

Water Pollution Abatement Plan

and

Organized Sewage Collection System Plan Modification

For

Somerset Hills Parcel 5E

In the

City of Georgetown

Williamson County, Texas

Submitted: March 28, 2022

Updated: April 5, 2022

Resubmitted: June 30, 2022

Modification: May 20, 2024

Job Number: 22226x-06_Parcel 5E

Water Pollution Abatement Plan

and Organized Sewage Collection System Plan Modification

For

Somerset Hills Parcel 5E

In

City of Georgetown Williamson County, Texas

Job Number: 22226x-06_Parcel 5E Prepared by:





Texas Registered Engineering Firm-181 1978 S. Austin Ave Georgetown, TX 78626

Modification of a Previously Approved Plan Checklist

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

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

- Geologic Assessment Form (TCEQ-0585)

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

Modification of a Previously Approved Plan (TCEQ-0590)

Attachment A - Original Approval Letter and Approved Modification Letters Attachment B - Narrative of Proposed Modification Attachment C - Current Site Plan of the Approved Project

- Application Form (include any applicable to the proposed modification):

Aboveground Storage Tank Facility Plan (TCEQ-0575) Organized Sewage Collection System Application (TCEQ-0582) Underground Storage Tank Facility Plan (TCEQ-0583) Water Pollution Abatement Plan Application (TCEQ-0584) Lift Station / Force Main System Application (TCEQ-0624)

Temporary Stormwater Section (TCEQ-0602)

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

Permanent Stormwater Section (TCEQ-0600), if necessary

Attachment A - 20% or Less Impervious Cover Declaration (if requested for multi-family, school, or small business site) Attachment B - BMPs for Upgradient Stormwater Attachment C - BMPs for On-site Stormwater

Attachment D - BMPs for Surface Streams

Attachment E - Request to Seal Features, if sealing a feature

Attachment F - Construction Plans

Attachment G - Inspection, Maintenance, Repair and Retrofit Plan

Attachment H - Pilot-Scale Field Testing Plan (if requested) Attachment I - Measures for Minimizing Surface Stream Contamination

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

Texas Commission on Environmental Quality Edwards Aquifer Application Cover Page

Our Review of Your Application

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

Administrative Review

1. <u>Edwards Aquifer applications</u> 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: <u>http://www.tceq.texas.gov/field/eapp</u>.

- 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 N	et Hills Parcel 5E	2. Regulated Entity No.: 111474482					
3. Customer Name: GTS Development II, LLC			4. Customer No.: N/A				
5. Project Type: (Please circle/check one)	New 🤇	Modification	Extension		Exception		
6. Plan Type: (Please circle/check one)	WPAP CZI	SCS JJST AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures	
7. Land Use: (Please circle/check one)	Residential	Non-residential		8. Site (acres		98.56	
9. Application Fee:	\$14,500	10. Permanent H	BMP(s	s):	Batch Detention Pond/ Vegetative Filter Strips		
11. SCS (Linear Ft.):	18,638	12. AST/UST (No. Tanks)			N/A		
13. County:	Williamson	14. Watershed:			Cowan Creek/Berry Creek		

Application Distribution

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

San Antonio Region								
County:	Bexar	Comal	Kinney	Medina	Uvalde			
Original (1 req.)		_						
Region (1 req.)								
County(ies)			_					
Groundwater Conservation District(s)	Edwards Aquifer Authority Trinity-Glen Rose	Edwards Aquifer Authority	Kinney	EAA Medina	EAA Uvalde			
City(ies) Jurisdiction	Castle Hills Fair Oaks Ranch Helotes Hill Country Village Hollywood Park San Antonio (SAWS) Shavano Park	Bulverde Fair Oaks Ranch Garden Ridge New Braunfels Schertz	NA	San Antonio ETJ (SAWS)	NA			

Austin Region

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.

Tyson L. Hasz, P.E. – Steger Bizzell

Print Name of Customer/Authorized Agent

Signature of Customer/Authorized Agent

5/17/2024 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):	Payable to TCEQ (Y	Payable to TCEQ (Y/N):			
Core Data Form Complete (Y/N):	Check: Signed (Y/N):				
Core Data Form Incomplete Nos.:	Less than 90 days of	ld (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: GTS Development II, LLC / Steger Bizzell, Tyson L Hasz, P.E.

Date: 5/17/2024

Signature of Customer/Agent:

Jym Hay

Project Information

- 1. Regulated Entity Name: Somerset Hills Parcel 5E
- 2. County: Williamson
- 3. Stream Basin: Cowan Creek / Berry Creek
- 4. Groundwater Conservation District (If applicable): N/A
- 5. Edwards Aquifer Zone:

$\left \right $	Recharge Zone
	Transition Zone

6. Plan Type:

X WPAP	AST
\boxtimes scs	🗌 UST
$\!$	Exception Request

7. Customer (Applicant):

Contact Person: Christopher ColemanEntity: GTS Development II, LLCMailing Address: c/o Hometown America, 110 N. Wacker Dr., Ste 4500City, State: Chicago, ILZip: 60606Telephone: (312) 265-7144FAX: n/aEmail Address: CColeman@HometownAmerica.net

8. Agent/Representative (If any):

Contact Person: Mr. Tyson L. Hasz, P.E.Entity: Steger BizzellMailing Address: 1978 S. Austin AveCity, State: Georgetown, TXZip: 78626Telephone: (512) 930-9412Email Address: tyson.hasz@stegerbizzell.com

9. Project Location:

The project site is located inside the city limits of <u>Georgetown</u>.

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

- The project site is not located within any city's limits or ETJ.
- 10. The location of the project site is described below. The description provides sufficient detail and clarity so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

Northeast of the intersection of County Road 245 and Ronald Reagan Blvd.

- 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: 6/17/2024

- 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

TCEQ-0587 (Rev. 02-11-15)

(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:

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

- 20. Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.
- 21. No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the Executive Director.













TCEQ-0587 Attachment C – Project Description

This project consists of the development of a detached, multi-family residential site to be known as Somerset Hills Parcel 5E. A sewage collection system (SCS) to serve 343 detached, multi-family residential units and 1 amenity center will be built on-site. The sewage collection system from Phase A will connect to a 4-foot Manhole north of Ronald Reagan Boulevard that is proposed for construction with Somerset Hills (Parcel 6) Phases A-E (REN 111309837). The sewage collection system from Phase B will connect to an existing 12-inch stub south of Ronald Reagan Boulevard. On-site water quality treatment will also be provided.

The site is 98.56 acres and is located in Georgetown, Texas. It will be developed in two phases. The neighborhood will have frontage to Ronald Reagan Boulevard to the. The site is bound by undeveloped lands to the north, east, and west.

The WPAP and SCS applications, which were approved on July 12, 2022, included paving, drainage, water and wastewater, detention and water quality improvements for the neighborhood site. <u>The project has since been modified by the inclusion of a 50 ft Atmos utility easement along the southern boundary of the site and has been changed from townhouses to detached units</u>. <u>This has reduced the number of residential units from 532 units to 343 units and the impervious cover from 46.76 acres to 40.09 acres</u>. Furthermore, the property has been sold to a new owner. With the site layout revisions that accompanied the addition of the Atmos easement and the change in product type, we are now applying for approval of 40.09 acres of impervious cover (40.7%) on the 98.56-acre project.

The proposed wastewater system will consist of eight-inch SDR-26 PVC and twelve-inch SDR-26 PVC wastewater gravity lines. The sewage collection system for Somerset Hills Parcel 5E Phase A will flow to the southeast and connect to a 4-foot Manhole north of Ronald Reagan Boulevard that is proposed for construction with Somerset Hills Phases 6 A-E. A Water Pollution Abatement Plan application and Organized Sewage Collection System application has been made to TCEQ for the Somerset Hills Phases 6 A-E collection system and is under review. The combined Parcel 5E Phase A and Phases 6 A-E systems will ultimately flow through an SCS for Sun City NH 69 to an existing 21-inch Wastewater Interceptor along Cowan Creek and onto the existing Sun City Lift Station along Berry Creek. The wastewater will then be conveyed to the City of Georgetown Pecan Branch Wastewater Treatment Plant (WWTP). The sewage collection system for Phase B will flow to the southwest and connect to an existing 12-inch stub south of Ronald Reagan Boulevard. The existing collection system then travels down Cowan Creek to Berry Creek and into the Sun City Lift Station where it ultimately flows to the Pecan Branch WWTP.

Phase A generally drains from northwest to southeast into a tributary of Cowan Creek. Phase B generally drains from east to west into Jennings Branch which is also a tributary of Cowan Creek. Two batch detention ponds will be provided on-site to treat the proposed impervious cover. Vegetative filter strips will also be used in some areas to provide treatment and meet City of Georgetown's 85% required removal.

The limit of the Somerset Hills Parcel 5E WPAP is 98.56 acres. The proposed impervious cover within the site will be 40.09 acres and 40.7%.

Included within the Geologic Assessment (GA) section of this WPAP/SCS for the project is a report prepared by Horizon Environmental Services, Inc dated June 2020, for Somerset Hills Parcels 5, 6 and

7. The WPAP/SCS for this project includes Parcel 5 only. The recommendations and buffers shown within this GA were made following a Phase II karst survey and reviewed by TCEQ in the field prior to the start of design for the project. There are seven features identified as sensitive in this GA that are located within the project limits: F-7 to F-13. Features F-8 to F-12 are located outside of the limits of construction to the east of Phase A. Features F-7 and F-13 are located in Phase A. All features require a minimum 50 feet setback. Feature 7 and Features F-9 to F-13 are caves and include both a protective buffer zone extending 50 feet in all directions from the footprint, plus the watershed catchment up to 200 feet from the footprint. These seven sensitive features and their buffers are shown on the Site Plan.

The site is currently undeveloped and has been used for agricultural purposes. There are no demolition activities proposed as a part of this project.



Environmental Services, Inc.

GEOLOGIC ASSESSMENT 233-ACRE SOMERSET HILLS PARCELS 5, 6, AND 7 RONALD REAGAN BOULEVARD GEORGETOWN, WILLIAMSON COUNTY, TEXAS HJN 200018 GA

> PREPARED FOR: SOMERSET HILLS, LTD NEWPORT BEACH, CALIFORNIA

PREPARED BY:

HORIZON ENVIRONMENTAL SERVICES, INC. TBPG FIRM REGISTRATION NO. 50488



JUNE 2020

200018 GA Report

CORPORATE HEADQUARTERS 1507 S Interstate 35 ★ Austin, TX 78741-2502 ★ (512) 328-2430 ★ www.horizon-esi.com An LJA Company



TABLE OF CONTENTS

I. GEOLOGIC ASSESSMENT FORM (TCEQ-0585)

II. ATTACHMENTS:

- A GEOLOGIC ASSESSMENT TABLE
- B STRATIGRAPHIC COLUMN
- C DESCRIPTION OF SITE GEOLOGY
- D SITE GEOLOGIC MAP
- E SUPPORTING INFORMATION
- F ADDITIONAL SITE MAPS
- G SITE PHOTOGRAPHS

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: James Killian

Telephone: 512-328-2430

Date: <u>4 June 2020</u>

Fax: <u>512-328-1804</u>

Representing: <u>Horizon Environmental Services</u>, Inc. and TBPG Firm Registration No. 50488 (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:

Regulated Entity Name: <u>233-acre Somerset Hills Parcels 5, 6, and 7, along north side of Ronald</u> <u>Reagan Boulevard, Georgetown, Williamson County, Texas</u>

Project Information

- 1. Date(s) Geologic Assessment was performed: <u>15, 20, 21, 24, and 31 January 2020; 19 and 24</u> <u>February 2020; 1, 2, 7, 8, 13 to 17, 20, 21, 23, and 27 to 30 April 2020, and 1 May 2020.</u>
- 2. Type of Project:

\boxtimes	WPAP
\square	SCS

	AST
	UST

3. Location of Project:

Recharge Zone

Contributing Zone within the Transition Zone

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

Soil Name	Group*	Thickness(feet)
Crawford clay, 1-3% slopes (CfB)	D	1 to 2
Eckrant extremely stony clay, 0- 3% slopes (EeB)	D	0 to 1
Eckrant-Rock outcrop association, 1- 10% slopes (ErE)	D	0 to 1

Table 1 - Soil Units, InfiltrationCharacteristics and Thickness

Soil Name	Group*	Thickness(feet)
Fairlie clay, 1- 2% slopes (FaB)	D	2 to 4
Georgetown stony clay loam, 1-3% slopes (GsB)	D	1 to 2

* Soil Group Definitions (Abbreviated)

- A. Soils having a high infiltration rate when thoroughly wetted.
- B. Soils having a moderate infiltration rate when thoroughly wetted.
- C. Soils having a slow infiltration rate when thoroughly wetted.
- D. Soils having a very slow infiltration rate when thoroughly wetted.
- 6. Attachment B Stratigraphic Column. A stratigraphic column showing formations, members, and thicknesses is attached. The outcropping unit, if present, should be at the top of the stratigraphic column. Otherwise, the uppermost unit should be at the top of the stratigraphic column.
- 7. X 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" = <u>400</u> '
Site Geologic Map Scale: 1" = <u>400</u> '
Site Soils Map Scale (if more than 1 soil type): 1" = <u>2000</u> '

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. [\langle	Surface	geologic	units are	e shown	and	labeled	on the	Site	Geologic N	Иар.
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- 12. Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.
 - Geologic or manmade features were not discovered on the project site during the field investigation.
- 13. The Recharge Zone boundary is shown and labeled, if appropriate.
- 14. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If applicable, the information must agree with Item No. 20 of the WPAP Application Section.

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

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

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

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

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

Administrative Information

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



ATTACHMENT A

GEOLOGIC ASSESSMENT TABLE

GEOL	OGIC ASS	SESSMENT	ГТАВ	LE			PRC	JEC	CT NA	ME		Somers	set Hills P	arcels 5, 6	, and 7	, Geo	orgeto	wn, W	/illiams	on Co., TX
	LOCATIO	DN				FE/	ATUR	E CH	ARACT	ERI	STIC	S			EVAL	LUAT	ΓΙΟΝ	PH	YSICA	L SETTING
1A	1B *	1C*	2A	2B	3		4		5	5A	6	7	8A	8B	9	1	10	1	1	12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIME	ENSIONS (F	EET)	TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENS	ITIVITY	CATCHMI (AC	ENT AREA RES)	TOPOGRAPHY
						х	Y	Z		10						<40	<u>>40</u>	<1.6	<u>>1.6</u>	
F-4	30.73708	-97.76594	SC	20	Ked	1	0.5	1.5		0			C,F,O	15	35	Х		Х		Hillside
F-5	30.74093	-97.76562	SC	20	Ked	0.8	0.3	1.5		0			C,F,O	15	35	Х		Х		Hillside
F-6	30.73773	-97.76334	SH	20	Ked	14	11	1		0			C,F,O	15	35	Х		Х		Hillside
F-7	30.73971	-97.76228	SH/C	30	Ked	15	15	23		0	-		C,F,O	45	75		Х	Х		Hillside
F-8	30.74087	-97.76221	SH	20	Ked	8	6	1.5		0	-		C,F,O	25	45		Х	Х		Hillside
F-9	30.74119	-97.76141	SH/C	30	Ked	7	6	6		0			C,F,O	45	75		Х	Х		Hillside
F-10	30.74198	-97.76099	SH/C	30	Ked	8	8	9.5	N85E	10			C,F,O	40	80		Х	Х		Hillside
F-11	30.742	-97.76028	SH/C	30	Ked	12	12	3.5		0			C,F,O	30	60		Х	Х		Hillside
F-12	30.74073	-97.76073	SH/C	30	Ked	8	5	4		0			C,F,O	40	70		Х	Х		Hillside
F-13	30.73893	-97.76088	SC/C	20	Ked	3	3	14	-	0	-		C,F,O	55	85		Х	Х		Hillside
F-14	30.73945	-97.75888	SH	20	Ked	15	6	1.5		0			C,F,O	17	37	Х		Х		Hillside
F-15	30.74002	-97.75935	SC	20	Ked	3	3	3		0	-		C,F,O	15	35	Х		Х		Hillside
F-16	30.740976	-97.756994	SH/SF	20	Ked	8	7	1		0	-		C,F,O	28	48		Х	Х		Hillside
F-17	30.741284	-97.755472	SH	20	Ked	12	6	0,5		0			C,F,O	15	35	Х		Х		Hillside
F-18	30.74002	-97.75935	SH	20	Ked	3	3	3		0			C,F,O	10	30	Х		Х		Hillside
F-19	30.740976	-97.756994	SF	20	Ked	8	7	1		0			C,F,O	18	38	Х		Х		Hillside
F-20	30.742814	-97.75239	SH	20	Ked	5	5	0.8		0			Ċ,F,O	10	30	Х		Х		Hillside

* DATUM:<u>WGS 84</u> 2A TYPE

2A TYPI	Ξ	TYPE
С	Cave	
SC	Solution cavity	
SF	Solution-enlarge	d fracture(s)
F	Fault	
0	Other network he	drook footure

- O Other natural bedrock features
- MB Man-made feature in bedrock
- SW Swallow hole SH Sinkhole
- SHSinkholeCDNon-karst closed depression
- Z Zone, clustered or aligned features

OF

JAMES P. KILLIAN

GEOLOGY

No. 10281

VAL X GE

- 8A INFILLING
- 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
- Construction materials: construction materials

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

I have read, I understood, and I have followed the Texas Commission on Environmental Quality's Instructions to Geologists. The information presented here complies with that document and is a true representation of the conditions observed in the field.

My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Date : 4 June 2020

Jame P. Willa

2B POINTS

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Sheet ___1___ of __2____

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

GEOL	OGIC ASS	SESSMENT	ГТАВ	LE			PRC	JEC	T NAI	ME		Somers	et Hills P	arcels 5, 6	, and 7	, Geo	orgeto	wn, W	illiams	on Co., TX
	LOCATIC	DN .				FEA	TURE	E CH	ARACT	ERI	STICS	5			EVAL	LUAT	FION	PH	YSICA	L SETTING
1A	1B *	1C*	2A	2B	3		4		5	5A	6	7	8A	8B	9	1	10	1	1	12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIME	ENSIONS (F	EET)	TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENS	ITIVITY	CATCHME (ACF	ENT AREA RES)	TOPOGRAPHY
						х	Y	Z		10						<40	<u>>40</u>	<1.6	<u>>1.6</u>	
F-21	30.742814	-97.75118	CD	5	Ked	60	60	1		0	1		C,F,O	20	25	Х		Х		Hillside
F-22	30.743263	-97.74849	SC	20	Ked	2	1	1.5		0	-		C,F,O	15	35	Х		Х		Hillside
F-23	30.744777	-97.745307	SH	20	Ked	3	3	0.5		0			C,F,O	15	35	Х		Х		Hillside
F-24	30.74656	-97.73086	SH/SF	20	Ked	6	6	1	N53E	10	-		C,F,O	20	50		Х	Х		Hillside
F-25	30.74787	-97.73112	SH/C	30	Ked	15	12	6		0	1		C,F,O	40	70		Х	Х		Hillside
F-26	30.74784	-97.73183	SH/C	30	Ked	8	8	10		0	1		C,F,O	45	75		Х	Х		Hillside
F-27	30.7471	-97.7317	SC	20	Ked	5	1.5	4		0	1		C,F,O	25	45		Х	Х		Hillside
F-28	30.747118	-97.73182	SH/SF	20	Ked	7	7	1.5		0	-		C,F,O	15	35	Х		Х		Hillside
F-29	30.738503	-97.7669	F	20	Ked	8	5	4	N30E	0	-		C,F,O	8	38	Х		Х		Hillside
F-30	30.741108	-97.7761	F	20	Ked	3	3	14	N30E	0	1		C,F,O	8	38	Х		Х		Hillside
M-6	30.74472	-97.74882	MB	30	Ked	2	2			0	1		Х	5	35	Х		Х		Hillside
M-7	30.74473	-97.74858	MB	30	Ked	1500	75			0	1		Х	5	35	Х		Х		Hillside
M-8	30.74558	-97.74588	MB	30	Ked	1000	75			0	1		Х	5	35	Х		Х		Hillside

* DATUM:<u>WGS 84</u>

- 2A TYPE TYPE C Cave SC Solution cavity SF Solution-enlarged fracture(s)
- F Fault
- O Other natural bedrock features
- MB Man-made feature in bedrock
- SW Swallow hole
- SH Sinkhole
- CD Non-karst closed depression

EOFTE

1. Ille

JAMES P. KILLIAN

GEOLOGY

No. 10281

VAL X GE

Zone, clustered or aligned features

- None, exposed bedrock
- C Coarse cobbles, breakdown, sand, gravel
- O Loose or soft mud or soil, organics, leaves, sticks, dark colors
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8A INFILLING

- V Vegetation. Give details in narrative description
- FS Flowstone, cements, cave deposits
- X Other materials: construction materials

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

I have read, I understood, and I have followed the Texas Commission on Environmental Quality's Instructions to Geologists. The information presented here complies with that document and is a true representation of the conditions observed in the field.

My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Date : 4 June 2020

Jama P. Willa

2B POINTS

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Sheet ___2___ of __2____

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



ATTACHMENT B

STRATIGRAPHIC COLUMN





ATTACHMENT C

DESCRIPTION OF SITE GEOLOGY



Geologic information for the subject site obtained via literature review is provided in Attachment E, Supporting Information.

A geologic assessment of the approximately 233-acre Somerset Hills Parcels 5, 6, and 7 property was conducted pursuant to Texas rules for regulated activities on the Edwards Aquifer Recharge Zone (EARZ) (30 TAC 213). The subject site consists of unimproved pastureland/rangeland located along the north side of Ronald Reagan Boulevard, Georgetown, Williamson County, Texas. Assessment findings were used to develop recommendations for site construction measures intended to be protective of water resources at the subject site and adjacent areas.

The entire subject site is located within the Edwards Aquifer Recharge Zone (EARZ), as defined by the Texas Commission on Environmental Quality (TCEQ). The EARZ occurs where surface water enters the subsurface through exposed limestone bedrock containing faults, fractures, sinkholes, and caves.

The subject site is predominantly underlain by the undifferentiated Edwards Limestone Formation (Ked), with an estimated maximum thickness of about 120 feet. However, the far western portion of the subject site is underlain by the Comanche Peak Limestone (Kc), with an estimated thickness of up to 70 feet (UT-BEG, 1995). In addition, an overlying thin amount of younger alluvium (Qal) occurs within the southwestern corner of the subject site.

Twenty-seven natural geologic features (F-4 to F-30) and 3 man-made features (M-6 to M-8) were identified at the subject site. Further information pertaining to the geologic and manmade features is presented in Attachments D, E, and F. Photographs of the features are presented in Attachment G.



ATTACHMENT D

SITE GEOLOGIC MAP





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Date:	02/25/202
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HJN NO:	200018.001 G
Source:	UT-BEG,1995 Nearmap, 201

	Man-Made Features	
•	Non-sensitive Geologic Features	
٠	Sensitive Geologic Features	
	- 2-Foot Contours	















ATTACHMENT E

SUPPORTING INFORMATION



1.0 INTRODUCTION AND METHODOLOGY

This report and any proposed abatement measures are intended to fulfill Texas Commission on Environmental Quality (TCEQ) reporting requirements (TCEQ, 2005). This geologic assessment includes a review of the subject site for potential aquifer recharge and documentation of general geologic characteristics for the subject site. Horizon Environmental Services, Inc. (Horizon) conducted the necessary field and literature studies according to TCEQ *Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones* (TCEQ, 2004).

Horizon walked transects spaced less than 50 feet apart, mapped the locations of features using a sub-foot accurate Trimble Geo HX handheld GPS, and posted processed data utilizing GPS Pathfinder Office software, topographic maps, and aerial photographs. Horizon also searched the area around any potential recharge features encountered to look for additional features. When necessary, Horizon removed loose rocks and soil (by hand) to preliminarily assess each feature's subsurface extent while walking transects. However, labor-intensive excavation was not conducted during this assessment. Features that did not meet the TCEQ definition of a potential recharge feature (per TCEQ, 2004), such as surface weathering, karren, or animal burrows, were evaluated in the field and omitted from this report.

The results of this survey do not preclude the possibility of encountering subsurface voids or abandoned test or water wells during the clearing or construction phases of the proposed project. If a subsurface void is encountered during any phase of the project, work should be halted until the TCEQ (or appropriate agency) is contacted and a geologist can investigate the feature.

2.0 ENVIRONMENTAL SETTING

2.1 LOCATION AND GENERAL DESCRIPTION

The subject site consists of approximately 233 acres of unimproved pastureland/rangeland located along the north side of Ronald Reagan Boulevard (Parcels 5 to 7), Georgetown, Williamson County, Texas (Attachment F, Figure 1).

2.2 LAND USE

The subject site is currently used for agricultural purposes to raise beef cattle. Surrounding lands are generally used for single-family residential and/or rural agricultural purposes.

2.3 TOPOGRAPHY AND SURFACE WATER

The subject site is situated on flat to moderately sloping terrain located within the Berry Creek and Cowan Creek watersheds (Attachment F, Figures 2 and 3). Surface elevations on the subject site vary from a minimum of approximately 840 feet above mean sea level (amsl) at Berry Creek to a maximum of approximately 950 feet amsl near the north-central boundary of the subject site (USGS, 1976 and 1982). Drainage on the site occurs primarily by overland sheet flow


in multiple directions depending on proximity to Berry Creek and 2 unnamed tributaries of Berry Creek and Cowan Creek. The tributary of Cowan Creek occurs on the west-central portion of the site while the tributary of Berry Creek occurs on the east-central portion of the subject site.

2.4 EDWARDS AQUIFER ZONE

The entire the subject site is located within the Edwards Aquifer Recharge Zone (EARZ) (TCEQ, 2020) (Attachment F, Figure 2). The Recharge Zone is described as an area where the stratigraphic units constituting the Edwards Aquifer crop out, including the outcrops of other geologic formations in proximity to the Edwards Aquifer, where caves, sinkholes, faults, fractures, or other permeable features would create a potential for recharge of surface waters into the Edwards Aquifer.

2.5 SURFACE SOILS

Six soil units are mapped within the subject site (NRCS, 2020) (Attachment F, Figure 4). Generally, the soil series are similar in their physical, chemical, and engineering properties, with the principal exception being rock fragment content and thickness. The soil units are described in further detail below.

Crawford clay, 1 to 3% slopes (CfB) is a gently sloping soil found on footslopes and at the heads of drainageways on uplands. Typically, the uppermost layer is neutral clay about 27 inches thick. It is brown in the upper 6 inches and dark reddish-brown below that. The underlying material is whitish, fractured, hard limestone. This soil is well-drained, and the available water capacity is low. When the soil is dry and cracked, permeability is rapid; but when the soil is wet and the cracks are closed, permeability is very slow. Runoff is medium.

Eckrant extremely stony clay, 0 to 3% slopes (EeB) typically has an extremely stony, very dark gray, clay surface layer about 11 inches thick. The underlying material is indurated limestone. About 25% of the surface is covered with fragments of limestone; most are about 6 inches across but range from 3 inches to 3 feet across and are as much as 10 inches thick. The soil is calcareous, moderately alkaline, and well-drained. Permeability is moderately slow, and surface runoff is rapid. The fragments of limestone on the surface help to prevent erosion. The available water capacity is very low because of the shallowness of the soil and stones in the soil.

Eckrant-Rock outcrop complex, rolling (ErE) consists of Eckrant soils and Rock outcrop located along hills, ridges, and on sides of drainageways on uplands. This complex is made up of about 70% Eckrant soils, 15% Rock outcrop, and 15% other soils. Typically, the surface layer of Eckrant soils is calcareous, moderately alkaline, dark grayish-brown, extremely stony clay about 8 inches thick. The underlying material is fractured, indurated limestone. Fragments of limestone from 6 inches to 2 feet across cover about 35% of the surface. Rock outcrop consists of exposed limestone bedrock in narrow bands within areas of Eckrant soils. Loose cobbles and stones on the surface are common. Permeability is moderately slow, and surface runoff is rapid. The available water capacity is very low.



Fairlie clay, 1 to 2% slopes (FaB) is a nearly level soil found on broad plateaus, slightly depressed areas near the heads of drains, and in shallow valleys on uplands throughout the site. Typically, this soil has a dark gray, clay upper layer about 36 inches thick. The layer below that, which extends to about 46 inches, is gray clay. The underlying material, to a depth of 55 inches, is weakly cemented limestone interbedded with limy material. This soil is calcareous and moderately alkaline. This soil is moderately well-drained. When dry, it has wide cracks, and water enters it rapidly. However, when this soil is wet and the cracks are sealed, water enters it very slowly. Surface runoff is slow when this soil is dry and cracked. The available water capacity is high, and erosion is a slight hazard.

Georgetown stony clay loam, 1 to 3% slopes (GsB) is a gently sloping soil that occurs within upland areas. Typically, this soil has a slightly acidic, brown, stony clay loam surface layer about 7 inches thick and few stones on or near the surface. The subsoil, which extends down to a depth of about 35 inches, is neutral, reddish-brown clay in the upper part and slightly acidic, reddish-brown, cobbly clay in the lower part. The underlying material is indurated, fractured limestone that has clay loam in crevices and fractures. This soil is well-drained. Permeability is slow, and surface runoff is medium. The available water capacity is low. Reaction is neutral to slightly acidic. The erosion hazard ranges to slight.

Oakalla soils, 0 to 1% slopes, channeled, frequently flooded (Oc) are found on bottomlands in narrow stream valleys. The bottomlands are dissected by numerous channels that are 2 to 6 feet deep, 10 to 30 feet wide, and 50 to 500 feet apart. The side slopes of the channels range from about 8% in gradient to nearly vertical. Areas of this soil are long and narrow and range up to several acres. These soils are not in a regular pattern. Typically, the surface layer is dark brown loam about 7 inches thick. The layer below that is dark brown clay loam about 16 inches thick. The underlying layer, to 66 inches, is dark brown sandy clay loam. The soil is calcareous and moderately alkaline. These soils are flooded for very brief to brief periods in most years. In most places, a network of small channels feeds into the main stream channel. These channels are the result of the scouring action of floodwater that overflows from the main channel. Soil and gravel have been deposited in many spots, and soil removal is apparently balanced somewhat by soil deposition. The available water capacity is high.

2.6 WATER WELLS

A review of TCEQ and Texas Water Development Board (TWDB) records revealed no water wells on the subject site and 4 wells within 0.5 miles of the subject site (TWDB, 2020). According to the TWDB records, all the off-site wells are reportedly completed within the Trinity Aquifer at total depths ranging from 700 to 800 feet below surface grade.

The results of this assessment do not preclude the existence of undocumented or abandoned wells on the site. If a water well or casing is encountered during construction, work should be halted near the object until the TCEQ is contacted. If any on-site wells are not intended for future use, they should be capped or properly abandoned according to the Administrative Rules of the Texas Department of Licensing and Regulation (TDLR), 16 Texas Administrative Code (TAC), Chapter 76. A plugging report must be submitted by a licensed water well driller to the TDLR Water Well Driller's Program, Austin, Texas. TCEQ publication RG-347, "Landowner's



Guide to Plugging Abandoned Water Wells," provides specific guidance. If a well is intended for use, it must comply with 16 TAC §76.

2.7 GEOLOGY

Literature Review

The subject site is predominantly underlain by the undifferentiated Edwards Limestone Formation (Ked), with estimated maximum thicknesses of about 120 feet. The Edwards Formation consists mostly of gray to light brownish-gray, thin to medium-bedded, dense dolomite, dolomitic limestone, and limestone. The far western portion of the subject site is underlain by the Comanche Peak Limestone (Kc), with an estimated thickness of up to 70 feet (UT-BEG, 1995). In addition, an overlying thin (<10 feet thick) layer of younger alluvium (Qal) (i.e., gravel, sand, silt, and clay) occurs within the southwestern corner of the subject site.

The subject site is located within the Balcones Fault Zone and available geologic reports indicate the nearest mapped faults (F-29 and F-30) bisect near the western and central portions of the site, trending from southwest to northeast. In general, the rock strata beneath the site dip to the east-southeast at about 10 to 30 feet per mile (less than 1°). The site Stratigraphic Column is provided as Attachment B, and the Site Geologic Map is Attachment D.

Field Assessment

A field survey of the subject site was conducted by a licensed Horizon geologist with support staff on 15, 20, 21, 24, and 31 January 2020; 19 and 24 February 2020; 1, 2, 7, 8, 13 to 17, 20, 21, 23, and 27 to 30 April 2020, and 1 May 2020. Horizon identified 27 natural geologic features (F-4 to F-30) at the subject site that meet the TCEQ definition of a potential recharge feature. Also, 3 man-made features (M-6 [water valve], M-7 [water hydrant], and M-8 [sanitary sewer manhole]) were identified at the subject site. Horizon observed no springs and 2 unnamed tributaries at the subject site.

Geologic features identified on the subject site are described as follows:

Geologic Feature F-4: Solution cavity immediately south of existing trail road measuring approximately 1.0 foot long by 0.5 feet wide by 1.5 feet deep with a small, semi-open drainage portal less than 0.5 feet in diameter. Very slight air flow conductivity was noted at the opening. After limited hand excavation, probing with a steel rod encountered loose soil, small rocks, and/or cobbles down about 2.0 feet below the surface. On 30 April 2020, Horizon staff excavated the feature using a backhoe with hoe ram attachment and did not find any drainage portals and/or voids within the floor or walls of the excavation (~10 feet long by 7 feet wide by 6.5 feet deep). This feature has a low infiltration rate and an apparent surface runoff catchment of less than 0.1 acres.

Geologic Feature F-5: Small solution cavity measuring approximately 0.8 feet long by 0.3 feet wide by 1.5 feet deep with a small, semi-open drainage portal less than 0.5 feet in



diameter. Slight air flow conductivity was noted at the opening. After limited hand excavation, probing with a steel rod encountered loose soil, small rocks, and/or cobbles down about 2.0 feet below the surface. On 1 May 2020, Horizon staff excavated the feature using a backhoe with hoe ram attachment and did not find any drainage portals and/or voids within the floor or walls of the excavation (~7 feet long by 6 feet wide by 3.5 feet deep). This feature has a low infiltration rate and an apparent surface runoff catchment of less than 0.1 acres.

Geologic Feature F-6: Upland sinkhole in a wooded area measuring approximately 14.0 feet long by 11.0 feet wide by 1.0 foot deep with a semi-open, clay-filled drainage portal about 3.0 inches in diameter near its center. No air flow conductivity was noted at the opening. After limited hand excavation, probing with a steel rod encountered dense soil, small rocks, and/or cobbles down about 2.0 feet below the surface. On 29 April 2020, Horizon staff excavated the feature using a backhoe with hoe ram attachment and did not find any drainage portals and/or voids within the floor or walls of the excavation (~9 feet long by 7 feet wide by 5 feet deep). This feature has a low infiltration rate and an apparent surface runoff catchment of less than 0.1 acres.

Geologic Feature F-7: Upland sinkhole in a thick brushy area measuring approximately 15.0 feet in diameter by 2.0 feet deep that funnels into a fenced, previously excavated pit opening approximately 7.0 feet long by 5.0 feet wide by 23.0 feet deep with additional void opening(s) at the bottom of the pit. Moderate to high air flow conductivity was noted at the opening. This feature meets the requirements to be classified as a **cave**, based on it being a natural underground open space formed by dissolution of limestone that is large enough for an average-sized person to enter. This cave has a very high infiltration rate and a surface runoff catchment of less than 1.0 acre. Additionally, this feature is a previously known cave named **Chagas Cave** that was explored, surveyed, and mapped by Mike Warton and Associates (MWA) in August 1994. A copy of the MWA cave map is included in this report.

Geologic Feature F-8: Upland sinkhole measuring approximately 8.0 feet long by 6.0 feet wide by 1.5 feet deep at the head of a thick brushy tributary. A semi-open drainage portal amongst large rocks and cobbles was found near its center with slight air flow conductivity noted at the opening. After limited hand excavation, probing with a steel rod encountered loose rocks and soils down about 2.5 feet below the surface. On 1 May 2020, Horizon staff enlarged/excavated the feature using a backhoe with hoe ram attachment. After excavation, a small (<0.5-inch diameter by 6 to 10 feet deep) but deep drainage portal was found along the floor of the excavation (~10 feet long by 6 feet wide by 4 feet deep). This feature has an intermediate infiltration rate and an apparent surface runoff catchment of less than 0.4 acres.

Geologic Feature F-9: Previously excavated fenced pit in thick brushy area measuring approximately 7.0 feet long by 6.0 feet wide by 3.0 feet deep that funnels down into a 3.5-feet-long by 2-feet-wide open portal that stairsteps further down into a low bedding plane void space near its base. Another previously excavated pit is located about 32 feet due east of the sinkhole that measures about 11 feet long by 6 feet wide by 3 feet deep with semi-open drainage portals amongst infilled rock and soils near its base. Moderate air flow conductivity was noted at the fenced excavated opening. This feature meets the requirements to be classified as a **cave**, based



on it being a natural underground open space formed by dissolution of limestone that is large enough for an average-sized person to enter. This cave has a high infiltration rate and a surface runoff catchment of less than 1 acre. Additionally, this feature is a previously known cave named **Aboreal Cave** that was explored, surveyed and mapped by Mike Warton and Associates (MWA) in August 1994. A copy of the MWA cave map is included in this report.

Geologic Feature F-10: Small upland sinkhole in an open grassy area measuring approximately 8 feet in diameter by 1.5 feet deep that funnels into an open, previously excavated vertical pit about 3 feet in diameter by 9.5 feet deep. A rock was placed partially over the opening. Moderate air flow conductivity was noted at the unfenced excavated opening. This feature meets the requirements to be classified as a **cave**, based on it being a natural underground open space formed by dissolution of limestone that is large enough for an average-sized person to enter. This cave has a high infiltration rate and a surface runoff catchment of less than 1 acre. Additionally, this feature is a previously known cave named **Spiny Tortilla Cave** that was explored, surveyed and mapped by Mike Warton and Associates (MWA) in August 1994. A copy of the MWA cave map is included in this report.

Geologic Feature F-11: Upland sinkhole in a wooded thicket measuring approximately 12 feet in diameter by 2 feet deep that funnels into a semi-open, previously excavated (unfenced) opening about 3 feet long by 2.3 feet wide by 1.5 feet deep with an apparent low bedding plane void trending below toward the northeast. Moderate air flow conductivity was noted at the unfenced excavated opening. This feature meets the requirements to be classified as a **cave**, based on it being a natural underground open space formed by dissolution of limestone that is large enough for an average-sized person to enter. This cave has an intermediate to high infiltration rate and a surface runoff catchment of less than 1 acre. Additionally, this feature is a previously known cave named **Double Dot Cave** that was explored, surveyed and mapped by Mike Warton and Associates (MWA) in August 1994. A copy of the MWA cave map is included in this report.

Geologic Feature F-12: Small upland sinkhole in a fenced, brushy thicket measuring approximately 8 feet long by 4 to 7 feet wide by 4 feet deep with an open drainage portal about 4 feet in diameter at its base that extends down another 3.5 feet into opposing, low bedding plane voids. Moderate air flow conductivity was noted at the opening. This feature meets the requirements to be classified as a **cave**, based on it being a natural underground open space formed by dissolution of limestone that is large enough for an average-sized person to enter. This cave has a high infiltration rate and a surface runoff catchment of less than 1 acre. Additionally, this feature is a previously known cave named **Overlooked Cave** that was explored, surveyed and mapped by Mike Warton and Associates (MWA) in August 1994. A copy of the MWA cave map is included in this report.

Geologic Feature F-13: Previously excavated vertical pit within fenced, thick brushy area measuring approximately 3 feet in diameter by 14 feet deep with a void opening at the northeast side of the pit base. Moderate to high air flow conductivity was noted at the opening. This feature meets the requirements to be classified as a **cave**, based on it being a natural



underground open space formed by dissolution of limestone that is large enough for an averagesized person to enter. This cave has a very high infiltration rate and a surface runoff catchment of less than 1 acre. Additionally, this feature is a previously known cave named **Pugilist Cave** that was explored, surveyed and mapped by Mike Warton and Associates (MWA) in August 1994. A copy of the MWA cave map is included in this report.

Geologic Feature F-14: Upland sinkhole in an open rocky area measuring approximately 15 feet long by 6 feet wide by 1.5 feet deep with a semi-open, rock and soil filled drainage portal about 0.5 feet in diameter by 1 foot deep near its center. Slight air flow conductivity was noted at the opening. After limited hand excavation, probing with a steel rod encountered dense soil, small rocks and/or cobbles down about 2.5 feet below the surface. On 28 April 2020, Horizon staff excavated the feature using a backhoe with hoe ram attachment and did not find any drainage portals within the floor of the excavation (~16 feet long by 5 feet wide by 5 feet deep). A very low (<0.5 feet high) epikarstic bedding plane void at 2.5 feet below the surface was found along the northeast wall of the excavation, but it was about 4 feet long and extended only 5 feet toward the northeast. This feature has a low infiltration rate and an apparent surface runoff catchment of less than 0.1 acres.

Geologic Feature F-15: Solution cavity measuring approximately 3 feet in diameter by 3 feet deep with very small semi-open drainage portals less than 0.2 feet in diameter along its base with soil and rock infilling. Very slight air flow conductivity was noted at the openings. After limited hand excavation, probing with a steel rod encountered loose soil, small rocks and/or cobbles down about 3.5 feet below the surface. On 28 April 2020, Horizon staff excavated the feature using a backhoe with hoe ram attachment and did not find any drainage portals and/or voids within the floor or walls of the excavation (~7 feet long by 3.5 feet wide by 6 feet deep). This feature has a low infiltration rate and an apparent surface runoff catchment of less than 0.1 acres.

Geologic Feature F-16: Small upland sinkhole measuring approximately 8 feet long by 7 feet wide by 1 foot deep with a solution-enlarged fracture drainage portal about 1.5 feet long by 0.3 feet wide by 1 foot deep near its center. Slight to moderate air flow conductivity was noted at the opening. After limited hand excavation, probing with a steel rod encountered dense soil, small rocks and/or cobbles down about 2 feet below the surface. On 27 April 2020, Horizon staff enlarged/excavated the feature using a backhoe with hoe ram attachment. After excavation, a low bedding plane void (<2 feet high by 6 feet wide) was found about 5 feet below the surface along the southeast wall of the excavation (~7 feet long by 4 feet wide by 8 feet deep). The void extends about 13 feet toward the northeast and slopes into an apparent drainage portal about 2 feet across by less than 0.5 feet high at the northeast corner, but was too small to follow. This feature has a final (negotiated) TCEQ buffer of 50 feet surrounding the excavated sinkhole area, including the adjoining bedding plane void/footprint toward the northeast (~13 feet long by 6 feet wide) This feature has an intermediate infiltration rate and an apparent surface runoff catchment of less than 0.4 acres.

Geologic Feature F-17: Upland sinkhole measuring approximately 12 feet long by 6 feet wide by 0.5 feet deep with 3 small open portals less than 0.5 feet in diameter by 0.5 feet deep



near its center. Slight air flow conductivity was noted at the openings. After limited hand excavation, probing with a steel rod encountered dense soil, small rocks and/or cobbles down about 2 feet below the surface. On 23 and 27 April 2020, Horizon staff excavated the feature using a backhoe with hoe ram attachment and did not find any drainage portals and/or voids within the floor or walls of the excavation (~6 feet long by 4 feet wide by 3.5 feet deep). This feature has a low infiltration rate and an apparent surface runoff catchment of less than 0.1 acres.

Geologic Feature F-18: Upland sinkhole measuring approximately 15 feet long by 11 feet wide by 1 foot deep with 3 small semi-open portals less than 0.5 feet in diameter by 0.5 feet deep near its center. Very slight air flow conductivity was noted at the openings. After limited hand excavation, probing with a steel rod encountered dense soil, small rocks and/or cobbles down about 2 feet below the surface. On 23 April 2020, Horizon staff excavated the feature using a backhoe with hoe ram attachment and did not find any drainage portals and/or voids within the floor or walls of the excavation (~8 feet long by 8 feet wide by 3.5 feet deep). This feature has a low infiltration rate and an apparent surface runoff catchment of less than 0.1 acres.

Geologic Feature F-19: Solution-enlarged fracture measuring approximately 1.5 feet long by 0.9 feet wide by 1.5 feet deep with slight air flow conductivity. After limited hand excavation, probing with a steel rod encountered loose soil, small rocks and/or cobbles down about 2 feet below the surface. On 21 and 23 April 2020, Horizon staff excavated the feature using a backhoe with hoe ram attachment and did not find any drainage portals and/or voids within the floor or walls of the excavation (~8 feet long by 7 feet wide by 10 feet deep). This feature has a low infiltration rate and an apparent surface runoff catchment of less than 0.1 acres.

Geologic Feature F-20: Small upland sinkhole measuring approximately 5 feet in diameter by 0.8 feet deep within fractured rock outcrop. No air flow conductivity was noted at the fractured openings. After limited hand excavation, probing with a steel rod encountered dense soil, small rocks and/or cobbles down about 1 foot below the surface. This feature has a very low infiltration rate and an apparent surface runoff catchment of less than 0.1 acres.

Geologic Feature F-21: Closed depression zone approximately 60 feet in diameter consisting of several closed depressions and epikarstic fractures and solution cavities. No air flow conductivity was noted at the cavity and fractured openings. After limited hand excavation, probing with a steel rod encountered dense soil, small rocks and/or cobbles down about 1 foot below the surface. This feature has a very low infiltration rate and an apparent surface runoff catchment of less than 0.1 acres.

Geologic Feature F-22: Solution cavity measuring approximately 2 feet long by 1 foot wide by 1.5 feet deep. Slight air flow conductivity was noted at the opening. After limited hand excavation, probing with a steel rod encountered loose soil, small rocks and/or cobbles down about 2 feet below the surface. On 20 and 21 April 2020, Horizon staff excavated the feature using a backhoe with hoe ram attachment and did not find any drainage portals and/or voids within the floor or walls of the excavation (~7 feet long by 6 feet wide by 4 feet deep). This feature has a low infiltration rate and an apparent surface runoff catchment of less than 0.1 acres.



Geologic Feature F-23: Small upland sinkhole measuring approximately 3 feet in diameter by 0.5 feet deep with a solutioned opening about 1 foot long by 0.5 feet wide by 1.5 feet deep near its center. Slight air flow conductivity was noted at the opening. After limited hand excavation, probing with a steel rod encountered dense soil, small rocks and/or cobbles down about 3 feet below the surface. On 17 and 20 April 2020, Horizon staff excavated the feature using a backhoe with hoe ram attachment and did not find any drainage portals and/or voids within the floor or walls of the excavation (~7 feet long by 5 feet wide by 6 feet deep). A second excavation (~7 feet long by 6 feet wide by 5 feet deep) was conducted on an outlying solution cavity feature located about 35 feet due east of the original feature; however, no drainage portals and/or voids were found within the floors or walls of the excavation. This feature has a low infiltration rate and an apparent surface runoff catchment of less than 0.1acres.

Geologic Feature F-24: Small upland sinkhole measuring approximately 6 feet in diameter by 1 foot deep with 2 intersecting solution-enlarged fractures across the sink (<0.5 feet wide by 1 foot deep). Slight to moderate air flow conductivity was noted at the fracture openings. After limited hand excavation, probing with a steel rod encountered dense soil, small rocks and/or cobbles down about 2 feet below the surface. On 13 and 14 April 2020, Horizon staff enlarged/excavated the feature using a backhoe with hoe ram attachment. After excavation, a small (0.5 feet in diameter by 2 feet deep) drainage portal was found along the floor of the excavation (~8 feet long by 4 feet wide by 10 feet deep). Due to its apparent limited extent, this feature has a final (negotiated) TCEQ buffer of 50 feet surrounding the excavated sinkhole area. This feature has an intermediate infiltration rate and an apparent surface runoff catchment of less than 0.4 acres.

Geologic Feature F-25: Upland sinkhole near a large oak tree measuring approximately 15 feet long by 12 feet wide by 1 foot deep that funnels into a previously excavated cave that has a locked metal gate ("DNC" engraved letters) over its entrance drop. Below the gate is an opening about 5 feet long by 1 to 2.5 feet wide that offsets and drops a several feet into an apparent bedding plane void. Moderate air flow conductivity was noted at the gated opening. This feature meets the requirements to be classified as a **cave**, based on it being a natural underground open space formed by dissolution of limestone that is large enough for an average-sized person to enter. This cave has a high infiltration rate and a surface runoff catchment of less than 1 acre. Additionally, this feature is a previously known cave named **Double Nickel Cave** that was explored, surveyed and mapped by Mike Warton and Associates (MWA) in August 1994. A copy of the MWA cave map is currently not available.

Geologic Feature F-26: Small upland sinkhole in wooded area measuring approximately 8 feet in diameter by 1.5 feet deep that funnels into a previously excavated opening about 3 feet long by 2 feet wide x 10 feet deep with a bedding plane void at its base. A large rock has been partially laid over the pit drop. Moderate to high air flow conductivity was noted at the opening. This feature meets the requirements to be classified as a **cave**, based on it being a natural underground open space formed by dissolution of limestone that is large enough for an average-sized person to enter. This cave has a very high infiltration rate and a surface runoff catchment of less than 1 acre. Additionally, this feature is a previously known cave named



Cannibal Lector Cave that was explored, surveyed and mapped by Mike Warton and Associates (MWA) in August 1994. A copy of the MWA cave map is included in this report.

Geologic Feature F-27: Two previously excavated solution cavities spaced about 12 feet apart measuring approximately 5 feet long by 1.5 feet wide by 4 feet deep (the larger solution cavity) and 2 feet long by 1 foot wide by 3 feet deep (the smaller solution cavity). Slight air flow conductivity was noted at the openings. After limited hand excavation, probing with a steel rod encountered loose soil, small rocks and/or cobbles down about 2 feet below the surface. On 15 April 2020, Horizon staff enlarged/excavated the larger cavity feature using a backhoe with hoe ram attachment. After excavation, a very low bedding plane void (i.e., drainage portal ~4 feet long by 3 feet wide by 0.5 feet high) was found near the center of the floor of the excavation (~7 feet long by 5 feet wide by 4.5 feet deep). Due to its apparent limited extent, this feature has a final (negotiated) TCEQ buffer of 50 feet surrounding the excavated area plus 50 feet surrounding the second (smaller) solution cavity located about 12 feet due northwest of the excavation. This feature has an intermediate infiltration rate and an apparent surface runoff catchment of less than 0.4 acres surface.

Geologic Feature F-28: Small upland sinkhole measuring approximately 7 feet in diameter by 1.5 feet deep with 2 intersecting solution-enlarged fractures across the sink (<0.5 feet wide by 2 foot deep). Slight air flow conductivity was noted at the fracture openings. After limited hand excavation, probing with a steel rod encountered dense soil, small rocks and/or cobbles down about 3 feet below the surface. On 15 and 17 April 2020, Horizon staff excavated the feature using a backhoe with hoe ram attachment and did not find any drainage portals and/or voids within the floor or walls of the excavation (~7 feet long by 6 feet wide by 5 feet deep). This feature has a low infiltration rate and an apparent surface runoff catchment of less than 0.1 acres.

The Geologic Assessment Table (Attachment A) summarizes this evaluation and assigns the feature's sensitivity a total point value. Features with a point value of 40 or higher are deemed to be sensitive groundwater recharge features and should be protected during site development pursuant to TCEQ rules for protection of the Edwards Aquifer (30 TAC 213).



3.0 CONCLUSIONS AND RECOMMENDATIONS

Twelve geologic features (F-7 to F-13, F16, and F-24 to F-27) have been evaluated as sensitive for groundwater recharge capability and would therefore require a TCEQ protective setback buffer. In general, a protective buffer encompassing a sensitive feature is recommended to meet the TCEQ guidance for a setback of at least 50 feet in all directions from the feature's areal extent (perimeter), plus its watershed catchment up to 200 feet from the perimeter of the feature. However, larger protective buffers for 8 of these features (F-7, F-9, F-10, F-11, F-12, F-13, F-25, and F-26) are recommended to meet the TCEQ guidance for setbacks of 8 known caves (F-7: Chagas Cave, F-9: Arboreal Cave, F-10: Spiny Tortilla Cave, F-11: Double Dot Cave, F-12: Overlooked Cave, F-13: Pugilist Cave, F-25: Double Nickel Cave, and F-26: Cannibal Lector Cave) with mapped subsurface footprints. Caves with a known subsurface footprint (i.e., surveyed/mapped) include a protective buffer zone extending an additional 50 feet in all directions from the footprint, plus the cave's watershed catchment up to 200 feet from the footprint.

A total of 15 geologic features (F-4 to F-6, F-14, F-15, F-17 to F-23, and F-28to F-30) have been evaluated as non-sensitive for groundwater recharge capability and would therefore not require TCEQ protective setback buffers. No further action is recommended for these non-sensitive geologic features. In addition, the man-made features on the site (M-6 to M-8) have been evaluated as non-sensitive for groundwater recharge capability and would therefore not require TCEQ protective setback buffers.

Additionally, no springs were identified within the subject site that would require protection or mitigation pursuant to the City of Georgetown Edwards Aquifer Recharge Zone Water Quality Ordinance No. 2013-59. Of note, if the onsite ephemeral tributaries of Berry Creek and Cowan Creek drain more than 64 acres, these tributaries would also require protection or mitigation pursuant to the City of Georgetown's ordinance.

The site generally appears well-suited to development prospectuses. It should be noted that soil and drainage erosion would increase with ground disturbance. Native grasses and the cobbly content of the soil aid to prevent erosion. Soil and sedimentation fencing should be placed in all appropriate areas prior to any site-disturbing activities.

Because the subject site is located over the Edwards Aquifer Recharge Zone, it is possible that subsurface voids underlie the site. If any subsurface voids are encountered during site development, work should halt immediately so that a geologist may assess the potential for the void(s) to provide meaningful contribution to the Edwards Aquifer.



Environmental Services, Inc.

4.0 REFERENCES

- (COA) City of Austin. GIS/Map Downloads, 2012 10-foot Contours. http://ftp.ci.austin.tx.us/GIS-Data/Regional/coa_gis.html>. 8 November 2012.
- (Nearmap) Nearmap US, Inc. Nearmap Vertical[™] digital orthographic photograph, . Imagery date 3 November 2019.
- (NRCS) US Department of Agriculture, Natural Resources Conservation Service. Web Soil Survey, http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>. Accessed 24 February 2020.
- (OSM) OpenStreetMap contributors. OpenStreetMap, http://www.openstreetmap .org>. Available under the Open Database License (www.opendatacommons.org/ licenses/odbl). Accessed 21 February 2020.
- (TCEQ) Texas Commission on Environmental Quality. *Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones.* Revised October 2004.
- _____. RG-348, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices. Revised July 2005.
- _____. Edwards Aquifer Protection Program. Edwards Aquifer Viewer, http://www.tceq.state. tx.us/field/eapp/viewer.html>. Accessed 21 February 2020.
- (TWDB) Texas Water Development Board. TWDB Groundwater Database, <http://www2.twdb.texas.gov/apps/waterdatainteractive/groundwaterdataviewer>. Water Information Integration and Dissemination System. Accessed 24 February 2020.
- (USGS) US Geological Survey. 7.5-minute series topographic maps, Leander NE, Texas quadrangle. 1976
 - _____. 7.5-minute series topographic maps, Georgetown, Texas quadrangle. 1982.
- UT-BEG) The University of Texas at Austin Bureau of Economic Geology; C.V. Proctor, Jr., T.E. Brown, J.H. McGowen, N.B. Waechter, and V.E. Barnes. *Geologic Atlas of Texas*, Austin Sheet. Francis Luther Whitney Memorial Edition. 1995.
- Werchan, L. E., and J. L. Coker. Soil survey of Williamson County, Texas. Soil Conservation Service, US Department of Agriculture, Washington, D.C. 1983.

Double Nickel Cave

Description: Double Nickel Cave is located at the edge of a large open pasture in an area of exposed limestone. The entrance was blocked with rocks but holes allowed entry by raccoons and other small mammals. After removal of rocks it is now an opening 5 ft. long and 1 to 2.5 ft. wide. The entrance is formed along a N 353° W joint. A drop of a few feet leads down a slope into a 2 to 3 ft. high, 30 ft. wide, 60 ft. long flat-floored room, the Raccoon Room. The floor is largely floored with large flat breakdown blocks covered with black topsoil. A 1 to 2.5 ft. high, 5 to 8 ft. wide passage trending N 332° W extends from the Raccoon Room. This passage is floored with small rocks and black topsoil with some clay exposed under the soil. The passage becomes too sediment filled to continue after 45 ft. The cave is a total of 176.8 ft long and the deepest point is 13.7 ft. below the entrance. It was surveyed on 3 May 1994 by Mike Warton & Associates.

Geology: The cave is a minor point recharge feature in the Edwards Limestone, Member No. 1 (Basal Unit).

Biology: The cave was biologically investigated by James Reddell and Marcelino Reyes on 14 April 1994 and 4 October 1994. The cave was moist when visited and has been heavily utilized by raccoons and other small mammals. Decomposing bodies of a raccoon and opossum were present, causing us to cut our initial investigation short. Much of the floor surface is covered with raccoon droppings. The cave contained a large population of cave crickets and other species associated with raccoon droppings and organic matter. The only troglobite found in the cave was the blind spider *Cicurina (Cicurella)* sp. and it does not appear to contain habitat for the endangered species. The following fauna was found:

Spiders: Cicurina (Cicurella) sp.

Cicurina (Cicurusta) varians Gertsch and Mulaik (troglophile) Meioneta sp. (troglophile)

Mites: Acarina undetermined

Centipedes: Lithobiomorpha undetermined

Springtails: Collembola undetermined

Slender entotrophs: Campodeidae genus and species

Silverfish: Thysanura undetermined

Cave crickets: Ceuthophilus (Ceuthophilus) new species (trogloxene)

Ceuthophilus (Ceuthophilus) secretus Scudder (trogloxene)

Ceuthophilus (Geotettix) cunicularis Hubbell (trogloxene)

Rove beetles: Staphylinidae genus and species

Wasps: Hymenoptera undetermined

Feather Cave

Description: Feather Cave was filled with sediment and loose rocks, but contained a small drain portal. The entrance is a circular opening about 5 ft. in diameter and 4 ft. deep. It drops into an 8 to 13 ft. wide, 26 ft. long, 1 to 1.5 ft. high chamber. Breakdown blocks occur in some areas. The floor is otherwise covered with black topsoil. Small stalactites occur throughout much of the cave. The deepest point below the entrance and is 4.4 ft. The cave was mapped on 29 April 1994 by Mike Warton & Associates.

Geology: The cave is a minor point recharge feature in the Edwards Limestone, Member No. 1 (Basal Unit).

ATTACHMENT F

ADDITIONAL SITE MAPS



200018 - Somerset Hills Parcels 4-7\Graphics\200018-001GA_01A_Vicinity



190109 - Chisholm Trail\Graphics\190109-001PI_02A_Topo_Hydro



200018 - Somerset Hills Parcels 4-7\Graphics\200018-001GA_03A_Topo



200018 - Somerset Hills Parcels 4-7\Graphics\200018-001GA_04A_Soil



Horizon	
Environmental Services	. In

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3	Legen	u		
		Man-Made Features		TCEQ Buffer Area
١		Non-sensitive Geologic Features		Subject Site
9	۲	Sensitive Geologic Features		
		Fault		
		Cave Footprint		



















ATTACHMENT G

SITE PHOTOGRAPHS





PHOTO 1 View of geologic feature F-4 (solution cavity) after mechanical excavation, facing down



PHOTO 3 View of geologic feature F-6 (upland sinkhole) after mechanical excavation, facing down



PHOTO 2 View of geologic feature F-5 (solution cavity) after mechanical excavation, facing down



PHOTO 4 Geologic feature F-7 (sinkhole/cave) with fencing at previously excavated entrance of Chagas Cave, facing north





PHOTO 5 View down into entrance drop of F-7 (Chagas Cave)



PHOTO 7 View of geologic feature F-9 (sinkhole/cave) with fencing at previous excavated entrance of Aboreal Cave, facing northwest



PHOTO 6 View of geologic feature F-8 (upland sinkhole) after mechanical excavation, facing north



PHOTO 8 View down into entrance drop of F-9 (Aboreal Cave)





PHOTO 9 View of infilled shallow pit at F-9 located about 32 feet due east of the fenced sinkhole of another previous excavated entrance drop into Aboreal Cave, facing south



PHOTO 10 View of geologic feature F-10 (small sinkhole/cave) with open (previously excavated) vertical pit drop into Spiny Tortilla Cave, facing north



PHOTO 11 Closer view of entrance drop into F-10 (Spiny Tortilla Cave)



PHOTO 12 View of geologic feature F-11 (sinkhole/cave) with previously excavated area that leads into Double Dot Cave, facing east





PHOTO 13 View of geologic feature F-12 (sinkhole/cave) with fenced previously excavated area into Overlooked Cave, facing south



PHOTO 15 View of geologic feature F-13 (solution cavity/cave) with fencing around previously excavated area into Pugilist Cave, facing south



PHOTO 14 Closer view down into F-12 (Overlooked Cave)



PHOTO 16 View down into F-13 (Pugilist Cave)





PHOTO 17 View of geologic feature F-14 (sinkhole) after mechanical excavation, facing north



PHOTO 19 View of geologic feature F-16 (sinkhole/solution-enlarged fracture) after mechanical excavation, facing north



PHOTO 18 View of geologic feature F-15 (solution cavity) after mechanical excavation, facing north



PHOTO 20 View of geologic feature F-17 (sinkhole) after mechanical excavation, facing down





PHOTO 21 View of geologic feature F-18 (sinkhole) after mechanical excavation, facing west



PHOTO 22 View of geologic feature F-19 (solution-enlarged fracture) after mechanical excavation, facing down



PHOTO 23 View of geologic feature F-20 (sinkhole), facing down



PHOTO 24 View of geologic feature F-21 (closed depression zone)





PHOTO 25 View of geologic feature F-22 (solution cavity) after mechanical excavation, facing south



PHOTO 26 View of geologic feature F-23 (sinkhole) after mechanical excavation, facing northwest



PHOTO 27 View of geologic feature F-24 (sinkhole/solution-enlarged fractures) after mechanical excavation, facing down



PHOTO 28 View of geologic feature F-25 (sinkhole/cave) with gated entrance on top Double Nickel Cave, facing west





PHOTO 29 Close up view of locked cave gate at F-25 (Double Nickel Cave (DNC))



PHOTO 31 View of geologic feature F-27 (2 solution cavities) after mechanical excavation, facing southwest



PHOTO 30 View of geologic feature F-26 (sinkhole/cave) with large rock covering entrance into Cannibal Lector Cave, facing southwest



PHOTO 32 View of geologic feature F-28 (sinkhole/solution-enlarged fractures) after mechanical excavation, facing west

Modification of a Previously Approved Plan

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: <u>GTS Development II, LLC / Steger Bizzell, Tyson L Hasz, P.E.</u> Date: 5/17/2024

Signature of Customer/Agent:

Jym Hay

Project Information

 Current Regulated Entity Name: <u>Somerset Hills Parcel 5E</u> Original Regulated Entity Name: <u>Georgetown Commons</u> Regulated Entity Number(s) (RN): <u>111474482</u> Edwards Aquifer Protection Program ID Number(s): 11003038 &

Edwards Aquifer Protection Program ID Number(s): <u>11003038 & 11003039</u>

The applicant has not changed and the Customer Number (CN) is:

The applicant or Regulated Entity has changed. A new Core Data Form has been provided.

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

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

Physical modification of the approved organized sewage collection system;

] Physical modification of the approved underground storage tank system;

Physical modification of the approved aboveground storage tank system.

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

WPAP Modification	Approved Project	Proposed Modification
Summary		
Acres	<u>98.56</u>	<u>98.56</u>
Type of Development	Multi-Family Residential	Multi-Family Residential
Number of Residential	<u>518</u>	<u>343</u>
Lots		
Impervious Cover (acres)	<u>46.76</u>	<u>40.09</u>
Impervious Cover (%	<u>47.4</u>	<u>40.7</u>
Permanent BMPs	<u>4</u>	<u>3</u>
Other		
SCS Modification	Approved Project	Proposed Modification
Summary		
Linear Feet	<u>18,630</u>	<u>18,638</u>
Pipe Diameter	<u>6, 8, 12</u>	<u>6, 8, 12</u>
Other		
AST Modification	Approved Project	Proposed Modification
---	------------------	-----------------------
Summary		
Number of ASTs		
Volume of ASTs		
Other		
UST Modification	Approved Project	Proposed Modification
UST Modification Summary	Approved Project	Proposed Modification
UST Modification Summary Number of USTs	Approved Project	Proposed Modification
UST Modification Summary Number of USTs Volume of USTs	Approved Project	Proposed Modification

- 5. Attachment B: Narrative of Proposed Modification. A detailed narrative description of the nature of the proposed modification is attached. It discusses what was approved, including any previous modifications, and how this proposed modification will change the approved plan.
- 6. Attachment C: Current Site Plan of the Approved Project. A current site plan showing the existing site development (i.e., current site layout) at the time this application for modification is attached. A site plan detailing the changes proposed in the submitted modification is required elsewhere.
 - The approved construction has not commenced. The original approval letter and any subsequent modification approval letters are included as Attachment A to document that the approval has not expired.
 - The approved construction has commenced and has been completed. Attachment C illustrates that the site was constructed as approved.
 - The approved construction has commenced and has been completed. Attachment C illustrates that the site was **not** constructed as approved.

The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was constructed as approved.

- The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was **not** constructed as approved.
- 7. The acreage of the approved plan has increased. A Geologic Assessment has been provided for the new acreage.
 - Acreage has not been added to or removed from the approved plan.
- 8. Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

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



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

July 12, 2022

Mr. Brannin Prideaux Georgetown Patio Homes, LLC P.O. Box 41805 Austin, Texas 78704

Re: Edwards Aquifer, Williamson County

NAME OF PROJECT: Georgetown Commons; located NE of Ronald Reagan Blvd. and CR 245, Georgetown, Texas

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

Edwards Aquifer Protection Program ID No. 11003038 (WPAP) and 11003039 (SCS); Regulated Entity No. RN111474482

Dear Mr. Prideaux:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP and SCS applications for the above-referenced project submitted to the Austin Regional Office by Steger Bizzell Engineers, Inc. on behalf of Georgetown Patio Homes, LLC on April 5, 2022. Final review of the WPAP and SCS applications was completed after additional material was received on June 30, 2022, and July 8, 2022. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected, and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213 and Chapter 217. These planning materials were sealed, signed, and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.

WPAP PROJECT DESCRIPTION

The proposed multi-family residential project will have an area of approximately 98.56 acres. It will include multiple buildings, drainage improvements, driveways, utilities, water quality facilities, and associated appurtenances. The impervious cover will be 46.76 acres (47.4 percent). Project wastewater will be disposed of by conveyance to the existing Pecan Branch Wastewater Treatment Plant.

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PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, three batch detention basins (Pond D, Pond E, and Pond F) and engineered vegetative filter strips, designed using the TCEQ technical guidance document, <u>Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005)</u>, will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 40,702 pounds of TSS generated from the 46.76 acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

SCS PROJECT DESCRIPTION

The proposed sewage collection system will provide disposal service for the development. The 18,630 linear feet gravity SCS will be composed entirely of 2,600 linear feet of 6-inch PVC-SDR 21 ASTM D3034 pipe, 15,249 linear feet of 8-inch PVC-SDR 21 ASTM D3034 pipe, 600 linear feet of 6-inch PVC-SDR 26 ASTM D2241 pipe, and 181 linear feet of 12-inch PVC-SDR 21 ASTM D3034 pipe. The system will be connected to an existing City of Georgetown wastewater line for conveyance to the Pecan Branch Wastewater Treatment Plant for treatment and disposal. The project will conform to all applicable codes, ordinances, and requirements of the City of Georgetown.

GEOLOGY

According to the Geologic Assessment included with the application, the surficial geologic units consist of Edwards Limestone (Ked), Comanche Peak Limestone (Kc), and Quaternary Alluvium (Qal). Seven sensitive geologic features (F-7, F-8, F-9, F-10, F-11, F-12, and F-13) were identified in the Geologic Assessment. Appropriate setbacks for the sensitive features are depicted in the application. The TCEQ Regional Office site assessment conducted on June 14, 2022, revealed the site to be generally as described.

SPECIAL CONDITIONS

- I. All permanent pollution abatement measures shall be operational prior to occupancy of the facility.
- II. All sediment and/or media removed from the water quality basins during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.

STANDARD CONDITIONS

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

Prior to Commencement of Construction:

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

During Construction:

- 10. During the course of regulated activities related to this project, the applicant or agent shall comply with all applicable provisions of 30 TAC Chapter 213 and Chapter 217, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
- 11. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 6, above.
- 12. If any sensitive feature (caves, solution cavities, sink holes, etc.) is discovered during construction, all regulated activities near the feature must be suspended immediately. The applicant or his agent must immediately notify the Austin Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the executive

> director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.

- 13. All water wells including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.
- 14. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
- 15. Discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices.
- 16. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
- 17. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.
- 18. No part of the system shall be used as a holding tank for a pump-and-haul operation.

After Completion of Construction:

- 19. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the Austin Regional Office within 30 days of site completion.
- 20. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. The regulated entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through Austin Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.
- 21. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
- 22. Certification by a Texas Licensed Professional Engineer of the testing of sewage collection systems required by 30 TAC Chapter 213 and Chapter 217 shall be submitted to the Austin Regional Office within 30 days of test completion and prior to the new sewage collection system being put into service. The certification should include the project name as it appeared on the approved application, the program ID number, and two copies of a site

plan sheet(s) indicating the wastewater lines that were tested and are being certified as complying with the appropriate regulations.

Every five years after the initial certification, the sewage collection system shall be retested. Any lines that fail the test must be repaired and retested. Certification that the system continues to meet the requirements of 30 TAC Chapter 213 and Chapter 217 shall be submitted to the Austin Regional Office. The certification should include the project name as it appeared on the approved application, the program ID number and two copies of a site plan sheet(s) indicating the wastewater lines that were tested and are being certified as complying with the appropriate regulations. Should any test result fail to meet passing test criteria, and then subsequently pass testing, the result(s) and an explanation of what repair, adjustment, or other means were taken to facilitate a subsequent passing result shall be provided.

- 23. If ownership of this organized sewage collection system is legally transferred (e.g., developer to city or Municipal Utility District), the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.
- 24. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.
- 25. An Edwards Aquifer protection plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Edwards Aquifer protection plan must be submitted to the Austin Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact James "Bo" Slone, P.G. of the Edwards Aquifer Protection Program of the Austin Regional Office at (512) 339-2929.

Sincerely, Xillian Butter

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

LIB/jcs

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

CC Mr. David Platt, P.E, Steger Bizzell Engineering, Inc.

Mr. Maxwell Aaronson Plazo Tierra, LLC P.O. Box 41805 Austin, Texas 78704

Change in Responsibility for Maintenance on Permanent Best Management Practices and Measures

The applicant is no longer responsible for maintaining the permanent best management practice (BMP) and other measures. The project information and the new entity responsible for maintenance is listed below.

Customer:					_
Regulated Entity Name:					_
Site Address:					
City, Texas, Zip: _					
County: _					
Approval Letter Date:					
BMPs for the project: _					
New Responsible Party:	·				_
Name of contact:					
Mailing Address:					
City, State:				Zip:	
Telephone:			FAX:		
Signature of New Respo	onsible Party	 Date			

I acknowledge and understand that I am assuming full responsibility for maintaining all permanent best management practices and measures approved by the TCEQ for the site, until another entity assumes such obligations in writing or ownership is transferred.

If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.

Deed Recordation Affidavit Edwards Aquifer Protection Plan

THE STATE OF TEXAS §

County of _____ §

BEFORE ME, the undersigned authority, on this day personally appeared ______ who, being duly sworn by me, deposes and says:

- (1) That my name is ______and that I own the real property described below.
- (2) That said real property is subject to an EDWARDS AQUIFER PROTECTION PLAN which was required under the 30 Texas Administrative Code (TAC) Chapter 213.
- (3) That the EDWARDS AQUIFER PROTECTION PLAN for said real property was approved by the Texas Commission on Environmental Quality (TCEQ) on _____.

A copy of the letter of approval from the TCEQ is attached to this affidavit as Exhibit A and is incorporated herein by reference.

(4) The said real property is located in _____ County, Texas, and the legal description of the property is as follows:

LANDOWNER-AFFIANT

SWORN AND SUBSCRIBED TO before me, on this __ day of _____, ____.

NOTARY PUBLIC

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:

TCEQ-0590 Attachment B – Narrative of Proposed Modification

The project type (multi-family residential) and overall acreages (98.56 acres) are unchanged. A proposed 50-foot Atmos utility easement will be dedicated along the southern boundary of the property. This has required us to push portions of the development 50' north and has resulted in a complete reworking of the layout. Previously the site was going to be a dense development of attached townhomes completed in four phases with a road around the outside boundary of the phases with interior roads on a grid pattern. The development was proposed to have three batch detention ponds for the removal of total suspended solids from the proposed impervious cover. The modified proposal consists of a lower density development of detached condos completed in two phases which will drain to two batch detention ponds. The roads now more closely match the existing contours of the site. The new layout reduces the overall number of residential units from 532 units to 343 units and the impervious cover from 46.76 acres (47.4% impervious cover) to 40.09 acres (40.7% impervious cover). The total footage of pipe in the sewer collection system went up slightly from 18,630 feet to 18,638 feet.

More specifically, Phases A and B have been combined into the new Phase A. The southern edge of the residential units and Pond F have been pushed 50 feet north to accommodate the Atmos easement, and the amenity center has been moved to the eastern edge of Phase A and north of the pond. A new road layout has a north-south road (Road 1A) along the western side of Phase A with an isolated loop coming off its north end (Road 9) and two interconnected loops (Roads 2, 3, and 10) coming off the south half and providing a second access (Road 2) to Ronald Reagan Blvd just west of Pond F. The backyards of condos are now along the property lines, rather than roads. The geologic buffer zones around caves F-7 and F-13 are now bordered with condos and roads on each side rather than being contained within courtyards surrounded by townhomes as was proposed previously.

The former Phases C and D have been combined into the new Phase B and drain to Pond E. Pond D has been eliminated. Pond E and the southern edge of development have been pushed 50 feet north for the Atmos easement. The road along the western edge of Phase A (Road 1A) curves west into Phase B in the back half of the site and loops back around to itself (as Road 1B). Four roads (Roads 5, 6, 7, & 8) cut through the inside of this loop and mostly run north-south. Another road (Road 3) comes off of the Phase A road on the south side of the site and runs west to a cul-de-sac by Pond E. It is connected to the rest of the Phase B roads via a short north-south road (Road 4) in the center. As with Phase A, there is no longer a road on the outside of the development of Phase B, and the backyards of condos now abut the property lines.



TCEQ-0590 Attachment C – Current Site Plan of the Approved Project

Please see attached overall water quality plans within the plan set.

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: GTS Development II, LLC / Steger Bizzell, Tyson L Hasz, P.E.

Date: 5/17/2024

Signature of Customer/Agent:

Jym Hay

Regulated Entity Name: Somerset Hills Parcel 5E

Regulated Entity Information

- 1. The type of project is:
 - Residential: Number of Lots:
 - Residential: Number of Living Unit Equivalents:<u>343</u>
 - Commercial
 - Industrial
 - Other:<u>Amenity Center</u>
- 2. Total site acreage (size of property): 98.56
- 3. Estimated projected population: <u>2.5 people per LUE * 343 = 858</u>
- 4. The amount and type of impervious cover expected after construction are shown below:

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	1,185,483	÷ 43,560 =	27.22
Parking	0	÷ 43,560 =	0
Other paved surfaces	560,739	÷ 43,560 =	12.87
Total Impervious Cover	1,746,222	÷ 43,560 =	40.09

Table 1 - Impervious Cover Table

Total Impervious Cover <u>40.09</u> ÷ Total Acreage <u>98.56</u> X **100** = <u>40.7</u>% 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 = _____ $Ft^2 \div 43,560 Ft^2/Acre = _____ acres.$

10. Length of pavement area: _____ feet.

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

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

A rest stop will not be included in this project.

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

Stormwater to be generated by the Proposed Project

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

Wastewater to be generated by the Proposed Project

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

<u>100 %</u> Domestic	Gallons/day
% Industrial	Gallons/day
% Commingled	Gallons/day
TOTAL gallons/day <u>310,070</u>	

15. Wastewater will be disposed of by:

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

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

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

Sewage Collection System (Sewer Lines):

- Private service laterals from the wastewater generating facilities will be connected to an existing SCS.
- Private service laterals from the wastewater generating facilities will be connected to a proposed SCS.
- \boxtimes The SCS was previously submitted on <u>04/05/2022</u>.
- \boxtimes 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 <u>Pecan Branch</u> (name) Treatment Plant. The treatment facility is:

\times	Existing.
	Proposed

16. \square 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. \square The Site Plan must have a minimum scale of 1" = 400'.

Site Plan Scale: 1" = <u>40</u>'.

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): _____

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

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

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

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

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

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

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

 \boxtimes 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.

TCEQ-0584 Attachment A – Factors Affecting Surface Water Quality

The following factors are anticipated to adversely affect surface water and groundwater quality:

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

TCEQ-0584 Attachment B – Volume and Character of Storm Water

Existing site conditions are for an undeveloped site with no impervious cover. The proposed Somerset Hills Parcel 5E is composed of a drainage area which discharges to Cowan Creek east of the property, as shown in the Cowan Creek drainage report. A summary of the drainage calculations is attached directly after this attachment as well as included in the Somerset Hills Parcel 5E construction plans included with this submittal.

The character of the storm water generated by this project in developed conditions is typical of residential development and results in 40.09 acres of impervious cover (40.7%). The stormwater flows across the pavement, then through a stormwater collection system and is directed towards the proposed water quality ponds on either side of the development for treatment or is conveyed across single-family lots via sheet flow and is treated with vegetative filter strips. Off-site upstream runoff is diverted around the site by western (referred to as Middle Channel in construction plans) and eastern channels that bypass the property.

EXISTING CONDITION SUBBASIN ELEMENTS							
				FLOWS [CFS]			
BASIN	AREA [SQ MI]	CN	TC[MIN]	100-YR	25-YR	10-YR	2-YR
Subbasin-A	3.608	80.6	111.3	5595	4041.7	2974.6	1318
Subbasin-A1	0.052	80	28.7	172.3	126.4	95.7	44.3
Subbasin-B	0.957	82	53.8	2420.7	1784.3	1341.7	638
Subbasin-C	0.355	80.6	45.5	953.9	698.3	522.6	242.1
Subbasin-D	1.52	82.25	74.9	3175.8	2331.2	1744.2	819.2
Subbasin-D1	0.064	80	28.2	213.9	156.9	118.6	55.1
Subbasin-D2	0.144	80	39.8	408.1	298.1	223	102.4
Subbasin-E	0.120	80	34.7	364.3	266.6	200.6	92.5
Subbasin-F	0.168	80	43.2	457.5	333.7	249.4	114.2
Subbasin-F1	0.159	80	28	533.6	391.4	295.7	137.5
Subbasin-G	0.463	80	56.7	1086.6	789.4	585	265.1
Subbasin-H	0.796	80	53.4	2022.4	1491.1	1122.1	533.7
Subbasin-I	0.428	84.5	48	1215	912.2	700.2	353
Subbasin-J	0.238	80	38.7	686.5	501.8	375.5	172.8
Subbasin-K	0.0676	84.5	41.9	206.1	155.1	119.5	60.6
Subbasin-L	0.892	82.7	68.4	1990.5	1467.8	1103.5	526.2
Subbasin-M	0.164	84.5	36.4	536	404.2	312.6	159.4
Subbasin-N	0.567	84.5	64.5	1361.8	1016.5	774.2	384.7

Cowan Creek Runoff Calculations – Existing Conditions

DEVELOPED CONDITION SUBBASIN ELEMENTS							
				FLOWS [CFS]			
BASIN	AREA [SQ MI]	CN	TC[MIN]	100-YR	25-YR	10-YR	2-YR
Subbasin-A	3.608	80.6	111.3	5595.0	4041.7	2974.6	1318.0
Subbasin-A1	0.052	87.2	20.9	224.9	174.1	139.4	76.8
Subbasin-B	0.957	82.0	53.8	2420.7	1784.3	1341.7	638.0
Subbasin-C	0.355	87.2	29.6	1341.8	1033.7	817.6	446.6
Subbasin-D	1.52	82.25	74.9	3175.8	2331.2	1744.2	819.2
Subbasin-D1	0.064	92.6	22.0	294.6	235.1	194.0	119.5
Subbasin-D2	0.144	89.1	37.3	504.5	391.5	311.8	175.4
Subbasin-E	0.120	87.2	34.7	422.4	324.4	255.4	138.4
Subbasin-F	0.168	80.0	43.2	457.5	333.7	249.4	114.2
Subbasin-F1	0.159	88.8	20.5	712.7	557.2	449.1	256.4
Subbasin-G	0.463	87.2	35.1	1620.8	1244.8	979.0	531.2
Subbasin-H	0.796	82.0	53.4	2022.4	1491.1	1122.1	533.7
Subbasin-I	0.428	84.5	48.0	1215.0	912.2	700.2	353.0
Subbasin-J	0.238	87.2	38.4	797.9	611.9	480.1	259.6
Subbasin-K	0.0676	84.5	41.9	206.1	155.1	119.5	60.6
Subbasin-L	0.892	82.7	68.4	1990.5	1467.8	1103.5	526.2
Subbasin-M	0.164	84.5	36.4	536.0	404.2	312.6	159.4
Subbasin-N	0.567	84.5	64.5	1361.8	1016.5	774.2	384.7

Cowan Creek Runoff Calculations – Developed Site

HMS Results:

	Peak Flow Change Due to Development (cfs)				
Point of	100-	25-	10-	2-	
Interest	Year	Year	Year	Year	
J-1	-2.7	4.1	9.0	12.2	
J-2	-130.1	-74.2	-38.1	-1.3	
J-3	-135.1	-73.6	-34.4	3.1	
J-4	-360.5	-208.9	-119.8	-17.2	
J-5	-338.0	-187.5	-103.3	-8.7	
J-6	-312.8	-168.8	-90.1	2.9	
J-7	-458.6	-262.9	-163.9	-27.0	

Please see attached water quality plans within the plan set.

Organized Sewage Collection System Application

Texas Commission on Environmental Quality

For Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(c), 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.

Regulated Entity Name: Somerset Hills Parcel 5E

 Attachment A – SCS Engineering Design Report. This Engineering Design Report is provided to fulfill the requirements of 30 TAC Chapter 217, including 217.10 of Subchapter A, §§217.51 – 217.70 of Subchapter C, and Subchapter D as applicable, and is required to be submitted with this SCS Application Form.

Customer Information

 The entity and contact person responsible for providing the required engineering certification of testing for this sewage collection system upon completion (including private service connections) and every five years thereafter to the appropriate TCEQ region office pursuant to 30 TAC §213.5(c) is:

Contact Person: <u>Christopher Coleman</u> Entity: <u>GTS Development II, LLC</u> Mailing Address: <u>c/o Hometown America, 110 N. Wacker Dr., Ste 4500</u> City, State: <u>Chicago, IL</u> Zip: <u>60606</u> Telephone: <u>(312) 265-7144</u> Fax: <u>n/a</u> Email Address: <u>CColeman@HometownAmerica.net</u> *The appropriate regional office must be informed of any changes in this information within 30 days of the change.*

3. The engineer responsible for the design of this sewage collection system is:

Contact Person: <u>Mr. Tyson L. Hasz, P.E.</u> Texas Licensed Professional Engineer's Number: <u>145151</u> Entity: <u>Steger Bizzell</u> Mailing Address: <u>1978 S. Austin Ave</u> City, State: <u>Georgetown, TX</u> Zip: <u>78626</u> Telephone: <u>(512) 930-9412</u> Fax: <u>n/a</u> Email Address: <u>tyson.hasz@stegerbizzell.com</u>

Project Information

4. Anticipated type of development to be served (estimated future population to be served, plus adequate allowance for institutional and commercial flows):

	Residential: Number of single-family lots:
imes	Multi-family: Number of residential units: 343
	Commercial
	Industrial
	Off-site system (not associated with any development)
\boxtimes	Other: <u>Amenity Center</u>

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

<u>100 </u> % Domestic	<u>310,070</u> gallons/day
<u>0 %</u> Industrial	<u>n/a</u> gallons/day
0% Commingled	<u>n/a</u> gallons/day
Total gallons/day: <u>310,070</u>	

- 6. Existing and anticipated infiltration/inflow is <u>61,980</u> gallons/day. This will be addressed by: <u>The project is all new construction with PVC pipe serving the new development</u>.
- 7. A Water Pollution Abatement Plan (WPAP) is required for construction of any associated commercial, industrial or residential project located on the Recharge Zone.

The WPAP application for this development was approved by letter dated $\frac{7/12}{2022}$. A copy of the approval letter is attached.

The WPAP application for this development was submitted to the TCEQ on _____, but has not been approved.

A WPAP application is required for an associated project, but it has not been submitted. There is no associated project requiring a WPAP application.

8. Pipe description:

Table 1 - Pipe Description

Pipe			
Diameter(Inches)	Linear Feet (1)	Pipe Material (2)	Specifications (3)
6	4,675	PVC SDR-26	ASTM D 3034
8	13,352	PVC SDR-26	ASTM D 3034
8	380	PVC DR-18	ASTM D 1784
8	49	PVC SDR-21	ASTM D 3034
12	182	PVC SDR-26	ASTM D 3034

Total Linear Feet: 18,638

- (1) Linear feet Include stub-outs and double service connections. Do not include private service laterals.
- (2) Pipe Material If PVC, state SDR value.
- (3) Specifications ASTM / ANSI / AWWA specification and class numbers should be included.

9. The sewage collection system will convey the wastewater to the Pecan Branch (name) Treatment Plant. The treatment facility is:

\times	Existing
	Proposed

10. All components of this sewage collection system will comply with:

\boxtimes	The City of Geo
	Other, Specific

orgetown standard specifications. The City of <u>Georgetown</u> standard sp Other. Specifications are attached.

11. 🖂 No force main(s) and/or lift station(s) are associated with this sewage collection system.

A force main(s) and/or lift station(s) is associated with this sewage collection system and the Lift Station/Force Main System Application form (TCEQ-0624) is included with this application.

Alignment

- 12. There are no deviations from uniform grade in this sewage collection system without manholes and with open cut construction.
- 13. There are no deviations from straight alignment in this sewage collection system without manholes.

Attachment B - Justification and Calculations for Deviation in Straight Alignment without Manholes. A justification for deviations from straight alignment in this sewage collection system without manholes with documentation from pipe manufacturer allowing pipe curvature is attached.

For curved sewer lines, all curved sewer line notes (TCEQ-0596) are included on the construction plans for the wastewater collection system.

Manholes and Cleanouts

14. 🖂 Manholes or clean-outs exist at the end of each sewer line(s). These locations are listed below: (Please attach additional sheet if necessary)

Line	Shown on Sheet	Station	Manhole or Clean- out?
See Attached Table	Of		
	Of		

Table 2 - Manholes and Cleanouts

Line	Shown on Sheet	Station	Manhole or Clean- out?
	Of		
	Of		
	Of		

- 15. Manholes are installed at all Points of Curvature and Points of Termination of a sewer line.
- 16. The maximum spacing between manholes on this project for each pipe diameter is no greater than:

Pipe Diameter (inches)	Max. Manhole Spacing (feet)
6 - 15	500
16 - 30	800
36 - 48	1000
≥54	2000

- Attachment C Justification for Variance from Maximum Manhole Spacing. The maximum spacing between manholes on this project (for each pipe diameter used) is greater than listed in the table above. A justification for any variance from the maximum spacing is attached, and must include a letter from the entity which will operate and maintain the system stating that it has the capability to maintain lines with manhole spacing greater than the allowed spacing.
- 17. All manholes will be monolithic, cast-in-place concrete.
 - The use of pre-cast manholes is requested for this project. The manufacturer's specifications and construction drawings, showing the method of sealing the joints, are attached.

Site Plan Requirements

Items 18 - 25 must be included on the Site Plan.

18. \square The Site Plan must have a minimum scale of 1" = 400'.

Site Plan Scale: 1" = <u>40</u>'.

- 19. The Site Plan must include the sewage collection system general layout, including manholes with station numbers, and sewer pipe stub outs (if any). Site plan must be overlain by topographic contour lines, using a contour interval of not greater than ten feet and showing the area within both the five-year floodplain and the 100-year floodplain of any drainage way.
- 20. Lateral stub-outs:
 - \boxtimes The location of all lateral stub-outs are shown and labeled.
 - No lateral stub-outs will be installed during the construction of this sewer collection system.

- 21. Location of existing and proposed water lines:
 - \bigotimes The entire water distribution system for this project is shown and labeled.
 - If not shown on the Site Plan, a Utility Plan is provided showing the entire water and sewer systems.
 - There will be no water lines associated with this project.

22. 100-year floodplain:

- After construction is complete, no part of this project will be in or cross a 100-year floodplain, either naturally occurring or manmade. (Do not include streets or concrete-lined channels constructed above of sewer lines.)
- After construction is complete, all sections located within the 100-year floodplain will have water-tight manholes. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.)

Table 3 - 100-Year Floodplain

Line	Sheet	Station
A01	41 of 212	22+84.67 to 24+35.77
	of	to
	of	to
	of	to

23. 5-year floodplain:

- After construction is complete, no part of this project will be in or cross a 5-year floodplain, either naturally occurring or man-made. (Do not include streets or concrete-lined channels constructed above sewer lines.)
- After construction is complete, all sections located within the 5-year floodplain will be encased in concrete or capped with concrete. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.)

Table 4 - 5-Year Flood

Line	Sheet	Station
N/A	of	to
	of	to
	of	to
	of	to

- 24. \square Legal boundaries of the site are shown.
- 25. The *final plans and technical specifications* are submitted for the TCEQ's review. Each sheet of the construction plans and specifications are dated, signed, and sealed by the Texas Licensed Professional Engineer responsible for the design on each sheet.

Items 26 - 33 must be included on the Plan and Profile sheets.

26. All existing or proposed water line crossings and any parallel water lines within 9 feet of sewer lines are listed in the table below. These lines must have the type of pressure rated pipe to be installed shown on the plan and profile sheets. Any request for a variance from the required pressure rated piping at crossings must include a variance approval from 30 TAC Chapter 290.

There will be no water line crossings.

There will be no water lines within 9 feet of proposed sewer lines.

Table 5 - Water Line Crossings

Line	Station or Closest Point	Crossing or Parallel	Horizontal Separation Distance	Vertical Separation Distance
See Attached Table				

27. Vented Manholes:

No part of this sewer line is within the 100-year floodplain and vented manholes are not required by 30 TAC Chapter 217.

A portion of this sewer line is within the 100-year floodplain and vented manholes will be provided at less than 1500 foot intervals. These water-tight manholes are listed in the table below and labeled on the appropriate profile sheets.

A portion of this sewer line is within the 100-year floodplain and an alternative means of venting shall be provided at less than 1500 feet intervals. A description of the alternative means is described on the following page.

A portion of this sewer line is within the 100-year floodplain; however, there is no interval longer than 1500 feet located within. No vented manholes will be used.

Table 6 - Vented Manholes

Line	Manhole	Station	Sheet
N/A			

Line	Manhole	Station	Sheet

28. Drop manholes:

There are no drop manholes associated with this project.

Sewer lines which enter new or existing manholes or "manhole structures" higher than 24 inches above the manhole invert are listed in the table below and labeled on the appropriate profile sheets. These lines meet the requirements of 30 TAC §217.55(I)(2)(H).

Table 7 - Drop Manholes

Line	Manhole	Station	Sheet
N/A			

29. Sewer line stub-outs (For proposed extensions):

] The placement and markings of all sewer line stub-outs are shown and labeled.

No sewer line stub-outs are to be installed during the construction of this sewage collection system.

30. Lateral stub-outs (For proposed private service connections):

The placement and markings of all lateral stub-outs are shown and labeled.

No lateral stub-outs are to be installed during the construction of this sewage collection system.

31. Minimum flow velocity (From Appendix A)

Assuming pipes are flowing full; all slopes are designed to produce flows equal to or greater than 2.0 feet per second for this system/line.

32. Maximum flow velocity/slopes (From Appendix A)

Assuming pipes are flowing full, all slopes are designed to produce maximum flows of less than or equal to 10 feet per second for this system/line.

Attachment D – Calculations for Slopes for Flows Greater Than 10.0 Feet per Second. Assuming pipes are flowing full, some slopes produce flows which are greater than 10 feet per second. These locations are listed in the table below. Calculations are attached.

Line	Profile Sheet	Station to Station	FPS	% Slope	Erosion/Shock Protection

Table 8 - Flows Greater Than 10 Feet per Second

33. Assuming pipes are flowing full, where flows are ≥ 10 feet per second, the provisions noted below have been made to protect against pipe displacement by erosion and/or shock under 30 TAC §217.53(I)(2)(B).

Concrete encasement shown on appropriate Plan and Profile sheets for the locations listed in the table above.

 Steel-reinforced, anchored concrete baffles/retards placed every 50 feet shown on appropriate Plan and Profile sheets for the locations listed in the table above.
 N/A

Administrative Information

- 34. The final plans and technical specifications are submitted for TCEQ review. Each sheet of the construction plans and specifications are dated, signed, and sealed by the Texas Licensed Professional Engineer responsible for the design on each sheet.
- 35. Standard details are shown on the detail sheets, which are dated, signed, and sealed by the Texas Licensed Professional Engineer, as listed in the table below:

Standard Details	Shown on Sheet
Lateral stub-out marking [Required]	71 of 212
Manhole, showing inverts comply with 30 TAC §217.55(I)(2) [Required]	70 of 212
Alternate method of joining lateral to existing SCS line for potential future connections [Required]	70 of 212
Typical trench cross-sections [Required]	70 of 212
Bolted manholes [Required]	71 of 212
Sewer Service lateral standard details [Required]	70 of 212
Clean-out at end of line [Required, if used]	70 of 212
Baffles or concrete encasement for shock/erosion protection [Required, if flow velocity of any section of pipe >10 fps]	N/A of N/A
Detail showing Wastewater Line/Water Line Crossing [Required, if crossings are proposed]	71 of 212
Mandrel detail or specifications showing compliance with 30 TAC §217.57(b) and (c) [Required, if Flexible Pipe is used]	71 of 212

Table 9 - Standard Details

Standard Details	Shown on Sheet
Drop manholes [Required, if a pipe entering a manhole is more than 24 inches above manhole invert]	N/A of N/A

- 36. All organized sewage collection system general construction notes (TCEQ-0596) are included on the construction plans for this sewage collection system.
- 37. All proposed sewer lines will be sufficiently surveyed/staked to allow an assessment prior to TCEQ executive director approval. If the alignments of the proposed sewer lines are not walkable on that date, the application will be deemed incomplete and returned.
 - Survey staking was completed on this date: 6/17/2024
- 38. 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.
- 39. Any modification of this SCS application will require TCEQ approval, prior to construction, and may require submission of a revised application, with appropriate fees.

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 **Organized Sewage Collection System Application** is hereby submitted for TCEQ review and executive director approval. The system was designed in accordance with the requirements of 30 TAC §213.5(c) and 30 TAC §217 and prepared by:

Print Name of Licensed Professional Engineer: Mr. Tyson L. Hasz, P.E.

Date: <u>5/17/</u>2024

Place engineer's seal here:



Signature of Licensed Professional Engineer:

Jym Hay

Appendix A-Flow Velocity Table

Flow Velocity (Flowing Full) All gravity sewer lines on the Edwards Aquifer Recharge Zone shall be designed and constructed with hydraulic slopes sufficient to give a velocity when flowing full of not less than 2.0 feet per second, and not greater than 10 feet per second. The grades shown in the following table are based on Manning's formula and an n factor of 0.013 and shall be the minimum and maximum acceptable slopes unless provisions are made otherwise.

Pipe Diameter(Inches)	% Slope required for minimum flow velocity of 2.0 fps	% Slope which produces flow velocity of 10.0 fps	
6	0.50	12.35	
8	0.33	8.40	
10	0.25	6.23	
12	0.20	4.88	
15	0.15	3.62	
18	0.11	2.83	
21	0.09	2.30	
24	0.08	1.93	
27	0.06	1.65	
30	0.055	1.43	
33	0.05	1.26	
36	0.045	1.12	
39	0.04	1.01	
>39	*	*	

Table 10 - Slope Velocity

*For lines larger than 39 inches in diameter, the slope may be determined by Manning's formula (as shown below) to maintain a minimum velocity greater than 2.0 feet per second when flowing full and a maximum velocity less than 10 feet per second when flowing full.

$$v = \frac{1.49}{n} \times R_h^{0.67} \times \sqrt{S}$$

Figure 1 - Manning's Formula

Where:

v = velocity (ft/sec)
n = Manning's roughness coefficient
(0.013)
Rh = hydraulic radius (ft)
S = slope (ft/ft)

ATTACHMENT A

ENGINEERING DESIGN REPORT

FOR

Somerset Hills Parcel 5E Organized Sewage Collection System

Job No. 22226x-6_Parcel 5E

Prepared by:

STEGER BIZZELL F-181 1978 South Austin Ave. Georgetown, Texas 78626

Engineering Design Report For a WASTEWATER COLLECTION SYSTEM Within Somerset Hills Parcel 5E

PURPOSE

The purpose of this report is to demonstrate that the proposed wastewater collection system complies with the Texas Commission on Environmental Quality's Chapter 217 - Design Criteria for Domestic Wastewater Systems. The project includes the construction of wastewater lines to service Somerset Hills Parcel 5E. The site will include development of the 98.56 acre tract to be known as Somerset Hills Parcel 5E and containing 343 residential units and an amenity center. Somerset Hills Parcel 5E is a high quality, detached multi-family residential development operating under a condominium regime and is located in Georgetown, Texas.

There will be two separate sewage collection systems for the site: one that serves Phases A, and the other that serves Phase B. (Note: Phases C and D have been incorporated into Phases A and B.)

Phase A:

The sewage collection system (SCS) for Somerset Hills Parcel 5E Phase A will flow to the southeast and connect to a 4-foot Manhole north of Ronald Reagan Boulevard that is proposed for construction with Somerset Hills (Parcel 6) Phases A-E. A Water Pollution Abatement Plan application and Organized Sewage Collection System application has been made to TCEQ for the Somerset Hills Phases A-E collection system, and it is under review. The combined systems will ultimately flow through an SCS for Sun City NH 69 to an existing 21-inch Wastewater Interceptor along Cowan Creek and onto the existing Sun City Lift Station along Berry Creek. The wastewater will then be conveyed to the City of Georgetown Pecan Branch Wastewater Treatment Plant (WWTP).

Phase B:

The sewage collection system for Phase B will flow to the southwest and connect to the existing 12inch stub south of Ronald Reagan Boulevard. The existing collection system then travels down Cowan Creek to Berry Creek and into the Sun City Lift Station where it ultimately flows to the Pecan Branch WWTP.

The <u>CITY OF GEORGETOWN</u> will own and maintain the sanitary sewer collection system described in this application. The <u>PECAN BRANCH WWTP</u> wastewater treatment plant (WWTP) will receive and treat flows from the project. The TCEQ Permit No. is <u>WQ 0010489005</u>. The Permittee is the <u>Plazo Tierra, LLC</u>. The plans will also be reviewed by the City of Georgetown's Development Engineer.

PIPE DESIGN 30 TAC §217.53

Flow design basis (30 TAC §217.53(a))

Flow development for the area is based on the following City of Georgetown design criteria:

Unit Flow:

• Typical Residential = 70 gpcd

Dry Weather Flow (DWF):

- Somerset Hills Parcel 5E= 2.5 people/LUE*(70 gpcd + 30 gpcd) = 250 gpd/LUE
- Amenity Center = 10 LUE's = 2500 gpd

Somerset Hills Parcel 5E Phase A:

Phase A to Existing Sun City NH 69 (138 residential units + 1 amenity center) AvgDWF= ((138 units *250 gpd/LUE) + (10 LUE's * 250 gpd/LUE))/10⁶ = (34,500 gpd + 2,500 gpd)/10⁶ = 0.037 (mgd) Peak Flow Factor (PF) = 2.8*AvgDWF^{-0.0732} = 3.56 Peak DWF = PF*DWF = <u>131,720 gpd</u>

Phases B to Existing Sun City NH 68 (205 residential units)

AvgDWF= (205 lots *250 gpd/LUE)/10⁶ = 51,250 gpd/10⁶ = 0.05125 (mgd) Peak Flow Factor (PF) = 2.8*AvgDWF^{-0.0732} = 3.48 Peak DWF = PF*DWF = <u>178,350 gpd</u>

I/I flows have to be considered as part of flow development. A generally accepted I/I generation rate in the City of Georgetown is 1,000 gallons/acre/day. The total area contributing to infiltration for the NH69 portion of the system (Phase A) is 24.20 acres and the total area contributing to infiltration for the NH68 portion of the system (Phases B) is 37.78 acres. Therefore, the flow resulting from I/I would be as follows:

Somerset Hills Parcel 5E I/I Flow:

PH A: 24.20 acres*1,000 gallons/acre/day = <u>24,200 gpd</u> PH B: 37.78 acres*1,000 gallons/acre/day = <u>37,780 gpd</u> Potential peak flow in the system would be as follows:

Somerset Hills Parcel 5E Total Flow:

PH A: 131,720 gpd + 24,200 gpd = <u>155,920 gpd or 0.2412 cfs</u> PH B: 178,350 gpd + 37,780 gpd = <u>216,130 gpd or 0.3344 cfs</u>

The wastewater line in Somerset Hills Parcel 5E consists of eight-inch gravity pipe.

For the portion of the collection system proposed in this report which encompasses the Somerset Hills Parcel 5E phase of development, the proposed minimum slope for 8-inch diameter pipe is 0.50%, and the proposed maximum slope for 8-inch diameter pipe is 6.49%. The required minimum slope for 8-inch diameter pipe is 0.33%, and the required maximum slope is 8.40%. The proposed minimum and maximum slope for 12-inch diameter pipe is 0.33%. The required minimum slope for 12-inch diameter pipe is 0.33%. The proposed system meets these requirements.

Therefore, the wastewater collection system contains slopes sufficient to maintain a minimum velocity of 2.0 feet per second when flowing full, while staying below the maximum pipe full velocity of 10 fps.

PIPE	LINEAR FEET	PIPE MATERIAL	NATIONAL	NATIONAL
			SPECIFICATION FOR	STANDARD FOR
			PIPE MATERIAL	PIPE JOINTS
6" Services	4,675	PVC SDR-26	ASTM D 3034	ASTM D 3212
8" Gravity	13,352	PVC SDR-26	ASTM D 3034	ASTM D 3212
8" Gravity	380	PVC DR-18	ASTM D 1784	ASTM D 3139
8" Gravity	49	PVC SDR-21	ASTM D 3034	ASTM D 3212
12" Gravity	182	PVC SDR-21	ASTM D 3034	ASTM D 3212

Gravity pipe materials (30 TAC §217.53(b)), Joints for gravity pipe (30 TAC §217.53(c))

Separation distances (30 TAC §217.53(d))

The proposed wastewater collection system complies with the TCEQ Separation Distance requirements for horizontal separation. There are crossings of the wastewater and water systems which are labeled on the appropriate sheets.

Building laterals and taps (30 TAC §217.53(e))

There are 6" laterals to proposed units in this project.

Bores (30 TAC §217.53(f))

There is 168 linear feet of 12-inch pipe that will be bored under Ronald Reagan Boulevard with this project. It is located on line B21 from STA 25+67.15 to STA 27+34.91. The 12-inch line will be at 0.33% slope with a 24-inch steel encasement pipe.

Corrosion potential (30 TAC §217.53(g)), Odor control (30 TAC §217.53(h))

PVC SDR26 meeting the requirements of ASTM D3034 for pipe and ASTM D3212 for pipe joints are proposed for this project. The sewer pipe will handle ordinary domestic sewer.
Active geologic faults (30 TAC §217.53(i))

There are no known active geologic faults within the limits of construction.

Capacity analysis (30 TAC §217.53(j))

The existing downstream collection system consists of 18" and larger pipes. The existing 18" line at the connection point has a minimum grade of 0.15% and a line capacity of 2,636,973 gpd. Confirmation of capacity from the City of Georgetown was included with the submittal package for the SCS approved on January 9, 2015. There is an agreement in place between the City of Georgetown and the developer, which ensures wastewater capacity within the system for the development of the Sun City Somerset Tract, including Somerset Hills Parcel 5E.

Structural analysis (30 TAC §217.53(k))

See Attachment Form 10243 for structural calculations following this report.

Minimum and maximum slopes (30 TAC §217.53(I))

The wastewater collection system contains slopes sufficient to maintain velocities greater than 2.0 feet per second and less than 10.0 feet per second, when flowing full. For 8" diameter pipe, the minimum slope is 0.33%, and the maximum slope is 8.40%. For this system, the proposed minimum slope is 0.5% and the maximum slope is 6.49%. For 12" diameter pipe, the minimum slope is 0.20%, and the maximum slope is 4.88%. For this system the proposed minimum and maximum slope is 0.33%.

Alignment (30 TAC §217.53(m))

The proposed wastewater collection system has been designed with uniform grade between manholes. No deviations from straight alignment between manholes are proposed.

Inverted siphons or sag pipes (30 TAC §217.53(n))

There are no inverted siphons or sag pipes proposed with this project.

Bridged sections (30 TAC §217.53(o))

There are no bridged sections proposed with this project.

CRITERIA FOR LAYING PIPE 30 TAC §217.54

Pipe embedment (30 TAC §217.54(a)), Compaction (30 TAC §217.54(b)) Envelope size (30 TAC §217.54(c)), Trench width (30 TAC §217.54(d))

The project will comply with the City of Georgetown's details and specifications for pipe embedment and excavation. The detail is included in the construction plans on Sheets 70 and 71 of the Somerset Hills Parcel 5 Construction Plans. The bedding complies with ASTM D-2321 class 1B gravel. The minimum trench width for 6", 8", 12", 15", 18" and 21" pipe is 19", 21", 25", 28", 31" and 45" respectively. The maximum trench width for 6", 8", 12", 15", 18" and 21" pipe is 33", 35", 39", 41", 45" and 48" respectively.

MANHOLES AND RELATED STRUCTURES 30 TAC §217.55

Precast concrete manholes are proposed for this project. A detail for the manhole is included in on Sheets 70 and 71 of the Somerset Hills Parcel 5 Construction Plans. The manholes must meet the requirements of ASTM C-478. Manholes are proposed at the end of the sewer line and at changes in alignment. A detail for the cleanout is included in the construction plans on Sheets 70 and 71 of the Somerset Hills Parcel 5 Construction Plans for cleanouts proposed. Details for the manhole covers and inverts are included on Sheets 70 and 71 of the Somerset Hills Parcel 5 Construction Plans.

The manholes have been spaced to comply with Table C.2 of 30 TAC §217.55. The maximum spacing between manholes is <u>472.12'</u>.

TRENCHLESS PIPE INSTALLATION 30 TAC §217.54

A portion of the proposed collection system, STA 25+67.15 to STA 27+34.91 of WW-B21, (approved in the original SCS application) has been installed employing <u>bore & jack.</u> A 24" steel casing with 35,000 psi yield strength and a minimum pipe thickness of 0.3750" was installed per the City of Georgetown detail W14. Detail W14 is included in the construction plans on Sheet 36. The carrier pipe was 12" PVC SDR-26 pipe. The soil is primarily characterized as limestone bedrock. There are no laterals or service connections nor a need for flow bypass provisions in this section.

TESTING REQUIREMENTS FOR INSTALLATION OF GRAVITY COLLECTION SYSTEM PIPES 30 TAC §217.57

The testing requirements for Gravity System Pipes are included in the Construction Plans on Sheet 3.

TESTING REQUIREMENTS FOR MANHOLES 30 TAC §217.58

The following testing requirements are taken from 30 TAC §217.58. The testing requirements are also included in the construction plans on Sheet 3.

All manholes must pass a leakage test. An owner shall test each manhole (after assembly and backfilling) for leakage, separate and independent of the collection system pipes, by hydrostatic exfiltration testing, vacuum testing, or other method approved by the executive director.

Hydrostatic Testing

The maximum leakage for hydrostatic testing or any alternative test methods is 0.025 gallons per foot diameter per foot of manhole depth per hour. To perform a hydrostatic exfiltration test, an owner shall seal all wastewater pipes coming into a manhole with an internal pipe plug, fill the manhole with water and maintain the test for at least one hour. A test for concrete manholes may use a 24-hour wetting period before testing to allow saturation of the concrete.

Vacuum Testing

To perform a vacuum test, an owner shall plug all lift holes and exterior joints with a non-shrink grout and plug all pipes entering a manhole. No grout must be placed in horizontal joints before testing. Stub outs, manhole boots and pipe plugs must be secured to prevent movement while a vacuum is drawn. An owner shall use a minimum 60 inch/lb torque wrench to tighten the external clamps that secure a test cover to the top of a manhole. A test head must be placed at the inside of the top of a cone section and the seal inflated in accordance with the manufacturer's recommendations. There must be a vacuum of 10 inches of mercury inside a manhole to perform a valid test. A test does not begin until after the vacuum pump is off. A manhole passes the test if after 2.0 minutes and with all valves closed, the vacuum is a least 9.0 inches of mercury.

LIFT STATION REQUIREMENTS 30 TAC §217.54

There are no lift stations or force mains associated with this project.

P:\22000-22999\22226 xSomerset Hills LTD\02_Parcels 6&7\Documents\TCEQ\SCS_WPAP\WORD FILES\Design Report for SCS Somerset Hills Phases A-E 001.doc USE THIS SPREADSHEET TO ASSIST COMPLETION OF TNRCC FORM 10243. FILL IN INFORMATION IN THE YELLOW CELLS. TAB BETWEEN CELLS. ASTM D3034 PIPE (NOT ASTM D2241) CHOOSE PIPE SDR AND DIAMETER SDR = 26

Dia. = 12 Wall = 0.481

Buckling Analysis T63) Pressure due to live load

 $L_1 =$

T68) Calculate allowable and predicted buckling pressure.

a) Calculate allowable buckling pressure:

$q_a = 0.4*Sqrt(32*R_W*B'*E_b*(E*I/D^3))$	Equation (1)
$R_{\rm W} = 1-0.33*(h_{\rm w}/h)$	Equation (2)
$B' = 1/(1 + 4*e^{-0.065H})$	Equation (3)
$I = (t^3/12) * (inches^4/Linch)$	Equation (4)

q_a = allowable buckling pressure, pounds per square inch (psi)

h = height of soil surface above top of pipe in inches (in)

- h_w = height of water surface above top of pipe in inches (in) (groundwater elevation)
- R_w = Water buoyancy factor. If h_w = 0, R_w = 1. If 0 < or = hw < or = h (groundwater elevation is between the top of the pipe and the ground surface), calculate Rw with Equation 2
- H = Depth of burial in feet (ft) from ground surface to crown of pipe.
- B' = Empirical coefficient of elastic support
- E_b = modulus of soil reaction for the bedding material (psi)
- E = modulus of elasticity of the pipe material (psi)

I = moment of inertia of the pipe wall cross section per linear inch of pipe, inch⁴/lineal inch = inch³. For solid wall pipe, I can be calculated with equation 4. If the pipe used is not solid wall pipe (for example a pipe with a ribbed cross section), the proper moment of inertia formula must be obtained from the manufacturer. t = pipe structural wall thickness (in)

r – pipe structurar wair trickine	0
D = mean pipe diameter (in)	

b) Calculate pressure applied to pipe under installed conditions:

$q_p = Y_w * h_w = R_w * (W_c/D) + L_l$	Equation (5)			
W _c - Y _s *H*(D+t)/144	Equation (6)			
q _p = pressure applied to pipe under installed conditions (psi)				
$Y_w = 0.0361$ pounds per cubic inch (pci), specific weight of water				
Y_s = specific weight of soil in pounds per cubic foot (pcf)				
$W_{\rm c}$ = vertical soil load on the pipe per unit length in pounds per linear	ar inch (lb/in)			

 L_I = Live load as determined in T63

=	127.11	psi
=	248.6	"
=	0	"
=	1	
=	20.72	'
=	0.49	
=	3000	psi
=	400000	psi

=	0.00927372 0.481 12	
=	19.45	psi
=	0.0361	pcf
=	130	pcf

233.43 lb/in

0 psi

=

=

=

Wall Crushing T71) **If no concrete encased flexible pipe is proposed,** skip to T73, otherwise:

$H = (24*P_c*A)/(Y_s*D_o)$	Equation (7)		
D_{o} = outside pipe diameter, in.		=	12.5 in.
P_c = compressive stress or hydrostatic design be	asis (HDB). For typical PVC pipe assume 4,000	-	
psi. For any other pipe material the HDB must b	be supplied by the pipe manufacturer.	=	4000 psi
A = surface area of the pipe wall, in. 2 /ft		=	5.772 in. ² /ft
Y_s = specific weight of soil in pounds per cubic for	oot (pcf)	=	130 pcf
H = Depth of burial in feet (ft) from ground surface	ce to crown of pipe.	=	341 ft
24 = conversions and coefficients		=	24
T81) Determine Pipe Stiffness			
$P_{s} = EI/0.149*r^{3}$	Equation (10)		
 E = modulus of elasticity of the pipe material (ps I = moment of inertia of the pipe wall cross sections For solid wall pipe, I can be calculated with experimental (for example a pipe with a ribbed cross section obtained from the manufacture) 	si) ion per linear inch of pipe, inch4/lineal inch = inch3. quation 4. If the pipe used is not solid wall pipe in), the proper moment of inertia formula must be	=	400000 psi
mean pipe diameter (in)		=	0.00927372 in
r =mean radius (in)		=	6 in.
P _s		=	115 psi
T83) Calculate P _s /SSF ratio			
$P_s/SSF = P_s/0.61*zeta*E_b > or = 0.15$	Equation (12)		
P _s = Pipe stiffness (psi)		=	115 psi
E _b = modulus of soil reaction for the bedding ma	aterial (psi) [from T76]	=	3000 psi
zeta = 1.0, or a value calculated with the method	d in T79	=	1.0
SSF = soil stiffness factor (0.061*zeta*Eb)		=	183
P _s /SSF		=	0.63
T86) Calculate and report predicted deflection.			
DeltaY/D(%) = $(K^*(L_p+L_l)^*100)/((0.149^*P_s)+(0.061)^*)$	* $zeta*E_b$)) Equation (13)		
$L_p = (Y_s * H)/144$	Equation (14)		
Delta Y/D = Predicted % vertical deflection under	er load	=	1.03 %
DeltaY = Change in vertical pipe diameter under	r load		
D = Undeflected mean pipe diameter (in)		=	12 in.
K = Bedding angle constant. Assumed to be 0.1	110 unless otherwise justified.	=	0.110
$r_s = Unit weight of soli (pcr). Y_s less than 120 p$	rourn of ning	=	130 pct
$\Box = \Box$ epth of burlar (II) from ground sufface to cl	rown or pipe.	=	20./10000/ Π.
$L_p = Prism load (psi).$ If prism load is calculated	using warston's load formula, or other formulas		
factor DL = 1.5 to account for long-term defle (P_s from T82; zeta from T80; and E_b from T76)	ection of the pipe as the bedding consolidates.	=	18.70 psi

TCEQ 0582 Supplemental Tables

	Shown on				Na shala a s
	Sr	lowr	non		iviannole or
Line		Shee	et	Station	Cleanout?
A01	41	of	212	0+00.00	MH
A02	41	of	212	0+00.00	MH
A03	41	of	212	0+00.00	MH
A04	41	of	212	0+00.00	MH
A05	41	of	212	0+00.00	MH
B01	41	of	212	0+00.00	MH
B02	41	of	212	0+00.00	MH
B03	41	of	212	0+00.00	MH
B04	41	of	212	0+00.00	MH
B05	41	of	212	0+00.00	MH
B06	41	of	212	0+00.00	MH
B07	41	of	212	0+00.00	MH

Table 2 – Manholes and Cleanouts

TCEQ 0582 Supplemental Tables

		-		
	Station or		Horizontal	Vertical
	Closest	Crossing	Separation	Separation
Line	Point	or Parallel	Distance	Distance
A01	7+38.78	Crossing	N/A	4.52'
A01	16+72.46	Crossing	N/A	3.55'
A01	21+15.23	Crossing	N/A	4.76'
A02	13+04.98	Crossing	N/A	7.16'
A05	1+99.94	Crossing	N/A	2.30'
A05	4+24.21	Crossing	N/A	2.82'
A05	4+80.22	Crossing	N/A	2.90'
B01	5+16.33	Crossing	N/A	2.38'
B01	7+86.38	Crossing	N/A	2.29'
B02	2+23.23	Crossing	N/A	4.79'
B02	5+20.45	Crossing	N/A	6.50'
B02	8+37.72	Crossing	N/A	8.06'
B02	11+07.74	Crossing	N/A	3.32'
B05	11+16.20	Crossing	N/A	5.35'
B06	5+81.83	Crossing	N/A	4.86'
B06	8+37.27	Crossing	N/A	2.82'
B21	24+98.06	Crossing	N/A	2.41'

Table 5 - Water Line Crossings



SCS Site Plan

See Overall Wastewater Plans in Attached Somerset Hills Parcel 5E construction plans.

Final Plan and Profile Sheets

See the Attached Somerset Hills Parcel 5E construction plans for sewage collection system plan and profile sheets.

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: GTS Development II, LLC / Steger Bizzell, Tyson L Hasz, P.E.

Date: 5/17/2024

Signature of Customer/Agent:

Jym Hay

Regulated Entity Name: Somerset Hills Parcel 5E

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: <u>Cowan Creek</u>

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 used in combination with other erosion and sediment controls within each 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 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. \square 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.

TCEQ-0602 Attachment A – Spill Response Actions

Because fuels and hazardous substances will be provided by an off-site facility, no on-site containment procedures are provided for in this WPAP.

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

Education

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

General Measures

- 1. To the extent that the work can be accomplished safely, spills of oil, petroleum products, and substances listed under 40 CFR parts 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
- 2. Store hazardous materials and wastes in covered containers and protect from vandalism.
- 3. Place a stockpile of spill cleanup materials where it will be readily accessible.
- 4. Train employees in spill prevention and cleanup.
- 5. Designate responsible individuals to oversee and enforce control measures.
- 6. Spills should be covered and protected from stormwater run-on during rainfall to the extent that it doesn't compromise clean-up activities.
- 7. Do not bury or wash spills with water.
- 8. Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.
- 9. Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with applicable regulations.
- 10. Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.
- 11. Place Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.
- 12. Keep waste storage areas clean, well-organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

Cleanup

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

Minor Spills

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

Semi-Significant Spills

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

Spills should be cleaned up immediately:

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

Significant/Hazardous Spills

For significant or hazardous spills that are in reportable quantities:

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

More information on spill rules and appropriate responses is available on the TCEQ website at: <u>http://www.tceq.texas.gov/response/</u>

Vehicle and Equipment Maintenance

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

Vehicle and Equipment Fueling

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

If a spill should occur, the person responsible for the spill should contact the TCEQ at (512) 339-2929 or call 911. Soil contaminated by spills that occur on-site will be removed and disposed at an approved disposal site.

TCEQ-0602 Attachment B – Potential Sources of Contamination

- Hydraulic and diesel
- Portable toilet systems (Sanitary Waste)
- Trash from construction workers
- Paints, Paint Solvents, glues, concrete and other building materials
- Plant fertilizers and Pesticides
- Inadequate maintenance of temporary water pollution abatement measures
- Stock piles or spoils of materials

TCEQ-0602 Attachment C – Sequence of Major Activities

The following sequence of activities is suggested. The sequence of construction will take place in two phases. Phase 'A' will include the two proposed roads coming off of Ronald Reagan Boulevard (Roads 1A and 2), three additional internal roads (Roads 3, 9, and 10), Pond F, and the amenity center. Phase 'B' will include the proposed continuation of the western entrance road (Road 1A) and of internal Road 3, six additional internal roads (Roads 1B, 4, 5, 6, 7, 8), and Pond E. As part of Phase B, improvements will be made to the drainage channel (referred to as Middle Channel in the construction plans) on the western edge of the property. Phase B also included the construction of a wastewater extension under Ronald Reagan Boulevard from an existing 12" stub on the south side of the road and construction of two manholes and a water crossing on the north side of the road. This work was approved in the original SCS and WPAP applications and has already been completed. The actual sequence of the remainder of Phases A and B may vary slightly depending on the contractor or weather conditions.

- Construction activities will commence with the installation of the required erosion and sedimentation controls and stabilized construction entrance. (Phase A area = 36.47 acres), (Phase B area = 48.45 acres).
- 2. Excavation will take place where the temporary sediment ponds, roads, parking, culverts and building pads will be situated. Spoils of this material may be placed at a location on the project site as directed by the contractor or hauled off-site. These spoils and any other loose granular material will be enclosed by a silt fence. A pond will be rough graded to provide sediment containment during construction (Phase A area = 36.47 acres), (Phase B area = 48.45 acres).
- 3. The installation of the utilities, BMPs and storm sewer will disturb a portion of the site. Proposed utility improvements include the construction of a wastewater collection system, water mains, reclaimed water mains, wastewater mains, BMPs and storm sewer extensions and connections (Phase A area = 36.47 acres), (Phase B area = 48.45 acres).
- 4. Grading on the site will consist of the placement and compaction of base or select fill material under and/or around the roads, culverts, and building pads and excavation and fill for the proposed roads, culverts, ponds and building pads. (Phase A area = 36.47 acres), (Phase B area = 48.45 acres).
- 5. Paving of the site will consist of the roads, driveways and sidewalks being concrete. (Phase A area = 6.16 acres), (Phase B area = 6.72 acres).
- 6. After the roads, driveways, and sidewalk are installed, finish grading around the site will be completed. (Phase A area = 36.47 acres), (Phase B area = 48.45 acres).
- 7. Subsequent to the construction of the roads, driveways, building pads, etc., disturbed areas will be hydro-mulched or seeded. (Phase A area = 5.94 acres), (Phase B area = 11.65 acres).
- 8. Once vegetation is established on the site, Temporary BMPs will be removed as allowed by the engineer.

TCEQ-0602 Attachment D – Temporary Best Management Practices and Measures

The following sequence of activities is suggested. The sequence of construction will take place in two phases. The actual sequence may vary slightly depending on the contractor or weather conditions.

- Construction activities will commence with the installation of the required silt fence, contractor staging and storage area, stabilized construction entrance, and a concrete washout area as erosion and sedimentation control measures. The project will be constructed in two phases: Phases A and B.
- 2. A protective setback buffer will be placed around sensitive geologic features. Orange silt fence will be utilized as the control measure just beyond the buffer. (Phase A= F-7, F-8, F-9, F-10, F-11, F-12, and F-13)
- 3. Excavation will take place where the roads, utilities, and building pads will be situated. **Pond F** (in Phase A) and Pond E (in Phase B) will be rough graded to provide sediment containment during construction. Spoils of this material may be placed at a location on the project site as directed by the contractor or hauled off-site. These spoils and any other loose granular material will be enclosed by a silt fence. Silt fence will be utilized as the control measures.
- 4. Grading on the site will consist of the placement and compaction of base or select fill material under and/or around the roads, culverts and building pads and excavation and fill for the proposed ponds, roads, culverts and building pads. Silt fence will be utilized as the control measures.
- 5. The installation of the utilities, BMPs and storm sewer will disturb a portion of the site. Proposed utility improvements include the construction of a wastewater collection system, water mains, BMPs, and storm sewer extensions and connections. **Silt fence, rock berm and inlet protection will be utilized as the control measures**.
- 6. Subsequent to the construction of the building, parking, etc., disturbed areas will be hydromulched or seeded. Silt fence, rock berm and inlet protection will be utilized as the control measures.
- 7. Once vegetation is established on the site, Temporary BMPs will be removed as allowed by the engineer.

All surface runoff originating up-gradient or onsite will be contained within the proposed silt fence and rock berm. The silt fence and rock berm will trap most pollutants and prevent them from entering off-site surface streams or the aquifer.

TCEQ-0602 Attachment E – Request to Temporarily Seal a Feature

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

TCEQ-0602 Attachment F – Structural Practices

Ponds E and F will be constructed to act as temporary sediment basins during construction activities. Construction will also be phased to minimize disturbed areas. Silt fences and rock berms will be used to limit the runoff discharge of sediments from exposed areas on the site during construction. Drainage off the site is typically in a sheet flow or shallow concentrated flow condition.

TCEQ-0602 Attachment G – Drainage Area Map

See the Attached Somerset Hills Parcel 5E construction plans for existing and proposed drainage area maps.

WQ Pond (Sediment Trap)

Construction Phase - Temporary Sediment Basin F					
Elevation [ft]	Area [s.f.]	Avg End Incremental Volume [c.f.]	Avg End Cumulative Volume [c.f.]		
883	25	0	0.00		
884	10,855	5,440	5,439.96		
885	26,627	18,741	24,180.86		
886	40,721	33,674	57,854.95		
887	50,906	45,814	103,668.65		
*887.5	52,699	25,901	129,570.00		
888	54,509	26,802	156,372.14		
889	58,180	56,344	212,716.63		
**889.5	60,042	29,555	242,271.99		
3,000 Ft ³ /Ac		Required =	48,000.00		

*Weir Elevation **Top of Berm

Construction Phase - Temporary Sediment Basin E					
Elevation [ft]	Area [s.f.]	Avg End Incremental Volume [c.f.]	Avg End Cumulative Volume [c.f.]		
891.25	25	0	0.00		
892	9,114	3,427	3,427.14		
893	16,338	12,726	16,152.91		
894	18,062	17,200	33,352.51		
895	19,872	18,967	52,319.44		
896	21,772	20,822	73,141.35		
897	23,760	22,766	95,907.25		
898	25,832	24,796	120,703.18		
*899	27,984	26,908	147,611.21		
900	30,209	29,097	176,708.02		
901	32,501	31,355	208,062.95		
902	34,857	33,679	241,741.74		
903	37,278	36,068	277,809.32		
904	39,762	38,520	316,329.64		
**905	42,308	41,035	357,365.01		
3,000 Ft ³ /Ac		Required =	70,530.00		

*Weir Elevation **Top of Berm

TCEQ-0602 Attachment I – Inspection and Maintenance for BMPs

Silt Fence

- 1. Inspect all fences weekly and after any rainfall.
- 2. Remove sediment when buildup reaches 6 inches, or install a second line of fencing parallel to the old fence.
- 3. Replace any torn fabric or install a second line of fencing parallel to the torn section.
- 4. Replace or repair any sections crushed or collapsed in the course of construction activity. If a section of fence is obstructing vehicular access, consider relocating it to a spot where it will provide equal protection, but will not obstruct vehicles. A triangular filter dike may be preferable to a silt fence at common vehicle access points.
- 5. When construction is complete, the sediment should be disposed of in a manner that will not cause additional siltation and the prior location of the silt fence should be revegetated. The fence itself should be disposed of in an approved landfill.

Concrete Washout

- 1. Inspection should be made weekly and after each rainfall by the responsible party.
- 2. Remove sediment and other debris when buildup reaches 6 inches and dispose of the accumulated silt in an approved manner that will not cause any additional siltation.
- 3. The berm/temporary pit should be reshaped as needed during inspection.
- 4. The berm/temporary pit should be replaced when the structure ceases to function as intended due to silt accumulation among the rocks, washout, construction traffic damage, etc.
- 5. The washout should be left in place until construction has been completed.
- 6. When construction is complete, the sediment should be disposed of in a manner that will not cause additional siltation and the prior location of the Concrete Washout should be revegetated.
- 7. The concrete from the washout should be removed from the site in an appropriate manner.

Rock Berm

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

Temporary Construction Entrance/Exit

 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.

- 2. All sediment spilled, dropped, washed or tracked onto public rights-of-way should be removed immediately by contractor.
- 3. When necessary, wheels should be cleaned to remove sediment prior to entrance onto public right-of-way.
- 4. When washing is required, it should be done on an area stabilized with crushed stone that drains into an approved sediment trap or sediment basin.
- 5. All sediment should be prevented from entering any storm drain, ditch or water course by using approved methods.

Temporary Sediment Basin

- Inspection should be made weekly and after each rainfall. Check the embankment, spillways, and outlet for erosion damage, and inspect the embankment for piping and settlement. Repair should be made promptly as needed by the contractor.
- 2. Trash and other debris should be removed after each rainfall to prevent clogging of the outlet structure.
- 3. Accumulated silt should be removed and the basin should be re-graded to its original dimensions at such point that the capacity of the impoundment has been reduced to 75% of its original storage capacity.
- 4. The removed sediment should be stockpiled or redistributed in areas that are protected from erosion.
- 5. When construction is complete, the sediment should be disposed of in a manner that will not cause additional siltation.

Inlet Protection

- 1. Inspection should be made weekly and after each rainfall. Check inlet protection for damage. Repair should be made promptly as needed by the contractor
- 2. Trash and other debris should be removed after each rainfall.
- 3. Accumulated silt should be removed.
- 4. The removed sediment should be stockpiled or redistributed in areas that are protected from erosion.
- 5. When construction is complete, the sediment should be disposed of in a manner that will not cause additional siltation.

The following sample forms should be utilized to document the inspection and maintenance of the proposed temporary BMPs as described above. This form shall be kept on site with the WPAP until the project is completed. A report documenting the Temporary BMPs maintenance activities, sediment removal and modifications to the sedimentation and erosion controls is required.

Temporary BMP Logs – Silt Fence

Date	Date of Last Inspection	Inspection Performed By	Title	Company	Status of BMP(s)	Corrective Action Required (if any)	Date Corrective Action Completed

Temporary BMP Logs – Rock Berm

Date	Date of Last Inspection	Inspection Performed By	Title	Company	Status of BMP(s)	Corrective Action Required (if any)	Date Corrective Action Completed

Temporary BMP Logs – Inlet Protection

Date	Date of Last	Inspection Performed	Title	Company	Status of BMP(s)	Corrective Action Required (if any)	Date Corrective
		Ву					Action Completed

Temporary BMP Logs – Temporary Sediment Basin

Date	Date of Last Inspection	Inspection Performed By	Title	Company	Status of BMP(s)	Corrective Action Required (if any)	Date Corrective Action Completed

Temporary BMP Logs – Contractor Staging and Storage Area

Date	Date of Last Inspection	Inspection Performed By	Title	Company	Status of BMP(s)	Corrective Action Required (if any)	Date Corrective Action Completed

Temporary BMP Logs – Concrete Washout Area

Date	Date of Last Inspection	Inspection Performed By	Title	Company	Status of BMP(s)	Corrective Action Required (if any)	Date Corrective Action Completed

Temporary BMP Logs – Stabilized Construction Entrance

Date	Date of Last Inspection	Inspection Performed	Title	Company	Status of BMP(s)	Corrective Action Required (if any)	Date Corrective
		Ву			<u>, , , , , , , , , , , , , , , , , , , </u>		Action Completed
							• • • • • • • • • • • • • • • • • • • •

TCEQ-0602 Attachment J – Schedule of Interim and Permanent Soil Stabilization Practices

Vehicular traffic should be limited to areas of the project site where construction will take place. The contractor should endeavor to preserve existing vegetation as much as practicable to reduce erosion and lower the cost associated with stabilization. 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.

All disturbed areas shall be stabilized as described below.

Except as provided for below, stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased.

- A. Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceases is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as practicable.
- B. Where construction activity on a portion of the site has temporarily ceased, and earthdisturbing activities will be resumed with 21 days, temporary stabilization measures do not have to be initiated on that portion of the site.
- C. In areas experiencing drought, where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

Stabilization measures as described as follows:

All disturbed grass areas should be planted in drought resistant species normally grown as permanent lawns, such as Zoysia, Bermuda and Buffalo. Grass areas may be sodded, plugged, sprigged or seeded except that solid sod shall be used in swales or other areas subject to erosion. All planted areas shall be provided with a readily available water supply and watered as necessary to ensure continuous healthy growth and development. Maintenance shall include the replacement of all dead plant material if that material was used to meet the requirements of this section.

Permanent Stormwater Section

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: GTS Development II, LLC / Steger Bizzell, Tyson L Hasz, P.E.

Date: 5/17/2024

Signature of Customer/Agent

Jym Hay

Regulated Entity Name: Somerset Hills Parcel 5E

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.



- 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 multifamily residential developments, schools, or small business sites where 20% or less impervious cover is used at the site. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.
 - 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 surface water, groundwater, or stormwater that originates upgradient from and flows across the site is attached. No surface water, groundwater or stormwater originates upgradient from the 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 flows across the site, and an explanation is attached. 	on of the site e site ce and
7.	🛛 Attachment C - BMPs for On-site Stormwater.	
	 A description of the BMPs and measures that will be used to prevent pollution surface water or groundwater that originates on-site or flows off the site, incompollution caused by contaminated stormwater runoff from the site is attached. Permanent BMPs or measures are not required to prevent pollution of surface or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached. 	on of cluding ed. ce water on
8.	Attachment D - BMPs for Surface Streams. A description of the BMPs and meas that prevent pollutants from entering surface streams, sensitive features, or the is attached. Each feature identified in the Geologic Assessment as sensitive has addressed.	ures aquifer been
	N/A	
9.	The applicant understands that to the extent practicable, BMPs and measures m maintain flow to naturally occurring sensitive features identified in either the ge assessment, executive director review, or during excavation, blasting, or constru	iust ologic iction.
	 The permanent sealing of or diversion of flow from a naturally-occurring sen feature that accepts recharge to the Edwards Aquifer as a permanent polluti abatement measure has not been proposed. Attachment E - Request to Seal Features. A request to seal a naturally-occu sensitive feature, that includes, for each feature, a justification as to why no reasonable and practicable alternative exists, is attached. 	sitive on rring
10	Attachment F - Construction Plans. All construction plans and design calculation the proposed permanent BMP(s) and measures have been prepared by or under direct supervision of a Texas Licensed Professional Engineer, and are signed, sea dated. The plans are attached and, if applicable include:	ns for ⁻ the led, and
	 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.
\boxtimes	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

degradation. N/A

Responsibility for Maintenance of Permanent BMP(s)

by the regulated activity, which increase erosion that results in water quality

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. \square 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

TCEQ-0600 Attachment B – BMPs for Upgradient Stormwater

Upgradient stormwater is diverted by swales through and around the project to existing culverts under Ronald Reagan Boulevard, and BMP's are not required.

TCEQ-0600 Attachment C – BMPs for On-site Stormwater

Development of Somerset Hills Parcel 5E is limited to 50-percent cumulative impervious cover, therefore development of the property is based on these impervious cover limitations. The batch detention ponds (Pond F and Pond E) have been designed for 91-percent total suspended solids (TSS) removal. Pond F will provide treatment to an onsite area of 28.95 acres. Furthermore, overtreatment will be provided by this pond for 0.32 acres of offsite pavement being constructed for access to the site giving the pond an *effective* basin area of 29.27 acres. Pond E will provide treatment to an onsite area of 38.34 acres. Furthermore, overtreatment will be provided for 0.43 acres of residential area onsite that does not drain to the pond giving the pond an *effective* basin area of 38.77 acres. Pond E and Pond F include areas within the Recharge Zone and therefore will include a liner and will treat to the 85% TSS removal required by the City of Georgetown.

The use of vegetative filter strips will also be used to treat the on-site stormwater for a total site removal of 85 percent.

TCEQ-0600 Attachment D – BMPs for Surface Streams

There are seven sensitive geologic features associated with this project. Phase A has features F-7 and F-13, as described in the GA. Being known caves with mapped subsurface footprints, they are located within open space and drainage easement lots for protection and have a protective buffer zone extending 50-feet in all directions from the footprint plus the cave watershed catchment up to 200 feet from the footprint.

Feature F-8 and known caves F-9, F-10, F-11, and F-12 are located in the dedicated parkland area east of Phase A and include a protective buffer zone extending 50-feet in all directions from the footprint plus the cave watershed catchment up to 200 feet from the footprint.

There are no additional BMPs for minimizing pollutants from entering surface streams. The Permanent BMPs have been designed to remove 85% of the anticipated pollutant loads. Temporary BMPs have been designed to reduce the potential pollutant load during construction activities.

TCEQ-0600 Attachment E – Request to Seal Features

There are no sensitive features that require sealing.

TCEQ-0600 Attachment F – Construction Plans

See Attached Somerset Hills Parcel 5E Construction Plans

TCEQ-0600 Attachment G – Inspection, Maintenance, Repair and Retrofit Plan

The following can be found in the TCEQ's "Complying with the Edwards Rules: Technical Guidance Manual on Best Management Practices."

Maintenance Guidelines for Batch Detention Basins

Batch detention basins may have somewhat higher maintenance requirements than an extended detention basin since they are active stormwater controls. The maintenance activities are identical to those of extended detention basins with the addition of maintenance and inspections of the automatic controller and the valve at the outlet.

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

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

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

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

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

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

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

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

Vegetative Filter Strips

Once a vegetated area is well established, little additional maintenance is generally necessary. The key to establishing a viable vegetated feature is the care and maintenance it receives in the first few months after it is planted. Once established, all vegetated BMPs require some basic maintenance to ensure the health of the plants including:

- *Pest Management*. An Integrated Pest Management (IPM) Plan should be developed for vegetated areas. This plan should specify how problem insects and weeds will be controlled with minimal or no use of insecticides and herbicides.
- Seasonal Mowing and Lawn Care. If the filter strip is made up of turf grass, it should be mowed as needed to limit vegetation height to 18 inches, using a mulching mower (or removal of clippings). If native grasses are used, the filter may require less frequent mowing, but a minimum of twice annually. Grass clippings and brush debris should not be deposited on vegetated filter strip areas. Regular mowing should also include weed control practices; however herbicide use should be kept to a minimum (Urbonas et al., 1992). Healthy grass can be maintained without using fertilizers because runoff usually contains sufficient nutrients. Irrigation of the site can help assure a dense and healthy vegetative cover.
- Inspection. Inspections will be documented in inspection reports. Inspection reports will be available to TCEQ upon request. Inspect filter strips at least twice annually for erosion or damage to vegetation; however, additional inspection after periods of heavy runoff is most desirable. The strip should be checked for uniformity of grass cover, debris and litter, and areas of sediment accumulation. More frequent inspections of the grass cover during the first few years after establishment will help to determine if any problems are developing, and to plan for long-term restorative maintenance needs. Bare spots and areas of erosion identified during semi-annual inspections must be replanted and restored to meet specifications. Construction of a level spreader device may be necessary to reestablish shallow overland flow.
- Debris and Litter Removal. Trash tends to accumulate in vegetated areas, particularly along highways. Any filter strip structures (i.e. level spreaders) should be kept free of obstructions to reduce floatables being flushed downstream, and for aesthetic reasons. The need for this practice is determined through periodic inspection but should be performed no less than 4 times per year.
- Sediment Removal. Sediment removal is not normally required in filter strips, since the vegetation normally grows through it and binds it to the soil. However, sediment may accumulate along the upstream boundary of the strip preventing uniform overland flow. Excess sediment should be removed by hand or with flat-bottomed shovels.
- *Grass Reseeding and Mulching*. A healthy dense grass should be maintained on the filter strip. If areas are eroded, they should be filled, compacted, and reseeded so that the final grade is level. Grass damaged during the sediment removal process should be promptly replaced using the same seed mix used during filter strip establishment. If possible, flow should be diverted from the damaged areas until the grass is firmly established. Bare spots and areas of erosion identified during semi-annual inspections must be replanted and restored to meet

specifications. Corrective maintenance, such as weeding or replanting should be done more frequently in the first two to three years after installation to ensure stabilization. Dense vegetation may require irrigation immediately after planting, and during particularly dry periods, particularly as the vegetation is initially established.

NOTE: This Inspection, Maintenance, Repair and Retrofit Plan for the **Somerset Hills Parcel 5E Filter Strips and Somerset Hills Parcel 5E Water Quality Ponds** was created and designed by the engineer of this BMP. Maintenance is the responsibility of the Owner and should be followed in accordance with this plan in order to keep the BMPs operating correctly.

DocuSigned by: ristopher Loleman

5/14/2024

Christopher Coleman GTS Development II, LLC

Date

DocuSigned by:

5/14/2024

Tyson L. Hasz, P.E. Steger Bizzell F-181

Date

(SAMPLE)	PERMANENT BMP LOG	**(SAMPLE)**
INSPECTOR:	DATE:	
Inspectors Company:		
Company Address:		
Company Phone:	Fax:	
Date of Last Inspection:	Recent Heavy Rainfall:	YES NO
	(CIRC	LE ONE)
Status of BMP(s):		
Corrective Action Required (if any):		
Date Corrected (if applicable):		
*If actions are required they must be	completed within 7 working days of	of this INSPECTION

Inspectors Signature

Date:

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

I	Christopher Coleman	
	Print Name	,
	Senior Vice President	
	Title - Owner/President/Other	
of	GTS Development II, LLC Corporation/Partnership/Entity Name	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
have authorized	Mr. Tyson L Hasz, P.E. Print Name of Agent/Engineer	
of	Steger Bizzell 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:

DocuSigned by: stopher Coleman isant/s2Signature

5/14/2024

Date

THE STATE OF ILLINOIS §

County of Cook §

BEFORE ME, the undersigned authority, on this day personally appeared <u>Christopher Coleman</u> known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (subscribed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this <u>14</u>^H day of <u>May</u> <u>2024</u>.

Maula bodo NOTARY PUBLIC

Marcela Godoy-Alvarez Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 3/31 2025

OFFICIAL SEAL MARCELA GODOY-ALVAREZ NOTARY PUBLIC, STATE OF ILLINOIS My Commission Expires March 31, 2025

Application Fee Form

Texas Commission on Environmental Quality								
Name of Proposed Regulated Entity: Somerset Hills Parcel 5E								
Regulated Entity Location: 30501	Ronald W Reagan Blvd,	Georgetown, TX 7863	<u>33</u>					
Name of Customer: GTS Developr	<u>nent II, LLC</u>							
Contact Person: Christopher Cole	<u>man</u> Phon	e: <u>(312) 265-7144</u>						
Customer Reference Number (if is	ssued):CN							
Regulated Entity Reference Numb	oer (if issued):RN <u>11147</u>	4482						
Austin Regional Office (3373)								
Hays	Travis	⊠w	illiamson					
San Antonio Regional Office (336	2)							
Bexar	Medina		valde					
	Kinney							
Application fees must be paid by	check certified check c	r money order navah	le to the Texas					
Commission on Environmental O	uality Your canceled c	heck will serve as you	r receint This					
form must be submitted with vo	ur fee payment. This pa	avment is being subm	itted to:					
Austin Regional Office		on Antonio Dogional C)ffico					
Austin Regional Office		an Antonio Regional C						
Mailed to: ICEQ - Cashier		vernight Delivery to: TCEQ - Cashier						
Revenues Section	1	2100 Park 35 Circle						
Mail Code 214	В	uilding A, 3rd Floor						
P.O. Box 13088	A	ustin, IX /8/53						
Austin, 1X /8/11-3088	(!	512)239-0357						
Site Location (Check All That App	ly):							
🔀 Recharge Zone	Contributing Zone	Transi	tion Zone					
Type of Pla	n	Size	Fee Due					
Water Pollution Abatement Plan,	Contributing Zone							
Plan: One Single Family Residentia	al Dwelling	Acres	\$					
Water Pollution Abatement Plan,	Contributing Zone							
Plan: Multiple Single Family Resid	ential and Parks	Acres	\$					
Water Pollution Abatement Plan,	Contributing Zone							
Plan: Non-residential	98.56 Acres	\$ 8 <i>,</i> 000						
Sewage Collection System	10 (20) 5	\$ 6,500						
		18,638 L.F.	. ,					
Lift Stations without sewer lines		Acres	\$					
Lift Stations without sewer lines Underground or Aboveground Sta	orage Tank Facility	Acres Tanks	\$					
Lift Stations without sewer lines Underground or Aboveground Sto Piping System(s)(only)	orage Tank Facility	Acres Tanks Each	\$ \$ \$					
Lift Stations without sewer lines Underground or Aboveground Sto Piping System(s)(only) Exception	orage Tank Facility	Acres Tanks Each Each	\$ \$ \$ \$					
Lift Stations without sewer lines Underground or Aboveground Sta Piping System(s)(only) Exception Extension of Time	orage Tank Facility	Acres Tanks Each Each Each	\$ \$ \$ \$ \$					

Signature: _____

Date: 5/17/2024

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 Area in	
Project	Acres	Fee
One Single Family Residential Dwelling	< 5	\$650
Multiple Single Family Residential and Parks	< 5	\$1,500
	5 < 10	\$3,000
	10 < 40	\$4,000
	40 < 100	\$6,500
	100 < 500	\$8,000
	≥ 500	\$10,000
Non-residential (Commercial, industrial, institutional,	< 1	\$3,000
multi-family residential, schools, and other sites	1 < 5	\$4,000
where regulated activities will occur)	5 < 10	\$5,000
	10 < 40	\$6,500
	40 < 100	\$8,000
	≥ 100	\$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	
	1 3 7		
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



TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (If other is checked please describe in space provided.)									
New Permit, Registration or Authorization (<i>Core Data Form should be submitted with the program application.</i>)									
Renewal (Core Data Form should be submitted with the renewal form) Other Modification of Permit and New Customer									
2. Customer Reference Number (<i>if issued</i>) Follow this link to search Construction Difference Number (<i>if issued</i>) 3. Regulated Entity Reference Number (<i>if issued</i>)									
СN	<u>Central Registry**</u>	RN 111474482							

SECTION II: Customer Information

4. General Customer Information 5. Effective Date for						ustome	er In	formation	Update	es (mm/dd/	уууу)		3/29/2024		
Now Customer								Char		aulated Ent	ity Orygo	archin			
Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)															
The Custome	r Name sı	ıbmittea	l here may b	be updated a	utomatical	ly base	ed or	n what is c	urrent	and active	with th	e Texas Secr	etary of State		
(SOS) or Texa	s Comptro	oller of F	ublic Accou	nts (CPA).											
6. Customer I	Legal Nam	ne (If an i	ndividual, prii	nt last name fi	rst: eg: Doe, J	lohn)			<u>If nev</u>	v Customer,	enter pre	evious Custom	er below:		
GTS Developme	ent II, LLC								Geor	getown Patio	o Homes	, LLC			
7. TX SOS/CP	A Filing N	umber		8. TX State	Tax ID (11 d	igits)			9. Fe	deral Tax I	D	10. DUNS 1	Secretary of State		
0805277100				3209219638	8				(9 dig	its)		applicable)			
0003277100				5205215050					(5 0)8	1007		N/A			
									38-31	.40664					
11. Type of C	ustomer:		Corporat	tion				🗌 Individ	dual		Partne	ership: 🗌 Gen	eral 🗌 Limited		
Government:	City 🗌 🤇	County 🗌] Federal 🗌	Local 🗌 State	e 🗌 Other			Sole P	roprietc	orship	🛛 Ot	her: Limited Li	ability Company		
12. Number o	of Employ	ees							13. lı	ndepender	ntly Ow	ned and Ope	rated?		
⊠ 0-20 □ 2	21-100 [] 101-25	50 🗌 251-	500 🗌 501	and higher				∏ Y∈	s	🛛 No				
14. Customer	Role (Pro	posed or	Actual) – <i>as i</i> i	t relates to the	e Regulated Ei	ntity list	ed o	n this form.	Please o	check one of	the follo	owing			
Owner		🗌 Оре	erator	0	wner & Opera	ator				Othory					
	al Licensee	🗌 Re	sponsible Par	rty 🗌	VCP/BSA App	olicant									
15 Mailing	C/o Hom	etown An	nerica, Attn: (Christopher Co	leman										
15. Walling	110 N. W	acker Dri	ve, Suite 4500	0											
Address:	City	City Chicago			State		71D 60606		5	710 + 4					
	City	Chicago	0		State			211	00000	5		2117 + 4			
16. Country N	16. Country Mailing Information (if outside USA)						17	. E-Mail A	ddress	(if applicabl	e)				
N/A					cco	oleman@ho	metowi	namerica.ne	t						
18. Telephone Number				19. Extensio	on or C	ode	e 20. Fax Number (if applicable)								

SECTION III: Regulated Entity Information

21. General Regulated Entity Information (If 'New Regulated Entity" is selected, a new permit application is also required.)								
New Regulated Entity] New Regulated Entity 🛛 Update to Regulated Entity Name 🔲 Update to Regulated Entity Information							
The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).								
22. Regulated Entity Nam	ie (Enter name	of the site where the	regulated action	is taking pla	ce.)			
Somerset Hills Parcel 5E								
23. Street Address of	30501 Ronald W Reagan Blvd							
the Regulated Entity:								
(NO PO Boxes)	City	Georgetown	State	тх	ZIP	78633	ZIP + 4	
24. County	Williamson							

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

25. Description to Physical Location:	NE Intersection of Ronald Reagan Blvd and CR 245								
26. Nearest City State Nearest ZIP Code									
Georgetown TX 78633							33		
Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).									
27. Latitude (N) In Decimal: 30.73924 28. Longitude (ongitude (W	/) In Decim	nal:	97.76206	97.76206	
Degrees	Minutes		Seconds	Degre	es	Mi	nutes		Seconds
29. Primary SIC Code (4 digits)	30. Secondary SIC Code 31. Primary NAICS Code 32. Secondary NAICS Code (4 digits) (5 or 6 digits) (5 or 6 digits)					CS Code			
6552	152	2		N/A					
33. What is the Primary B	Susiness of t	this entity? (Do	o not repeat the SIC or	NAICS descri	iption.)				
Land development and multi	family homes	5							
C/o Hometown America, Attn: Christopher Coleman									
Address:	110 N. Wa	cker Drive, Suite	4500						
Autress.	City	Chicago	State	IL	ZIP	60606		ZIP + 4	
35. E-Mail Address:	35. E-Mail Address: ccoleman@hometownamerica.net								
36. Telephone Number 37. Extension or Code 38. Fax Number (if applicable)									
(312) 265-7144	(312)265-7144 () -								

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
		11003038 (WPAP) & 11003039 (SCS)		
Municipal Solid Waste	New Source Review Air	☐ OSSF	Petroleum Storage Tank	D PWS
Sludge	Storm Water	Title V Air		Used Oil
Voluntary Cleanup	UWastewater	Wastewater Agriculture	Water Rights	Other:

SECTION IV: Preparer Information

40. Name:	Steger Bizzell -	Tyson L Hasz, P.E.		41. Title:	Project Manager
42. Telephone Number 43. Ext./Code 44. Fax Num		44. Fax Number	45. E-Mail Address		
(512)930-9412 () -		Tyson.Hasz@StegerBizzell.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:	Steger Bizzell Job Title: Project M			lanager		
Name (In Print):	Mr. Tyson L. Hasz, P.E.				(512) 930- 9412	
Signature:	Jym H-			Date:	5/20/2024	

SITE



SOMEF 30501 R WILLI



	Sheet List Table
Sheet	Sheet Title 🔥
Number	\sim
Yu	
Ć	CENERAL NOTES (1 OF 2)
yu	
4 F	FINAL PLAT (1 OF 3)
5	
7	PHASING PLAN
8	EROSION & SEDIMENTATION CONTROL PLAN
6	EROSION & SEDIMENTATION CONTROL PLAN
10	EROSION & SEDIMENTATION CONTROL PLAN
(11	EROSION & SEDIMENTATION CONTROL PLAN
12	EROSION & SEDIMENTATION CONTROL PLAN - PHASE E
13	EROSION & SEDIMENTATION CONTROL
14	OVERALL DIMENSIONAL SITE PLAN
15	DIMENSIONAL SITE PLAN (1 OF 12)
16	DIMENSIONAL SITE PLAN (2 OF 12)
17	DIMENSIONAL SITE PLAN (3 OF 12)
18	DIMENSIONAL SITE PLAN (4 OF 12)
19	EAST DIMENSIONAL SITE PLAN (5 OF 12)
20	EAST DIMENSIONAL SITE PLAN (6 OF 12)
21	EAST DIMENSIONAL SITE PLAN (7 OF 12)
22	EAST DIMENSIONAL SITE PLAN (8 OF 12) 🗸
23	EAST DIMENSIONAL SITE PLAN (9 OF 12)

SITE PLAN NOTES:

- It is the responsibility of the property owner, and successors to the current property 16. Where no existing overhead infrastructure exists, underground electric utility lines owner, to ensure the subject property and any improvements are maintained in conformance with this Site Development Plan.
- This development shall comply with all standards of the Somerset Hills PUD Zoning Construction Standards and Specifications Manual, the Development Manual and 18. Traffic Impact Analysis (TIA) requirements have been met as the project area has all other applicable City standards.
- This Site Development Plan shall meet the UDC Stormwater requirements. All signage requires a separate application and approval from the Inspection Services Department. No signage is approved with the Site Development Plan.
- Sidewalks shall be provided in accordance with the PUD and UDC. Driveways will require approval by the Development Engineer of the City of
- Georgetown. Outdoor lighting shall comply with Section 7.05 of the UDC and PUD.
- Screening of mechanical equipment, dumpsters and parking shall comply with the PUD. The screening is shown on the Landscape and Architectural Plans, as applicable.
- The companion Landscape Plan has been designed and plant materials shall be installed to meet all requirements of the UDC and PUD. 10. All maintenance of required landscape shall comply with the maintenance
- standards of Chapter 8 of the UDC and PUD. 11. A separate Irrigation Plan shall be required at the time of building permit
- application. 12. Fire flow requirements of 1,500 gallons per minute are being met by this plan.
- 13. Any Heritage Tree noted on this Site Development Plan is subject, in perpetuity, to the maintenance, care, pruning and removal requirements of the Unified Development Code.
- 14. The construction portion of these plans were prepared, sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the construction plans for construction of the proposed ELE project are hereby approved subject to the Standard Construction Specifications N= and Details Manual and all other applicable City, State and Federal Requirements E= and Codes.

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24	EAST DIMENSIONAL SITE PLAN (10 OF 12)	52	WW-B01 PROFILE (2 OF 2)
25	EAST DIMENSIONAL SITE PLAN (11 OF 12) 🗸	53	WW-B02 PROFILE (1 OF 2) 🖌
26	EAST DIMENSIONAL SITE PLAN (12 OF 12)	54	WW-B02 PROFILE (2 OF 2)
27	OVERALL WATER PLAN (1 OF 5)	55	WW-B03 PROFILE
28	OVERALL WATER PLAN (2 OF 5)	56	WW-B04 PROFILE
29	OVERALL WATER PLAN (3 OF 5)	57	WW-B05 PROFILE (1 OF 2)
30	OVERALL WATER PLAN (4 OF 5)	58	WW-B05 PROFILE (2 OF 2)
(31)	OVERALL WATER PLAN (5 OF 5)	59	WW-B06 PROFILE
32	OVERALL FIRE-WATER PLAN (1 OF 4)	60	WW-B07 PROFILE
33	OVERALL FIRE-WATER PLAN (2 OF 4)	61	WW-B21 PROFILE (1 OF 3)
34	OVERALL FIRE-WATER PLAN (3 OF 4)	62	WW-B21 PROFILE (2 OF 3)
35	OVERALL FIRE-WATER PLAN (4 OF 4)	63	WW-B21 PROFILE (3 OF 3)
36	WATER & FIRE DETAILS	64	WW-B22 PROFILE
50		65	WW-B23 PROFILE
37	OVERALL WASTEWATER PLAN (1 OF 5)	66	WW-B24 PROFILE
		67	WW-B25 PROFILE
38	OVERALL WASTEWATER PLAN (2 OF 5)	68	WW-B26 PROFILE
20	OVERALL WASTEWATER PLAN (3 OF 5)	69	WW-B27 PROFILE
33		70	WASTEWATER DETAILS (1 OF 2)
40	OVERALL WASTEWATER PLAN (4 OF 5)	71	WASTEWATER DETAILS (2 OF 2)
41	OVERALL WASTEWATER PLAN (5 OF 5)	72	EXISTING DRAINAGE PLAN
42	WW-A01 PROFILE (1 OF 3)	73	PROPOSED DRAINAGE PLAN
43	WW-A01 PROFILE (2 OF 3)	74	WATER QUALITY PLAN
44	WW-A01 PROFILE (3 OF 3)	75	OVERALL STORM SEWER PLAN
45	WW-A02 PROFILE (1 OF 2)	76	OVERALL STORM SEWER PLAN
46	WW-A02 PROFILE (2 OF 2)	77	STRM-A BASIN CALCULATIONS
47	WW-A03 PROFILE	78	SS-A01 PLAN & PROFILE (1 OF 2
48	WW-A04 PROFILE	79	SS-A01 PLAN & PROFILE (2 OF 2
49	WW-A05 PROFILE (1 OF 2)	80	SS-A11 PLAN & PROFILE
50	WW-A05 PROFILE (2 OF 2)	81	SS-A21 PLAN & PROFILE
v51	WW-B01 PROFILE (1 OF 2)	82	WATER QUALITY POND A PLAN

- 15. This project is subject to all City Standard Construction Specifications and Details in effect at the time of submittal of the project to the City.
- shall be located along the street and within the site. Where existing overhead infrastructure is to be relocated, it shall be re-installed underground and the existing facilities shall be removed at the discretion of the Development Engineer.
- Ordinance 2018-20, Unified Development Code (UDC), the City of Georgetown 17. All electric and communication infrastructure shall comply with UDC Section 13.06
 - already been included in a previous study, (TIA-2020-157, 2020-6-TIA). 19. The property subject to this application is subject to the Water Quality by
 - Regulations of the City of Georgetown. 20. All bearings and coordinates are referenced to the Texas Coordinate System, Central Zone, NAD 83 horizontal control datum and NGVD 29 vertical control datum. All distances and coordinates are surface and may be converted to grid by multiplying by the combined scale factor of 0.999856056. The translation of the Sun City coordinate system to NAD 83 / 93 HARN coordinate system and the NAVD 88 Vertical Datum are as follows:
 - (NAD83) Northing -1.83' = Northing (NAD 83 / 93 HARN) (NAD83) Easting -1.49' = Easting (NAD 83 / 93 HARN)
 - (NGVD29) Elevation +0.35' = Elevation (NAD 83 / 93 HARN)
 - 21. There are no areas within the boundaries of this subdivison in the 100-year floodplain as defined by firm map number 48491c0275e, effective date of september 26, 2008.

BENCHMARKS: (REFER TO E&S CONTROL PLAN FOR LOCATION)

1: AT 7 MAG NAIL SET IN ASPHALT (CR 245)	BM: TP 13 MAG NAIL SET I
EV. 890.65	ELEV. 891.39
10,240,307.62	N= 10,240,657.52
3,101,889.737	E= 3,101,787.758

				PROJECT INFOR	MATION
	PIV		N	SITE ADDRESS:	30501 Ronald W. Reagan Blvd. Georgetown, TX 78633
FC	OR			OWNER:	Georgetown Patio Homes, LLC. Brannin Prideaux - General Partner P.O. Box 41805 Austin, TX 78704 (512)-340-9100 ibprideaux@austin rr.com
RSET H		_S PAR(CEL	5	GTS Development, L.L.C. GTS Development II, L.L.C. c/o Hometown America 110 North Wacker Drive Suite 4500 Chicago, IL 60606 (312)-265-7144
RONALD	W F	REAGAN B	LVD.		ccoleman@hometownamerica.net
TY OF GE	OR	GETOWN			10003 Technology Blvd. West Dallas, TX 75220 972-620-8204 www.strandae.com rda@strandae.com
AMSON	CO	UNTY, TE>	〈 AS	MEP:	Hendrix Consulting Engineers 115 East Main St. Round Rock, Texas 78664 (512)-218-0060 TEL ext 313 (512)-218-0077 FAX (512)-468-6265 CELL www.hcengineer.com
2022-2	21-	SDP		CIVIL ENGINEER:	Steger Bizzell 1978 S. Austin Avenue Georgetown, TX 78626 512-930-9412 OFFICE info@stegerbizzell.com www.stegerbizzell.com
01 PROFILE (2 OF 2)	83	WATER QUALITY POND A DETAILS		SS-E02 & E03 PLAN & PROFILE	$\frac{3}{2}$
02 PROFILE (1 OF 2)	84	SW SWALE & CULVERT CALCULATIONS	113	SS-E02 & E03 LATERALS	
02 PROFILE (2 OF 2)	85	SW SWALE PLAN & PROFILE (1 OF 2)	114	SS-E04 PLAN & PROFILE	
03 PROFILE	86	SW SWALE PLAN & PROFILE (2 OF 2)	C 115	SS-E05 & E06 PLAN & PROFILE	
04 PROFILE	87	STRM-B BASIN CALCULATIONS	116	51 SS-E04 & E06 LATERAL PROF	ILES
605 PROFILE (1 OF 2) 🧹	88	SS-B1-01 PLAN & PROFILE	117	SS-E07 PLAN & PROFILE	145
05 PROFILE (2 OF 2) 关	89	SS-B1-11 PLAN & PROFILE	(118	SS-E07 LATERAL PROFILES	
06 PROFILE	90	SS-B2-01 PLAN & PROFILE	119	WATER QUALITY POND E PLAN	147

PROFILE ROFILE PROFILE PROFILE ATER DETAILS (1 OF 2) ATER DETAILS (2 OF 2 DRAINAGE PLAN DRAINAGE PLAN JALITY PLAN $\gamma \gamma \gamma \gamma$ STORM SEWER PLAN (1 OF 2) STORM SEWER PLAN (2 OF 2) ASIN CALCULATIONS AN & PROFILE (1 OF 2) AN & PROFILE (2 OF 2) AN & PROFILE

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118	SS-E07 LATERAL PROFILES	~	146	DE
119	WATER QUALITY POND E PLAN	3	147	
120	WATER QUALITY POND E DETAILS	2	148	RC
121	STRM-F BASIN CALCULATIONS (1 OF 3)	2	149	RC
122	STRM-F BASIN CALCULATIONS (2 OF 3)	4	(150	RC
123	STRM-F BASIN CALCULATIONS (3 OF 3)	3	151	RC
124	SS-F01 PLAN & PROFILE (1 OF 2)	2	152	RC
125	SS-F01 PLAN & PROFILE (2 OF 2)	2	153	RC
126	SS-F01 LATERALS	4	154	RC
127	SS-F02 PLAN & PROFILE	3	155	RC
128	SS-F02 LATERALS	2	156	RC
129	SS-F03 & F04 PLAN & PROFILE	2	157	RC
130	SS-F04 LATERALS	3	158	RC
131	SS-F05 PLAN & PROFILE (1 OF 2)	3	159	RC
132	SS-F05 PLAN & PROFILE (2 OF 2)	2	160	RC
133	SS-F05 LATERALS	~	161	RC
134	SS-F06 & F07 PLAN & PROFILE	3	162	RC
135	STRM-F CULVERT PLAN & PROFILE	2	163	RC
136	STRM-F CULVERT CALCULATIONS	2	164	RC
137	WATER QUALITY POND F PLAN	4	165	RC
120		3	166	RC
138	WATER QUALITY FOND F DETAILS	2	167	RC
139	MIDDLE CHANNEL CALCULATIONS	2	168	RC
	MIDDLE CHANNEL DETAILED GRADING PLAN	<u>ن</u>	169	RC
140	(1 OF 2)	3	170	CL

BEFORE YOU DIG STEGER BIZZELL 1978 S. AUSTIN AVENUE GEORGETOWN, TX 78626 TEXAS REGISTERED ENGINEERING FIRM F-181 WEB TBPLS FIRM No.10003700 STEGERBIZZELL.COM METRO 512.930.9412 N ASPHALT (CR 245) SERVICES >>ENGINEERS >>PLANNERS >>SURVEYORS

Average Daily Trips = 6,008 AM Peak Trips = 79 enter, 265 exit PM Peak Trips = 237 enter, 139 exit This site is subject to the approved TIA study (TIA-2020-157, 2020-6-TIA).

Warning!

NOTE:

There are existing water pipelines, underground teleph cables and other above and below ground utilities in th vicinity of this project. The Contractor shall contact all appropriate companies prior to any construction in the area and determine if any conflicts exist. If so, the Contractor shall immediately contact the Engineer who shall revise the design as necessary.

77777777777777777777777777777777

TEXAS ONE-CALL 800-344-8377

CONTRACTOR IS TO FURNISH A SET OF CONSTRUCTION PLANS BACK TO THE ENGINEER AT THE END OF THE PROJECT WITH ALL DEVIATIONS NOTED IN RED INK ON THE PLAN SHEETS. CONTRACTOR SHALL NOT RECEIVE FINAL PAYMENT UNTIL COMPLETE "AS-BUILT" SET IS RETURNED TO ENGINEER.

SURVEYOR: LANDSCAPE ARCHITECT: ORIGINAL DATE: REVISION DATE: ACREAGE: LIMITS OF CONSTRUCTION:	McKim & Creed 8868 Research Blvd., Suite 407 Austin, TX 78758 512-916-0224 Contact: Jorge Fernandez, R.P.L.S JFernandez@mckimcreed.com TBPLS Firm Registration No. 101776-01 www.mckimcreed.com SEC Planning, LLC 4201 W. Parmer Lane Building A, Suite 220 Austin, TX 78727 512-246-7003 bdebellis@secplanning.com www.secplanning.com March 21, 2022 January 19, 2023 134.314 Acres 134.314 Acres	UTILITY PROVIDERS: ZONING INFORMATION: FINAL PLAT CASE NUMBER: P&Z ACTION DATE:	Domestic Water - City of Georgetown Wastewater - City of Georgetown Electric - City of Georgetown Georgetown Utilities & Customer Care https://gus.georgetown.org/ 300-1 Industrial Avenue Georgetown, TX 78626 (512)-930-3640 Somerset Hills Planned Unit Development (PUD) per Ordinance No. 2018-20 2022-21-FP 2022-08-18
IMPERVIOUS COVER: LEGAL DESCRIPTION:	48.4% (2,813,586.43 S.F./ 5,850,740 S.F. 134.314 Acres Containing 45.61 Ac from Document Number 20191109 and 88.82 Acres from Instrument Number 2019110963 of the Williamson County Deed Records i the F. Foy Survey, Abstract No. 229) res 163 n 9.	
PROPOSED USE:	Multi-Family (Senior)		
MIDDLE CHANNEL DETAILED (1 OF 2) OVERALL GRADING PLAN (1 OVERALL GRADING PLAN (2) DETAILED GRADING PLAN (2) ROAD 1A PLAN & PROFILE (1) ROAD 1A PLAN & PROFILE (2) ROAD 1A PLAN & PROFILE (2) ROAD 1B PLAN & PROFILE (2) ROAD 1B PLAN & PROFILE (2) ROAD 2 PLAN & PROFILE (1) ROAD 2 PLAN & PROFILE (2) ROAD 3 PLAN & PROFILE (2) ROAD 4 PLAN & PROFILE (2) ROAD 5 PLAN & PROFILE (2) ROAD 7 PLAN & PROFILE (2) ROAD 7 PLAN & PROFILE (2) ROAD 7 PLAN & PROFILE (2) ROAD 10 PLAN &	GRADING PLAN 1 OF 2) 3 OF 2) 3 OF 3) 0F 3) OF 3) 3 OF 3) 1 OF 4) 1 OF 2) 1 OF 2) <td>71PAVING AND DRAINA72PAVING AND DRAINA73PAVING AND DRAINA74TRAFFIC CONTROL PI75PHASE A & B STRIPING &76PHASE A & B STRIPING &77STRIPING & SIGNAGE78INTERSECTION DETAI80INTERSECTION DETAI81INTERSECTION DETAI82INTERSECTION DETAI83INTERSECTION DETAI84INTERSECTION DETAI85INTERSECTION DETAI86AMENITY ELEVATIONS88AMENITY ELEVATIONS89AMENITY ELEVATIONS89AMENITY ELEVATIONS89AMENITY CENTER PHO91STREETLIGHTING PHO92AMENITY CENTER PHO93STREETLIGHTING SPEC94PLANTING PLAN UP-1.095PLANTING PLAN UP-1.096PLANTING PLAN UP-1.097PLANTING PLAN UP-1.098PLANTING PLAN UP-1.099PLANTING PLAN UP-1.090PLANTING PLAN UP-1.091PLANTING PLAN UP-1.092PLANTING PLAN UP-1.093PLANTING PLAN UP-1.094PLANTING PLAN UP-1.095PLANTING PLAN UP-1.096PLANTING PLAN UP-1.097PLANTING PLAN UP-1.098PLANTING PLAN UP-1.099PLANTING PLAN UP-1.090PLANTING PLAN UP-1.191PLANTING PLAN UP-1.192PLANTING PLAN UP-1.193PLANTING PLAN UP-1.194<td< td=""><td>3 AGE DETAILS (1 OF 3) AGE DETAILS (2 OF 3) AN AN G AND SIGNAGE PLAN DETAILS SIGNAGE PLAN SIGNAGE PLAN</td></td<></td>	71PAVING AND DRAINA72PAVING AND DRAINA73PAVING AND DRAINA74TRAFFIC CONTROL PI75PHASE A & B STRIPING &76PHASE A & B STRIPING &77STRIPING & SIGNAGE78INTERSECTION DETAI80INTERSECTION DETAI81INTERSECTION DETAI82INTERSECTION DETAI83INTERSECTION DETAI84INTERSECTION DETAI85INTERSECTION DETAI86AMENITY ELEVATIONS88AMENITY ELEVATIONS89AMENITY ELEVATIONS89AMENITY ELEVATIONS89AMENITY CENTER PHO91STREETLIGHTING PHO92AMENITY CENTER PHO93STREETLIGHTING SPEC94PLANTING PLAN UP-1.095PLANTING PLAN UP-1.096PLANTING PLAN UP-1.097PLANTING PLAN UP-1.098PLANTING PLAN UP-1.099PLANTING PLAN UP-1.090PLANTING PLAN UP-1.091PLANTING PLAN UP-1.092PLANTING PLAN UP-1.093PLANTING PLAN UP-1.094PLANTING PLAN UP-1.095PLANTING PLAN UP-1.096PLANTING PLAN UP-1.097PLANTING PLAN UP-1.098PLANTING PLAN UP-1.099PLANTING PLAN UP-1.090PLANTING PLAN UP-1.191PLANTING PLAN UP-1.192PLANTING PLAN UP-1.193PLANTING PLAN UP-1.194 <td< td=""><td>3 AGE DETAILS (1 OF 3) AGE DETAILS (2 OF 3) AN AN G AND SIGNAGE PLAN DETAILS SIGNAGE PLAN SIGNAGE PLAN</td></td<>	3 AGE DETAILS (1 OF 3) AGE DETAILS (2 OF 3) AN AN G AND SIGNAGE PLAN DETAILS SIGNAGE PLAN SIGNAGE PLAN
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3377			

Project Number: 22226x Parcel 5 EAST HTA 1 of 212

TCEQ WATER DISTRIBUTION SYSTEM GENERAL CONSTRUCTION NOTES

This water distribution system must be constructed in accordance with the current Texas Commission on Environmental Quality (TCEQ) Rules and Regulations for Public Water Systems 30 Texas Administrative Code (TAC) Chapter 290 Subchapter D. When conflicts are noted with local standards, the more stringent requirement shall be applied. Construction for public water systems must always, at a minimum, meet TCEQ's "Rules and Regulations for Public Water Systems.

- An appointed engineer shall notify in writing the local TCEQ's Regional Office when construction will start. Please keep in mind that upon completion of the water works project, the engineer or owner shall notify the commission's Water Supply Division, in writing, as to its completion and attest to the fact that the work has been completed essentially according to the plans and change orders on file with the commission as required in 30 TAC §290.39(h)(3).
- All newly installed pipes and related products must conform to American National Standards Institute (ANSI)/NSF International Standard 61 and must be certified by an organization accredited by ANSI, as required by 30 TAC §290.44(a)(1).
- Plastic pipe for use in public water systems must bear the NSF International Seal of Approval (NSF-pw) and have an ASTM design pressure rating of at least 150 psi or a standard dimension ratio of 26 or less, as required by 30 TAC §290.44(a)(2).
- No pipe which has been used for any purpose other than the conveyance of drinking water shall be accepted or relocated for use in any public drinking water supply, as required by 30 TAC §290.44(a)(3).
- Water transmission and distribution lines shall be installed in accordance with the manufacturer's instructions. However, the top of the water line must be located below the frost line and in no case shall the top of the water line be less than 24 inches below ground surface, as required by 30 TAC §290.44(a)(4).
- Pursuant to 30 TAC §290.44(a)(5), the hydrostatic leakage rate shall not exceed the amount allowed or recommended by the most current AWWA formulas for PVC pipe, cast iron and ductile iron pipe. Include the formulas in the notes on the plans.
- The hydrostatic leakage rate for polyvinyl chloride (PVC) pipe and appurtenances shall not exceed the amount allowed or recommended by formulas in America Water Works Association (AWWA) C-605 as required in 30 TAC §290.44(a)(5). Please ensure that the formula for this calculation is correct and most current formula is in use;
- $Q = L x D x P^{1/2}$
- 148.000
- Q = the quantity of makeup water in gallons per hour,
- L = the length of the pipe section being tested, in feet, D = the nominal diameter of the pipe in inches, and
- P = the average test pressure during the hydrostatic test in pounds per square inch (psi).
- The hydrostatic leakage rate for ductile iron (DI) pipe and appurtenances shall not exceed the amount allowed or recommended by formulas in America Water Works Association (AWWA) C-600 as required in 30 TAC §290.44(a)(5). Please ensure that the formula for this calculation is correct and most current formula is in use;
- $L = S \times D \times P^{1/2}$
- 148.000 L = the quantity of makeup water in gallons per hour,
- S = the length of the pipe section being tested, in feet,
- D = the nominal diameter of the pipe in inches, and
- P = the average test pressure during the hydrostatic test in pounds per square inch (psi).
- 8. The maximum allowable lead content of pipes, pipe fittings, plumbing fittings, and fixtures to 0.25 percent.
- 9. The system must be designed to maintain a minimum pressure of 35 psi at all points within the distribution network at flow rates of at least 1.5 gallons per minute per connection. When the system is intended to provide firefighting capability, it must also be designed to maintain a minimum pressure of 20 psi under combined fire and drinking water flow conditions as required by 30 TAC §290.44(d).
- 10. The contractor shall install appropriate air release devices in the distribution system at all points where topography or other factors may create air locks in the lines. All vent openings to the atmosphere shall be covered with 16-mesh or finer, corrosion resistant screening material or an acceptable equivalent as required by 30 TAC §290.44(d)(1)
- 11. Pursuant to 30 TAC §290.44(d)(4), accurate water meters shall be provided. Service connections and meter locations should be shown on the plans.
- 12. Pursuant to 30 TAC §290.44(d)(5), sufficient valves and blowoffs to make repairs. The engineering report shall establish criteria for this design.
- 13. Pursuant to 30 TAC §290.44(d)(6), the system shall be designed to afford effective circulation of water with a minimum of dead ends. All dead-end mains shall be provided with acceptable flush valves and discharge piping. All dead-end lines less than two inches in diameter will not require flush valves if they end at a customer service. Where dead ends are necessary as a stage in the growth of the system, they shall be located and arranged to ultimately connect the ends to provide circulation.
- 14. The contractor shall maintain a minimum separation distance in all directions of nine feet between the proposed waterline and wastewater collection facilities

including manholes and septic tank drainfields. If this distance cannot be maintained, the contractor must immediately notify the project engineer for further direction. Separation distances, installation methods, and materials utilized must meet 30 TAC §290.44(e)(1-4) of the current rules.

- 15. Pursuant to 30 TAC §290.44(e)(5), the separation distance from a potable waterline to a wastewater main or lateral manhole or cleanout shall be a minimum of nine feet. Where the nine-foot separation distance cannot be achieved, the potable waterline shall be encased in a joint of at least 150 psi pressure class pipe at least 18 feet long and two nominal sizes larger than the new conveyance. The space around the carrier pipe shall be supported at five-foot intervals with spacers or be filled to the springline with washed sand. The encasement pipe shall be centered on the crossing and both ends sealed with cement grout or manufactured sealant.
- 16. Pursuant to 30 TAC §290.44(e)(6), fire hydrants shall not be installed within nine feet vertically or horizontally of any wastewater line, wastewater lateral, or wastewater service line regardless of construction.
- 17. Pursuant to 30 TAC §290.44(e)(7), suction mains to pumping equipment shall not cross wastewater mains, wastewater laterals, or wastewater service lines. Raw water supply lines shall not be installed within five feet of any tile or concrete wastewater main, wastewater lateral, or wastewater service line.
- 18. Pursuant to 30 TAC §290.44(e)(8), waterlines shall not be installed closer than ten feet to septic tank drainfields.
- 19. Pursuant to 30 TAC {290.44(f)(1), the contractor shall not place the pipe in water or where it can be flooded with water or sewage during its storage or installation.
- 20. Pursuant to 30 TAC §290.44(f)(2), when waterlines are laid under any flowing or intermittent stream or semi-permanent body of water the water main shall be installed in a separate watertight pipe encasement. Valves must be provided on each side of the crossing with facilities to allow the underwater portion of the system to be isolated and tested.
- 21. The contractor shall disinfect the new water mains in accordance with AWWA Standard C-651 and then flush and sample the lines before being placed into service. Samples shall be collected for microbiological analysis to check the effectiveness of the disinfection procedure which shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of completed water line will be required or at the next available sampling point beyond 1,000 feet as designated by the design engineer, in accordance with 30 TAC §290.44(f)(3).

SEQUENCE OF CONSTRUCTION

- 1. Temporary erosion and sedimentation controls are to be installed as indicated on the approved construction plan and in accordance with the Stormwater Pollution Prevention Plan (SWPPP) that is required to be posted on the site. Install tree protection and initiate tree mitigation measures.
- 2. Prior to beginning construction, the Owner or his authorized representative. shall convene a Pre-Construction Conference between the City of Georgetown, Engineer, Contractor, County Engineer (if applicable), Texas Commission on Environmental Quality Field Office, and any other affected parties. Notify all such parties at least 48 hours prior to the time of the conference and 48 hours prior to beginning construction.
- 3. The Environmental Project Manager, and/or Site Supervisor, and/or Designated Responsible Party, and the General Contractor will follow the Storm Water Pollution Prevention Plan (SWPPP) posted on the site. Temporary erosion and sedimentation controls will be revised, if needed, to comply with City Inspectors' directives, and revised construction schedule relative to the water quality plan requirements and the erosion plan.
- 4. Rough grade the pond(s) at 100% proposed capacity. Either the permanent outlet structure or a temporary outlet must be constructed prior to development of embankment or excavation that leads to ponding conditions. The outlet system shall be protected from erosion and shall be maintained throughout the course of construction until installation of the permanent water quality pond(s).
- 5. Temporary erosion and sedimentation controls will be inspected and maintained in accordance with the Storm Water Pollution Prevention Plan (SWPPP) posted on the site.
- 6. Begin site clearing/construction activities.
- 7. Permanent water quality ponds or controls will be cleaned out and filter media will be installed prior to/concurrently with revegetation of site.
- 8. Complete construction and start revegetation of the site and installation of landscaping.
- 9. Upon completion of the site construction and revegetation of a project site, a final inspection will be scheduled by the appropriate City Inspector.
- 10. After a final inspection has been conducted by the City Inspector and with approval from the City Inspector, remove the temporary erosion and sedimentation controls and complete any necessary final revegetation resulting from removal of the controls. Conduct any maintenance and rehabilitation of the water quality ponds or controls.

	NO.	REVISION	BY	DATE	
WARNING!					SJT
There are existing water pipelines, underground telephone cables and other above and below ground					DESIGNED BY:
utilities in the vicinity of this project. The contractor shall contact all appropriate utility companies prior to any					SJT, AEC, BLM
construction in the area and determine if any conflicts exist. If so, the Contractor shall immediately contact the					DRAWN BT.
Engineer, who shall revise the design as necessary.					CHECKED BY:
					APPROVED BY:

ACCESSIBILITY NOTES

- 1. Project shall be constructed in full compliance with the Texas Accessibility Standards (TAS) 2012.
- 2. Slopes in the direction of pedestrian travel shall not exceed 5% (1:20) or have a cross slope greater than 2% (1:48). This shall include routes that cross-vehicular ways including but not limited pedestrian/ vehicular ways such as street intersections.
- A. Exception: Per TAS 405.8 and 68.102 (1) grades at the new sidewalks parallel to the streets shall be equal to, or less than, the street grade. Should the new sidewalks exceed the street grade, and the new sidewalk grades exceed 5% in the direction of travel, ramps complying with TAS 405 are required at these conditions.

Curb Ramps:

- A. Curb ramps shall not exceed 8.3% (1:12) in the direction of pedestrian travel.
- B. Curb ramps flares (wings) shall not exceed 1:10.
- C. Minimum width of a curb ramp is 36".
- D. Top of the curb ramp must be 2% in all directions for an area 36" wide and 48"deep. When truncated domes are used, the truncated dome system shall extend the full width of the curb ramp and
- for a minimum depth of 24" at the bottom of the curb ramp.
- Returned curb ramps shall only be used where the adjacent surface on one or both sides of the curb ramp do not allow pedestrian travel such as but not limited to stop lights, stop signs and permanently mounted waste receptacles.
- 4. There shall be no changes in level greater than $\frac{1}{4}$ on any accessible route or $\frac{1}{2}$ with a 1:2 bevel.
- 5. Decomposed granite surfaces, or similar Engineer-approved surfaces shall be compacted tight and maintained by the Owner at all times.
- 6. Provide directional signage using the international symbol of accessibility when not all routes are accessible. Signage shall be placed at the beginning of the route to avoid a patron from proceeding on a non-accessible route
- 7. Verify that no plantings or other site elements on circulation paths would be protruding objects based on TAS 307 (protrudes more 4" and is higher than 27" from the surface and less than 80" from the surface).

Contractor shall notify the Engineer before proceeding with any Work, which is in conflict with the Texas Accessibility Standards. Contractor is financially responsible for proceeding with any Work without written direction on any clarification from the Engineer.

CITY OF GEORGETOWN GENERAL NOTES

- These Construction plans were prepared, sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore based on the engineer's concurrence of compliance, the construction plans for construction of the proposed project are hereby approved subject to the standard Construction Specifications and Details Manual and all other applicable City, State, and Federal Requirements and Codes.
- 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. The site construction plans shall meet all requirements of the approved site plan.
- 4. Wastewater mains and service lines shall be SDR-26 PVC.
- 5. Wastewater mains shall be installed without horizontal or vertical bends.
- 6. Maximum distance between wastewater manholes is 500 feet.
- Wastewater mains shall be low pressure air tested and mandrel tested by the contractor according to City of Georgetown and TCEQ requirements.
- Wastewater manholes shall be vacuum tested and coated by the contractor according to City of Georgetown and TCEQ requirements.
- 9. Wastewater mains shall be camera tested by the contractor and submitted to the City on DVD format prior to paving the streets.
- 10. Private water system fire lines shall be tested by the contractor to 200 psi for 2 hours.
- 11. Private water system fire lines shall be ductile iron piping from the water main to the building sprinkler system, and 200 psi C900 DR-18 PVC for all others.
- 12. Public water system mains shall be 150 psi C900 DR-18 PVC and tested by the contractor at 150 psi for 4
- 13. All bends and changes in direction on water mains shall be restrained and thrust blocked.
- 14. Fire hydrant leads shall be restrained.
- 15. All water lines are to be bacteria tested by the contractor according to the City standards and specifications.
- 16. Water and Sewer main crossings shall meet all requirements of the TCEQ and the City.
- 17. Flexible base material for public streets shall be TXDOT Type A Grade 1.
- 18. Hot mix asphaltic concrete pavement shall be Type D unless otherwise specified and shall be a minimum of 2 inches thick on public streets and roadways.
- 19. All sidewalk ramps are to be installed with the public infrastructure.
- 20. A maintenance bond is required to be submitted to the City prior to acceptance of the public improvements. This bond shall be established for 2 years in the amount of 10% of the cost of the public improvements and shall follow the City format.
- 21. Record drawings of the public improvements shall be submitted to the City by the design engineer prior to acceptance of the project. These drawings shall be submitted on a flash drive or emailed through a cloud source.
- 22. Prior to the start of construction, the City shall be provided with a WPAP approval letter, WPAP recordation receipt, NOI, approved SWPPP, and contact information of the compliance inspector.
- 23. During construction, all compliance inspections and resolutions shall be copied to the City inspector upon receipt
- 24. At the completion of construction, Engineer's letter of concurrence and Notice of Termination shall be provided.
- 25. Prior to construction above the slab, Contractor to provide an all-weather drive surface of asphalt, concrete, or chip seal placed onto base material engineered to withstand 75,000 lbs. An acceptance inspection by Fire Inspections is required. 2012 IFC 503 and D102.1.



ADDRESS 1978 S. AUSTIN AVENUE GEORGETOWN, TX 78626 TEXAS REGISTERED ENGINEERING FIRM F-181 TBPLS FIRM No.10003700 STEGERBIZZELL.COM 512.930.9412 SERVICES >>ENGINEERS >>PLANNERS >>SURVEYORS

STEGER BIZZELL

GENERAL CONSTRUCTION NOTES

- All construction shall be in accordance with the latest city of Georgetown Technical Specifications and Details.
- Prior to beginning construction, the Owner or his authorized representative, shall convene a Pre-Construction Conference between the City of Georgetown, Engineer, Contractor, County Engineer (if applicable), Texas Commission on Environmental Quality Field Office, and any other affected parties. Notify all such parties at least 48 hours prior to the time of the conference and 48 hours prior to beginning construction.
- 3. The Contractor shall give the City a minimum of 48 hours notice before beginning each phase of construction, call 512-930-3555.
- 4. No blasting will be permitted on this project.
- 5. Any existing utilities, pavement, curbs, and/or sidewalks damaged or removed shall be repaired by the Contractor at his expense before acceptance of the project.
- 6 The location of any existing water, wastewater lines or other utilities shall be verified by the City of Georgetown & other utility providers prior to construction.
- Manhole frames, covers, water valve covers, etc., shall be raised to finished 7. pavement grade at the Contractor's expense by a qualified contractor with City inspection. All utility adjustments shall be completed prior to final paving construction.
- 8. The Contractor is responsible for any damages to any public improvements.
- 9. Replace all destructed CMP culverts with CMP of equal size
- 10. Steger Bizzell has endeavored to design these plans compliant with ADA/TDLR and other accessibility requirements. However, the contractor shall not be relieved of any responsibility for constructing these improvements compliant with all applicable accessibility standards. If the contractor notices any discrepancies between these plans and accessibility laws/rules, he is to stop work in the area of conflict and notify Steger Bizzell immediately for a resolution and/or revision to these plans. Steger Bizzell shall not be held responsible for constructing this site compliant with accessibility laws/rules regardless of what is shown in these plans.
- 11. Topography based upon LiDAR survey dated January 23, 2015, and supplemental ground survey by McKim and Creed, dated March 23, 2019. The contractor shall notify the design engineer in writing of any discrepancies discovered during construction prior to proceeding.

TEMPORARY EROSION CONTROL NOTES

- The Contractor shall install erosion/sedimentation controls and tree protective fencing prior to any site preparation work (clearing grubbing or excavation).
- 2. The placement of erosion/sedimentation controls shall be in accordance with the **EROSION & SEDIMENTATION CONTROL PLAN**
- 3. Any significant variation in materials or locations of controls or fences from those shown on the approved plans must be approved by the City Engineer
- The Contractor is required to inspect all controls and fences at weekly intervals and after significant rainfall events to insure that they are functioning properly. The person(s) responsible for maintenance of controls and fences shall immediately make any necessary repairs to damaged areas. Silt accumulation at controls must be removed when the depth reaches six (6) inches.
- Prior to final acceptance, haul roads and waterway crossings constructed for temporary Contractor access must be removed, accumulated sediment removed from the waterway and the area restored to the original grade and revegetated. All land clearing debris shall be disposed of in approved spoil disposal sites.
- Field revisions to the EROSION & SEDIMENTATION CONTROL PLAN required by the Engineer or field inspector with the Texas Commission may be on Environmental Quality (TCEQ) during the course of construction to correct control inadequacies. Major revisions must be approved by the (TCEQ).
- 7. Add feature information upon receipt of Geologic Assessment.

PERMANENT EROSION CONTROL NOTES

. All d	isturbed areas shall be restored as noted l
1.a.	A minimum of six inches of imported s
	equal shall be placed in all drainage ch
	cleared areas.
1.b.	The seeding for permanent erosion con
	disturbed by construction as follows, unle
1.b.a.	From September 15 to March
	combination of 1 nound per 1 000 s

- and 7 pounds per 1,000 square feet of Winter Rye with a purity of 95% with 90% germination. 1.b.b.
- Bermuda at a rate of 3 pounds per 1,000 square feet with a purity of 95% with 85% germination.
- an analysis of 15-15-15 and shall be applied at the rate of 23 pounds per acre once at the time of planting and again once during the time of establishment.
- 1.d. erode the top soil, but will sufficiently soak the soil to a depth of six inches. The irrigation shall occur at ten-day intervals during the first two months. Rainfall occurrences of 1/2 inch or more shall postpone the watering schedule for one week.
- 1.e. Mulch type used shall be Mulch, applied at a rate of 1,500 pounds per acre.
- Disturbed areas within areas to become public shall be re-vegetated to the City of Georgetown requirements. See section G7 of the City of Georgetown Specifications.



below sandy loam topsoil or approved nannels (except rock) and on all

ntrol shall be applied over areas ess specified elsewhere:

1, seeding shall be with a combination of 1 pound per 1,000 square feet of unhulled Bermuda

From March 2 to September 14, seeding shall be with hulled

1.c. Fertilizer shall be slow release granular or pelleted type and shall have

The planted area shall be irrigated or sprinkled in a manner that will not

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY CONTRIBUTING ZONE PLAN **GENERAL CONSTRUCTION NOTES**

Edwards Aquifer Protection Program Construction Notes - Legal Disclaimer

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

- 1. A written notice of construction must be submitted to the TCEQ regional office at least 48 hours prior to the start of any ground disturbance or construction activities. This notice must include:
 - the name of the approved project; - the activity start date; and
 - the contact information of the prime contractor.
- 2. All contractors conducting regulated activities associated with this project should be provided with complete copies of the approved Contributing Zone Plan (CZP) and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractor(s) should keep copies of the approved plan and approval letter on-site.
- 3. No hazardous substance storage tank shall be installed within 150 feet of a water supply source, distribution system, well, or sensitive feature.
- 4. Prior to beginning any construction activity, all temporary erosion and sedimentation (E&S) control measures must be properly installed and maintained in accordance with the manufacturers specifications. If inspections indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations. These controls must remain in place until the disturbed areas have been permanently stabilized.
- 5. Any sediment that escapes the construction site must be collected and properly disposed of before the next rain event to ensure it is not washed into surface streams, sensitive features, etc.
- 6. Sediment must be removed from the sediment traps or sedimentation basins when it occupies 50% of the basin's design capacity.
- 7. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from being discharged offsite.
- 8. All excavated material that will be stored on-site must have proper E&S controls.
- 9. If portions of the site will have a cease in construction activity lasting longer than 14 days, soil stabilization in those areas shall be initiated as soon as possible prior to the 14th day of inactivity. If activity will resume prior to the 21st day, stabilization measures are not required. If drought conditions or inclement weather prevent action by the 14th day, stabilization measures shall be initiated as soon as possible.
- 10. The following records should be maintained and made available to the TCEQ upon request:
- the dates when major grading activities occur; - the dates when construction activities temporarily or permanently cease on a
- portion of the site; and - the dates when stabilization measures are initiated.
- 11. The holder of any approved CZP must notify the appropriate regional office in writing and obtain approval from the executive director prior to initiating any of the following:
- A. any physical or operational modification of any best management practices (BMPs) or structure(s), including but not limited to temporary or permanent ponds, dams, berms, silt fences, and diversionary structures; B. any change in the nature or character of the regulated activity from that which
- was originally approved; C. any change that would significantly impact the ability to prevent pollution of the Edwards Aquifer: or
- D. any development of land previously identified as undeveloped in the approved

contributing zone plan.

Austin Regional Office 12100 Park 35 Circle, Building A Austin, Texas 78753-1808 Phone(512) 339-2929 Fax (512) 339-3795

ENERAL NOTES (1 OF 2)
ERSET HILLS PARCEL 5
I RONALD W REAGAN BLVD
City of Georgetown
Villiamson County, Texas

Project Number: 22226x SCALE: Project Path: Project Name Prawing Path

AS NOTED P\22000-22999 22226-xSOMERSET HILLS P\22000-22999 SOMERSET Xref DWG FILE. HILLS

2022-21-SDP

heet Number: 02 of 212 sheets

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY ORGANIZED SEWAGE COLLECTION SYSTEM **GENERAL CONSTRUCTION NOTES**

- This Organized Sewage Collection System must be designed and constructed in accordance with the Texas Commission on Environmental Quality's (TCEQ) Edwards Aquifer Rules 30 Texas Administrative Code (TAC) §§213.5(c) and 217.51 - 217.70 and 30 TAC Chapter 217, Subchapter D, and the City of Georgetown Standard Specifications.
- All contractors conducting regulated activities associated with this proposed regulated project must be provided with copies of the Sewage Collection System plan and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractors must be required to keep on-site copies of the plan and the approval letter.
- No later than 48 hours prior to commencing any regulated 3. activity, the applicant or his agent must notify the Austin Regional Office, in writing, of the date on which the regulated activity will
- Any modification to the activities described in the referenced SCS 4. application following the date of approval may require the submittal of an SCS application to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval.
- All temporary erosion and sedimentation controls must be installed prior to construction, must be maintained during construction, and must be removed when sufficient vegetation is established to control the erosion and sedimentation and the construction area is stabilized.
- The sewer line trench details showing the cross section with the dimensions, pipe placement, and backfill instructions are included on Plan Sheets <u>96 & 97</u> of these plans. All sewer pipes joints must meet the requirements in 30 TAC §217.53(c) an 217.65.
- Gravity lines must have a <u>SDR-26</u> or less. Pressurized sewer systems must have pipe with a minimum working pressure rating of 150 psi.

The ASTM, ANSI, or AWWA specification numbers for the pipe(s) and joints are: ASTM D 3034, F679, AWWAC900, CL150.

The pipe material, the pressure classes, and the SDR and/or DR designations are: PVC SDR-26, PS-115, DR-18.

- If any sensitive features are discovered during the wastewater line trenching activities, all regulated activities near the sensitive feature must be suspended immediately. The applicant must immediately notify the appropriate regional office of the Texas Commission on Environmental Quality of the feature discovered. A geologist's assessment of the location and extent of the feature discovered must be reported to that regional office in writing within two working days. The applicant must submit a plan for ensuring the structural integrity of the sewer line or for modifying the proposed collection system alignment around the feature. The regulated activities near the sensitive feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the sensitive feature and the Edwards Aquifer from any potentially adverse impacts to water quality while maintaining the structural integrity of the line.
- Sewer lines located within or crossing the 5-year floodplain of a drainage way will be protected from inundation and stream velocities which could cause erosion and scouring of backfill. The trench must be capped with concrete to prevent scouring of backfill, or the sewer lines must be encased in concrete. Al concrete shall have a minimum thickness of six (6) inches.
- 10. Blasting procedures for protection of existing sewer lines and other utilities will be in accordance with the National Fire Protection Association criteria. Sand is not allowed as bedding or backfill in trenches that have been blasted. If any existing sewer lines are damaged, the lines must be repaired and retested.
- 11. All manholes constructed or rehabilitated on this project must have watertight size on size resilient connectors allowing for differential settlement. If manholes are constructed within the 100-year floodplain, the cover must have a gasket and be bolted to the ring. Where gasketed manhole covers are required for more than three manholes in sequence or for more than 1500 feet, alternate means of venting will be provided. Bricks are not an acceptable construction material for any portion of the manhole.

The diameter of the manholes must be a minimum of four feet and the manhole for entry must have a minimum clear opening diameter of 30 inches. These dimensions and other details showing compliance with the commission's rules concerning manholes and sewer line/manhole inverts described in 30 TAC §217.55 are included on Plan Sheets 96 & 97.

It is suggested that entrance into manholes in excess of four feet deep be accomplished by means of a portable ladder. The inclusion of steps in a manhole is prohibited.

- Where water lines and new sewer line are installed with a 12 separation distance closer than nine feet (i.e., water lines crossing wastewater lines, water lines paralleling wastewater lines, or water lines next to manholes) the installation must meet the requirements of 30 TAC §217.53(d) (Pipe Design) and 30 TAC §290.44(e) (Water Distribution).
- 13. Where sewers lines deviate from straight alignment and uniform grade all curvature of sewer pipe must be achieved by the following procedure which is recommended by the pipe

manufacturer: NOT APPLICABLE

If pipe flexure is proposed, the following method of preventing deflection of the joint must be used: NOT APPLICABLE.

Specific care must be taken to ensure that the joint is placed in the center of the trench and properly bedded in accordance with 30 TAC §217.54.

14. New sewage collection system lines must be constructed with stub outs for the connection of anticipated extensions. The location of such stub outs must be marked on the ground such that their location can be easily determined at the time of connection of the extensions. Such stub outs must be manufactured wyes or tees that are compatible in size and material with both the sewer line and the extension. At the time of original construction, new stub-outs must be constructed sufficiently to extend beyond the end of the street pavement. All stub-outs must be sealed with a manufactured cap to prevent leakage. Extensions that were not anticipated at the time of original construction or that are to be connected to an existing sewer line not furnished with stub outs must be connected using a manufactured saddle and in accordance with accepted plumbing techniques.

If no stub-out is present an alternate method of joining laterals is shown in the detail on Plan Sheet <u>96</u>. (For potential future laterals).

The private service lateral stub-outs must be installed as shown on the plan and profile sheets on Plan Sheets $\underline{52} - \underline{97}$ and marked after backfilling as shown in the detail on Plan Sheet 97.

- 15. Trenching, bedding and backfill must conform with 30 TAC §217.54. The bedding and backfill for flexible pipe must comply with the standards of ASTM D-2321, Classes IA, IB, II or III. Rigid pipe bedding must comply with the requirements of ASTM C 12 (ANSI A 106.2) classes A, B or C.
- 16. Sewer lines must be tested from manhole to manhole. When a new sewer line is connected to an existing stub or clean-out, it must be tested from existing manhole to new manhole. If a stub or clean-out is used at the end of the proposed sewer line, no private service attachments may be connected between the last manhole and the cleanout unless it can be certified as conforming with the provisions of 30 TAC 213.5(c)(3)(E).
- 17 All sewer lines must be tested in accordance with 30 TAC §217.57. The engineer must retain copies of all test results which must be made available to the executive director upon request. The engineer must certify in writing that all wastewater lines

have passed all required testing to the appropriate regional office within 30 days of test completion and prior to use of the new collection system. Testing method will be:

17.a. For a collection system pipe that will transport wastewater by gravity flow, the design must specify an infiltration and exfiltration test or a low-pressure air test. A test must conform to the following requirements:

- 17.a.1. Low Pressure Air Test. 17.a.1.A. A low pressure air test must follow the procedures described in American Society For Testing And Materials (ASTM) C-828, ASTM C-924, or ASTM F-1417 or other procedure approved by the executive director, except as to testing times as required in Table C.3 in subparagraph (C) of this paragraph or Equation C.3 in subparagraph (B)(ii) of this paragraph. 17.a.1.B. For sections of collection system pipe less than
- 36 inch average inside diameter, the following procedure must apply, unless a pipe is to be tested as required by paragraph (2) of this subsection. 17.a.1.B.a. A pipe must be pressurized to 3.5 pounds
- per square inch (psi) greater than the pressure exerted by groundwater above the 17.a.1.B.b. Once the pressure is stabilized, the minimum
- time allowable for the pressure to drop from 3.5 psi gauge to 2.5 psi gauge is computed from the following equation:

Equation C.3

Where:

T = time for pressure to drop 1.0 pound per square inch gauge in seconds

 $T = 0.085 \times D \times K$

- K = 0.000419 X D X L, but not less than 1.0
- D = average inside pipe diameter in inches
- L = length of line of same size being tested, in feet Q = rate of loss, 0.0015 cubic feet per minute per square foot internal surface

Ма

17.b.1.A.a.

17.b.1.A.b.

17.b.1.C.	N
17.b.1.C.a.	

	NO.	REVISION	BY	DATE		
(<i>[</i>		HTA LAYOUT UPDATE	ТН	4/22/24	TLH, TG, JKL	04-19-20
WARNING!					DESIGNED BY:	DATE
There are existing water pipelines, underground telephone	<u> </u>				TLH, TEH, TG, JKL	04-19-20
of this project. The Contractor shall contact all appropriate	<u> </u>				DRAWN BY:	DATE
companies prior to any construction in the area and determine if					TLH	04-19-20
contact the Engineer who shall revise the design as necessary.					CHECKED BY:	DATE
					TLH	04-19-20
					APPROVED BY:	DATE

File Name: P:\22000-22999\22226 xSomerset Hills LTD\06_Parcel 5 East HTA\CAD\Plans\3 GENERAL NOTES (2 OF 2).dwg By: Kevin Langford Date: 5/14/2024 5:00 PM

C.3:

PIPE

Since a K value of less than 1.0 may not be used, the minimum testing time for each pipe diameter is shown in the following Table

INIMUM IME (SEC)	MAXIMUM LENGTH FOR MINIMUM TIME (FT)	TIME FOR LONGER LENGTH (SEC/FT)
340	398	0.8550
454	298	1.5200
567	239	2.3740
680	199	3.4190
850	159	5.3420
1020	133	7.6930
1190	114	10.4710
1360	100	13.6760
1530	88	17.3090
1700	80	21.3690
1870	72	25.8560

An owner may stop a test if no pressure loss has occurred during the first 25% of the calculated testing time.

If any pressure loss or leakage has occurred during the first 25% of a testing period, then the test must continue for the entire test duration as outlined above or until failure.

Wastewater collection system pipes with a 27 inch or larger average inside diameter may be air tested at each joint instead of following the procedure outlined in this section.

A testing procedure for pipe with an inside diameter greater than 33 inches must be approved by the executive director.

17.a.2.A. The total exfiltration, as determined by a hydrostatic head test, must not exceed 50 gallons per inch of diameter per mile of pipe per 24 hours at a minimum test head of 2.0 feet above the crown of a pipe at an upstream manhole.

> An owner shall use an infiltration test in lieu of an exfiltration test when pipes are installed below the groundwater level.

The total exfiltration, as determined by a hydrostatic head test, must not exceed 50 gallons per inch diameter per mile of pipe per 24 hours at a minimum test head of two feet above the crown of a pipe at an upstream manhole, or at least two feet above existing groundwater level, whichever is greater.

For construction within a 25-year flood plain, the infiltration or exfiltration must not exceed 10 gallons per inch diameter per mile of pipe per 24 hours at the same minimum test head as in subpargraph (C) of this paragraph.

If the quantity of infiltration or exfiltration exceeds the maximum quantity specified, an owner shall undertake remedial action in order to reduce the infiltration or exfiltration to an amount within the limits specified. An owner shall retest a pipe

following a remediation action. 17.b. If a gravity collection pipe is composed of flexible pipe, deflection testing is also required. The following

procedures must be followed: 17.b.1. For a collection pipe with inside diameter less than 27 inches, deflection measurement requires a rigid

mandrel. 17.b.1.A. Mandrel Sizing.

> A rigid mandrel must have an outside diameter (OD) not less than 95% of the base inside diameter (ID) or average ID of a pipe, as specified in the appropriate standard by the ASTMs, American Water Works Association, UNI-BELL, or American National Standards Institute, or any related appendix. If a mandrel sizing diameter is not specified in the appropriate standard, the mandrel must have an OD equal to 95% of the ID of a pipe. In this case, the ID of the pipe, for the purpose of determining the OD of the mandrel, must equal be the average outside diameter minus two minimum wall thicknesses for OD controlled pipe and the average inside diameter for ID controlled

pipe. All dimensions must meet the appropriate standard.

andrel Design.

A rigid mandrel must be constructed of a metal or a rigid plastic material that can withstand 200 psi without being deformed. A mandrel must have nine or more odd number of runners or legs.

A barrel section length must equal at least 75% of the inside diameter of a pipe. Each size mandrel must use a separate

proving ring. Method Options. An adjustable or flexible mandrel is

prohibited.



17.b.1.C.b. A test may not use television inspection as a substitute for a deflection test. 17.b.1.C.c. If requested, the executive director may approve the use of a deflectometer or a mandrel with removable leas or runners on a case-by-case basis. 17.b.2. For a gravity collection system pipe with an inside diameter 27 inches and greater, other test methods

- may be used to determine vertical deflection. 17.b.3. A deflection test method must be accurate to within plus or minus 0.2% deflection. 17.b.4. An owner shall not conduct a deflection test until at
- least 30 days after the final backfill. Gravity collection system pipe deflection must not 17.b.5.
- exceed five percent (5%). If a pipe section fails a deflection test, an owner shall 17.b.6. correct the problem and conduct a second test after

the final backfill has been in place at least 30 days.

18. All manholes must be tested to meet or exceed the requirements of 30 TAC §217.58.

19. All private service laterals must be inspected and certified in accordance with 30 TAC §213.5(c)(3)(I). After installation of and, prior to covering and connecting a private service lateral to an existing organized sewage collection system, a Texas Licensed Professional Engineer, Texas Registered Sanitarian, or appropriate city Inspector must visually inspect the private service lateral and the connection to the sewage collection system, and certify that it is constructed in conformity with the applicable provisions of this section. The owner of the collection system must maintain such certifications for five years and forward copies to the appropriate regional office upon request. Connections may only be made to an approved sewage collection system.

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

MANHOLE TESTING

All manholes must pass a leakage test. An owner shall test each manhole (after assembly and backfilling) for leakage, separate and independent of the collection system pipes, by hydrostatic exfiltration testing, vacuum testing, or other method approved by the executive director.

HYDROSTATIC TESTING

The maximum leakage for hydrostatic testing or any alternative test methods is 0.025 gallons per foot diameter per foot of manhole depth per hour. To perform a hydrostatic exfiltration test, an owner shall seal all wastewater pipes coming into a manhole with an internal pipe plug, fill the manhole with water and maintain the test for at least one hour. A test for concrete manholes may use a 24 hour wetting period before testing to allow saturation of the concrete.

VACUUM TESTING

To perform a vacuum test, an owner shall plug all lift holes and exterior joints with a non-shrink grout and plug all pipes entering a manhole. No grout must be placed in horizontal joints before testing. Stub outs. manhole boots and pipe plugs must be secured to prevent movement while a vacuum is drawn. An owner shall use a minimum 60 inch/lb torque wrench to tighten the external clamps that secure a test cover to the top of a manhole. A test head must be placed at the inside of the top of a cone section and the seal inflated in accordance with the manufacturer's recommendations. There must be a vacuum of 10 inches of mercury inside a manhole to perform a valid test. A test does not begin until after the vacuum pump is off. A manhole passes the test if after 2.0 minutes and with all valves closed, the vacuum is a least 9.0 inches of mercury.

ADDITIONAL WASTEWATER NOTES

- 1. If a conflict exists between the various documents, the documents will take precedence in the following order:
- a. Municipal Utility Specifications
- b. Change Orders c. Addenda Issue During Bidding
- d. Construction Plans
- e. Project Specifications

2 The following size diameters size meterial and national standard apositions							
are proposed for this project:							
	PIPE DIAMETER (IN)	LINEAR FEET (FT)	PIPE MATERIAL	NATIONAL STANDARD FOR PIPE MATERIAL	NATIONAL STANDARD FOR PIPE JOINTS		
	6	1575	PVC SDR-21	ASTM D 3034	ASTM D 3212		
	6	4675	PVC SDR-26	ASTM D 3034	ASTM D 3212		
	8	6542	PVC SDR-21	ASTM D 3034	ASTM D 3212		
	8	13492	PVC SDR-26	ASTM D 3034	ASTM D 3212		
	8	380	PVC DR-18	ASTM D 1784	ASTM D 3139		
	12	182	PVC SDR-26	ASTM D 3034	ASTM D 3212		
	24	168	DUCTILE IRON	ASTM A746	ANSI C11		

3. Watertight, size on size resilient connectors conforming to ASTM C 923 must be used for connecting pipe to manholes.

4. The bedding class for each diameter of flexible pipe and each flexible pipe material is as follows:

PIPE DIAMETER (IN)	PIPE MATERIAL	BEDDING CLA
8	PVC SDR-21	CHECK
8	PVC SDR-26	1B
12	PVC SDR-21	1B
	•	-

- 5. Brick manhole construction is not allowed. Use of brick for adjusting manhole covers to grade is also prohibited.
- 6. All manholes shall be of precast concrete construction.
- 7. The structural integrity of the collection line due to high soil P.I.'s will require the bedding around the pipe to be 6" minimum below the pipe, 6" minimum on each side of the pipe, and 12" minimum above the pipe.
- 8. If faults, caverns, or subsidence are discovered during construction, construction shall be halted to allow the features to be inspected by the design engineer or a geological or geotechnical engineer. Based on this inspection, revisions approval to the design may be required.
- 9. The trench walls shall be vertical to at least one foot above the pipe.
- 10. The trench backfill shall be free of stones greater than 6 inches in diameter and free of organic or any other unstable material.
- 11. Manholes shown on the plans with sealed and gasketed covers are provided as protection against inflow for those manholes which lie 1) within a 100 year flood plain, 2) lie with a drainageway, 3) lie within a street subject to carrying drainage flows, and 4) additional locations as determined necessary by the Engineer.

12. No drop connections are proposed in these plans.

13. The minimum allowable tensile strength and cell class for each flexible pipe shall be as follows:

PIPE MATERIAL	TENSILE STRENGTH	CELL CLASS (PVC ONLY)			
SDR-26	7,000	12454-B			
PS-115	7,000	12454-B			

- 14. All gravity lines utilizing flexible pipe must be tested for deflection by pulling a rigid mandrel through the installed pipe. The test must be conducted at least 30 days after placement and compaction of final backfill. No pipe shall exceed a deflection of 5 rigid mandrel shall be used to measure deflection. The test must be performed without mechanical pulling devices. The mandrel's minimum outside diameter is 95 inside diameter. The mandrel must have an odd number of runners, totaling nine or more. The barrel section of the mandrel must have a length at least 75 inside diameter. A TV test cannot substitute for the deflection
- 15. A leakage test is required for all gravity lines. For line that is not horizontally curved, a hydrostatic test and/or a low pressure air test must be performed on all proposed gravity sanitary sewer collection piping. These tests must comply with Section 217.57(a) of the TCEQ's rules. The contractor shall have the option of utilizing either a hydrostatic test or a low pressure air test.
- 16. Manholes must be tested for leakage. Manholes will be tested with a hydrostatic test, or with a vacuum test, Contractor's Option.
- 17. The hydrostatic manhole test shall comply with the test requirements detailed in Section 217.58(b)(1) of the TCEQ's rules.
- 18. Each manhole shall be tested immediately after assembly and prior to backfilling. Manholes which have been backfilled shall either be excavated to expose the entire exterior prior to vacuum testing or the manhole shall be tested for leakage by means of a hydrostatic test.
- 19. All lift holes and exterior joints shall be plugged with an approved non-shrink grout.
- 20. No grout shall be placed in horizontal joints before testing.
- 21. All pipes entering the manhole shall be plugged, taking care to securely brace the plugs from being drawn into the manhole.



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- 22. Stubouts, manhole boots and pipe plugs shall be secured to prevent movement while the vacuum is drawn.
- 23. A minimum 60-inch/lb torque wrench shall be used to tighten the external clamps that secure the test cover to the top of the manhole.
- 24. The test head shall be placed at the inside of the top of the cone section and the seal inflated in accordance with the manufacturer's recommendation.
- 25. A vacuum of 10 inches of mercury shall be drawn and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop to 9 inches of mercury. The manhole shall pass if the time is greater than 2 minutes. If the manhole fails the initial test, necessary repairs shall be made with a non-shrink grout while the vacuum is still being drawn. If the manhole fails a second time, repairs should again be made and the manhole shall be tested by means of a hydrostatic test which complies with Section 217.58(b)(1) of the TCEQ's rules. If any manhole fails the hydrostatic test, after failing the vacuum test twice, the contractor should consider replacing that manhole. If the contractor chooses to attempt to repair that manhole, the manhole must be retested by means of the hydrostatic test outlined in Section 217.58(b)(1) of the TCEQ's rules, until it passes.
- 26. Inspection must be provided during critical phases of construction by a qualified inspector under the direction of a P.E. Critical phases of construction are deemed at a minimum to include testing of pipe and manholes for leakage, testing of flexible pipe for installed deflection, and any other as directed by the City. The City and design engineer shall provide inspection as appropriate.
- 27. TCEQ approval letters for plans and specifications review contain the requirement that once the project is completed, a P.E. registered in the state of Texas must certify that the construction was performed substantially in accordance with the approved plans and specifications. If flexible pipe was installed, a P.E. must also certify that all pipe was subjected to and passed the required deflection test. The design engineer, with concurrence of the City, will certify the installation.
- 28. The project plans and specifications must ensure that the pipe installation will adhere to the minimum separation distances allowed by 217.53 (d), TCEQ's rules.

Separation Distances.

- The following rules apply to separation distances between potable water and wastewater treatment plants, and waterlines and sanitary sewers.
- (a) Water line/new sewer line separation. When new sanitary sewers are installed, they shall be installed no closer to waterlines than nine feet in all directions. Sewers that parallel waterlines must be installed in separate trenches. Where the nine foot separation distance cannot be achieved, the following guidelines will apply: (b) SDF
- (1) Where a sanitary sewer parallels a waterline, the sewer shall be constructed of cast iron, ductile iron or PVC meeting ASTM specifications with a pressure rating for both the pipe and joints of 150 psi. The vertical separation shall be a minimum of two feet between outside diameters and the horizontal separation shall be a minimum of four feet between outside diameters. The sewer shall be located below the waterline.
- (2) Where a sanitary sewer crosses a waterline and the sewer is constructed of cast iron, ductile iron or PVC with a minimum pressure rating of 150 psi, an absolute minimum distance of 6 inches between outside diameters shall be maintained. In addition the sewer shall be located below the waterline where possible and one length of the sewer pipe must be centered on the waterline.
- (3) Where a sewer crosses under a waterline and the sewer is con-structed of ABS truss pipe, similar semi-rigid plastic composite pipe, clay pipe or concrete pipe with gasketed joints, a minimum two foot separation distance shall be maintained. The initial backfill shall be cement stabilized sand (two or more bags of cement per cubic yard of sand) for all sections of sewer within nine feet of the waterline. This initial backfill shall be from one guarter diameter below the centerline of the pipe to one pipe diameter (but not less than 12 inches) above the top of the pipe.
- (4) Where a sewer crosses over a waterline all portions of the sewer within nine feet of the waterline shall be constructed of cast iron, ductile iron, or PVC pipe with a pressure rating of at least 150 psi using appropriate adapters. In lieu of this procedure the new conveyance may be encased in a joint of 150 psi pressure class pipe at least 18 feet long and two nominal sizes larger than the new conveyance. The space around the carrier pipe shall be supported at 5 feet intervals with spacers or be filled to the springline with washed sand. The encasement pipe should be centered on the crossing and both ends sealed with cement grout or manufactured seal.
- b) Water line/manhole separation. Unless sanitary sewer manholes and the connecting sewer can be made watertight and tested for no leakage, they must be installed so as to provide a minimum of nine feet of horizontal clearance from an existing or proposed waterline. Where the nine foot separation distance cannot be achieved, a carrier pipe as des- cribed in subsection (a)(4) of this section may be used where appropriate.

The separation distance between any unknown water lines which are discovered during the installation phase of the project, and, the gravity sanitary sewer pipe which will be installed, shall be sufficient to comply with the minimum separation distances allowed by 217.53(d) of the TCEQ's rules as stated above.

- 29. AN EROSION AND SEDIMENTATION CONTROL PLAN is included with these plans. These provisions are intended to control erosion and sedimentation due to runoff during construction. These provisions must be installed prior to any other construction activities.
- 30. It is the intent of this project that portable ladders be used to access manholes during construction by the Contractor as well as for maintenance purposes after construction is complete by the City.
- 31. It is the intent of this project that personal gas detectors are required for wear by all personnel whose jobs require entering enclosed spaces (such as manholes and lift stations) capable of accumulations of hydrogen sulfide or other harmful gases. It shall be the responsibility of the Contractor to ensure these detectors are provided to the appropriate personnel during the construction of this project. It shall be the responsibility of the City to ensure these detectors are provided to the appropriate personnel during the maintenance of this project after construction.

GENERAL NOTES (2 OF 2) SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

SCALE: Project Path: Project Name Drawing Path

Project Number: 22226\21-MADISON TRACT AS NOTED P\22000-22999 SOMERSET HILLS PARCEL 5 Somerset Hills LTD\06_Parcel 5 East

Xref DWG FILE

2022-21-SDP

heet Number: 3 of 212 sheets





	NO.	REVISION	BY	DATE		
					TLH, TG, JKL	04-19-
WARNING!					DESIGNED BY:	DATE
There are existing water pipelines, underground telephone					TLH, TEH, TG, JKL	04-19-
cables and other above and below ground utilities in the vicinity of this project. The Contractor shall contact all appropriate					DRAWN BY:	DATE
companies prior to any construction in the area and determine if					TLH	04-19
any conflicts exist. If so, the Contractor shall immediately contact the Engineer who shall revise the design as necessary.					CHECKED BY:	DATE
					TLH	04-19-
					APPROVED BY	DATE

File Name: P:\22000-22999\22226 xSomerset Hills LTD\06 Parcel 5 East HTA\CAD\Plans\8 EROSION & SEDIMENTATION CONTROL PLAN - PHASE A (1 OF 2).dwg By: Tomas Garcia Date: 4/19/2024 2:43 PM rset Hills LTD\06_Parcel 5 East HTA\CAD\Plans\8 EROSION & SEDIMENTATION CONTROL PLAN - PHASE A (1 OF 2).dwg, 4/19/2024 2:43:09 PM



100 200 Feet E: 1" = 100'
GEND
REMOVE TREE
TREE TO BE PRESERVED
TREE PROTECTION
SILT FENCE
ROCK BERM
LIMITS OF CONSTRUCTION
15' VEGETATIVE FILTER STRIP
GRATE INLET PROTECTION PROPERTY BOUNDARY

HERITAGE TREE SCHEDULE:

				-	
5022	26"	LIVE OAK MULTI (10-10-10-8-4)	8376	40"	LIVE OAK MULTI (30-20)
5100	34"	POST OAK	8377	32"	LIVE OAK
5101	34"	SPANISH OAK MULTI (23-22)	8378	27"	LIVE OAK
5102	29"	SPANISH OAK MULTI (14-12-12)	8379	32"	LIVE OAK
8370	31"	LIVE OAK	*8380	36"	LIVE OAK
*8371	29"	LIVE OAK			
8372	26"	LIVE OAK			
8373	30"	LIVE OAK			
*8374	27"	LIVE OAK MULTI (17-12-8)			
*8375	31"	LIVE OAK			

*TREES TO BE REMOVED

TREE PROTECTION NOTES:

- Existing trees to remain shall be flagged by contractor prior to beginning any work on site. Contractor shall place a minimum 4' height protective fencing 5' outside the edge of canopy of all trees to remain and as shown on the tree protection and removal plans.
- All understory trees, undergrowth, shrubs, cacti and native grasses shall remain in areas
- protected by tree protection fence unless noted otherwise on the landscape plans. Contractor shall maintain flagging and protective fencing around existing trees to remain at least until substantial completion.
- 5. Contractor shall ensure that no dumping of backfill, soil excavation, staking or storage of materials of dumping of any kind shall occur within the fenced area of the trees to remain. 6. Contractor shall ensure that no parking of any type of vehicle, equipment or construction
- trailer shall occur within the fenced area of trees to remain. 7. Contractor shall ensure that no driving of vehicles shall occur within the fenced area of trees to remain.
- 8. Contractor shall ensure that no grade changes shall occur within the canopy of the existing trees to remain.
- Contractor shall keep fenced areas of trees to remain free of trash, debris or excessive 9. runoff.
- 10. No trenching for utilities or irrigation shall occur within the dripline (canopy) of existing trees to remain
- 11. For irrigation, any lateral line or mainline trenches which encroach in the dripline of existing trees shall be hand dug.
- 12. For utilities, any lines which cannot be altered to fall outside the canopy of existing trees shall be installed by boring a minimum of 24" below grade.

NOTES:

- Topography based upon LIDAR aerial mapping, dateD April 23, 2019, by McKim & Creed. 2. All proposed development of this site conforms to the City of Georgetown's UDC regulations and/or the development agreement.
- 3. Limits of construction line has been offset for clarity.
- 4. All temporary erosion and sedimentation controls shall be inspected every 7 days. 5. Contractor shall maintain all temporary erosion and sediment controls in accordance with local, state and federal regulations.
- 6. Contractor shall place rock filter dams at the locations where concentrated flow enters and exits the limits of construction.
- 7. Contractor shall place construction entrance at the location determined by the owner in the
- 8. Area inlet protection is required at inlets installed with this project. Protection to remain in place until the project is accepted. 9. Perimeter silt fence shall be installed prior to start of construction. Interior silt fence shall be
- implemented following the completion of lot grading. 10. All storm inlets will have inlet protection installed.
- 11. All heritage trees will have tree protection installed.
- 12. See sheet 07 PHASING PLAN for locations of each phase.

roject Number: <u>22226\21-MADISON TRACT</u> EROSION & SEDIMENTATION CONTROL PLAN - PHASE A (1 OF 2) AS NOTED SCALE: SOMERSET HILLS PARCEL 5 Project Path: P\22000-22999 Project Name: SOMERSET HILLS PARCEL 30501 RONALD W REAGAN BLVD Somerset Hills LTD\06_Parcel Drawing Path: City of Georgetown 5 East Xref DWG FILE. Williamson County, Texas heet Number: 8 of 212 sheets



File Name: P:\22000-22999\22226 xSomerset Hills LTD\06_Parcel 5 East HTA\CAD\Plans\9 EROSION & SEDIMENTATION CONTROL PLAN - PHASE A (2 OF 2).dwg By: Ted Haynie Date: 4/19/2024 4:33 PM

TREE PROTECTION NOTES: 1. Existing trees to remain shall be flagged by contractor prior to beginning any work on site. 2. Contractor shall place a minimum 4' height protective fencing 5' outside the edge of canopy of all trees to remain and as shown on the tree protection and removal plans. 3. All understory trees, undergrowth, shrubs, cacti and native grasses shall remain in areas protected by tree protection fence unless noted otherwise on the landscape plans. 4. Contractor shall maintain flagging and protective fencing around existing trees to remain at least until substantial completion. 5. Contractor shall ensure that no dumping of backfill, soil excavation, staking or storage of materials or dumping of any kind shall occur within the fenced area of the trees to remain. 6. Contractor shall ensure that no parking of any type of vehicle, equipment or construction trailer shall occur within the fenced area of **REMOVE TREE** trees to remain. 7. Contractor shall ensure that no driving of vehicles shall occur within the fenced area of trees to remain. 8. Contractor shall ensure that no grade changes shall occur within the TREE TO BE PRESERVED canopy of the existing trees to remain. 9. Contractor shall keep fenced areas of trees to remain free of trash, debris or excessive runoff. 10. No trenching for utilities or irrigation shall occur within the dripline SILT FENCE (canopy) of existing trees to remain. 11. For irrigation, any lateral line or mainline trenches which encroach in the ROCK BERM dripline of existing trees shall be hand dug. 12. For utilities, any lines which cannot be altered to fall outside the canopy LIMITS OF CONSTRUCTION of existing trees shall be installed by boring a minimum of 24" below grade. 15' VEGETATIVE FILTER STRIP NOTES: Topography based upon LIDAR aerial mapping, dated April 23, 2019, **GRATE INLET PROTECTION** by McKim & Creed. 2. All proposed development of this site conforms to the City of PROPERTY BOUNDARY Georgetown's UDC regulations and/or the development agreement. 3. Limits of construction line has been offset for clarity. 4. All temporary erosion and sedimentation controls shall be inspected every 7 days. Contractor shall maintain all temporary erosion and sediment controls in accordance with local, state and federal regulations. Contractor shall place rock filter dams at the locations where concentrated flow enters and exits the limits of construction. 8376 40" LIVE OAK MULTI (30-20) Contractor shall place construction entrance at the location determined 8377 32" LIVE OAK by the owner in the field. 8378 27" LIVE OAK 8. Area inlet protection is required at inlets installed with this project. 8379 32" LIVE OAK Protection to remain in place until the project is accepted. *8380 36" LIVE OAK Perimeter silt fence shall be installed prior to start of construction. Interior silt fence shall be implemented following the completion of lot grading. 10. All storm inlets will have inlet protection installed. 11. All heritage trees will have tree protection installed. 12. See sheet 07 - PHASING PLAN for the locations of each phase.

EDIMENTATION CONTROL PLAN	
- PHASE A (2 OF 2)	
SET HILLS PARCEL 5	
ONALD W REAGAN BLVD	
City of Georgetown	
amson County, Texas	

SCALE: Proiect Path: Project Name: Drawing Path: Xref DWG FILE.

Project Number: 22226\21-MADISON TRACT AS NOTED P\22000-22999

SOMERSET HILLS PARCEL Somerset Hills LTD\06 Parce 5 East

Sheet Number: 9 of 212 sheets 2022-21-SDP

		Image: Construction of the second of the	 IREE PROTECTION NOTES: Existing trees to remain shall be flagged by contractor prior to beginning work on site. Contractor shall pace a minimum 4' height protective fencing 5' outside the edge of canopy of all trees to remain and as shown on the tree protection and removal plans. All understory trees, undergrowth, shrubs, cact and native grasses shall remain in areas protected by the protection fence unless noted otherwise on the landscape plans. Contractor shall ensure that no durping of ackfill, soil excavation, staking or storage of materials or durping of any type of vehicle. Contractor shall ensure that no durping of ackfill, soil excavation, staking or storage of materials relativity of vehicles shall occur within the fenced area of the trees to remain. Contractor shall ensure that no garding of any type of vehicle. Contractor shall ensure that no gardin single of the shall occur within the fenced area of the trees to remain. Contractor shall ensure that no gardin single of the shall occur within the fenced area of the trees to remain. Contractor shall ensure that no gardin single occur within the fenced area of trees to remain. Contractor shall ensure that no gardin single occur within the figure of existing trees shall be hand dug. Contractor shall face or main the trees to remain free of trash, define or cositing troes shall be hand dug. For utilities, any lines which cannot be altered to fail outside the canopy of existing trees shall be installed by boring a minimum of 24' below grade. Mortessi. Contractor shall maintan altemporary erosion and sediment controls in accordance with local, state and federari equations. Contractor shall maintan altemporary erosion and sediment controls in accordance with local, state and federari equations. Contractor shall maintan altemporary erosion and sediment controls in accordance with local, state and federari equ
WARNING! There are existing water pipelines, underground telephone cables and other above and below ground utilities in the vicinity of this project. The Contractor shall contact all appropriate companies prior to any construction in the area and determine if any conflicts exist. If so, the Contractor shall immediately	REVISION BY DATE Image: International internatine internatinternational internatinterenational internat	ZELL EROSION & SEDIMENTATION CONTROL PI (1 OF 2) SOMERSET HILLS PARCE 30501 RONALD W REAGAN BL	AN - PHASE B Project Number: 22226\21-MADISON TRAC SCALE: AS NOTED Project Path: P\22000-22999 Project Name: SOMERSET HILLS PARCEL Drawing Path: Somerset Hills LTD\06_Parce









- **15' VEGETATIVE FILTER STRIP**
- GRATE INLET PROTECTION

~~~~		
8376	40"	LIVE OAK MULTI (30-20)
8377	32"	LIVE OAK
8378	27"	LIVE OAK
8379	32"	LIVE OAK
*8380	36"	LIVE OAK

#### TREE PROTECTION NOTES:

- 1. Existing trees to remain shall be flagged by contractor prior to beginning any work on site.
- Contractor shall place a minimum 4' height protective fencing 5' outside 2. the edge of canopy of all trees to remain and as shown on the tree protection and removal plans.
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- 7. Contractor shall ensure that no driving of vehicles shall occur within the fenced area of trees to remain.
- 8. Contractor shall ensure that no grade changes shall occur within the canopy of the existing trees to remain.
- 9. Contractor shall keep fenced areas of trees to remain free of trash, debris or excessive runoff.
- 10. No trenching for utilities or irrigation shall occur within the dripline (canopy) of existing trees to remain.
- 11. For irrigation, any lateral line or mainline trenches which encroach in the dripline of existing trees shall be hand dug.
- 12. For utilities, any lines which cannot be altered to fall outside the canopy of existing trees shall be installed by boring a minimum of 24" below grade.

#### NOTES

- 1. Topography based upon LIDAR aerial mapping, dated April 23, 2019, by McKim & Creed.
- 2. All proposed development of this site conforms to the City of Georgetown's UDC regulations and/or the development agreement.
- 3. Limits of construction line has been offset for clarity. 4. All temporary erosion and sedimentation controls shall be inspected every 7 days.
- 5. Contractor shall maintain all temporary erosion and sediment controls in accordance with local, state and federal regulations.
- 6. Contractor shall place rock filter dams at the locations where
- concentrated flow enters and exits the limits of construction. 7. Contractor shall place construction entrance at the location determined by the owner in the field.
- 8. Area inlet protection is required at inlets installed with this project. Protection to remain in place until the project is accepted.
- 9. Perimeter silt fence shall be installed prior to start of construction. Interior silt fence shall be implemented following the completion of lot grading.
- 10. All storm inlets will have inlet protection installed. 11. All heritage trees will have tree protection installed.
- 12. See sheet 07 PHASING PLAN for locations of each phase.

IMENTATION CONTROL PLAN - PHASE B		
$(1 \cap E 2)$	Project Number:	ZZZZ6\Z1-MADISON TRAC
(1012)	SCALE:	AS NOTED
IERSET HILLS PARCEL 5	Project Path:	P\22000-22999
	Project Name:	SOMERSET HILLS PARCEL
	Drawing Path:	Somerset Hills LTD\06_Parce
City of Georgetown	Xref DWG FILE.	5 East
Williamson County, Texas	Sheet Number:	of 212 sheets



[_____/



DATE File Name: \\WINSERVER\Projects\22000-22999\22226 xSomerset Hills LTD\03_Parcel 5\CAD\Plans\13 EROSION & SEDIMENTATION CONTROL DETAILS.dwg By: Brandon Montoya Date: 10/6/2022 8:48 AM

APPROVED B

05-15-2021

SERVICES

>>ENGINEERS >>PLANNERS >>SURVEYORS

2022-12-00

3050

·	NOTE: THIS SECTION IS INTENDED T STORM WATER POLITION DE	O ASSIST THOSE PERSONS PREPARING WAT EVENTION PLANS (SW3P) THAT COMPLY WI	ER POLLUTION ABATI	EMENT PLANS (WPAP) OR ND/OR LOCAL STORM
ROAD	<ul> <li>NOTE: THIS SECTION IS INTENDED T STORM WATER POLLUTION PR WATER REGULATIONS.</li> <li>1. THE CONTRACTOR TO INSTALL FENCING PRIOR TO ANY SITE REMOVE EROSION/SEDIMENTATION 2. ALL PROJECTS WITHIN THE R AND WATER POLLUTION AND 3. THE PLACEMENT OF EROSION SEDIMENTATION CONTROL PLA MUST BE SUBMITTED TO AND</li> <li>4. ALL PLANTING IS AUTHORIZED OF WINTER FESCUE (KENTUC MINIMUM 82% PURE LIVE SEI RECLEANED AND TREATED WI STANDARD CONTAINERS WITH</li> <li>5. ALL DISTURBED AREAS TO BE</li> <li>6. THE PLANTED AREA TO BE IF SUFFICIENTLY SOAK THE SOIL INTERVALS DURING THE FIRST OCCURRENCES OF 1/2 INCH</li> <li>7. RESTORATION TO BE ACCEPT PROVIDED NO BARE SPOTS L</li> <li>8. A MINIMUM OF FOUR (4) INC</li> <li>9. THE CONTRACTOR TO HYDROI OF CONSTRUCTION.</li> <li>10. EROSION AND SEDIMENTATION SOIL BUILDUP WITHIN TREE I 11. TO AVOID SOIL COMPACTION, EQUIPMENT OR MATERIALS IN</li> <li>12. WHERE A FENCE IS CLOSER PLANKING TO A HEIGHT OF BI 13. TREES TO BE REMOVED IN A 14. ANY ROOT EXPOSED BY CON GOOD QUALITY TOPSOIL AS S COVER THEM WITH ORGANIC DUE TO EVAPORATION.</li> <li>15. CONTRACTOR TO PRUNE VEG BEFORE DAMAGE OCCURS (R RECOGNIZED, APPROVED STAL STANDARDS FOR SHADE TREE</li> <li>16. THE CONTRACTOR TO PRUNE VEG BEFORE DAMAGE OCCURS (R RECOGNIZED, APPROVED IN A 14. ANY ROOT EXPOSED BY CON GOOD QUALITY TOPSOIL AS S COVER THEM WITH ORGANIC DUE TO EVAPORATION.</li> <li>15. CONTRACTOR TO PRUNE VEG BEFORE DAMAGE OCCURS (R RECOGNIZED, APPROVED STAL STANDARDS FOR SHADE TREE</li> <li>16. THE CONTRACTOR TO TO RUNE VEG BEFORE DAMAGE OCCURS (R RECOGNIZED, APPROVED STAL STANDARDS FOR SHADE TREE</li> <li>16. THE CONTRACTOR TO NELOW C 19. IF EROSION AND SEDIMENTAT 17. WHERE THERE IS TO BE AN 16. NO ABOVE AND/OR BELOW C 19. IF EROSION AND SEDIMENTAT 17. WHERE THERE AFEORD AT OWNERS 20. INTENTIONAL RELEASE OF VEI RESULTING FORM ACCIDENTAL</li> </ul>	O ASSIST THOSE PERSONS PREPARING WAT EVENTION PLANS (SW3P) THAT COMPLY WI AND MAINTAIN EROSION/SEDIMENTATION C PREPARATION WORK (CLEARING, GRUBBING TION CONTROLS AT THE COMPLETION OF P ECHARGE ZONE OF THE EDWARD'S AQUIFEF ABATEMENT PLAN TO THE TINRCC FOR APP /SEDIMENTATION CONTROLS TO BE IN ACCA N AND WATER POLLUTION ABATEMENT PLAN APPROVED BY THE OWNER'S REPRESENTA & BETWEEN MAY 1 AND SEPTEMBER 15 E TO BE DONE OUTSIDE THE DATES SPECIFIE KY 31) AT A RATE OF 1001b/ACRE. GRAS ED. ALL GRASS SEED SHALL BE FREE FRI H APPROPRIATE FUNGICIDE AT TIME OF MI DEALER'S GUARANTEED ANALYSIS. E RESTORED AS NOTED IN THE WATER POL RRIGATED OR SPRINKLED IN A MANNER THA TO A DEPTH FUNGICIDE AT TIME OF MI DEALER'S GUARANTEED ANALYSIS. E RESTORED AS NOTED IN THE WATER POL RRIGATED OR SPRINKLED IN A MANNER THA TO A DEPTH FOR FOUR (4) INCHES. THE TWO MONTHS TO INSURE GERMINATION AT OR GREATER TO POSTPONE THE WATERING BALE WHEN THE GRASS HAS GROWN AT LE ARGER THAN 25 SQUARE FEET EXIST. HES OF TOPSOIL TO BE PLACED IN ALL AULCH OR SOD (AS SHOWN ON PLANS) AL CONTROLS TO BE INSTALLED OR MAINTAIN IRIPLINE. CONTRACTOR SHALL NOT ALLOW VEHICULAI THE TREE DRIPLINE AREAS. THAN FOUR (4) FEET TO A TREE TRUNK, IGHT (8) FEET (OR TO THE LIMITS OF LOO MANNER WHICH DOES NOT IMPACT TREES STRUCTION ACTIVITY TO BE PRUNED FLUSH OON AS POSSIBLE. IF EXPOSED ROOT ARE MATERIAL IN A MANNER WHICH REDUCES S STRUCTION ACTIVITY TO BE RUNCE TRUES STRUCTION ACTIVITY TO BE RUNCE TRUE PING OF BRANCHES, ETC.). ALL FINISHED DAARDS OF THE INDUSTRY (REFERENCE TH IS"). THAT ON PROVIDE CLEARANCE FOR STRL PING OF BRANCHES, ETC.). ALL FINISHED APPROVED GADE CHANGE, IMPERMENTATION C O ASSURE CONTINUED EFFECTIVE OPERATIO APPROVED GRADE CHANGE, MEREMENTATION CON APROVED AND PLACED IN THE OWNER DE CITONS OF THE INDUSTRY (REFERENCE TH IS"). 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BAA AS ARE NOT BACKFII OLI TEMPERATURE AI ICTURES, VEHICULAR PRUNING TO BE DOC E "NATIONAL ARBORIS AND AFTER EVERY ANY ACCUMULATED SIGNA AND SEDIMENTE ROSION AND SEDIMENT FROSION AND SEDIMENT ROSION AND SEDIME ROUND IS NOT ALLOV F PROPERLY.	EMENT PLANS (WPAP) OR AND/OR LOCAL STORM (NATURAL AREA PROTECTIVE WATION). CONTRACTOR TO RESTORATION. JEST MANAGEMENT PRACTICES Y CONSTRUCTION. APPROVED EROSION AND THE APPROVED PLAN LLY AUTHORIZED IN WRITING. BE PLANTED WITH THE ADDITION N BERMUDA GRASS, HULLED, GRADE "A" RECENT CROP, BE FURNISHED IN SEALED, PLAN. THE TOPSOIL, BUT WILL R AT 10-DAY PT HE GRASS . RAINFALL JEK. HIGH WITH 95% COVERAGE, CONSTRUCTION. ND FILLS UPON COMPLETION HICH DOES NOT RESULT IN OR STORAGE OF CWITH STRAPPED-ON ADDITION TO THE FENCING. CXFILL ROOT AREAS WITH LLED WITHIN TWO DAYS, YO MINIMIZES WATER LOSS TRAFFIC, AND EQUIPMENT INE ACCORDING TO ST ASSOCIATION PRUNING RAINFALL EXCEEDING 1/4 SEDIMENT AFTER A 'OSAL SITE. THE CONTRACTOR AKE ANY REPAIRS OR EE WELL, OR OTHER SUCH IOXIMATELY TWO TO FOUR DN THE PROJECT SITE. OWNER'S INTATION CONTROLS SYSTEMS INTATION CONTROLS SYSTEMS INTATION CONTROLS SOLL
HAT DRAINS INTO AN APPROVED			The resp use o	Architect/Engineer assumes onsibility for appropriate of this standard.
ADOPTED         6/21/2006           ME         EC06           3         1/2003           5         MORE FR	GEORGETOWN TEXAS Georgetown Utility Systems For Commany, Georget (Hary	CITY OF GEORGETOW CONSTRUCTION STANDARDS AN EROSION AND SEDIMENTATI TREE PROTECTION NO	N ID DETAILS ON AND DTES	ADOPTED 6/21/2006 NO NAME EC01A
OF NTROLS	INSTALLATION:	48" MIN. HEAVY WEIGHT T-POST 24" TALL MIN., 2" X 4" 12 GAUG GALVANIZED WIRE MESH 4.5 OZ. MIN. NON-WOVEN GEOTE) FILTER FABRIC 42" WIDE EXTENSION OF FABRIC INTO TRENC SOIL LEVEL OW WWW WIRE SUPPORT TILE WOVEN WIRE SUPPORT 2" X 4" WIRE MESH WOVEN WIRE SUPPORT 2" X 4" WIRE MESH WOVEN SUPPORT 2" X 4" WIRE MESH WING AS CLOSELY AS POSSIBLE TO TH ROCKS, PLANTS (INCLUDING GRASSES SACH SURFACE. EXCAVATE 6" DEEP X AT LEAST 12 INCHES INTO THE GROU WELDED WIRE MESH TO THE T-POST 4" ABOVE GROUND LEVEL. THE WELDE G RINGS. D WITH A SKIRT A MINIMUM OF 6" WI FABRIC TO OVERLAP THE TOP OF THE SKILLING WITH EXCAVATED DIRT AND A MINIMUM OF 18" WIDE ATTACHED I THED. WHEN THE SITE IS COMPLETELY STAB	The A respon- use of E (TILE CH INSPECTION AND M - INSPECT ALL FENCI- EVENT. - REMOVE SEDIMENT - REPLACE OR REPAI COLLAPSED IN THE 6'-0' MAX FILL FILL FILL FILL FILL FILL FILL FIL	AINTENANCE GUIDELINES: NG WEEKLY, AND AFTER ANY RAINFALL WHEN BUILDUP REACHES 6 INCHES. IF FARRIC. R ANY SECTIONS CRUSHED OR COURSE OF CONSTRUCTION ACTIVITY.
E EC01	GEORGETING GEORGETING GEORGETING Georgetown Unity Systems Ber Commeng (Amari Unity	CITY OF GEORGETOW CONSTRUCTION STANDARDS AN SILT FENCE DETAIL	REVAS ID DETAILS - SOLE DOWN	ADOPTED 6/21/2006
SEDIMENTATIO ERSET HILL 1 RONALD W R City of Georg Williamson Cour	N CONTROL DE S PARCEL 5 EAGAN BLVD getown ntv. Texas	TAILS	Project Number: SCALE: Project Path: Project Name: Drawing Path: Xref DWG FILE. Sheet Number:	22226x AS NOTED P\22000-22999 22226-xSOMERSET HILLS P\22000-22999 SOMERSET HILLS
	<b>,</b>		2	2022-21-SDP



File Name: P:\22000-22999\22226 xSomerset Hills LTD\06_Parcel 5 East HTA\CAD\Plans\40 OVERALL WASTEWATER PLAN (4 of 5).dwg By: Tyson Hasz Date: 4/19/2024 2:58 PM





FOR TYPICAL UTILITY ASSIGNMENTS

### **CITY OF GEORGETOWN GENERAL NOTES**

- 1. These construction plans were prepared, sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore based on the engineer's concurrence of compliance, the construction plans for construction of the proposed project are hereby approved subject to the standard Construction Specifications and Details Manual and all other applicable City, State and Federal Requirements and Codes.
- 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. The site construction plans shall meet all requirements of the approved site plan.
- Wastewater mains and service lines shall be SDR 26 PVC.
- Wastewater mains shall be installed without horizontal or vertical bends.
- Maximum distance between wastewater manholes is 500 feet.
- 7. Wastewater mains shall be low pressure air tested and mandrel tested by the contractor according to the City of Georgetown and TCEQ requirements.
- Wastewater manholes shall be vacuum tested and coated by the contractor according to City of Georgetown and TCEQ requirements.
- Wastewater mains shall be camera tested by the contractor and submitted to the City on DVD format prior to paving the streets. 10. Private water system fire lines shall be tested by the contractor to 200 psi for 2 hours.
- 11. Private water system fire lines shall be ductile iron piping from the water main to the building sprinkler system, and 200 psi C900 PVC for all others.
- 12. Public water system mains shall be 150 psi C900 PVC and tested by the contractor at
- 13. All bends and changes in direction on water mains shall be restrained and thrust
- 14. Long fire hydrant leads shall be restrained.
- 15. All water lines are to be bacteria tested by the contractor according to the City standards and specifications.
- 16. Water and Sewer main crossings shall meet all requirements of the TCEQ and the City. 17. Flexible base material for public streets shall be TXDOT Type A Grade 1.
- 18. Hot mix asphaltic concrete pavement shall be Type D unless otherwise specified and shall be a minimum of 2 inches thick on public streets and roadways.
- 19. All sidewalk ramps are to be installed with the public infrastructure. 20. A maintenance bond is required to be submitted to the City prior to acceptance of the public improvements. This bond shall be established for 1 year in the amount of 25% of the cost of the public improvements and shall follow the City format.
- 21. Record drawings of the public improvements shall be submitted to the City by the design engineer prior to acceptance of the project. These drawings shall be on PDF

1. All sewer lines are 8" unless otherwise noted.

SCALE: Project Path Project Name: Drawing Path

Project Number: 22226\21-MADISON TRACT AS NOTED P\22000-22999 SOMERSET HILLS PARCEL Somerset Hills LTD\06 Parcel

Xref DWG FILE

2022-21-SDP

5 East

neet Number: 40 of 212 sheets





File Name: P:\22000-22999\22226 xSomerset Hills LTD\06_Parcel 5 East HTA\CAD\Plans\42 WW-A01 PROFILE (1 OF 3).dwg By: Tyson Hasz Date: 4/19/2024 3:01 PM 

1" = 40' HORIZONTAL 1" = 4' VERTICAL

Project Number: 22226\21-MADISON TRACT AS NOTED P\22000-22999 SOMERSET HILLS PARCEL S

Somerset Hills LTD\06_Parcel 5 East

Xref DWG FILE.

heet Number: 42 of 212 sheets



File Name: P:\22000-22999\22226 xSomerset Hills LTD\0	Parcel 5 East HTA\CAD\Plans\43 WW-A01 PROFILE (2 OF 3).d	wg By: Tyson Hasz Date: 4/19/2024 3:01 PM



SCALE: Project Path: Project Name: Drawing Path:

Project Number: 22226\21-MADISON TRACT AS NOTED P\22000-22999 SOMERSET HILLS PARCEL S Somerset Hills LTD\06_Parcel

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neet Number: 43 of 212 sheets

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# WW-A01 PROFILE (3 OF 3) SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas



SCALE 1" = 40' HORIZONTAL 1" = 4' VERTICAL

SCALE: Project Path: Project Name: Drawing Path:

Project Number: 22226\21-MADISON TRACT AS NOTED P\22000-22999 SOMERSET HILLS PARCEL S Somerset Hills LTD\06_Parcel

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WARNING! There are existing water pipelines, underground telephone cables and other above and below ground utilities in the vicinity of this project. The Contractor shall contact all appropriate companies prior to any construction in the area and determine if	DESIGNED BY: DATE TLH, TEH, TG, JKL 04-19-2024 DRAWN BY: DATE TI H	TYSON L. HASZ		SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD	Project Path:P\22000-22999Project Name:SOMERSET HILLS PARCELDrawing Path:Somerset Hills LTD\06 Parce
any conflicts exist. If so, the Contractor shall immediately contact the Engineer who shall revise the design as necessary.	Image: Constraint of the constr	ADDRESS 1978 S. AUSTIN AVI METRO 512.930.9412 TEXAS F SERVICES >>ENGINEE	ENUE GEORGETOWN, TX 78626 REGISTERED ENGINEERING FIRM F-181 WEB STEGERBIZZELL.COM TBPLS FIRM No.10003700 STEGERBIZZELL.COM	City of Georgetown Williamson County, Texas	5 East Xref DWG FILE.

File Marine. P. 22000-22999/22220 X50merset Hills LTD	UD_Parcer 5 East HTA/CAD/Plans/40 WW-A	AUZ PROFILE (Z OF Z).dwg - by. Tysoi	THASE Date. 4/19/2024 3.03 PW	





# WW-A02 PROFILE (2 OF 2) SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

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File Name: P:\22000-22999\22226 xSomerset Hills LTD\06_Parcel 5 East HTA\CAD\Plans\48 WW-A04 PROFILE.dwg By: Tyson Hasz Date: 4/19/2024 3:04 PM

Project Number: 22226\21-MADISON TRACT AS NOTED P\22000-22999 SOMERSET HILLS PARCEL S Somerset Hills LTD\06_Parcel

heet Number: 48 of 212 sheets





	NO.	REVISION	BY	DATE	
					TLH, TG, JKL
WARNING!					DESIGNED BY:
There are existing water pipelines, underground telephone					TLH, TEH, TG, JKL
of this project. The Contractor shall contact all appropriate					DRAWN BY:
companies prior to any construction in the area and determine if					TLH
contact the Engineer who shall revise the design as necessary.					CHECKED BY:
					TLH
					APPROVED BY:

File Name: P:\22000-22999\22226 xSomerset Hills LTD\06_Parcel 5 East HTA\CAD\Plans\49 WW-A05 PROFILE (1 OF 2).dwg By: Tyson Hasz Date: 4/19/2024 3:04 PM 



SCALE 1" = 40' HORIZONTAL 1" = 4' VERTICAL

## WW-A05 PROFILE (1 OF 2) SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

SCALE: Project Path: Project Name: Drawing Path:

Project Number: 22226\21-MADISON TRACT AS NOTED P\22000-22999 SOMERSET HILLS PARCEL S Somerset Hills LTD\06_Parcel

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SCALE 1" = 40' HORIZONTAL 1" = 4' VERTICAL

WW-A05 PROFILE (2 OF 2) SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

SCALE: Project Path: Project Name: Drawing Path:

Project Number: 22226\21-MADISON TRACT AS NOTED P\22000-22999 SOMERSET HILLS PARCEL 5

Somerset Hills LTD\06_Parcel 5 East

Xref DWG FILE.

heet Number: 50 of 212 sheets





	NO.	REVISION	BY	DATE		
·····	$\boxed{3}$	HTA LAYOUT UPDATE	ТН	4/22/24	TLH, TG, JKL	04-19-20
WARNING!			<u> </u>		DESIGNED BY:	DATE
There are existing water pipelines, underground telephone	<u> </u>		+		TLH, TEH, TG, JKL	04-19-20
of this project. The Contractor shall contact all appropriate					DRAWN BY:	DATE
companies prior to any construction in the area and determine if					TLH	04-19-20
contact the Engineer who shall revise the design as necessary.					CHECKED BY:	DATE
					TLH	04-19-20
					APPROVED BY:	DATE



SCALE 1" = 40' HORIZONTAL 1" = 4' VERTICAL

WW-B01 PROFILE (1 OF 2) SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

SCALE: Project Path: Project Name: Drawing Path: Xref DWG FILE. Sheet Number: 51 of 212 sheets

Project Number: 22226\21-MADISON TRACT AS NOTED P\22000-22999 SOMERSET HILLS PARCEL 5 Somerset Hills LTD\06_Parcel 5 East

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WW-B01 PROFILE (2 OF 2) SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

SCALE: Project Path: Project Name: Drawing Path: 5 East Xref DWG FILE. heet Number: 52 of 212 sheets

AS NOTED P\22000-22999 SOMERSET HILLS PARCEL 5 Somerset Hills LTD\06_Parcel

Project Number: 22226\21-MADISON TRACT

2022-21-SDP

SCALE

1" = 40' HORIZONTAL 1" = 4' VERTICAL



SCALE 1" = 40' HORIZONTAL 1" = 4' VERTICAL

SCALE: Project Path: Project Name: Drawing Path:

Project Number: 22226\21-MADISON TRACT AS NOTED P\22000-22999 SOMERSET HILLS PARCEL S Somerset Hills LTD\06_Parcel

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neet Number: 53 of 212 sheets



There are existing water pipelines, underground telephone	7
cables and other above and below ground utilities in the vicinity	Χ
of this project. The Contractor shall contact all appropriate	1
companies prior to any construction in the area and determine if	2
any conflicts exist. If so, the Contractor shall immediately	X
contact the Engineer who shall revise the design as necessary.	Ζ
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TLH





SCALE 1" = 40' HORIZONTAL 1" = 4' VERTICAL

# WW-B02 PROFILE (2 OF 2) SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

SCALE: Project Path: Project Name: Drawing Path:

Project Number: 22226\21-MADISON TRACT AS NOTED P\22000-22999 SOMERSET HILLS PARCEL 5 Somerset Hills LTD\06_Parcel

5 East Xref DWG FILE.

Sheet Number: 54 of 212 sheets

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TLH, TG, JKL
DESIGNED BY:
TLH, TEH, TG, JKL
DRAWN BY:
TLH
CHECKED BY:
TLH
APPROVED BY:

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File Name: P:\22000-22999\22226 xSomerset Hills LTD\06_Parcel 5 East HTA\CAD\Plans\55 WW-B03 PROFILE.dwg By: Tomas Garcia Date: 4/19/2024 3:01 PM





SCALE 1" = 40' HORIZONTAL 1" = 4' VERTICAL

## WW-B03 PROFILE SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

SCALE: Project Path: Project Name: Drawing Path:

Project Number: 22226\21-MADISON TRACT AS NOTED P\22000-22999

SOMERSET HILLS PARCEL S Somerset Hills LTD\06_Parcel 5 East

Xref DWG FILE.

neet Number: 55 of 212 sheets 2022-21-SDP

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				<u>324</u> 8"	
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TLH APPROVED BY:







WW-B04 PROFILE SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

neet Number: 56 of 212 sheets



	NO.	REVISION	BY	DATE	
					TLH, TG, JKL
WARNING!					DESIGNED BY:
There are existing water pipelines, underground telephone					TLH, TEH, TG, JKL
of this project. The Contractor shall contact all appropriate					DRAWN BY:
companies prior to any construction in the area and determine if any conflicts exist. If so, the Contractor shall immediately					TLH
contact the Engineer who shall revise the design as necessary.					CHECKED BY:
					APPROVED BY:





# WW-B05 PROFILE (1 OF 2) SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

SCALE: Project Path: Project Name: Drawing Path:

Project Number: 22226\21-MADISON TRACT AS NOTED P\22000-22999 SOMERSET HILLS PARCEL S Somerset Hills LTD\06_Parcel

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heet Number: 57 of 212 sheets 2022-21-SDP

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895					STA: 11+30.25 WW-B05= 4' WW-B05 MH 4 8"			STA: 12+50.80 WW-B05= 41 WW-B05 41 WW-B05 81 FL				888.27 81 FL 81 FL 82 7 838.27 81 FL 81 FL 82 7 838.27	814+79 814+79 814+79 814+79 814+79 880 880 882 882 882 882 882 882		
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## WW-B05 PROFILE (2 OF 2) SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

Sheet Number: 58 of 212 sheets



	NO.	REVISION	BY	DATE	
					TLH, TG, JKL 
There are existing water pipelines, underground telephone cables and other above and below ground utilities in the vicinity					TLH, TEH, TG, JKL
of this project. The Contractor shall contact all appropriate companies prior to any construction in the area and determine if					DRAWN BY: TLH
any conflicts exist. If so, the Contractor shall immediately contact the Engineer who shall revise the design as necessary.					CHECKED BY:

8	contact the Engineer who shall revise the design as necessary.
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1" = 4' VERTICAL

WW-B06 PROFILE SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

SCALE: Project Path: Project Name: Drawing Path:

Project Number: 22226\21-MADISON TRACT AS NOTED P\22000-22999

SOMERSET HILLS PARCEL S Somerset Hills LTD\06_Parcel 5 East

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heet Number: 59 of 212 sheets

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are the	NO. REVISION BY DATE	WW-B07 PROFILE	Project Number: 22226\21-MADISON TRACT
drawings	WARNING! There are existing water pipelines, underground telephone	SOMERSET HILLS PARCEL 5	SCALE:AS NOTEDProject Path:P\22000-22999
These (	cables and other above and below ground utilities in the vicinity of this project. The Contractor shall contact all appropriate companies prior to any construction in the area and determine if any conflicts exist. If so, the Contractor shall immediately.       DRAWN BY:       DRAWN BY:         TLH       04-19-2024       ADDRESS       1078 S, ALISTIN AVENUE       CEORCETOWNETX 79536	30501 RONALD W REAGAN BLVD	Project Name:       SOMERSET HILLS PARCEL 5         Drawing Path:       Somerset Hills LTD\06_Parcel         5 Fast
	contact the Engineer who shall revise the design as necessary.     DATE       LH     04-19-2024       DATE	City of Georgetown Williamson County, Texas	Xref DWG FILE Sheet Number: 60 of 212 sheets

e Name:	P:\22000-22999\22226 xSomerset Hills LTD\06	Parcel 5 East HTA\CAD\Plans\60 WW-B07 PROFILE.dwg	By:	Tomas Garcia	Date:	4/19/2024 3:04 PM	





# WW-B07 PROFILE SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

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				S SDR-21 PVC @	2.52%
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any conflicts exist. If so, the Contractor shall immediately

contact the Engineer who shall revise the design as necessary.

NO.	REVISION	BY	DATE	
2	ADJUSTED BORE LENGTH PER CONTRACTOR	DLP	8/8/2023	TLH, TG, JKL
3	UPDATED WASTEWATER NETWORK	TG	4/22/2024	DESIGNED BY:
				TLH, TEH, TG, JKL
				DRAWN BY:
				TLH
				CHECKED BY:
				TLH
				APPROVED BY:

File Name: P:\22000-22999\22226 xSomerset Hills LTD\06_Parcel 5 East HTA\CAD\Plans\63 WW-B21 PROFILE (3 OF 3).dwg By: Kevin Langford Date: 5/14/2024 5:01 PM





WW-B21 PROFILE (3 OF 3) SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

roject Number: 22226\21-MADISON TRACT AS NOTED SCALE: Project Path: P\22000-22999 Project Name: SOMERSET HILLS PARCEL 5 Somerset Hills LTD\06_Parcel Prawing Path: 5 East Xref DWG FILE. Sheet Number: 63 of 212 sheets







- 5. MARE THE SIZE OF THE HOLE TO BE CUT USING THE GASKET SKIRT OR THE SADDLE ITSELF AS THE TEMPLATE.
- 6. SAW OUT THE SECTION OF THE PIPE WHERE THE SADDLE WILL BE LOCATED, WITH A
- SABER OR KEY HOLE SAW. 7. TEST TO MAKE SURE SADDLE FITS HOLE PROPERLY.
- 8. SERVICE PIPE SHALL NOT EXTEND MORE THAN ONE-HALF INCH INTO THE MAIN.



responsibility for appropriate

use of this stunuuru.	REVISION NOTE:	ADOPTE	D 6/21/2006
CITY OF GEORGETOWN CONSTRUCTION STANDARDS AND DETAILS GASKETED SEWER FITTING FOR SEWER SERVICE CONNECTIONS TO EXISTING MAINS	SCALE: NTS DRUMW BY: MRS	MTE: 1/2003 APPROVED BT: TRB	/W13A





	NO.	REVISION	BY	DATE	
WARNING!					
telephone cables and other above and below ground utilities in the vicinity of this project. The contractor shall					
contact all appropriate utility companies prior to any					DRAWN BY:
exist. If so, the Contractor shall immediately contact the					
Engineer, who shall revise the design as necessary.					CHECKED BY:
					APPROVED BY:

File Name: \\WINSERVER\Projects\22000-22999\22226 xSomerset Hills LTD\03_Parcel 5\CAD\Plans\96 WASTEWATER DETAILS (1 OF 2).dwg By: Brandon Montoya Date: 10/6/2022 12:43 PM











WASTEWATER DETAILS (1 OF 2) SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

Project Number: 22226x SCALE: Project Path: Project Name Drawing Path Xref DWG FILE.

AS NOTED P\22000-22999 22226-xSOMERSET HILLS P\22000-22999 SOMERSET HILLS

neet Number: 70 of 212 sheets



	NO.	REVISION	BY	DATE		
WARNING!					SJT	05-15-2021
There are existing water pipelines, underground telephone cables and other above and below ground					DESIGNED BY:	DATE
utilities in the vicinity of this project. The contractor shall					SJT, AEC, BLM	05-15-2021
contact all appropriate utility companies prior to any					DRAWN BY:	DATE
exist. If so, the Contractor shall immediately contact the						05-15-2021
Engineer, who shall revise the design as necessary.					CHECKED BY:	DATE
						05-15-2021
					APPROVED BY:	DATE

File Name: \\WINSERVER\Projects\22000-22999\22226 xSomerset Hills LTD\03_Parcel 5\CAD\Plans\97 WASTEWATER DETAILS (2 OF 2).dwg By: Brandon Montoya Date: 10/6/2022 12:43 PM









(INSTALL AT ALL SEWER STUB-OUT ENDS AND SERVICE ENDS)

NOTES: SIGNS SHALL BE CONSTRUCTED OF 20 GAUGE STEEL w/BAKED ENAMEL FINISH.
 THE BACKGROUND COLOR FOR THE SIGNS SHALL BE WHITE.
 THERE SHALL BE NO SEPARATE BID ITEM FOR MAKEPES

ARKERS.

SERVICE MARKER DETAIL







- NEW WATER PIPE



WASTEWATER DETAILS (2 OF 2) SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

Project Number: 22226x SCALE: Project Path: Project Name: Drawing Path: Xref DWG FILE. neet Number: 71 of 212 sheets

AS NOTED P\22000-22999 22226-xSOMERSET HILLS P\22000-22999 SOMERSET HILLS



NOTES:

 THIS DRAINAGE STUDY IS CONSISTENT WITH THE REPORT "PARCELS 4, 5, AND, 6 COWAN CREEK" SUBMITTED ON OCTOBER 16, 2020

Project Number:	22226x
SCALE:	AS NOTED
Project Path:	P\22000-22999
Project Name:	22226-xSOMERSET HILLS
Drawing Path:	P\22000-22999 SOMERSET
Xref DWG FILE.	HILLS
Sheet Number: 7	2 of 212 sheets
20	)22-21-SDP





File Name: \\WINSERVER\Projects\22000-22999\22226 xSomerset Hills LTD\03_Parcel 5\CAD\Plans\99 PROPOSED DRAINAGE PLAN.dwg By: Brandon Montoya Date: 10/6/2022 12:49 PM

NOTES:

 THIS DRAINAGE STUDY IS CONSISTENT WITH THE REPORT "PARCELS 4, 5, AND, 6 COWAN CREEK" SUBMITTED ON OCTOBER 16, 2020

Project Number:	22226x
SCALE:	AS NOTED
Project Path:	P\22000-22999
Project Name:	22226-xSOMERSET HILLS
Drawing Path:	P\22000-22999 SOMERSET
Xref DWG FILE.	HILLS
Sheet Number:	73 of 212 sheets
20	)22-21-SDP

2. Drainage Basin Parameters (This information should be provided for each basin)	<u>):</u>		2. Drainage Basin Parameters (This ir	formation should be provided for each basin	<u>1):</u>		2. Drainage Ba
Drainage Basin/Outfall Area No. =	POND A			Drainage Basin/Outfall Area No. =	POND B		
Total drainage basin/outfall area = Predevelopment impervious area within drainage basin/outfall area = Post-development impervious area within drainage basin/outfall area =	9.33 0.00 6.66	acres acres acres	Predevelopment imperviou Post-development imperviou	Total drainage basin/outfall area = us area within drainage basin/outfall area = us area within drainage basin/outfall area =	6.31 acres 0.00 acres 4.68 acres		Pred Post-d
Post-development impervious fraction within drainage basin/outfall area =	0.71 5796	lbs.	Post-development impervious fr	action within drainage basin/outfall area =	0.74 4073 Ibs.		Post-deve
3. Indicate the proposed BMP Code for this basin.			3. Indicate the proposed BMP Code for	or this basin.			3. Indicate the
Proposed BMP = Bat Removal efficiency =	91 I	percent		Proposed BMP = B: Removal efficiency =	91 percent		
4. Calculate Maximum TSS Load Removed (L _R ) for this Drainage Basin by the select	cted BMP Type.	16+0 ×0.54)	4. Calculate Maximum TSS Load Ren	noved (L _R ) for this Drainage Basin by the sele	ected BMP Type.	( 0.54)	4. Calculate M
where: $A_{\rm C}$ = Tot	tal On-Site drainage area in	the BMP catchment area	where:	A _C = To	tal On-Site drainage area in the BMP	catchment area	
A _i = Imp A _p = Per L _n = TS'	pervious area proposed in th rvious area remaining in the S Load removed from this ca	e BMP catchment area BMP catchment area atchment area by the proposed BMP		A _i = Im A _p = Pi L _p = TS	pervious area proposed in the BMP cat ervious area remaining in the BMP cat SS Load removed from this catchment	atchment area chment area area by the proposed BMP	
A _C =	9.33	acres		A _C =	6.31 acres		
A, = Ap = Lp =	6.66 2.67 6751	acres acre		A ₁ = A _P = L _R =	4.68 acres 1.63 acres 4740 lbs		
Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area			5. Calculate Fraction of Annual Runo	f to Treat the drainage basin / outfall area			5. Calculate F
Desired L _{M THIS BASIN} = F =	0.91	lbs.		Desired L _{M THIS BASIN} =	4100 Ibs.		
6. Calculate Capture Volume required by the BMP Type for this drainage basin / ou	utfall area.	Calculations from RG-348	6. Calculate Capture Volume required	d by the BMP Type for this drainage basin / o	utfall area.	Calculations from RG-348	6. Calculate C
Rainfall Depth =	1.80 i	inches		Rainfall Depth =	1.38 inches		
Post Development Runoff Coefficient = On-site Water Quality Volume =	0.52 31684	cubic feet		Post Development Runoff Coefficient = On-site Water Quality Volume =	0.55 17396 cubic feet		
	0	Pages 3-36 to 3-37			0	Pages 3-36 to 3-37	
Off-site area draining to BMP = Off-site Impenvious cover draining to BMP =	0.00	acres		Off-site area draining to BMP = Off-site Impervious cover draining to BMP =	0.00 acres 0.00 acres		
Impervious fraction of off-site area = Off-site Runoff Coefficient = Off-site Water Quality Volume =	0 0.00 0	cubic feet		Impervious fraction of off-site area = Off-site Runoff Coefficient = Off-site Water Quality Volume =	0 0.00 0 cubic fee	t	
Storage for Sediment =	6337			Storage for Sediment =	3479		
	R. 245		OND A 9.33 AC 5.66 ACIMP		POND B 6.31 AC 4.68 AC IMP		
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2022-21-SDP

File Name: P:\22000-22999\22226 xSomerset Hills LTD\06 Parcel 5 East HTA\CAD\Plans\75 OVERALL STORM SEWER PLAN (1 OF 2).dwg By: Tomas Garcia Date: 4/19/2024 3:07 PM 

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							STRM-	EHYDRO	LOGICSL	IMMARY	TABLE						
Subarea	Area	Тс	i2	i10	i25	i100	c2	c10	c25	c100	Q2	Q10	Q25	Q100	Roadway/ Buildings/ Sidewalks	%	Grass
Number	(acres)	(min)	(in/hr)	(in/hr)	(in/hr)	(in/hr)					(cfs)	(cfs)	(cfs)	(cfs)	(acres)		(acres)
E-01	0.960	6.42	6.11	8.20	9.37	11.34	0.71	0.73	0.74	0.77	4.16	5.75	6.66	8.38	0.59	62%	0.37
E-01A	0.481	5.46	6.35	8.49	9.68	11.69	0.71	0.73	0.74	0.77	2.17	2.98	3.45	4.33	0.30	62%	0.18
E-01B	0.894	5.04	6.46	8.62	9.82	11.86	0.71	0.73	0.74	0.77	4.10	5.63	6.50	8.16	0.55	62%	0.34
E-01C	0.511	5.52	6.34	8.47	9.66	11.67	0.71	0.73	0.74	0.77	2.30	3.16	3.65	4.59	0.32	62%	0.19
E-01D	0.459	5.34	6.38	8.53 8.22	9.72	11.74	0.76	0.78	0.79	0.81	2.23	3.05	3.52	4.30	0.32	/1% CE0/	0.14
	0.885	9.72	5.42	7 34	9.50	10.29	0.75	0.75	0.78	0.70	3.60	5.00	4.30	7 29	0.40	68%	0.21
E-01G	0.000	5.88	6.25	8.36	9.54	11.53	0.73	0.73	0.75	0.00	4.38	5.00	6.97	8.65	0.00	62%	0.20
E-01H	0.346	5.00	6.47	8.64	9.83	11.87	0.72	0.80	0.80	0.82	1.75	2.39	2.72	3.37	0.26	74%	0.09
E-01J	0.773	6.48	6.10	8.18	9.35	11.32	0.73	0.75	0.76	0.78	3.44	4.74	5.49	6.83	0.50	65%	0.27
E-01K	0.578	9.90	5.39	7.30	8.42	10.23	0.72	0.74	0.75	0.77	2.24	3.12	3.65	4.55	0.37	63%	0.21
E-01L	0.261	5.00	6.47	8.64	9.83	11.87	0.79	0.80	0.81	0.83	1.33	1.80	2.08	2.57	0.20	76%	0.06
E-01M	0.567	10.08	5.35	7.26	8.37	10.18	0.72	0.74	0.75	0.77	2.18	3.05	3.56	4.44	0.36	63%	0.21
E-01N	0.789	6.66	6.06	8.13	9.30	11.25	0.72	0.74	0.75	0.77	3.44	4.75	5.50	6.83	0.50	63%	0.29
E-01P	0.546	5.34	6.38	8.53	9.72	11.74	0.71	0.73	0.74	0.77	2.47	3.40	3.93	4.94	0.34	62%	0.21
E-01Q	0.708	5.82	6.26	8.38	9.56	11.56	0.73	0.74	0.76	0.78	3.24	4.39	5.14	6.38	0.46	64%	0.25
E-01R	0.595	5.88	6.25	8.30	9.54	11.53	0.71	0.73	0.74	0.77	2.64	3.63	4.20	5.28	0.37	62%	0.23
E-015	0.490	6.06	6.20	8.30	9.02	11.00	0.71	0.73	0.74	0.77	2.25	3.00	3.97	4.47	0.30	63%	0.19
E-01U	0.901	5.04	6.46	8.62	9.82	11.86	0.72	0.74	0.75	0.78	4.19	5.75	6.64	8.33	0.58	64%	0.33
E-01V	0.567	5.94	6.23	8.34	9.52	11.51	0.74	0.76	0.77	0.79	2.61	3.59	4.16	5.16	0.39	68%	0.18
E-01W	0.759	10.80	5.23	7.11	8.20	9.99	0.72	0.73	0.75	0.77	2.86	3.94	4.67	5.84	0.48	63%	0.28
E-02	0.522	6.06	6.20	8.30	9.48	11.47	0.71	0.73	0.74	0.77	2.30	3.16	3.66	4.61	0.32	62%	0.20
E-02A	0.619	5.64	6.31	8.43	9.62	11.62	0.71	0.73	0.74	0.77	2.77	3.81	4.41	5.54	0.38	62%	0.24
E-02B	0.742	5.46	6.35	8.49	9.68	11.69	0.72	0.73	0.75	0.77	3.39	4.60	5.39	6.68	0.46	63%	0.28
E-03	0.906	14.34	4.68	6.44	7.48	9.14	0.72	0.74	0.75	0.77	3.05	4.32	5.08	6.38	0.57	63%	0.33
E-03A	0.441	5.76	6.28	8.39	9.58	11.58	0.74	0.75	0.76	0.79	2.05	2.77	3.21	4.03	0.29	66%	0.15
E-03B	0.675	7.00	5.65	7.60	9.00	10.91	0.72	0.73	0.75	0.77	2.03	3.07 2.12	4.00	0.07 3.12	0.42	64%	0.25
E-030	0.584	10.40	5.32	7.04	8.33	10.00	0.72	0.74	0.75	0.70	2.24	3.12	3.65	4.56	0.24	63%	0.14
E-03E	0.388	9.60	5.44	7.37	8.49	10.32	0.72	0.74	0.75	0.77	1.52	2.12	2.47	3.08	0.25	63%	0.14
E-03F	0.478	5.76	6.28	8.39	9.58	11.58	0.73	0.75	0.76	0.79	2.19	3.01	3.48	4.37	0.31	66%	0.16
E-04	0.491	6.66	6.06	8.13	9.30	11.25	0.71	0.73	0.74	0.77	2.11	2.91	3.38	4.25	0.30	62%	0.19
E-04A	0.486	6.60	6.07	8.14	9.31	11.27	0.72	0.73	0.75	0.77	2.12	2.89	3.39	4.22	0.30	63%	0.18
E-04B	0.625	8.82	5.59	7.56	8.69	10.55	0.72	0.74	0.75	0.78	2.52	3.50	4.07	5.14	0.40	64%	0.23
E-04C	0.491	5.00	6.47	8.64	9.83	11.87	0.77	0.79	0.80	0.81	2.45	3.35	3.86	4.72	0.36	73%	0.14
E-04D	0.261	6.36	6.13	8.21	9.39	11.36	0.72	0.73	0.75	0.77	1.15	1.56	1.84	2.28	0.16	62%	0.10
E-04E	0.752	9.72	5.42	7.34	0.40 8.77	10.29	0.72	0.74	0.75	0.78	2.93	4.08	4.77	6.04 1.45	0.48	68%	0.27
E-04F	0.172	5.00	6.47	8.64	9.83	11.87	0.74	0.76	0.77	0.79	2.81	3.81	4 39	5.51	0.12	68%	0.00
E-040	0.598	5.00	6.40	8.55	9.74	11.07	0.70	0.73	0.75	0.00	2.01	373	4.37	5.42	0.40	63%	0.10
E-04J	0.987	9.66	5.43	7.36	8.47	10.30	0.73	0.75	0.76	0.79	3.91	5.45	6.35	8.03	0.65	66%	0.34
E-04K	0.566	5.00	6.47	8.64	9.83	11.87	0.75	0.77	0.78	0.80	2.75	3.77	4.34	5.37	0.39	69%	0.17
E-05	0.395	5.64	<mark>6.3</mark> 1	8.43	9.62	11.62	0.74	0.75	0.77	0.79	1.84	2.50	2.93	3.63	0.26	67%	0.13
E-05A	0.725	9.48	5.46	7.40	8.52	10.35	0.72	0.74	0.75	0.78	2.85	3.97	4.63	5.85	0.46	64%	0.26
E-06	0.755	10.14	5.34	7.25	8.36	10.17	0.72	0.74	0.75	0.77	2.90	4.05	4.73	5.91	0.48	63%	0.28
E-06A	0.579	10.74	5.24	7.12	8.22	10.00	0.72	0.74	0.75	0.78	2.18	3.05	3.57	4.52	0.37	63%	0.21
E-06B	1.000	12.60	4.93	6.75	7.81	9.53	0.73	0.75	0.76	0.79	3.60	5.06	5.94	7.53	0.66	66%	0.34
	0.402	6.06	6.20	8.30	9.70	11.72	0.75	0.76	0.77	0.79	2.21	2.99	J.45	4.20	0.31	6/0%	0.15
E-06E	0.273	5.58	6.32	8 45	9.40	11.47	0.72	0.74	0.73	0.70	1.23	1.68	1.95	2 45	0.42	63%	0.10
E-07	0.508	5.34	6.38	8.53	9.72	11.74	0.72	0.74	0.75	0.78	2.33	3.21	3.70	4.65	0.32	64%	0.18
E-07A	0.598	5.46	6.35	8.49	9.68	11.69	0.73	0.75	0.76	0.79	2.77	3.81	4.40	5.52	0.39	66%	0.20
E-07B	0.648	8.82	5.59	7.56	8.69	10.55	0.72	0.74	0.75	0.78	2.61	3.63	4.22	5.33	0.41	64%	0.24
E-07C	0.530	10.26	5.32	7.22	8.33	10.13	0.72	0.74	0.75	0.78	2.03	2.83	3.31	4.19	0.34	64%	0.19
E-07D	0.733	5.64	6.31	8.43	9.62	11.62	0.73	0.75	0.76	0.79	3.38	4.63	5.36	6.73	0.48	66%	0.25
E-07E	0.112	7.02	5.97	8.02	9.19	11.13	0.74	0.76	0.77	0.79	0.49	0.68	0.79	0.98	0.08	68%	0.04
E-07F	0.724	10.20	5.33	0.24	8.34	10.15	0.72	0.75	0.76	0.79	2.86	3.93	4.59	5.81	0.48	66%	0.24
E-07U	0.440	0.52	0.04 5 /1	0.4/	9.00	10.27	0.73	0.75	0.76	0.79	2.00	2.03	5.27	4.11	0.29	63%	0.15
E-U/H	0.000	3.10	J.41	1.55	0.40	10.27	U.7 I	0.75	0.74	0.11	J.20	4.00	J.JJ	0.75	0.55	03%	0.52

	NO.	REVISION	BY	DATE	TLH, TG, JKL	04-19-2
WARNING!					DESIGNED BY:	
cables and other above and below ground utilities in the vicinity of this project. The Contractor shall contact all appropriate					DRAWN BY:	<u>04-19-2</u> DATE
any conflicts exist. If so, the Contractor shall immediately contact the Engineer who shall revise the design as necessary.					TLH CHECKED BY:	04-19-2 DATE
						04-19-2

File Name: P:\22000-22999\22226 xSomerset Hills LTD\06_Parcel 5 East HTA\CAD\Plans\106 STRM-E BASIN CALCULATIONS (2 OF 3).dwg By: Kevin Langford Date: 4/19/2024 2:32 PM 

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# STRM-E BASIN CALCULATIONS (2 0F 3) SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

Project Number:	22226\21-MADISO						
SCALE:	AS NOTED						
Project Path:	P\22000-22999						
Project Name:	SOMERSET HILLS						
Drawing Path:	Somerset Hills LTD\( 5 East						
Xref DWG FILE.							
Sheet Number:	106 of 212 sheets						

22226\21-MADISON TRACT AS NOTED P\22000-22999 SOMERSET HILLS PARCEL 5 Somerset Hills LTD\06_Parcel 5 East

InletID
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				25-Y	R INLET RES	JLTS				
InletID	BypassInletID	Total Runoff (CFS)	Qcarryover (CFS)	Qcaptured (CFS)	Qbypass (CFS)	Gutter Depth (CFS)	Gutter Spread (CFS)	Gutter Longitudinal Slope (F17 F1)	Gutter Cross Slope (SW) (FT/ FT)	Road Cross Slope (Sx) (FT/ FT)
E01	E01A	6.93	0.00	5.97	0.97	0.31	15.70	0.005	0.02	0.02
E01A	E01B	3.57	0.97	4.08	0.46	0.23	11.56	0.011	0.02	0.02
E01B	E01C	6.74	0.46	4.49	2.71	0.22	10.89	0.038	0.02	0.02
E01C	E01E	3.80	2.71	4.33	2.18	0.21	10.71	0.034	0.02	0.02
E01D	E01F	3.63	0.00	3.63	0.00	0.17	8.75	0.031	0.02	0.02
F01E	F01J	4 58	2.18	4 54	222	0.22	11 19	0.029	0.02	0.02
F01F	F01J	6.03	1.22	4 72	2.53	0.23	11.48	0.029	0.02	0.02
E01G	F01J	6.40	0.00	5.65	0.74	0.30	15.23	0.005	0.02	0.02
F01H	E011	2.61	0.00	2.61	0.00	0.22	10.89	0.005	0.02	0.02
E01.1	E01L	5.69	5.50	8.01	317	0.38	18.78	0.005	0.02	0.02
F01K	F01M	3.81	1.06	4.08	0.79	0.22	11.06	0.016	0.02	0.02
E01I	E01N	2 12	3 79	5.24	0.67	0.29	14.29	0.006	0.02	0.02
F01M	E06	3.72	0.79	4.31	0.20	0.26	12.92	0.006	0.02	0.02
E01N	F01P	5.72	0.67	5.54	0.87	0.29	14.73	0.006	0.02	0.02
F01P	E01R	4 12	0.87	4 66	0.34	0.23	13.42	0.006	0.02	0.02
E010	E0111	5 30	0.00	4.86	0.44	0.27	13.72	0.006	0.02	0.02
E01Q	E016	4 4 1	0.34	4.00	0.77	0.26	13.12	0.006	0.02	0.02
F01S	E010	3.76	0.27	3 94	0.09	0.25	12.38	0.006	0.02	0.02
E010		0.70 11/	0.27	4 10	0.03	0.25	12.00	0.006	0.02	0.02
E0111	E01V	6.91	0.03	6.05	1 30	0.25	15.50	0.006	0.02	0.02
E01V	Son	4.35	3.73	8.08	0.00	0.31	21.22	0.000 Soc	0.02	0.02
	Say	4.33	3.73	0.00	0.00	0.42	21.22	Say	0.02	0.02
	Say For A	4.07	3.92	0.79	0.00	0.45	22.44	Say	0.02	0.02
E02	EUZA	3.01	0.00	3.79	0.02	0.25	12.04	0.005	0.02	0.02
EUZA	EU2B	4.56	0.02	4.08	0.53	0.23	11.43	0.012	0.02	0.02
EU2B	EUTF	5.58	0.53	4.90	1.22	0.25	12.71	0.012	0.02	0.02
E03	E03B	5.31	1.19	4.29	2.22	0.21	10.59	0.036	0.02	0.02
E03A	E03C	3.34	0.00	2.75	0.59	0.16	1.15	0.050	0.02	0.02
E03B	E03D	4.77	2.22	4.35	2.64	0.21	10.57	0.042	0.02	0.02
E03C	E03F	2.60	0.59	2.81	0.38	0.16	8.19	0.034	0.02	0.02
E03D	E03E	3.77	2.64	4.29	2.12	0.21	10.64	0.034	0.02	0.02
E03E	E01K	2.58	2.12	3.64	1.06	0.19	9.64	0.031	0.02	0.02
E03F	E01L	3.63	0.38	3.40	0.62	0.19	9.46	0.025	0.02	0.02
E04	E04A	3.52	0.00	3.52	0.00	0.24	12.17	0.005	0.02	0.02
E04A	E04C	3.56	0.00	3.56	0.00	0.24	12.23	0.005	0.02	0.02
E04B	E04E	4.27	0.54	3.96	0.85	0.21	10.66	0.019	0.02	0.02
E04C	E04G	3.95	0.03	3.48	0.51	0.20	9.84	0.020	0.02	0.02
E04D	E04G	1.91	0.00	1.91	0.00	0.19	9.68	0.005	0.02	0.02
E04E	E04J	4.95	0.85	3.84	1.97	0.19	9.62	0.048	0.02	0.02
E04F	E04J	1.19	0.00	1.19	0.00	0.11	5.70	0.033	0.02	0.02
E04G	E04K	4.57	0.51	4.15	0.92	0.22	11.10	0.017	0.02	0.02
E04H	E04K	5.39	0.00	5.01	0.38	0.29	14.28	0.005	0.02	0.02
E04J	E01W	6.62	1.97	4.67	3.92	0.22	10.97	0.052	0.02	0.02
E04K	E01V	4.70	1.30	3.94	2.06	0.20	9.81	0.046	0.02	0.02
E05	E04C	3.05	0.00	3.02	0.03	0.20	10.13	0.010	0.02	0.02
E05A	E04B	4.85	0.00	4.31	0.54	0.24	12.06	0.010	0.02	0.02
E06	E06A	4.95	0.20	4.84	0.31	0.28	14.04	0.005	0.02	0.02
E06A	Sag	3.99	0.31	4.30	0.00	0.28	13.93	Sag	0.02	0.02
E06B	Sag	6.18	0.00	6.18	0.00	0.35	17.74	Sag	0.02	0.02
E06C	Sag	3.57	0.00	3.57	0.00	0.25	12.31	Sag	0.02	0.02
E06D	E01V	4.89	0.00	4.66	0.23	0.28	13.78	0.005	0.02	0.02
E06E	E01V	2.00	0.00	2.00	0.00	0.20	9.86	0.005	0.02	0.02
E07	E07B	3.87	0.00	3.45	0.42	0.20	9.93	0.018	0.02	0.02
E07A	E07D	4.58	0.00	3.86	0.72	0.21	10.58	0.018	0.02	0.02
E07B	E07C	4.41	0.42	3.99	0.84	0.22	10.78	0.018	0.02	0.02
E07C	E07F	3.45	0.84	3.70	0.59	0.21	10.31	0.018	0.02	0.02
E07D	E07G	0.81	0.00	0.81	0.00	0.14	7.02	0.005	0.02	0.02
E07E	E07F	5.54	0.72	4.64	1.61	0.24	11.77	0.019	0.02	0.02
E07F	E07H	4.75	0.59	4.22	1.12	0.22	11.08	0.019	0.02	0.02
E07G	E07H	3.44	1.61	3.88	1.17	0.20	10.17	0.027	0.02	0.02
E07H	Sag	5.53	2.29	7.82	0.00	0.42	20.76	Sag	0.02	0.02

	NO.	REVISION	BY	DATE		
					TLH, TG, JKL	04-19-20
WARNING!					DESIGNED BY:	DATE
There are existing water pipelines, underground telephone	<b></b>				TLH, TEH, TG, JKL	04-19-20
cables and other above and below ground utilities in the vicinity of this project. The Contractor shall contact all appropriate					DRAWN BY:	DATE
companies prior to any construction in the area and determine if					TLH	04-19-20
any conflicts exist. If so, the Contractor shall immediately contact the Engineer who shall revise the design as necessary.					CHECKED BY:	DATE
Comming the second second					TLH	04-19-20
					APPROVED BY:	DATE

File Name: P:\22000-22999\22226 xSomerset Hills LTD\06_Parcel 5 East HTA\CAD\Plans\107 STRM-E BASIN CALCULATIONS (3 of 3).dwg By: Kevin Langford Date: 4/19/2024 2:32 PM

100-YR INLET RESULTS										
InletID	BypassInletID	Total Runoff (CFS)	Qcarryover (CFS)	Qcaptured (CFS)	Qbypass (CFS)	Gutter Depth (CFS)	Gutter Spread (CFS)	Gutter Longitudinal Slope (F17 F1)	Gutter Cross Slope (SW) (F1/ F1)	Road Cross Slope (Sx) (F1/ F1)
E01	E01A	8.39	0.00	6.74	1.65	0.34	16.86	0.005	0.02	0.02
E01A	E01B	4.32	1.65	4.88	1.09	0.26	12.80	0.011	0.02	0.02
E01C	E01C	0.14	1.09	5.12	4.10	0.24	11.95	0.036	0.02	0.02
F01D	F01F	4 38	0.00	4 38	0.00	0.24	9 39	0.034	0.02	0.02
E01E	E01J	5.54	3.63	5.35	3.82	0.25	12.54	0.029	0.02	0.02
E01F	E01J	7.33	2.11	5.44	4.01	0.25	12.68	0.029	0.02	0.02
E01G	E01J	7.74	0.00	6.41	1.33	0.33	16.36	0.005	0.02	0.02
E01H	E01L	3.16	0.00	3.16	0.00	0.23	11.69	0.005	0.02	0.02
E01J	E01L	6.88	9.15	9.81	6.23	0.43	21.50	0.005	0.02	0.02
E01K	E01M	4.63	2.37	5.09	1.91	0.25	12.67	0.016	0.02	0.02
E01L	E01N	2.56	7.43	7.29	2.70	0.35	17.40	0.006	0.02	0.02
E0 TIVI	E00 E01P	4.53	1.91	5.55 7.15	0.89	0.30	14.70	0.006	0.02	0.02
E01N F01P	E01P F01R	4.98	2.70	6.12	1.37	0.34	15.62	0.000	0.02	0.02
E01Q	E01U	6.41	0.00	5.54	0.87	0.29	14.73	0.006	0.02	0.02
E01R	E01S	5.33	1.37	5.70	1.00	0.30	14.97	0.006	0.02	0.02
E01S	E01T	4.54	1.00	5.01	0.53	0.28	13.95	0.006	0.02	0.02
E01T	E01V	5.01	0.53	5.01	0.53	0.28	13.94	0.006	0.02	0.02
E01U	E01V	8.34	0.87	6.95	2.26	0.34	16.88	0.006	0.02	0.02
E01V	Sag	5.26	6.86	12.12	0.00	0.56	27.80	Sag	0.02	0.02
E01W	Sag	5.93	5.87	11.80	0.00	0.55	27.31	Sag	0.02	0.02
E02	E02A	4.60	0.00	4.44	0.16	0.27	13.47	0.005	0.02	0.02
E02A	E02B	5.54	0.16	4.69	1.01	0.25	12.38	0.012	0.02	0.02
E02B	E01F E03B	6.75	2.10	2.65 4.98	2.11	0.28	11.76	0.012	0.02	0.02
F03A	E03D	4 04	0.00	3.09	0.94	0.24	8.33	0.050	0.02	0.02
E03B	E03D	5.79	3.61	5.08	4.32	0.24	11.81	0.042	0.02	0.02
E03C	E03F	3.16	0.94	3.30	0.80	0.18	9.00	0.034	0.02	0.02
E03D	E03E	4.58	4.32	5.13	3.78	0.24	12.04	0.034	0.02	0.02
E03E	E01K	3.14	3.78	4.55	2.37	0.22	11.14	0.031	0.02	0.02
E03F	E01L	4.39	0.80	3.98	1.20	0.21	10.41	0.025	0.02	0.02
E04	E04A	4.26	0.00	4.17	0.09	0.26	13.08	0.005	0.02	0.02
E04A	E04C	4.31	0.09	4.28	0.11	0.26	13.24	0.005	0.02	0.02
E04B	E04E	5.19	0.99	4.61	1.57	0.23	11.71	0.019	0.02	0.02
E04C	E04G	4.77	0.27	2 31	0.00	0.21	10.74	0.020	0.02	0.02
E04E	E04J	6.03	1.57	4.44	3.16	0.21	10.63	0.048	0.02	0.02
E04F	E04J	1.45	0.00	1.45	0.00	0.12	6.13	0.033	0.02	0.02
E04G	E04K	5.51	1.00	4.83	1.68	0.24	12.19	0.017	0.02	0.02
E04H	E04K	6.51	0.00	5.72	0.79	0.31	15.33	0.005	0.02	0.02
E04J	E01W	8.06	3.16	5.34	5.87	0.24	12.12	0.052	0.02	0.02
E04K	E01V	5.68	2.47	4.64	3.50	0.22	11.00	0.046	0.02	0.02
E05	E04C	3.68	0.00	3.53	0.15	0.22	10.88	0.010	0.02	0.02
E05A	E04B	5.90	0.00	4.91	0.99	0.26	12.98	0.010	0.02	0.02
EUG	EU6A	0.02	0.89	5.95	0.96	0.31	15.68	0.005	0.02	0.02
FORR	San	7 54	0.90	7 54	0.00	0.34	20.26	San	0.02	0.02
F06C	San	4 31	0.00	4 31	0.00	0.41	13.96	Sad	0.02	0.02
E06D	E01V	5.92	0.00	5.36	0.56	0.30	14.79	0.005	0.02	0.02
E06E	E01V	2.42	0.00	2.42	0.00	0.21	10.59	0.005	0.02	0.02
E07	E07B	4.68	0.00	3.92	0.76	0.21	10.66	0.018	0.02	0.02
E07A	E07D	5.54	0.00	4.35	1.19	0.23	11.35	0.018	0.02	0.02
E07B	E07C	5.36	0.76	4.62	1.50	0.24	11.79	0.018	0.02	0.02
E07C	E07F	4.20	1.50	4.43	1.27	0.23	11.48	0.018	0.02	0.02
E07D	E07G	0.98	0.00	0.98	0.00	0.15	7.54	0.005	0.02	0.02
E07E	E07F	6.70	1.19	5.30	2.59	0.26	12.83	0.019	0.02	0.02
E07F	E07H	5.78	1.27	4.97	2.08	0.25	12.30	0.019	0.02	0.02
	EU/H	4.15	2.59	4.58	2.16	0.23	11.33	0.027	0.02	0.02
	Sag	0.72	4.23	10.95	0.00	0.52	20.99	Sag	0.02	0.02

![](_page_202_Picture_5.jpeg)

![](_page_202_Picture_6.jpeg)

# STRM-E BASIN CALCULATIONS (3 of 3) SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

SCALE: Project Path: Project Name: Drawing Path: Xref DWG FILE.

Project Number: 22226\21-MADISON TRACT AS NOTED P\22000-22999 SOMERSET HILLS PARCEL 5 Somerset Hills LTD\06_Parcel 5 East

2022-21-SDP

heet Number: 107 of 212 sheets

![](_page_203_Figure_0.jpeg)

-					
			Avg End Area Cumulative		
)	Area (sf)	nd Area Volum	Volume (cf)		
	25	0	0		
	9,114	3,427	3,427		
	16,338	12,726	16,153		
	18,062	17,200	33,353		
	19,872	18,967	52,319		
	21,772	20,822	73,141		
	23,760	22,766	95,907		
	25,832	24,796	120,703		
	26,683	10,503	131,206		
	27,984	16,400	147,606		
	30,209	29,097	176,703		
	32,501	31,355	208,058		
	34,857	33,679	241,737		
	37,278	36,068	277,805		
	39,762	38,520	316,325		
	42,308	41,035	357,360		
		Required:	122,101		

100 YEAR DEV CFS			
314.37	WEIR CAI		NQ POND E -P5
Maximum WSE (ft)	Elevation (ft)	Storage (ac-ft)	Discharge (cfs)
898.4	897	2.20	0
Weir Elevation (ft)	898	2.77	0
899	899	3.39	0
Weir Length (ft)	900	4.06	34
13	901	4.78	96
	902	902.00	176
	903	6.38	270
	904	7.26	378
	905	8.20	497
	100 YEAR CF	-S TO POND E	314

Construc	tion Pha	ase - Temporary	Sedi
Elevation [ft]	Area [s.f.]	Avg End Incremental Volume [c.f.]	Avg I V
891.25	25	0	
892	9,114	3,427	
893	16,338	12,726	
894	18,062	17,200	
895	19,872	18,967	
896	21,772	20,822	
897	23,760	22,766	
898	25,832	24,796	
899	27,984	26,908	
900	30,209	29,097	
901	32,501	31,355	
902	34,857	33,679	
903	37,278	36,068	
904	39,762	38,520	
905	42,308	41,035	
3,000 Ft ³ /Ac		Required =	

![](_page_203_Figure_6.jpeg)

![](_page_203_Figure_7.jpeg)

### BATCH POND CONTROLLER NOTES:

- 1. Submittals The contractor shall provide the engineer with batch pond controller submittals for review and approval prior to construction. Submittals shall include: power source, battery backup, logic controller, lockable parts enclosure, float, valve, actuator, relay, alarm system, signage, etc. Total wattage of power consumption and w-hours of actuator, controller and relay shall be provided. A copy of the approved submittals shall be provided to TCEQ with the engineers certification of project completion for inclusion in the TCEQ project file .
- 2. Controller The controller consists of a level sensor in the detention basin, a valve (with a default closed position), an actuator, and the associated control. The controller detects water filling the basin from the level sensor and initiates a 12-hour detention time. At the end of the required detention time, the controller opens the valve and drains into the second basin. Subsequent rainfall events that occur prior to the basin draining should cause the valve to remain open and allow the additional stormwater runoff to pass through the basin. Once the basin is drained the controller closes the valve. The drawdown time of the basin should not exceed 48 hours for a single storm event after the 12 hour required detention time. All cables should be protected by conduit and buried to prevent damage during maintenance activities. Information on the design and configuration of an existing system, including the system schematic, can be viewed at the Austin or San Antonio Regional Offices.
- 3. Logic Controller The controller should be programmed to begin draining stormwater runoff from the basin 12 hours after the first stormwater runoff is sensed. The system should be programmed to have the valve remain open for two hours after the level sensor indicates the basin is empty to allow any remaining shallow water to be discharged. The system should provide the following: a test sequence, be able to deal with low battery/power outages, an on/off/reset switch, manual open/close switches (maintenance/spill), clearly visible external indicator to indicate a cycle is in progress without opening the box, and ability to exercise the valve to prevent seizing.
- 4. Power The pond control system controller and actuator shall be 120 volt powered or 120 volt solar powered with backup battery power to respond to a loss of power in the middle of a cycle. 5. Parts Enclosure & Alarm System - The parts enclosure shall be lockable. An alarm system clearly visible to indicate system malfunction, with phone
- numbers of the owner and TCEQ Region 11 office shall be provided. 6. Temperature/Weather - The system shall be be capable of operation from 0 to 130 degrees Fahrenheit and from 10 to 90% humidity.
- 7. Reliability The system shall have a minimum reliability of 40,000 hours (4.6 years).

![](_page_204_Figure_7.jpeg)

![](_page_204_Figure_8.jpeg)

![](_page_204_Figure_9.jpeg)

## LINER DATA

IMPERMEABLE LINERS MAY BE CLAY, CONCRETE OR GEOMEMBRANE. CLAY LINERS SHOULD MEET THE SPECIFICATIONS AS SHOWN BELOW AND HAVE A MINIMUM THICKNESS OF 12 INCHES.

CLAY I	INER SPECIFICATIONS	(MIN. THICKNESS = 12")				
PROPERTY	TEST METHOD	UNIT	SPECIFICATION			
		1	·			
PERMEABILITY	ASTM D-2434	Cm/Sec	1X10 ⁽⁻⁶⁾			
PLASTICITY INDEX OF CLAY	ASTM D-423 & D-424	%	NOT LESS THAN 15			
LIQUID LIMIT OF CLAY	ASTM D-2216	%	NOT LESS THAN 30			
CLAY PARTICLES PASSING	ASTM D-422	%	NOT LESS THAN 30			
CLAY COMPACTION	ASTM D-2216	%	95% OF STANDARD PROCTOR DENSITY AT			
			OR ABOVE OPTIMUM MOISTURE CONTENT			

GEOSYNTHETIC CLAY LINERS (GCLS) ARE FACTORY MANUFACTURED HYDRAULIC BARRIERS TYPICALLY CONSISTING OF BENTONITE CLAY OR OTHER VERY LOW PERMEABILITY MATERIAL, SUPPORTED BY GEOTEXTILES AND/OR GEOMEMBRANES WHICH ARE HELD TOGETHER BY NEEDLING, STITCHING, OR CHEMICAL ADHESIVES. THESE LINERS MUST HAVE A HYDRAULIC CONDUCTIVITY OF LESS THAN 5 X 10-9 CM/SEC, WHEN TESTED BY ASTM D5887. A MINIMUM OF 12 INCHES OF SOIL COVER IS

GEOTEXTILE FABRIC DATA										
PROPERTY	TEST METHOD	UNIT	SPECIFICATION							
MATERIAL NON-WOVEN GEOTEXTILE FABRIC										
UNIT WEIGHT		OZ./SQ. YD.	8 (MIN.)							
FILTRATION RATE		IN./SEC.	0.20 (MIN)							
PUNCTURE STRENGTH	ASTM D-751 (MODIFIED)	LB.	125 (MIN)							
MULLEN BURST STRENGTH	ASTM D-751	P.S.I.	400 (MIN.)							
TENSILE STRENGTH	ASTM D-1682	LB.	200 (MIN.)							
EQUIV. OPENING SIZE	U.S. STANDARD SIEVE	NO.	80 (MIN.)							

![](_page_205_Picture_0.jpeg)

SOMERS 30501 RC

* * * * * * * * * * * * * * * * * * * *	************
	7
	Feet
	D STORM MANHOLE
	STORM JUNCTION BOX
	© WASTEWATER MANHOLE
	SUBBASIN BOUNDARY
	FLOW DIRECTION
	-
	-
	-
	-
$\mathbf{A} = \mathbf{A} = $	Project Number:     22226\21-MADISON TRACT       SCALE:     AS NOTED
SET HILLS PARCEL 5	Project Path: P\22000-22999 Project Name: SOMEDSET HULLS DADOEL 5
ONALD W REAGAN BLVD	Drawing Path: Somerset Hills LTD\06_Parcel
ity of Georgetown	Xref DWG FILE.
amson County, Texas	Sheet Number: 121 of 212 sheets

	STRM-F HYDROLOGIC SUMMARY TABLE																	
Subarea	Area	Тс	i2	i10	i25	i100	c2	c10	c25	c100	Q2	Q10	Q25	Q100	Roadway/ Buildings/ Sidewalks	%	Grass	%
Number	(acres)	(min)	(in/hr)	(in/hr)	(in/hr)	(in/hr)					(cfs)	(cfs)	(cfs)	(cfs)	(acres)		(acres)	
F-01	0.476	6.78	6.03	8.09	9.26	11.21	0.74	0.75	0.76	0.79	2.12	2.89	3.35	4.22	0.31	66%	0.16	34%
F-01A	0.843	8.10	5.74	7.74	8.88	10.77	0.72	0.74	0.75	0.78	3.48	4.83	5.61	7.08	0.54	64%	0.31	36%
F-01B	0.146	5.00	6.47	8.64	9.83	11.87	0.78	0.80	0.81	0.82	0.74	1.01	1.16	1.42	0.11	75%	0.04	26%
F-01C	0.398	8.46	5.66	7.64	8.78	10.66	0.72	0.74	0.75	0.78	1.62	2.25	2.62	3.31	0.25	64%	0.14	36%
F-01D	0.817	5.00	6.47	8.64	9.83	11.87	0.74	0.75	0.76	0.79	3.91	5.29	6.10	7.66	0.54	66%	0.27	34%
F-01E	0.299	5.58	6.32	8.45	9.64	11.65	0.72	0.74	0.75	0.78	1.36	1.87	2.16	2.72	0.19	64%	0.11	36%
F-01F	0.692	6.18	6.17	8.27	9.44	11.42	0.73	0.75	0.76	0.78	3.12	4.29	4.96	6.16	0.45	65%	0.24	35%
F-01G	0.650	6.54	6.09	8.16	9.33	11.29	0.72	0.74	0.75	0.78	2.85	3.92	4.55	5.72	0.41	64%	0.24	36%
F-01H	0.577	5.82	6.26	8.38	9.56	11.56	0.72	0.74	0.75	0.77	2.60	3.58	4.14	5.14	0.37	65%	0.20	35%
F-01J	0.403	5.00	0.47	8.64	9.83	11.87	0.72	0.74	0.75	0.77	1.88	2.58	2.97	3.68	0.25	63%	0.15	37%
F-01K	0.499	0.00 01.10	0.47	0.04 5.49	9.83	7.00	0.72	0.74	0.75	0.76	2.32	3. 19 2.74	3.00	4.02	0.32	620/	0.10	30%
F-01L	0.934	21.1Z	3.9Z	0.40 7.01	0.42	10.12	0.71	0.73	0.74	0.70	2.00	3.74	4.44	0.01	0.57	02% 710/	0.30	39%
F-01M	1.527	10.32	0.01	6.02	0.32 7.02	8.60	0.11	0.70	0.79	0.61	0.24	0.09	10.04 5.36	7.35	0.31	71%	0.45	29% 70%
F-01N	0.750	12.90	4.55	6.78	7.02	0.00	0.44	0.40	0.50	0.50	2.92	4.41	3.81	1.55	0.31	ZT /0	0.42	7970 55%
F-01P	0.753	12.42	5.02	6.85	7.03	9.50	0.00	0.00	0.04	0.00	0.97	1 52	1.85	2.63	0.04	7%	0.42	93%
F-01Q	0.599	7.92	5.02	7 78	8.93	10.83	0.33	0.40	0.75	0.43	2 49	3.45	4 01	5.00	0.38	63%	0.32	37%
F-02	0.380	7.50	5.87	7.89	9.05	10.97	0.72	0.74	0.75	0.77	1.61	2.72	2.58	3.21	0.24	63%	0.14	37%
F-02R	0.842	7.86	5.79	7.80	8.95	10.85	0.72	0.74	0.75	0.78	3.51	4.86	5.65	7 13	0.54	64%	0.31	36%
F-02D	0.577	8.22	571	7.71	8.85	10.73	0.72	0.75	0.76	0.78	2 41	3.34	3.88	4 83	0.38	65%	0.20	35%
F-02D	0.692	5.70	6.29	8.41	9.60	11.60	0.74	0.76	0.77	0.79	3.22	4 42	5.12	6.34	0.47	67%	0.23	33%
F-02E	0.761	5.88	6.25	8.36	9.54	11.53	0.75	0.76	0.77	0.79	3.57	4.84	5.59	6.93	0.51	68%	0.25	32%
F-03	0.557	5.52	6.34	8.47	9.66	11.67	0.73	0.75	0.76	0.78	2.58	3.54	4.09	5.07	0.36	65%	0.20	35%
F-03A	0.729	6.42	6.11	8.20	9.37	11.34	0.73	0.74	0.75	0.78	3.25	4.42	5.12	6.45	0.47	64%	0.26	36%
F-04	0.306	5.94	6.23	8.34	9.52	11.51	0.72	0.74	0.75	0.78	1.37	1.89	2.18	2.75	0.20	64%	0.11	36%
F-04A	0.990	12.12	5.01	6.84	7.91	9.65	0.72	0.74	0.75	0.78	3.57	5.01	5.87	7.45	0.63	64%	0.36	36%
F-04B	0.681	11.88	5.05	6.89	7.96	9.71	0.71	0.73	0.74	0.77	2.44	3.43	4.01	5.09	0.42	62%	0.26	38%
F-04C	0.419	6.54	6.09	8.16	9.33	11.29	0.72	0.74	0.75	0.78	1.84	2.53	2.93	3.69	0.27	64%	0.15	36%
F-04D	0.626	10.26	5.32	7.22	8.33	10.13	0.54	0.57	0.59	0.64	1.80	2.58	3.08	4.06	0.23	36%	0.40	64%
F-04E	0.412	9.66	5.43	7.36	8.47	10.30	0.73	0.75	0.76	0.79	1.63	2.27	2.65	3.35	0.27	66%	0.14	34%
F-04F	0.552	11.16	5.16	7.03	8.12	9.89	0.74	0.75	0.76	0.79	2.11	2.91	3.41	4.31	0.37	66%	0.19	34%
F-05	0.600	5.10	6.45	8.60	9.80	11.83	0.73	0.74	0.75	0.78	2.83	3.82	4.41	5.54	0.39	64%	0.22	36%
F-05A	0.443	5.00	6.47	8.64	9.83	11.87	0.78	0.80	0.80	0.82	2.24	3.06	3.48	4.31	0.33	74%	0.11	26%
F-05B	0.754	6.48	6.10	8.18	9.35	11.32	0.73	0.74	0.75	0.78	3.36	4.56	5.29	6.66	0.49	64%	0.27	36%
F-05C	0.289	5.00	6.47	8.64	9.83	11.87	0.79	0.80	0.81	0.83	1.48	2.00	2.30	2.85	0.22	75%	0.07	25%
F-05D	0.208	6.12	6.19	8.29	9.46	11.45	0.72	0.74	0.75	0.78	0.93	1.28	1.48	1.86	0.13	64%	0.08	36%
F-05E	0.690	6.36	6.13	8.21	9.39	11.36	0.73	0.75	0.76	0.78	3.09	4.25	4.92	6.11	0.45	65%	0.24	35%
F-05F	0.702	6.18	6.17	8.27	9.44	11.42	0.72	0.74	0.75	0.78	3.12	4.30	4.97	6.25	0.45	64%	0.25	36%
F-05G	0.393	5.00	6.47	8.64	9.83	11.8/	0.79	0.80	0.81	0.82	2.01	2.72	3.13	3.83	0.29	75%	0.10	26%
F-05H	0.225	5.00	6.4/	8.64	9.83	11.8/	0.79	0.80	0.81	0.83	1.15	1.56	1.79	2.22	0.17	/5%	0.06	25%
F-05J	0.737	13.02	4.87	0.01	1.13	9.44	0.59	0.61	0.63	0.07	2.12	3.00	3.59	4.66	0.32	43%	0.42	5/%
F-05K	0.332	5.00	0.47	8.64	9.83	11.8/	0.77	0.78	0.79	0.81	1.65	2.24	2.58	3.19	0.24	770/	0.09	29%
F-06	0.123	5.00	0.4/	0.04	9.83	11.8/	0.79	0.70	0.81	0.83	0.03	0.80	0.98	1.21	0.09	71%	0.03	24%
F-06A	0.2/4	5.40	6.47	0.49	9.00	11.09	0.70	0.78	0.79	0.01	0.79	1.01	2.10	2.59	0.20	750/	0.08	29%
	0.155	6.00	0.47	0.04	9.03	11.0/	0.79	0.00	0.01	0.02	0.70	2.01	2.26	1.49	0.11	600/	0.04	20%
F-07A	0.434	0.00	0.22	0.32	9.00	11.49	0.75	0.77	0.7δ	0.80	Z. 1Z	2.91	3.30	4.17	0.31	09%	0.14	51%

	NO.	REVISION	BY	DATE		
					TLH, TG, JKL	04-19-2024
WARNING!					DESIGNED BY:	DATE
There are existing water pipelines, underground telephone	<u> </u>				TLH, TEH, TG, JKL	04-19-2024
of this project. The Contractor shall contact all appropriate	<u> </u>				DRAWN BY:	DATE
companies prior to any construction in the area and determine if	L				TLH	04-19-2024
contact the Engineer who shall revise the design as necessary.					CHECKED BY:	DATE
					TLH	04-19-2024
	1					

 $\underline{A}$ 

File Name: P:\22000-22999\22226 xSomerset Hills LTD\06_Parcel 5 East HTA\CAD\Plans\122 STRM-F BASIN CALCULATIONS (2 OF 3).dwg By: Kevin Langford Date: 4/19/2024 1:58 PM

![](_page_206_Picture_3.jpeg)

# STRM-F BASIN CALCULATIONS (2 0F 3) SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

Project Number:	22226\21-MADISC						
SCALE:	AS NOTED						
Project Path:	P\22000-22999						
Project Name:	SOMERSET HILLS						
Drawing Path:	Somerset Hills LTD∖ 5 East						
Xref DWG FILE.							
Sheet Number:	122 of 212 sheets						

22226\21-MADISON TRACT AS NOTED P\22000-22999 SOMERSET HILLS PARCEL 5 Somerset Hills LTD\06_Parcel 5 East

25-YR INLET RESULTS										
InletID	BypassInletID	Total Runoff (CFS)	Qcarryover (CFS)	Qcaptured (CFS)	Qbypass (CFS)	Gutter Depth (CFS)	Gutter Spread (CFS)	Gutter Longitudinal Slope (FT/ FT)	Gutter Cross Slope (SW) (FT/ FT)	Road Cross Slope (Sx) (FT/ FT)
F01	E03	3.48	0.00	3.30	0.19	0.20	10.06	0.021	0.02	0.02
F01A	E03	5.84	0.00	4.84	1.00	0.26	12.80	0.016	0.02	0.02
F01B	E03A	1.20	0.00	1.20	0.00	0.14	6.98	0.017	0.02	0.02
F01C	E03	2.73	0.00	2.73	0.00	0.20	10.18	0.012	0.02	0.02
F01D	F01F	6.36	0.00	5.89	0.46	0.33	16.42	0.005	0.02	0.02
F01E	F01H	2.26	0.00	2.26	0.00	0.22	11.14	0.005	0.02	0.02
F01F	F01G	5.17	0.46	4.48	1.15	0.23	11.72	0.024	0.02	0.02
F01G	F01J	4.74	1.15	4.64	1.25	0.24	12.03	0.023	0.02	0.02
F01H	F01L	4.31	0.00	3.69	0.62	0.21	10.26	0.028	0.02	0.02
F01J	F01K	3.09	1.25	3.40	0.94	0.18	9.13	0.054	0.02	0.02
F01K	F01M	3.84	0.94	3.71	1.06	0.20	9.83	0.044	0.02	0.02
F01L	F01N	4.62	0.62	4.07	1.17	0.21	10.65	0.034	0.02	0.02
F01M	F05K	3.02	1.06	3.72	0.36	0.22	10.79	0.020	0.02	0.02
F01N	F01P	6.01	1.17	5.46	1.71	0.27	13.71	0.017	0.02	0.02
F01P	F01Q	4.12	2.51	5.51	1.12	0.29	14.34	0.011	0.02	0.02
F01Q	F05J	2.15	1.12	3.24	0.04	0.21	10.65	0.013	0.02	0.02
F02	F02A	4.18	0.00	3.77	0.41	0.22	10.83	0.020	0.02	0.02
F02A	F02C	2.69	0.41	3.01	0.09	0.19	9.65	0.020	0.02	0.02
F02B	F02D	5.88	0.00	4.70	1.17	0.25	12.27	0.020	0.02	0.02
F02C	F02E	4.04	0.09	4.12	0.00	0.28	13.97	0.005	0.02	0.02
F02D	Sag	5.31	2.19	7.50	0.00	0.40	20.19	Sag	0.02	0.02
F02E	Sag	5.82	0.90	6.72	0.00	0.38	18.77	Sag	0.02	0.02
F03	F02D	5.59	0.00	4.57	1.02	0.24	12.07	0.020	0.02	0.02
F03A	F02E	5.34	0.00	4.44	0.90	0.24	11.87	0.020	0.02	0.02
F04	F04A	2.28	0.00	2.28	0.00	0.20	9.91	0.010	0.02	0.02
F04A	F04C	6.12	0.00	4.25	1.86	0.21	10.66	0.047	0.02	0.02
F04B	F04D	4.19	0.00	3.61	0.57	0.20	10.10	0.029	0.02	0.02
F04C	F07A	3.06	1.86	3.75	1.18	0.20	9.83	0.047	0.02	0.02
F04D	F04E	3.34	0.57	3.06	0.85	0.17	8.31	0.072	0.02	0.02
F04E	F01P	2.77	0.85	3.20	0.42	0.18	9.24	0.035	0.02	0.02
F04F	F01P	3.55	0.00	3.16	0.39	0.18	9.17	0.035	0.02	0.02
F05	F05B	4.60	0.00	4.55	0.04	0.29	14.54	0.005	0.02	0.02
F05A	F05C	3.62	0.00	3.62	0.00	0.27	13.31	0.005	0.02	0.02
F05B	F05E	5.51	0.04	5.32	0.23	0.31	15.61	0.005	0.02	0.02
F05C	Sag	2.36	0.00	2.36	0.00	0.19	9.34	Sag	0.02	0.02
F05D	F05C	1.54	0.00	1.54	0.00	0.15	7.48	0.020	0.02	0.02
F05E	F05F	5.12	0.23	4.02	1.34	0.21	10.39	0.041	0.02	0.02
F05F	F07A	5.18	1.34	4.50	2.03	0.22	11.17	0.041	0.02	0.02
F05G	F05H	3.21	0.00	2.90	0.32	0.17	8.57	0.041	0.02	0.02
F05H	Sag	1.84	0.32	2.16	0.00	0.18	8.80	Sag	0.02	0.02
F05J	Offsite	3.88	0.04	3.59	0.33	0.21	10.50	0.021	0.02	0.02
F05K	Offsite	2.65	0.36	3.01	0.00	0.21	10.56	0.012	0.02	0.02
F06	Offsite	1.02	0.00	1.02	0.00	0.16	7.89	0.007	0.02	0.02
F06A	Offsite	2.16	0.00	2.16	0.00	0.17	8.48	0.020	0.02	0.02
F07	F05H	1.25	0.00	1.25	0.00	0.16	7.97	0.009	0.02	0.02
F07A	Sag	3.45	3.20	6.66	0.00	0.37	18.64	Sag	0.02	0.02

	NO.	REVISION	BY	DATE	
					TLH, TG, JKL
WARNING!	<u> </u>				DESIGNED BY:
There are existing water pipelines, underground telephone	<u> </u>				TLH, TEH, TG, JKL
cables and other above and below ground utilities in the vicinity of this project. The Contractor shall contact all appropriate					DRAWN BY:
companies prior to any construction in the area and determine if					TLH
any conflicts exist. If so, the Contractor shall immediately contact the Engineer who shall revise the design as necessary.					CHECKED BY:
					TLH

100-YR INLET RESULTS												
InletID	Bypass Inlet ID	Total Runoff (CFS)	Qcarryover (CFS)	Qcaptured (CFS)	Qbypass (CFS)	Gutter Depth (CFS)	Gutter Spread (CFS)	Gutter Longitudinal Slope (FT/FT)	Gutter Cross Slope (SW) (FT/ FT)	Road Cross Slope (Sx) (FT/ FT)		
F01	E03	4.22	0.00	3.78	0.44	0.22	10.81	0.021	0.02	0.02		
F01A	E03	7.09	0.00	5.46	1.63	0.28	13.76	0.016	0.02	0.02		
F01B	E03A	1.45	0.00	1.45	0.00	0.15	7.49	0.017	0.02	0.02		
F01C	E03	3.31	0.00	3.28	0.03	0.22	10.95	0.012	0.02	0.02		
F01D	F01F	7.67	0.00	6.72	0.95	0.35	17.63	0.005	0.02	0.02		
F01E	F01H	2.73	0.00	2.73	0.00	0.24	11.96	0.005	0.02	0.02		
F01F	F01G	6.26	0.95	5.19	2.02	0.26	12.86	0.024	0.02	0.02		
F01G	F01J	5.73	2.02	5.46	2.29	0.27	13.34	0.023	0.02	0.02		
F01H	F01L	5.21	0.00	4.17	1.04	0.22	11.02	0.028	0.02	0.02		
F01J	F01K	3.74	2.29	4.12	1.91	0.21	10.32	0.054	0.02	0.02		
F01K	F01M	4.63	1.91	4.46	2.08	0.22	11.06	0.044	0.02	0.02		
F01L	F01N	5.68	1.04	4.71	2.01	0.23	11.70	0.034	0.02	0.02		
F01M	F05K	3.68	2.08	4.67	1.09	0.25	12.27	0.020	0.02	0.02		
F01N	F01P	7.36	2.01	6.38	3.00	0.30	15.16	0.017	0.02	0.02		
F01P	F01Q	5.02	4.70	6.95	2.78	0.33	16.56	0.011	0.02	0.02		
F01Q	F05J	2.63	2.78	4.71	0.70	0.26	12.85	0.013	0.02	0.02		
F02	F02A	5.07	0.00	4.29	0.78	0.23	11.64	0.020	0.02	0.02		
F02A	F02C	3.26	0.78	3.67	0.36	0.21	10.66	0.020	0.02	0.02		
F02B	F02D	7.13	0.00	5.28	1.84	0.26	13.19	0.020	0.02	0.02		
F02C	F02E	4.90	0.36	5.10	0.16	0.31	15.30	0.005	0.02	0.02		
F02D	Sag	6.42	3.46	9.89	0.00	0.49	24.28	Sag	0.02	0.02		
F02E	Sag	7.04	1.62	8.66	0.00	0.44	22.23	Sag	0.02	0.02		
F03	F02D	6.75	0.00	5.13	1.62	0.26	12.96	0.020	0.02	0.02		
F03A	F02E	6.46	0.00	5.00	1.46	0.25	12.75	0.020	0.02	0.02		
F04	F04A	2.75	0.00	2.75	0.00	0.21	10.64	0.010	0.02	0.02		
F04A	F04C	7.46	0.00	4.75	2.71	0.23	11.49	0.047	0.02	0.02		
F04B	F04D	5.10	0.00	4.10	1.00	0.22	10.88	0.029	0.02	0.02		
F04C	F07A	3.70	2.71	4.37	2.05	0.22	10.85	0.047	0.02	0.02		
F04D	F04E	4.07	1.00	3.57	1.50	0.18	9.16	0.072	0.02	0.02		
F04E	F01P	3.36	1.50	3.88	0.99	0.21	10.33	0.035	0.02	0.02		
F04F	F01P	4.32	0.00	3.60	0.72	0.20	9.88	0.035	0.02	0.02		
F05	F05B	5.55	0.00	5.32	0.23	0.31	15.61	0.005	0.02	0.02		
F05A	F05C	4.38	0.00	4.36	0.02	0.29	14.28	0.005	0.02	0.02		
F05B	F05E	6.67	0.23	6.25	0.65	0.34	16.94	0.005	0.02	0.02		
F05C	Sag	2.85	0.02	2.87	0.00	0.21	10.63	Sag	0.02	0.02		
F05D	F05C	1.86	0.00	1.86	0.00	0.16	8.03	0.020	0.02	0.02		
F05E	F05F	6.20	0.65	4.63	2.22	0.23	11.40	0.041	0.02	0.02		
F05F	F07A	6.27	2.22	5.20	3.30	0.25	12.33	0.041	0.02	0.02		
F05G	F05H	3.88	0.00	3.29	0.59	0.18	9.20	0.041	0.02	0.02		
FU5H	Sag	2.23	0.59	2.82	0.00	0.21	10.51	Sag	0.02	0.02		
F05J	Offsite	4.73	0.70	4.47	0.96	0.24	11.87	0.021	0.02	0.02		
F05K	Ottsite	3.20	1.09	4.05	0.24	0.24	12.05	0.012	0.02	0.02		
F06	Offsite	1.24	0.00	1.24	0.00	0.17	8.47	0.007	0.02	0.02		
FU6A	Offsite	2.61	0.00	2.60	0.01	0.18	9.10	0.020	0.02	0.02		
F07	FU5H	1.51	0.00	1.51	0.00	0.17	8.56	0.009	0.02	0.02		
F07A	Sag	4.18	5.35	9.52	0.00	0.47	23.67	Sag	0.02	0.02		

![](_page_207_Picture_5.jpeg)

![](_page_207_Picture_6.jpeg)

STRM-F BASIN CALCULATIONS (3 of 3) SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

SCALE: Project Path: Project Name: Drawing Path: Xref DWG FILE. heet Number: 123 of 212 sheets

Project Number: 22226\21-MADISON TRACT AS NOTED P\22000-22999 SOMERSET HILLS PARCEL 5 Somerset Hills LTD\06_Parcel 5 East

2. Drainage Basin Parameters (This information should be provided for each ba	<u>sin):</u>			
Drainage Basin/Outfall Area No. =	POND F	•		
Total drainage basin/outfall area =	29.27	acres		
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres		
Post-development impervious area within drainage basin/outfall area =	16.32	acres		
Post-development impervious fraction within drainage basin/outfall area =	0.56			
L _{M THIS BASIN} =	14202	lbs.	15105 AT 85% RE	MOV
3. Indicate the proposed BMP Code for this basin.				
Proposed BMP = <b>Ba</b>	tch Deter	ntion		
Removal efficiency =	91	percent		
. Calculate Maximum TSS Load Removed (L _R ) for this Drainage Basin by the s	elected B	MP Type.		
RG-348 Page 3-33 Equation 3.7: $L_R = (Bl)$	MP efficier	ncy) x P x (A _l	x 34.6 + A _P x 0.54)	
where: A _C = To	tal On-Site	e drainage are	a in the BMP catchment area	
$A_1 = Im$	pervious a	rea proposed	in the BMP catchment area	
A _P = Pe	ervious area	a remaining in	the BMP catchment area	
L _R = TS	S Load re	moved from th	is catchment area by the proposed	BMF
A _C =	28.95	acres		
A ₁ =	16.00	acres		
A _P =	12.95	acres		
L _R =	16324	lbs		
		,		
. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area	<u>.</u>			
Desired L _{M THIS BASIN} =	15105	lbs.		
F =	0.93	٦		
. Calculate Capture Volume required by the BMP Type for this drainage basin	/ outfall a	irea.	Calculations from RG-348	F
Rainfall Depth =	2.20	inches		
Post Development Runoff Coefficient =	0.39	٦		
On-site Water Quality Volume =	89800	cubic feet		
Ca	lculations	from RG-348	Pages 3-36 to 3-37	
Off-site area draining to RMP =	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	٦		
Off-site Water Quality Volume =	0	cubic feet		
	Ŭ	cubic leet		
Storage for Sediment =	17960	cubic reet		

![](_page_208_Figure_2.jpeg)

![](_page_208_Figure_3.jpeg)

![](_page_208_Figure_5.jpeg)

### NOTES:

- 1. ALL VOLUMES WERE CALCULATED USING THE AVERAGE END AREA METHOD
- 2. ALL DISTURBED AREAS SHALL BE STABILIZED WITH VEGETATION
- 3. ALL WEIRS WERE CALCULATED USING A WEIR COEFICENT OF 3.0 REPRESENTING A SHARP CRESTED WEIR

		Р	ond F Volume	
	Stage (ft)	Area (sf)	Avg End Area Volume (cf)	Avg End Area Cumulative Volume (cf)
	883	25	0	0
	884	10,855	5,440	5,440
	885	26,627	18,741	24,181
	886	40,721	33,674	57,855
	887	50,906	45,814	103,669
	887.1	51,263	5,108	108,777
AX WQ WSE	887.5	52,699	20,793	129,570
	888	54,509	26,802	156,372
	888.5	56,336	27,711	184,083
	889	58,180	28,629	212,712
	889.5	60,042	29,555	242,268
			Required:	107,760

100 YEAR DEV CFS			
219.12	WEIR CAL		WQ POND F -P5
Maximum WSE (ft)	Elevation (ft)	Storage (ac-ft)	Discharge (cfs)
887.5	883	0.00	0
Weir Elevation (ft)	884	0.12	0
887.5	885	0.56	0
Weir Length (ft)	886	1.33	0
85	887	2.38	0.0
	888	3.59	81.1
	888.5	4.23	229.5
	889	4.88	421.6
	889.5	5.56	649
	100 YEAR CH	S TO POND F	219.12

Construc	tion Pha	ase - Temporary	Sediment Basin F
Elevation [ft]	Area [s.f.]	Avg End Incremental Volume [c.f.]	Avg End Cumulative Volume [c.f.]
883	25	0	0.00
884	10,855	5,440	5,439.96
885	26,627	18,741	24,180.86
886	40,721	33,674	57,854.95
887	50,906	45,814	103,668.65
887.5	52,699	25,901	129,570.00
888	54,509	26,802	156,372.14
889	58,180	56,344	212,716.63
889.5	60,042	29,555	242,271.99
3,000 Ft ³ /Ac		Required =	48,000.00

Project Number:
SCALE:
Project Path:
Project Name:
Drawing Path:
Xref DWG FILE.

22226\21-MADISON TRACT AS NOTED P\22000-22999 SOMERSET HILLS PARCEL S Somerset Hills LTD\06_Parcel 5 East

Sheet Number: 137 of 212 sheets

![](_page_209_Figure_0.jpeg)

![](_page_209_Figure_14.jpeg)

CLAY LIN	ER SPECIFICATIONS	(MIN. THICKN	ESS = 12")
PROPERTY	TEST METHOD	UNIT	SPECIFICATION
PERMEABILITY	ASTM D-2434	Cm/Sec	1X10 ⁽⁻⁶⁾
PLASTICITY INDEX OF CLAY	ASTM D-423 & D-424	%	NOT LESS THAN 15
LIQUID LIMIT OF CLAY	ASTM D-2216	%	NOT LESS THAN 30
CLAY PARTICLES PASSING	ASTM D-422	%	NOT LESS THAN 30
CLAY COMPACTION	ASTM D-2216	%	95% OF STANDARD PROCTOR DENSITY AT

PROPERTY	TEST METHOD	UNIT	SPECIFICATION
MATERIAL NON-WO	VEN GEOTEXTILE FABRIC		
UNIT WEIGHT		OZ./SQ. YD.	8 (MIN.)
FILTRATION RATE		IN./SEC.	0.20 (MIN)
PUNCTURE STRENGTH	ASTM D-751 (MODIFIED)	LB.	125 (MIN)
MULLEN BURST STRENGTH	ASTM D-751	P.S.I.	400 (MIN.)
TENSILE STRENGTH	ASTM D-1682	LB.	200 (MIN.)
EQUIV. OPENING SIZE	U.S. STANDARD SIEVE	NO.	80 (MIN.)

![](_page_210_Figure_0.jpeg)

![](_page_210_Figure_2.jpeg)

### NOTES:

- 1. DRAINAGE AREAS AND TIME OF CONCENTRATIONS ARE CONSISTENT WITH THE COWAN CREEK DRAINAGE REPORT.
- THE NRCS METHOD WAS USED FOR ALL 2.
- CALCULATIONS
- PERVIOUS LAND COVER WAS ASSUMED TO 3. HAVE A CURVE NUMBER OF 80 AND IMPERVIOUS COVER A CURVE NUMBER OF 98. ACREAGE LOTS WITH A CN OF 84 WAS USED FOR DEVELOPED AREAS WITHIN BASIN D.

## MIDDLE CHANNEL CALCULATIONS SOMERSET HILLS PARCEL 5 30501 RONALD W REAGAN BLVD City of Georgetown Williamson County, Texas

roject Number: 22226x SCALE: roject Path: roject Name: rawing Path:

AS NOTED P\22000-22999 22226-xSOMERSET HILLS P\22000-22999 SOMERSET Xref DWG FILE. HILLS

neet Number: 139 of 240 sheet

![](_page_211_Figure_0.jpeg)

<u> </u>	NO.	REVISION	BY	DATE	
WARNING! There are existing water pipelines, underground					SJT DESIGNED BY:
utilities in the vicinity of this project. The contractor shall contact all appropriate utility companies prior to any construction in the area and determine if any conflicts					<u>SJT, AEC, BLM</u> DRAWN BY:
exist. If so, the Contractor shall immediately contact the Engineer, who shall revise the design as necessary.					CHECKED BY:
	╹ ┠──┤───				

![](_page_212_Figure_1.jpeg)

![](_page_212_Picture_2.jpeg)