALL BE FORMED. LAID FORMS SHALL BE INSPECTED BY THE CITY OF GEORGETOWN PRIOR TO THE POURING OF CONCRETE AND SHALL ALSO BE INSPECTED BY THE CITY OF GEORGETOWN PRIOR TO COVERING. TYPICAL LOCATIONS WHICH REQUIRE CONCRETE REACTION (THRUST) BLOCKS, FOR PRESSURE MAINS FOUR INCHES (4") AND GREATER, CONCRETE SHALL HAVE 2,500 P.S.I. MINIMUM STRENGTH AT TWENTY EIGHT (28) DAYS AND BEAR AGAINST UNDISTURBED STABLE SOILS, AREA OF CONTACT SHALL BE GOVERNED BY PIPE SIZE, MAXIMUM PRESSURE IN PIPE, AND BEARING CAPACITY OF SOIL. PROTECT FITTINGS, BOLTS, ETC. BY COVERING WITH VISQUEEN OR OTHER ACCEPTABLE MATERIAL. CONCRETE SHALL BE A MINIMUM OF TWELVE INCHES (12") THICK.

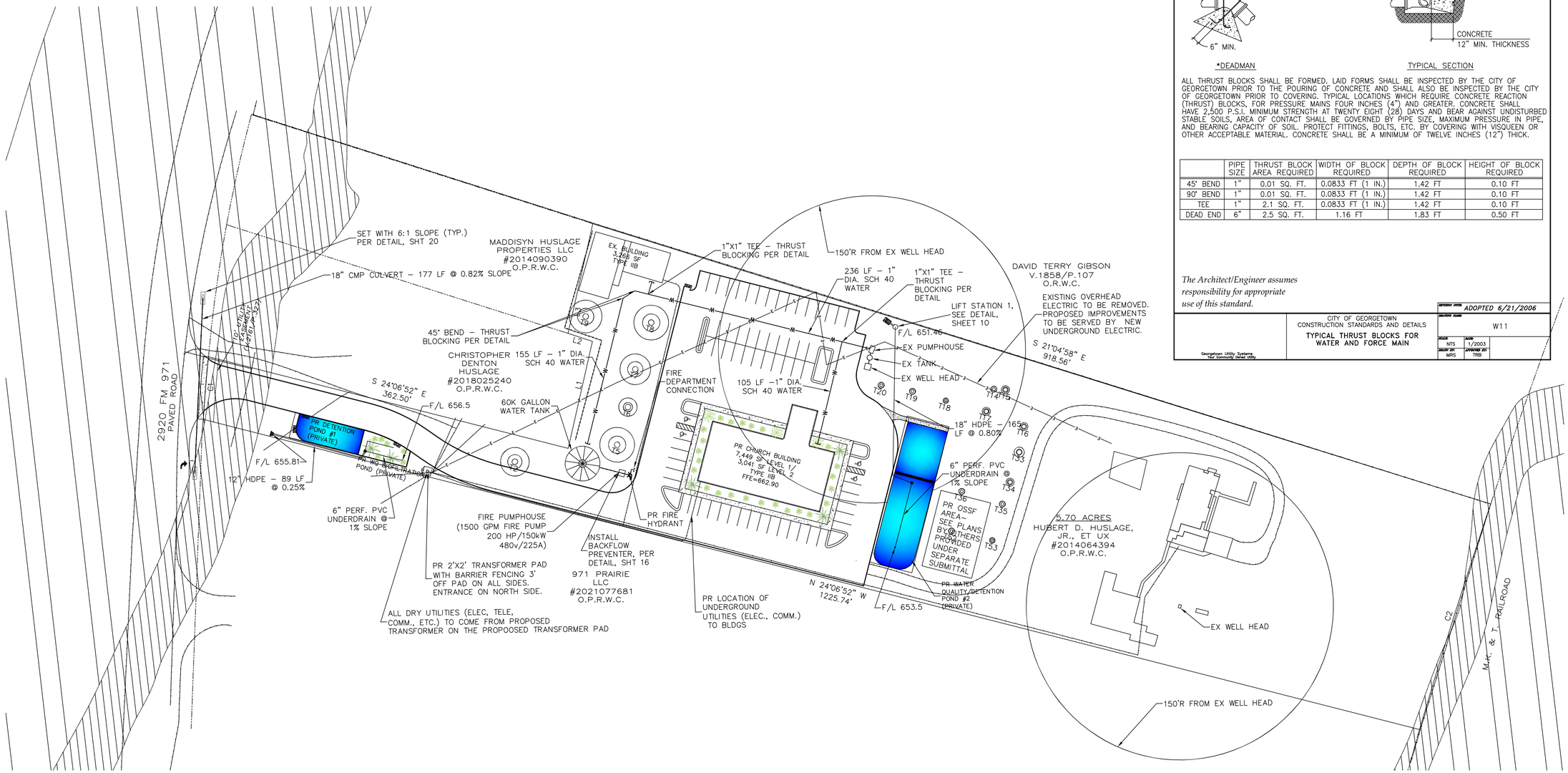
| | PIPE SIZE | THRUST BLOCK AREA REQUIRED | WIDTH OF BLOCK REQUIRED | DEPTH OF BLOCK REQUIRED | HEIGHT OF BLOCK REQUIRED |
|---|---|---|---|---|---|
| 45° BEND | 1" | 0.01 SQ. FT. | 0.0833 FT (1 IN.) | 1.42 FT | 0.10 FT |
| 90° BEND | 1" | 0.01 SQ. FT. | 0.0833 FT (1 IN.) | 1.42 FT | 0.10 FT |
| TEE | 1" | 2.1 SQ. FT. | 0.0833 FT (1 IN.) | 1.42 FT | 0.10 FT |
| DEAD END | 6" | 2.5 SQ. FT. | 1.16 FT | 1.83 FT | 0.50 FT |

*The Architect/Engineer assumes responsibility for appropriate use of this standard.*

Georgetown Utility Systems
Your Community Owned Utility

CITY OF GEORGETOWN
CONSTRUCTION STANDARDS AND DETAILS
**TYPICAL THRUST BLOCKS FOR WATER AND FORCE MAIN**

REVISION DATE: ADOPTED 6/21/2006
SHEET NO.: W11
SCALE: NTS
DATE: 1/2003
DESIGN BY: MRS
APPROVED BY: TRB




CASE NO: 2023-25-SWP

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

2924 & 2926 FM 971
GEORGETOWN, TX 78626

## UTILITY PLAN


Highland Development & ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674-4945


STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED PROFESSIONAL ENGINEER
09/25/2024

SHEET 11 OF 29

## LEGEND

- △ = CALCULATED POINT
- ● = FND 1/2" IRON ROD
- ( ) = RECORD INFORMATION
- B.S. = BUILDING SETBACK
- R.D. = RECORD DIGNITY MONUMENT
- = FIRE HYDRANT
- Ⓜ = SANITARY SEWER MANHOLE
- —x— = WIRE FENCE
- = POWER POLE
- —E— = OVERHEAD ELECTRIC

## PROPOSED LEGEND

- 100' = CONTOUR
- CULVERT
- EDGE OF ASPHALT
- LIMITS OF DISTURBANCE
- FLOW ARROW
- SILT FENCE
- ROCK RIP RAP

= CRITICAL ROOT ZONE OF TREE TO BE REMOVED

= CRITICAL ROOT ZONE OF TREE TO REMAIN

TREE NUMBER (TYP.)

SCALE: 1"= 50'

0' 50' 100' 150'




CASE NO: 2023-25-SWP

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|---|---|---|---|
| | | | |

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

2924 & 2926 FM 971
GEORGETOWN, TX 78626

# EROSION & SEDIMENTATION CONTROL PLAN


Highland Development & ENGINEERING COMPANY
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FIRM REGISTRATION # F-19450
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STATE OF TEXAS
RACHEL D. HARTZLER
117344
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09/25/2024

SHEET
14
OF 29

## GUIDELINES FOR DESIGN AND INSTALLATION OF TEMPORARY EROSION AND SEDIMENTATION CONTROLS

| TYPE OF STRUCTURE | REACH LENGTH | MAXIMUM DRAINAGE AREA | SLOPE |
|---|---|---|---|
| SILT FENCE | N/A | 2 ACRES | 0 – 10% |
| | 200 FEET | 2 ACRES | 10 – 20% |
| | 100 FEET | 1 ACRE | 20 – 30% |
| | 50 FEET | 1/2 ACRE | > 30% |
| TRIANGLE FILTER DIKE | 100 FEET | 1/2 ACRE | < 30% SLOPE |
| | 50 FEET | 1/4 ACRE | > 30% SLOPE |
| ROCK BERM *, ** | 500 FEET | < 5 ACRES | 0 – 10% |

* FOR ROCK BERM DESIGN WHERE PARAMETERS ARE OTHER THAN STATED, DRAINAGE AREA CALCULATIONS AND ROCK BERM DESIGN MUST BE SUBMITTED FOR REVIEW.

** HIGH SERVICE ROCK BERMS MAY BE REQUIRED IN AREAS OF ENVIRONMENTAL SIGNIFICANCE AS DETERMINED BY THE CITY OF GEORGETOWN.

*The Architect/Engineer assumes responsibility for appropriate use of this standard.*

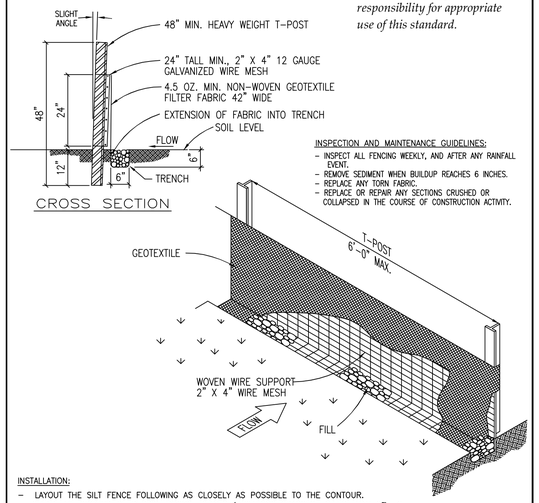
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|---|---|---|
| | CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS | ADOPTION NOTE: ADOPTED 6/21/2006 |
| GEORGETOWN TEXAS Georgetown Utility Systems "Our Community Owned Utility" | TEMPORARY EROSION AND SEDIMENTATION CONTROL GUIDELINES | DRAWING NUMBER: EC01 |
| | | SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB |

NOTE: THIS SECTION IS INTENDED TO ASSIST THOSE PERSONS PREPARING WATER POLLUTION ABATEMENT PLANS (WPAP) OR STORM WATER POLLUTION PREVENTION PLANS (SW3P) THAT COMPLY WITH FEDERAL, STATE AND/OR LOCAL STORM WATER REGULATIONS.

1. THE CONTRACTOR TO INSTALL AND MAINTAIN EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING, GRADING, OR EXCAVATION). CONTRACTOR TO REMOVE EROSION/SEDIMENTATION CONTROLS AT THE COMPLETION OF PROJECT AND GRASS RESTORATION.
2. ALL PROJECTS WITHIN THE RECHARGE ZONE OF THE EDWARD'S AQUIFER SHALL SUBMIT A BEST MANAGEMENT PRACTICES AND WATER POLLUTION AND ABATEMENT PLAN TO THE TNRCC FOR APPROVAL PRIOR TO ANY CONSTRUCTION.
3. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS TO BE IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN AND WATER POLLUTION ABATEMENT PLAN. DEVIATIONS FROM THE APPROVED PLAN MUST BE SUBMITTED TO AND APPROVED BY THE OWNER'S REPRESENTATIVE.
4. ALL PLANTING SHALL BE DONE BETWEEN MAY 1 AND SEPTEMBER 15 EXCEPT AS SPECIFICALLY AUTHORIZED IN WRITING. IF PLANTING IS AUTHORIZED TO BE DONE OUTSIDE THE DATES SPECIFIED, THE SEED SHALL BE PLANTED WITH THE ADDITION OF WINTER FESCUE (KENTUCKY 31) AT A RATE OF 100lb/ACRE. GRASS SHALL BE COMMON BERMUDA GRASS, HULLED, MINIMUM 82% PURE LIVE SEED. ALL GRASS SEED SHALL BE FREE FROM NOXIOUS WEED, GRADE "A" RECENT CROP, RECLEANED AND TREATED WITH APPROPRIATE FUNGICIDE AT TIME OF MIXING. SEED SHALL BE FURNISHED IN SEALED, STANDARD CONTAINERS WITH DEALER'S GUARANTEED ANALYSIS.
5. ALL DISTURBED AREAS TO BE RESTORED AS NOTED IN THE WATER POLLUTION ABATEMENT PLAN.
6. THE PLANTED AREA TO BE IRRIGATED OR SPRINKLED IN A MANNER THAT WILL NOT ERODE THE TOPSOIL, BUT WILL SUFFICIENTLY SOAK THE SOIL TO A DEPTH OF FOUR (4) INCHES. THE IRRIGATION TO OCCUR AT 10-DAY INTERVALS DURING THE FIRST TWO MONTHS TO INSURE GERMINATION AND ESTABLISHMENT OF THE GRASS . RAINFALL OCCURRENCES OF 1/2 INCH OR GREATER TO POSTPONE THE WATERING SCHEDULE ONE WEEK.
7. RESTORATION TO BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 1-1/2 INCHES HIGH WITH 95% *COVERAGE*, PROVIDED NO BARE SPOTS LARGER THAN 25 SQUARE FEET EXIST.
8. A MINIMUM OF FOUR (4) INCHES OF TOPSOIL TO BE PLACED IN ALL AREAS DISTURBED BY CONSTRUCTION.
9. THE CONTRACTOR TO HYDROMULCH OR SOD (AS SHOWN ON PLANS) ALL EXPOSED CUTS AND FILLS UPON COMPLETION OF CONSTRUCTION.
10. EROSION AND SEDIMENTATION CONTROLS TO BE INSTALLED OR MAINTAINED IN A MANNER WHICH DOES NOT RESULT IN SOIL BUILDUP WITHIN TREE DRIPLINE.
11. TO AVOID SOIL COMPACTION, CONTRACTOR SHALL NOT ALLOW VEHICULAR TRAFFIC, PARKING, OR STORAGE OF EQUIPMENT OR MATERIALS IN THE TREE DRIPLINE AREAS.
12. WHERE A FENCE IS CLOSER THAN FOUR (4) FEET TO A TREE TRUNK, PROTECT THE TRUNK WITH STRAPPED-ON PLANKING TO A HEIGHT OF EIGHT (8) FEET (OR TO THE LIMITS OF LOWER BRANCHING) IN ADDITION TO THE FENCING.
13. TREES TO BE REMOVED IN A MANNER WHICH DOES NOT IMPACT TREES TO BE PRESERVED.
14. ANY ROOT EXPOSED BY CONSTRUCTION ACTIVITY TO BE PRUNED FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOPSOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT BACKFILLED WITHIN TWO DAYS, COVER THEM WITH ORGANIC MATERIAL IN A MANNER WHICH REDUCES SOIL TEMPERATURE AND MINIMIZES WATER LOSS DUE TO EVAPORATION.
15. CONTRACTOR TO PRUNE VEGETATION TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC, AND EQUIPMENT BEFORE DAMAGE OCCURS (RIPPING OF BRANCHES, ETC.). ALL FINISHED PRUNING TO BE DONE ACCORDING TO RECOGNIZED, APPROVED STANDARDS OF THE INDUSTRY (REFERENCE THE "NATIONAL ARBORIST ASSOCIATION PRUNING STANDARDS FOR SHADE TREES").
16. THE CONTRACTOR IS TO INSPECT THE CONTROLS AT WEEKLY INTERVALS AND AFTER EVERY RAINFALL EXCEEDING 1/4 INCH TO VERIFY THAT THEY HAVE NOT BEEN SIGNIFICANTLY DISTURBED. ANY ACCUMULATED SEDIMENT AFTER A SIGNIFICANT RAINFALL TO BE REMOVED AND PLACED IN THE OWNER DESIGNATED SPOIL DISPOSAL SITE. THE CONTRACTOR TO CONDUCT PERIODIC INSPECTIONS OF ALL EROSION/SEDIMENTATION CONTROLS AND TO MAKE ANY REPAIRS OR MODIFICATIONS NECESSARY TO ASSURE CONTINUED EFFECTIVE OPERATION OF EACH DEVICE.
17. WHERE THERE IS TO BE AN APPROVED GRADE CHANGE, IMPERMEABLE PAVING SURFACE, TREE WELL, OR OTHER SUCH SITE DEVELOPMENT IMMEDIATELY ADJACENT TO A PROTECTED TREE, ERECT THE FENCE APPROXIMATELY TWO TO FOUR FEET (2'-4") BEHIND THE AREA IN QUESTION.
18. NO ABOVE AND/OR BELOW GROUND TEMPORARY FUEL STORAGE FACILITIES TO BE STORED ON THE PROJECT SITE.
19. IF EROSION AND SEDIMENTATION CONTROL SYSTEMS ARE EXISTING FROM PRIOR CONTRACTS, OWNER'S REPRESENTATIVE AND THE CONTRACTOR TO EXAMINE THE EXISTING EROSION AND SEDIMENTATION CONTROL SYSTEMS FOR DAMAGE PRIOR TO CONSTRUCTION. ANY DAMAGE TO PREEXISTING EROSION AND SEDIMENTATION CONTROLS NOTED TO BE REPAIRED AT OWNERS EXPENSE.
20. INTENTIONAL RELEASE OF VEHICLE OR EQUIPMENT FLUIDS ONTO THE GROUND IS NOT ALLOWED. CONTAMINATED SOIL RESULTING FROM ACCIDENTAL SPILL TO BE REMOVED AND DISPOSED OF PROPERLY.

*The Architect/Engineer assumes responsibility for appropriate use of this standard.*

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| | CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS | ADOPTION NOTE: ADOPTED 6/21/2006 |
| GEORGETOWN TEXAS Georgetown Utility Systems "Our Community Owned Utility" | EROSION AND SEDIMENTATION AND TREE PROTECTION NOTES | DRAWING NUMBER: EC01A |
| | | SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB |

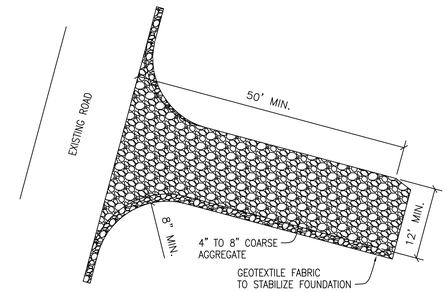



INSPECTION AND MAINTENANCE GUIDELINES:
- INSPECT ALL FENCING WEEKLY, AND AFTER ANY RAINFALL EVENT.
- REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES.
- REPLACE ANY TORN FABRIC.
- REPLACE OR REPAIR ANY SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY.

INSTALLATION:
- LAYOUT THE SILT FENCE FOLLOWING AS CLOSELY AS POSSIBLE TO THE CONTOUR.
- CLEAR THE GROUND OF DEBRIS, ROCKS, PLANTS (INCLUDING GRASSES TALLER THAN 2") TO PROVIDE A SMOOTH FLOW APPROACH SURFACE. EXCAVATE 6" DEEP X 6" WIDE TRENCH ON UPSTREAM SIDE OF FACE PER PLANS.
- DRIVE THE HEAVY DUTY T-POST AT LEAST 12 INCHES INTO THE GROUND AND AT A SLIGHT ANGLE TOWARDS THE FLOW.
- ATTACH THE 2" X 4" 12 GAUGE WELDED WIRE MESH TO THE T-POST WITH 11 1/2 GAUGE GALVANIZED T-POST CLIPS. THE TOP OF THE WIRE TO BE 24" ABOVE GROUND LEVEL. THE WELDED WIRE MESH TO BE OVERLAPPED 6" AND TIED AT LEAST 6 TIMES WITH HOG RINGS.
- THE SILT FENCE TO BE INSTALLED WITH A SKIRT A MINIMUM OF 6" WIDE PLACED ON THE UPHILL SIDE OF THE FENCE INSIDE EXCAVATED TRENCH. THE FABRIC TO OVERLAP THE TOP OF THE WIRE BY 1".
- ANCHOR THE SILT FENCE BY BACKFILLING WITH EXCAVATED DIRT AND ROCKS (NOT LARGER THAN 2").
- GEOTEXTILE SPLICES SHOULD BE A MINIMUM OF 18" WIDE ATTACHED IN AT LEAST 6 PLACES. SPLICES IN CONCENTRATED FLOW AREAS WILL NOT BE ACCEPTED.
- SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

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| | CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS | ADOPTION NOTE: ADOPTED 6/21/2006 |
| GEORGETOWN TEXAS Georgetown Utility Systems "Our Community Owned Utility" | SILT FENCE DETAIL | DRAWING NUMBER: EC02 |
| | | SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB |

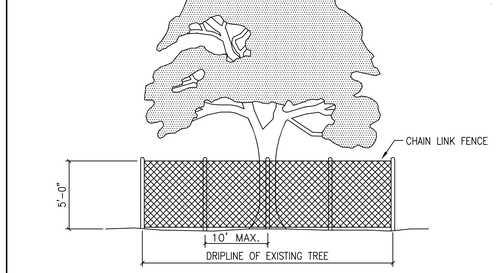



INSTALLATION:
- CLEAR THE AREA OF DEBRIS, ROCKS OR PLANTS THAT WILL INTERFERE WITH INSTALLATION.
- GRADE THE AREA FOR THE ENTRANCE TO FLOW BACK ON TO THE CONSTRUCTION SITE. RUNOFF FROM THE STABILIZED CONSTRUCTION
- PLACE GEOTEXTILE FABRIC AS APPROVED BY THE CITY.
- PLACE ROCK AS APPROVED BY THE CITY.

INSPECTIONS AND MAINTENANCE GUIDELINES:
- THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
- ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ON TO PUBLIC RIGHTS-OF-WAY SHOULD BE REMOVED IMMEDIATELY BY CONTRACTOR.
- WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY.
- 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.
- ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

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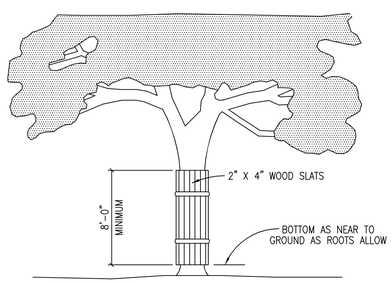
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| | CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS | ADOPTION NOTE: ADOPTED 6/21/2006 |
| GEORGETOWN TEXAS Georgetown Utility Systems "Our Community Owned Utility" | STABILIZED CONSTRUCTION ENTRANCE | DRAWING NUMBER: EC06 |
| | | SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB |




NOTES:
1. TREE PROTECTION FENCES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING).
2. FENCES SHALL COMPLETELY SURROUND THE TREE, OR CLUSTERS OF TREES; WILL BE LOCATED AT THE OUTERMOST LIMIT OF THE TREE BRANCHES (DRIPLINE), AND WILL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROJECT IN ORDER TO PREVENT THE FOLLOWING:
   A. SOIL COMPACTION IN THE ROOT ZONE AREA RESULTING FROM VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MATERIALS.
   B. ROOT ZONE DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN SIX INCHES (6") CUT OR FILL, OR TRENCHING NOT REVIEWED AND AUTHORIZED BY THE CITY.
   C. WOUNDS TO EXPOSED ROOTS, TRUNKS OR LIMBS BY MECHANICAL EQUIPMENT.
   D. OTHER ACTIVITIES DETRIMENTAL TO TREES, SUCH AS CHEMICAL STORAGE, CEMENT TRUCK CLEANING AND FIRE.
3. EXCEPTIONS TO INSTALLING FENCES AT TREE DRIPLINES MAY BE PERMITTED IN THE FOLLOWING CASES:
   A. WHERE PERMEABLE PAVING IS TO BE INSTALLED, ERECT THE FENCE AT THE OUTER LIMITS OF THE PERMEABLE PAVING AREA.
   B. WHERE TREES ARE CLOSE TO PROPOSED BUILDINGS, ERECT THE FENCE NO CLOSER THAN SIX FEET (6'-0") TO BUILDING.

*The Architect/Engineer assumes responsibility for appropriate use of this standard.*

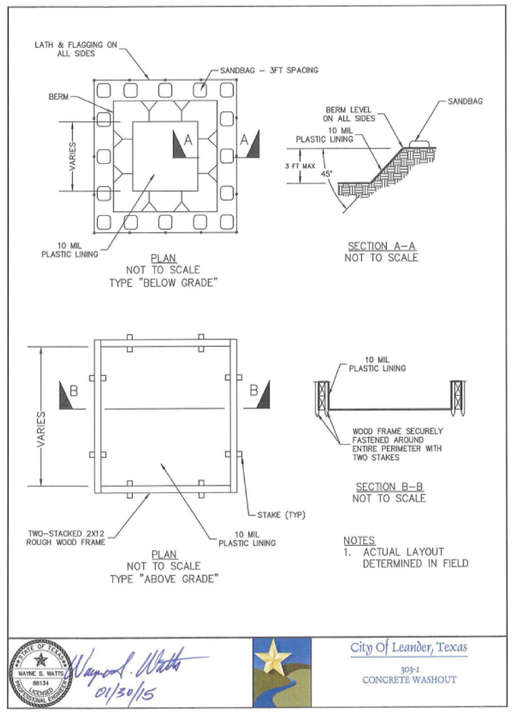
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| | CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS | ADOPTION NOTE: ADOPTED 6/21/2006 |
| GEORGETOWN TEXAS Georgetown Utility Systems "Our Community Owned Utility" | TREE PROTECTION – CHAIN LINK FENCE | DRAWING NUMBER: EC09 |
| | | SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB |

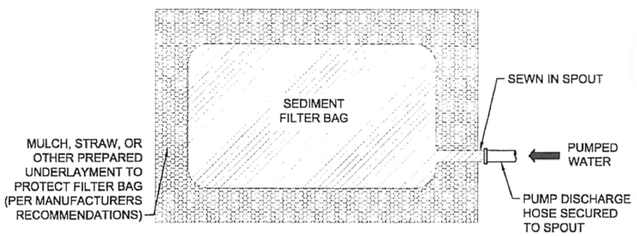



NOTES:
1. WHERE ANY EXCEPTIONS RESULT IN A FENCE BEING CLOSER THAN FOUR FEET (4'-0") TO A TREE TRUNK; PROTECT THE TRUNK WITH STRAPPED-ON-PLANKING TO A HEIGHT OF EIGHT FEET (8'-0"), OR TO THE LIMITS OF LOWER BRANCHING IN ADDITION TO THE REDUCED FENCING PROVIDED.
2. ANY ROOTS EXPOSED BY CONSTRUCTION ACTIVITY SHALL BE PRUNED FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOP SOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT BACKFILLED WITHIN TWO (2) DAYS, COVER THEM WITH ORGANIC MATERIAL IN A MANNER WHICH REDUCES SOIL TEMPERATURE, AND MINIMIZES WATER LOSS DUE TO EVAPORATION.
3. PRIOR EXCAVATION OR GRADE CUTTING WITHIN TREE DRIPLINE, MAKE A CLEAN CUT BETWEEN THE DISTURBED AND UNDISTURBED ROOT ZONES WITH A ROCK SAW OR SIMILAR EQUIPMENT, TO MINIMIZE DAMAGE TO REMAINING ROOTS.
4. TREES MOST HEAVILY IMPACTED BY CONSTRUCTION ACTIVITIES SHOULD BE WATERED DEEPLY ONCE A WEEK DURING PERIODS OF HOT, DRY WEATHER. TREE CROWNS SHOULD BE SPRAYED WITH WATER PERIODICALLY TO REDUCE DUST ACCUMULATION ON THE LEAVES.
5. ANY TRENCHING REQUIRED FOR THE INSTALLATION OF LANDSCAPE IRRIGATION SHALL BE PLACED AS FAR FROM EXISTING TREE TRUNKS AS POSSIBLE.
6. NO LANDSCAPE TOPSOIL DRESSING GREATER THE FOUR INCHES (4") SHALL BE PERMITTED WITHIN THE DRIPLINE OF A TREE. NO SOIL IS PERMITTED ON THE ROOT FLARE OF ANY TREE.
7. PRUNING TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC AND EQUIPMENT SHALL TAKE PLACE BEFORE CONSTRUCTION BEGINS.

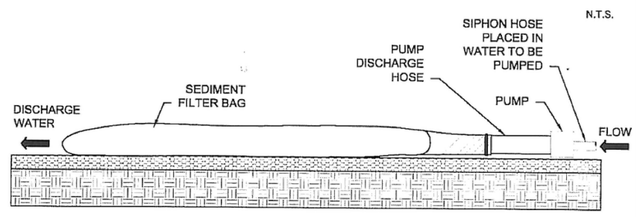
*The Architect/Engineer assumes responsibility for appropriate use of this standard.*

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| | CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS | ADOPTION NOTE: ADOPTED 6/21/2006 |
| GEORGETOWN TEXAS Georgetown Utility Systems "Our Community Owned Utility" | TREE PROTECTION – WOOD SLATS | DRAWING NUMBER: EC10 |
| | | SCALE: NTS; DATE: 1/2003; DRAWN BY: MRS; APPROVED BY: TRB |




SEDIMENT FILTER BAG PLAN VIEW




DEWATERING FILTER BAG DETAIL

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

HOPE FAMILY FELLOWSHIP OF GEORGETOWN
2924 & 2926 FM 971
GEORGETOWN, TX 78626
EROSION CONTROL DETAILS


Highland Development & ENGINEERING COMPANY
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STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED PROFESSIONAL ENGINEER
Rachel D Hartzler
09/25/2024

SHEET 17 OF 29

CASE NO: 2023-25-SWP

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
# WATER POLLUTION ABATEMENT PLAN NOTES
# GENERAL CONSTRUCTION NOTES

EDWARDS AQUIFER PROTECTION PROGRAM CONSTRUCTION NOTES – LEGAL DISCLAIMER

THE FOLLOWING/LISTED "CONSTRUCTION NOTES" ARE INTENDED TO BE ADVISORY IN NATURE ONLY AND DO NOT CONSTITUTE AN APPROVAL OR CONDITIONAL APPROVAL BY THE EXECUTIVE DIRECTOR (ED), NOR DO THEY CONSTITUTE A COMPREHENSIVE LISITING OF RULES OR CONDITIONS TO BE FOLLOWED DURING CONSTRUCTION. FURTHER ACTIONS MAY BE REQUIRED TO ACHIEVE COMPLIANCE WITH TCEQ REGULATIONS FOUND IN TITLE 30, TEXAS ADMINISTRATIVE CODE (TAC), CHAPTERS 213 AND 217, AS WELL AS LOCAL ORDINANCES AND REGULATIONS PROVIDING FOR THE PROTECTION OF WATER QUALITY. ADDITIONALLY, NOTHING CONTAINED IN THE FOLLOWING/LISTED "CONSTRUCTION NOTES" RESTRICTS THE POWERS OF THE ED, THE COMMISSION OR ANY OTHER GOVERNMENTAL ENTITY TO PREVENT, CORRECT, OR CURTAIL ACTIVITIES THAT RESULT OR MAY RESULT IN POLLUTION OF THE EDWARDS AQUIFER OR HYDROLOGICALLY CONNECTED SURFACE WATERS. THE HOLDER OF ANY EDWARDS AQUIFER PROTECTION PLAN CONTAINING "CONSTRUCTION NOTES" IS STILL RESPONSIBLE FOR COMPLIANCE WITH TITLE 30, TAC, CHAPTERS 213 OR ANY OTHER APPLICABLE TCEQ REGULATION, AS WELL AS ALL CONDITIONS OF AN EDWARDS AQUIFER PROTECTION PLAN THROUGH ALL PHASES OF PLAN IMPLEMENTATION. FAILURE TO COMPLY WITH ANY CONDITION OF THE ED'S APPROVAL, WHETHER OR NOT IN CONTRADICTION OF ANY "CONSTRUCTION NOTES," IS A VIOLATION OF TCEQ REGULATIONS AND ANY VIOLATION IS SUBJECT TO ADMINISTRATIVE RULES, ORDERS, AND PENALTIES AS PROVIDED UNDER TITLE 30, TAC 213.10 (RELATING TO ENFORCEMENT). SUCH VIOLATIONS MAY ALSO BE SUBJECT TO CIVIL PENALTIES AND INJUNCTION. THE FOLLOWING/LISTED "CONSTRUCTION NOTES" IN NO WAY REPRESENT AN APPROVED EXCEPTION BY THE ED TO ANY PART OF TITLE 30 TAC, CHAPTERS 213 AND 217, OR ANY OTHER TCEQ APPLICABLE REGULATION.

1. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START OF ANY REGULATED ACTIVITIES. THIS NOTICE MUST INCLUDE:
   –THE NAME OF THE APPROVED PROJECT;
   –THE ACTIVITY OF THE START DATE; AND
   –THE CONTACT INFORMATION OF THE PRIME CONTRACTOR.

2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT MUST BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED WATER POLLUTION ABATEMENT PLAN (WPAP) AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTORS ARE REQUIRED TO KEEP ON–SITE COPIES OF THE APPROVED PLAN AND APPROVAL LETTER.

3. IF ANY SENSITIVE FEATURE(S) (CAVES, SOLUTION CAVITY, SINK HOLE, ETC.) IS DISCOVERED DURING CONSTRUCTION, ALL REGULATED ACTIVIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPROPRIATE TCEQ REGIONAL OFFICE MUST BE IMMEDIATELY NOTIFIED OF ANY SENSITIVE FEATURES ENCOUNTERED DURING CONSTRUCTION. CONSTRUCTION ACTIVITIES MAY NOT BE RESUMED UNTIL THE TCEQ HAS REVIEWED AND APPROVED THE APPROPRIATE PROTECTIVE MEASURES IN ORDER TO PROTECT ANY SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY.

4. NO TEMPORARY OR PERMANENT HAZARDOUS SUBSTANCE STORAGE TANK SHALL BE INSTALLED WITHIN 150 FEET OF A WATER SUPPLY SOURCE, DISTRIBUTION SYSTEM, WELL, OR SENSITIVE FEATURE.

5. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND MANUFACTURERS SPECIFICATIONS. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THESE CONTROLS MUST REMAIN IN PLACE UNTIL THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.

6. ANY SEDIMENT THAT ESCAPES THE CONSTRUCTION SITE MUST BE COLLECTED AND PROPERLY DISPOSED OF BEFORE THE NEXT RAIN EVENT TO ENSURE IT IS NOT WASHED INTO SURFACE STREAMS, SENSITIVE FEATURES, ETC.

7. SEIDMENT MUST BE REMOVED FROM THE SEDIMENT TRAPS OR SEDIMENTATION BASINS NOT LATER THAN WHEN IT OCCUPIES 50% OF THE BASIN'S DESIGN CAPACTIY.

8. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BEING DISCHARGED OFFSITE.

9. ALL SPOILS (EXCAVATED MATERIAL) GENERATED FROM THE PROJECT SITE MUST BE STORED ON–SITE WITH PROPER E&S CONTROLS. FOR STORAGE OR DISPOSAL OF SPOILS AT ANOTHER SITE ON THE EDWARDS AQUIFER RECHARGE ZONE, THE OWNER OF THE SITE MUST RECEIVE APPROVAL OF A WATER POLLUTION ABATEMENT PLAN FOR THE PLACEMENT OF FILL MATERIAL OR MASS GRADING PRIOR TO THE PLACEMENT OF SPOILS AT THE OTHER SITE.

10. IF PORTIONS OF THE SITE WILL HAVE A TEMPORARY OR PERMANENT CEASE IN CONSTRUCTION ACTIVITY LASTING LONGER THAN 14 DAYS, SOIL STABILIZATION IN THOSE AREAS SHALL BE INITIATED AS SOON AS POSSIBLE PRIOR TO THE 14TH DAY OF INACTIVITY. IF ACTIVITY WILL RESUME PRIOR TO THE 21ST DAY, STABILIZATION MEASURES ARE NOT REQUIRED. IF DROUGHT CONDITIONS OR INCLEMENT WEATHER PREVENT ACTION BY THE 14TH DAY, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS POSSIBLE.

11. THE FOLLOWING RECORDS SHALL BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST:
   –THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR;
   –THE DATES WHEN CONSTRCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; AND
   –THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.

12. THE HOLDER OF ANY APPROVED EDWARD AQUIFER PROTECTION PLAN MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:
   a. ANY PHYSICAL OR OPERATIONAL MODIFICATIONS OF ANY WATER POLLUTION ABATEMENT STRUCTURE(S), INCLUDING BUT NOT LIMITED TO PONDS, DAMS, BERMS, SEWAGE TREATMENT PLANTS, AND DIVERSIONARY STRUCTURES;
   b. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED OR A CHANGE WHICH WOULD SIGNIFICANTLY IMPACT THE ABILITY OF THE PLAN TO PREVENT POLLUTION OF THE EDWARDS AQUIFER;
   c. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE ORIGINAL WATER POLLUTION ABATEMENT PLAN.

| | |
|---|---|
| AUSTIN REGIONAL OFFICE<br>12100 PARK 35 CIRCLE, BUILDING A<br>AUSTIN, TEXAS 78753–1808<br>PHONE (512) 339–2929<br>FAX (512) 339–3795 | SAN ANTONIO REGIONAL OFFICE<br>14250 JUDSON ROAD<br>SAN ANTONIO, TEXAS 78233–4480<br>PHONE (210) 490–3096<br>FAX (210) 545–4329 |

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |

*HOPE FAMILY FELLOWSHIP OF GEORGETOWN*
2924 & 2926 FM 971
GEORGETOWN, TX 78626

*WPAP GENERAL CONSTRUCTION NOTES*


Highland Development
& ENGINEERING COMPANY
hd+e
FIRM REGISTRATION # F-19450
155 Glass Ln
Bastrop, Texas 78602
(815) 674–4945


STATE OF TEXAS
RACHEL D. HARTZLER
117344
LICENSED
PROFESSIONAL ENGINEER
09/25/2024

SHEET
19
OF 29

*CASE NO: 2023-25-SWP*

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## Permanent Stormwater Section Attachment G

## Inspection, Maintenance, Repair and Retrofit Plan

The owner will be responsible for the required maintenance activities as listed:

BIORETENTION:

- During the first growing season, inspections shall occur biweekly until 95% vegetative cover is established.
- During the first year, monthly inspections shall include the removal of accumulated sediments.
- Quarterly inspections shall include the removal of debris and accumulated sediments. Soil media shall be replaced in voided areas caused by settlement. Eroded areas shall be repaired, and voided areas shall be re-mulched by hand.
- Semi-annual inspections shall include the removal and replacement of any dead/diseased vegetation and removal of debris and accumulated sediments. If the drawdown time exceeds 72 hours, the top layer of sediment shall be removed, mulch shall be added, and vegetation shall be replaced. Alternatively, the soil may be de-compacted through scarification and mulch and disturbed vegetation replaced. Sediment removal shall be performed at least once every two years.
- In late winter, bunch grasses shall be trimmed no lower than 18-inches from the ground. Turf grass shall be mowed no lower than 4-inches from the ground. All clippings/trimmings shall be removed from the site. Mulching may be used to control weeds by blocking light and air space. Gravel or crushed recycled glass equivalent in size to gravel may be used to cover the soil surface. Weed fabric should not be utilized.
- In spring, the previous mulch layer shall be removed and a new mulch layer shall be applied by hand once every two to three years.
- The underdrain piping network shall be cleaned every five years, or as needed, to remove any sediment build-up.
- Inspections of the Permanent BMPs shall be documented in inspection reports. The inspection reports shall be maintained onsite in the administrator's office.

SAND FILTER:

- Inspections: BMP facilities must 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 an repaired or revegetated immediately. With each inspection, any damage to the structural elements of the system (pipes, concrete drainage structures, retaining walls, etc.) must be identified and repaired immediately. Cracks, voids, and undermining should be patched/filled to prevent additional structural damage. Trees and root systems should be removed to prevent growth in cracks and joints that can cause structural damage.
- Sediment Removal: Remove sediment from the inlet structure and sedimentation chamber when sediment buildup reaches a depth of 6 inches or when the proper functioning of inlet and outlet structures is impaired. Sediment should be cleared from the inlet structure at least every year and from the sedimentation basin at least every 5 years.
- Media Replacement: Maintenance of the filter media is necessary when the drawdown time exceeds 48 hours. When this occurs, the upper layer of sand should be removed and replaced with new material meeting the original specifications. Any discolored sand should also be removed and replaced. In filters that have been regularly maintained, this should be limited to the top 2 to 3 inches.
- Debris and Litter Removal: Debris and litter will accumulate near the sedimentation basin outlet device and should be removed during regular mowing operations and inspections. Particular attention should be paid to floating debris that can eventually clog the control device.
- Filter Underdrain: Clean underdrain piping network to remove any sediment buildup as needed to maintain design drawdown time.
- Mowing: Grass areas in and around sand filters 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. Vegetation on the pond embankments should be mowed as appropriate to prevent the establishment of woody vegetation.

An amended copy of this document shall be provided to TCEQ within 30 days of any changes in the following information. This Inspection, Maintenance, Repair and Retrofit Plan follows the RG-348 Guidlines.

By: Rachel D Hartzler Date 8/9/2024

Rachel D. Hartzler, P.E

I, the owner, have and read understand the requirements of the attached Inspection, Maintenance, Repair and Retrofit Plan for the proposed Permanent Best Management Practices for my project. I acknowledge that I will maintain responsibility for the implementation and execution of the plan until the responsibility is transferred to or assumed by another party in writing through a binding legal instrument.

Responsible Party for Maintenance: **Steve Damman**
Title: **Board Member, Hope Family Fellowship of Georgetown Inc.**
Mailing Address: **P.O. Box 2731**
City, State, Zip Code: **Georgetown, TX 78627**
Telephone: **512-943-9886**

Signature: _____

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## Permanent Stormwater Section Attachment I

## Measures for Minimizing Surface Stream Contamination

The San Gabriel River is adjacent to this property along the southern boundary. Due to the layout of the site, there are no proposed improvements or impervious cover within 100-feet of the southern boundary of the property. This provides a natural vegetated stream buffer that will filter sediment in stormwater runoff that drains toward the San Gabriel River. Stormwater runoff on-site is directed toward the proposed bioretention pond and the detention pond with sand filter that will provide water quality treatment.

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## Agent Authorization Form

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

I, Steve Damman,
Print Name

Board Member,
Title - Owner/President/Other

of Hope Family Fellowship of Georgetown Inc,
Corporation/Partnership/Entity Name

have authorized Rachel Hartzler
Print Name of Agent/Engineer

of Highland Development & Engineering Co, 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

8-12-24
Date

THE STATE OF TEXAS §

County of TRAVIS §

BEFORE ME, the undersigned authority, on this day personally appeared STEVE DAMMAN 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 12TH day of AUGUST, 2024

WAYLAND WAMPLER
ID #125097679
My Commission Expires
November 01, 2024

Wayland Wampler
NOTARY PUBLIC

WAYLAND WAMPLER
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 11/01/24

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

I Shane Rotter,
Print Name

Environmental Project Planner,
Title - Owner/President/Other

of TXDOT,
Corporation/Partnership/Entity Name

have authorized Rachel D. Hartzler, P.E.
Print Name of Agent/Engineer

of Highland Development & Engineering Co, 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.

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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

9/19/24
Date

THE STATE OF _____ §

County of _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____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 ____ day of _____,_____.

NOTARY PUBLIC

Typed or Printed Name of Notary

MY COMMISSION EXPIRES: _____

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## Application Fee Form

# Application Fee Form

**Texas Commission on Environmental Quality**
Name of Proposed Regulated Entity: Hope Family Fellowship of Georgetown
Regulated Entity Location: 2920 FM 971, Georgetown, TX 78628
Name of Customer: Hope Family Fellowship of Georgetown
Contact Person: Steve Damman Phone: 512-296-5765
Customer Reference Number (if issued):CN _____
Regulated Entity Reference Number (if issued):RN _____

**Austin Regional Office (3373)**

☐ Hays ☐ Travis ☒ Williamson

**San Antonio Regional Office (3362)**

☐ Bexar ☐ Medina ☐ Uvalde
☐ Comal ☐ Kinney

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

☒ Austin Regional Office
☐ 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 | 5.70 Acres | $ 5,000 |
| Sewage Collection System | L.F. | $ |
| Lift Stations without sewer lines | Acres | $ |
| Underground or Aboveground Storage Tank Facility | Tanks | $ |
| Piping System(s)(only) | Each | $ |
| Exception | Each | $ |
| Extension of Time | Each | $ |

Signature: Rachel A Hastings Date: 08/09/2024

# Application Fee Schedule

**Texas Commission on Environmental Quality**
Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

***Water Pollution Abatement Plans and Modifications***

***Contributing Zone Plans and Modifications***

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

# HOPE FAMILY FELLOWSHIP OF GEORGETOWN

## Core Data Form

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 | | RN |

## 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:*

Hope Family Fellowship of Georgetown

| 7. TX SOS/CPA Filing Number | 8. TX State Tax ID (11 digits) | 9. Federal Tax ID (9 digits) | 10. DUNS Number *(if applicable)* |
|---|---|---|---|
| 802040331 | 32054806370 | | |

**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:**

303 E. Morrow St.

| City | State | ZIP | ZIP + 4 |
|---|---|---|---|
| Georgetown | TX | 78626 | |

| 16. Country Mailing Information *(if outside USA)* | 17. E-Mail Address *(if applicable)* |
|---|---|
| | Steve@QuantumDigital.com |

| 18. Telephone Number | 19. Extension or Code | 20. Fax Number *(if applicable)* |
|---|---|---|
| ( 512 ) 296-5765 | | ( ) - |

## 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.*)

Hope Family Fellowship of Georgetown

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **23. Street Address of the Regulated Entity:** *(No PO Boxes)* | | | | | | | | |
| | 2920 FM 971 | | | | | | | |
| | **City** | Georgetown | **State** | TX | **ZIP** | 78602 | **ZIP + 4** | |
| **24. County** | Williamson | | | | | | | |

**Enter Physical Location Description if no street address is provided.**

| | |
|---|---|
| **25. Description to Physical Location:** | From SH 130 in Georgetown, travel east 1 mile on FM 971, the site is on the south side of the road, there is are mailboxes with site address to identify the site |

| **26. Nearest City** | **State** | **Nearest ZIP Code** |
|---|---|---|
| Georgetown | TX | 78628 |

| **27. Latitude (N) In Decimal:** | 30.673864 | **28. Longitude (W) In Decimal:** | -97.627660 |
|---|---|---|---|

| Degrees | Minutes | Seconds | Degrees | Minutes | Seconds |
|---|---|---|---|---|---|
| 30 | 40 | 25.9104 | 97 | 37 | 39.576 |

| **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) |
|---|---|---|---|
| 8661 | | 813110 | |

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

Church - place of worship

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **34. Mailing Address:** | **40201 Industrial Circle** | | | | | | | |
| | **City** | **Georgetown** | **State** | **TX** | **ZIP** | **78626** | **ZIP + 4** | |

| **35. E-Mail Address:** | **Brett@PlatinumResortAssistedLiving.com** |
|---|---|

| **36. Telephone Number** | **37. Extension or Code** | **38. Fax Number** *(if applicable)* |
|---|---|---|
| **( 512 ) 296-5765** | | **( ) -** |

**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:** | Rachel D. Hartzler, P.E. | **41. Title:** | Owner |
|---|---|---|---|

| **42. Telephone Number** | **43. Ext./Code** | **44. Fax Number** | **45. E-Mail Address** |
|---|---|---|---|
| ( 815 ) 674-4945 | | ( ) - | Rachel@HighlandDevTX.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:** | Highland Development & Engineering Co, LLC | **Job Title:** | Owner |
|---|---|---|---|
| **Name** *(In Print):* | Rachel D. Hartzler, P.E. | **Phone:** | **( 815 ) 674- 4945** |
| **Signature:** | Rachel D Hartzler | **Date:** | 08/09/2024 |