TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

March 24, 2017

RECEIVED

APR 04 2017

COUNTY ENGINEER

Mr. Scott Schneider
Ervendberg Duplex
1227 Ervendberg Ave.
New Braunfels, Texas 78130

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: Ervendberg Duplex; Located at 1227 and 1231 Ervendberg Ave.; New Braunfels, Texas

TYPE OF PLAN: Request for Approval of a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Regulated Entity No. RN109438689; Additional ID. No. 13000265

Dear Mr. Schneider:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP Application for the above-referenced project submitted to the San Antonio Regional Office by M & S Engineering, LLC on behalf of the Ervendberg Duplex on October 7, 2016. A request for additional information, NOD1 (Notice of Deficiency), was issued on November 7, 2016 and a response was received on December 2, 2016. NOD2 was issued on December 12, 2016 and a response was received on December 28, 2016.

NOD3 was issued on January 12, 2017 requesting an irrigation system design for the proposed rainwater harvesting system. A withdrawal request was issued on March 7, 2017 as no response to NOD3 had been received. A response to the withdrawal request was received on March 8, 2017 and included the submittal of an irrigation system design. This response was inadequate due to the following reasons:

1) The irrigation system was only partially distributed over the previously defined 0.58 acre green space area to be used for irrigation;

2) The irrigation system design for the west side of duplex building #5 is unacceptable as the trajectory of the sprinklers intersects the west side of the duplex building;

3) Inspection and maintenance procedures were not provided for the proposed irrigation system.

Please be advised that the above referenced WPAP application is denied.

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 Dianne Pavlicek-Mesa, P.G., of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210-403-4074.

Sincerely,

Lynn Bumguardner, Water Section Manager
San Antonio Region
Texas Commission on Environmental Quality

LB/DPM/eg

cc: Mr. Lance Klein, P.E., M & S Engineering, LLC
Mr. Robert Camareno, City of New Braunfels
Mr. Thomas H. Hornseth, P.E., Comal County Engineer
Mr. Roland Ruiz, Edwards Aquifer Authority
Mr. H. L. Saur, Comal Trinity Groundwater Conservation District

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

March 31, 2017

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APR 04 2017

COUNTY ENGINEER

Mr. Thomas H. Hornseth, P.E.
Comal County Engineer
195 David Jonas Drive
New Braunfels TX 78132-3710

Re: Edwards Aquifer, Comal County

PROJECT NAME: Ervendberg Duplex, located at 1227 and 1231 Ervendberg Road, New Braunfels, Texas

PLAN TYPE: Application for Approval of a Water Pollution Abatement Plan (WPAP) 30 Texas Administration Code (TAC) Chapter 213; Edwards Aquifer Protection Program

Dear Mr. Hornseth:

The referenced application is being forwarded to you pursuant to the Edwards Aquifer Rules. The Texas Commission on Environmental Quality (TCEQ) is required by 30 TAC Chapter 213 to provide copies of all applications to affected incorporated cities and underground water conservation districts for their comments prior to TCEQ approval. More information regarding this project may be obtained from the TCEQ Central Registry website at http://www.tceq.state.tx.us/permitting/central_registry/.

Please forward your comments to this office by May 1, 2017.

The Texas Commission on Environmental Quality appreciates your assistance in this matter and your compliance efforts to ensure protection of the State's environment. If you or members of your staff have any questions regarding these matters, please feel free to contact the San Antonio Region Office at (210) 490-3096.

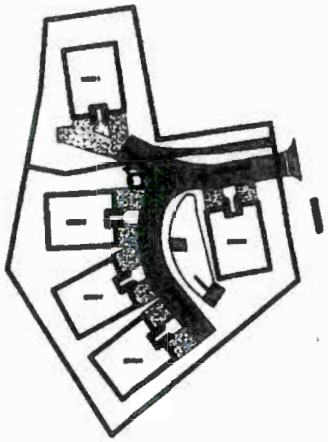
Sincerely

Todd Jones, Water Section Work Leader
San Antonio Regional Office

TJ/eg

WATER POLLUTION ABATEMENT PLAN

Ervendberg Duplex WPAP



Prepared for:

Scott Schneider
1227 Ervendberg Ave.
New Braunfels, Texas 78130

Prepared by:

M & S ENGINEERING
ENGINEERS | PLANNERS | SURVEYORS

M&S Engineering Project Number: 16SSCHR001

Main Office:
Post Office Box 970
Spring Branch, Texas 78070
Telephone: 830/228-5446
Facsimile: 830/885-2170
Web: www.msengr.com

Branch Offices:
376 Landa St
New Braunfels, Texas 78130

Prepared by:
Lance Klein, PE, PH, CFM
M&S Engineering, L.L.C.
Texas Registered Engineering Firm F-1394

10/4/16

SEPTEMBER 2016

TCEQ Core Data Form

TCEQ Use Only

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

SECTION I: General Information

1. Reason for Submission (If other is checked please describe in space provided.)

☒ New Permit, Registration or Authorization (Core Data Form should be submitted with the program application.)

☐ Renewal (Core Data Form should be submitted with the renewal form) ☐ Other

2. Customer Reference Number (if issued)	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number (if issued)
CN 603027152		RN 109438689

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	3/21/2017

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership

☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name (If an individual, print last name first: e.g.: Doe, John) — If new Customer, enter previous Customer below:

Scott Schneider

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

11. Type of Customer: ☐ Corporation ☒ Individual Partnership: ☐ General ☐ Limited

Government: ☐ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees ☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated? ☐ Yes ☒ No

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APR 04 2017

14. Customer Role (Proposed or Actual) - as it relates to the Regulated Entity listed on this form. Please check one of the following:

☒ Owner ☐ Operator ☐ Owner & Operator ☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other: COUNTY ENGINEER

15. Mailing Address:	1227 Ervendberg Ave						
	City	New Braunfels	State	TX	ZIP	7813	ZIP + 4	3313

16. Country Mailing Information (if outside USA)	17. E-Mail Address (if applicable)
	booma21@gmail.com

18. Telephone Number	19. Extension or Code	20. Fax Number (if applicable)
(830) 237 - 3494		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information (If "New Regulated Entity" is selected below this form should be accompanied by a permit application)

☒ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated in order to meet TCEQ Agency Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name (Enter name of the site where the regulated action is taking place.)

Ervendberg Duplex WPAP

23. Street Address of the Regulated Entity: (No PO Boxes)	1227 & 1231 Ervendberg Ave.							
	City	New Braunfels	State	TX	ZIP	78130	ZIP + 4	3313
24. County								

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	This site is located at 1227 and 1231 Ervendberg Ave. in New Braunfels Texas. The site entrance is about 330 feet north from the intersection of Ervendberg and Gruene .				
26. Nearest City			State	Nearest ZIP Code	
New Braunfels			TX	78130	
27. Latitude (N) In Decimal:	29.73708		28. Longitude (W) In Decimal:	98.10933	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	44	13.5	98	6	33.6

29. Primary SIC Code (4 digits)	30. Secondary SIC Code (4 digits)	31. Primary NAICS Code (5 or 6 digits)	32. Secondary NAICS Code (5 or 6 digits)
1522		236116	

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APR 04 2017
COUNTY ENGINEER

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

Residential Duplexes

34. Mailing Address:	1227 Ervendberg Ave.						
	City	New Braunfels	State	TX	ZIP	78130	ZIP + 4	3313
35. E-Mail Address:	booma21@gmail.com						

36. Telephone Number	37. Extension or Code	38. Fax Number (if applicable)
(830) 237 - 3494		( ) -

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
		WPAP		
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Lance Klein, P.E., P.H., C.F.M.		41. Title: Project Manager
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(830) 629 - 2988		(830) 228 - 4197	lklein@msengr.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:	M&S Engineering	Job Title:	Agent- Engineer
Name(*In Print*):	Lance Klein, P.E., P.H., C.F.M.	Phone:	(830) 629-2988
Signature:		Date:	3/29/17

TCEQ Core Data Form

TCEQ Use Only

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

SECTION I: General Information

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☒ New Permit, Registration or Authorization (Core Data Form should be submitted with the program application.)

☐ Renewal (Core Data Form should be submitted with the renewal form) ☐ Other

2. Customer Reference Number (if issued)	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number (if issued)
CN 602010415		RN 109438689

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	3/21/2017

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership

☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

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Don Koepp

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

11. Type of Customer: ☐ Corporation ☒ Individual Partnership: ☐ General ☐ Limited

Government: ☐ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

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12. Number of Employees

☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?

☐ Yes ☒ No

14. Customer Role (Proposed or Actual) - as it relates to the Regulated Entity listed on this form. Please check one of the following:

☒ Owner ☐ Operator ☐ Owner & Operator

☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other:

COUNTY ENGINEER

15. Mailing Address: 1420 Elm Creek Road

City	New Braunfels	State	TX	ZIP	7813	ZIP + 4	3080

16. Country Mailing Information (if outside USA)	17. E-Mail Address (if applicable)

18. Telephone Number	19. Extension or Code	20. Fax Number (if applicable)
(830) 237 - 1099		( ) -

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Ervendberg Duplex WPAP

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	City	New Braunfels	State	TX	ZIP	78130	ZIP + 4	3313
24. County								

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	This site is located at 1227 and 1231 Ervendberg Ave. in New Braunfels Texas. The site entrance is about 330 feet north from the intersection of Ervendberg and Gruene .				
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New Braunfels			TX	78130	
27. Latitude (N) In Decimal:	29.73708		28. Longitude (W) In Decimal:	98.10933	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
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1522		236116	

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APR 04 2017
COUNTY ENGINEER

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

Residential Duplexes

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	City	New Braunfels	State	TX	ZIP	78130	ZIP + 4	3313
35. E-Mail Address:	booma21@gmail.com						
36. Telephone Number	37. Extension or Code	38. Fax Number (if applicable)					
(830) 237 - 3494		( ) -					

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		WPAP		
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name: Lance Klein, P.E., P.H., C.F.M.			41. Title: Project Manager
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(830) 629 - 2988		(83) 99 - 419	lklein@msengr.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:	M&S Engineering	Job Title:	Agent- Engineer
Name(*In Print*):	Lance Klein, P.E., P.H., C.F.M.	Phone:	(830) 629-2988
Signature:		Date:	3/29/17

Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

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APR 04 2017
COUNTY ENGINEER

Our Review of Your Application

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

Administrative Review

1. Edwards Aquifer applications must be deemed administratively complete before a technical review can begin. To be considered administratively complete, the application must contain completed forms and attachments, provide the requested information, and meet all the site plan requirements. The submitted application and plan sheets should be final plans. Please submit one full-size set of plan sheets with the original application, and half-size sets with the additional copies.

   To ensure that all applicable documents are included in the application, the program has developed tools to guide you and web pages to provide all forms, checklists, and guidance. Please visit the below website for assistance: http://www.tceq.texas.gov/field/eapp.

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.

3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.

4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

   An appointment should be made to resubmit the application. The application is re-examined to ensure all deficiencies are resolved. The application will only be deemed administratively complete when all administrative deficiencies are addressed.

5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be conducted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is found to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.

6. If the geologic assessment was completed before October 1, 2004 and the site contains "possibly sensitive" features, the assessment must be updated in accordance with the *Instructions to Geologists* (TCEQ-0585 Instructions).

Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.

2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be clearly marked, features identified in the geologic assessment should be flagged, roadways marked and the alignment of the Sewage Collection System and manholes should be staked at the time the application is submitted. If the site is not marked the application may be returned.

3. We evaluate the application for technical completeness and contact the applicant and agent via Notice of Deficiency (NOD) to request additional information and identify technical deficiencies. There are two deficiency response periods available to the applicant. There are 14 days to resolve deficiencies noted in the first NOD. If a second NOD is issued, there is an additional 14 days to resolve deficiencies. If the response to the second notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, the application must be withdrawn or if not withdrawn the application will be denied and 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 to you:

- You can withdraw your application, and your fees will be refunded or credited for a resubmittal.
- 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 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 effected jurisdictions.

Please contact the regional office if you have questions. If your project is located in Williamson, Travis, or Hays County, contact TCEQ's Austin Regional Office at 512-339-2929. If your project is in Comal, Bexar, Medina, Uvalde, or Kinney County, contact TCEQ's San Antonio Regional Office at 210-490-3096

Please fill out all required fields below and submit with your application.

1. Regulated Entity Name: Ervendberg Duplex WPAP						**2. Regulated Entity No.:** 10938689			
3. Customer Name: Scott Schneider & Don Koepp						**4. Customer No.:** 603027152 602010413			
5. Project Type: (Please circle/check one)	New		Modification			Extension		Exception	
6. Plan Type: (Please circle/check one)	WPAP	CZP	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: (Please circle/check one)	Residential		Non-residential			**8. Site (acres):**		1.82 acres	
9. Application Fee:	$4,000.00		**10. Permanent BMP(s):**			Grassy Swale and Retention/Irrigation System			
11. SCS (Linear Ft.):	N/A		**12. AST/UST (No. Tanks):**			N/A			

13. County:	Comal	14. Watershed:	Guadalupe River

Application Distribution

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

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

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

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

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

	__San Antonio (SAWS) __Shavano Park				

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.

Lance Klein

Print Name of Customer/Authorized Agent

Signature of Customer/Authorized Agent Date 10/4/16

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:		
gent Authorization omplete/Notarized (Y/N):		Fee Check:	Payable to TCEQ (Y/N):	
Core Data Form Complete (Y/N):			Signed (Y/N):	
Core Data Form Incomplete Nos.:			Less than 90 days old (Y/N):	

General Information Form

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Lance Klein, PE, PH, CFM

Date: 10/4/16

Signature of Customer/Agent:

RECEIVED

APR 04 2017

COUNTY ENGINEER

Project Information

1. Regulated Entity Name: Ervendberg Duplex WPAP
2. County: Comal
3. Stream Basin: Guadalupe River
4. Groundwater Conservation District (If applicable): Edwards Aquifer Authority & Comal Trinity GWD
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☐ Transition Zone
6. Plan Type:

   ☒ WPAP
   ☐ SCS
   ☐ Modification
   ☐ AST

☐ UST ☐ Exception Request

7. Customer (Applicant):

Contact Person: Scott Schneider
Entity: Ervendberg Duplex
Mailing Address: 1227 Ervendberg Ave
City, State: New Braunfels, Texas Zip: 78130
Telephone: (830)237-3494 FAX: N/A
Email Address: booma21@gmail.com

8. Agent/Representative (If any):

Contact Person: Lance Klein, P.E.,P.H., C.F.M,
Entity: M&S Engineering, LLC
Mailing Address: 376 Landa St.
City, State: New Braunfels, Texas Zip: 78130
Telephone: (830)629-2988 FAX: (830)228-4197
Email Address: lklein@msengr.com

9. Project Location:

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

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

This site is located at 1227 and 1231 Ervendberg Ave. in New Braunfels Texas. The site entrance is about 330 feet north from the intersection of Ervendberg and Gruene Road.

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: _____

14. ☒ **Attachment C – Project Description**. Attached at the end of this form is a detailed narrative description of the proposed project. The project description is consistent throughout the application and contains, at a minimum, the following details:

☒ Area of the site
☒ Offsite areas
☒ Impervious cover
☒ Permanent BMP(s)
☒ Proposed site use
☒ Site history
☒ Previous development
☒ Area(s) to be demolished

15. Existing project site conditions are noted below:

☐ Existing commercial site
☐ Existing industrial site
☒ Existing residential site
☒ Existing paved and/or unpaved roads
☐ Undeveloped (Cleared)
☐ Undeveloped (Undisturbed/Uncleared)
☐ Other: _____

Prohibited Activities

16. ☒ I am aware that the following activities are prohibited on the Recharge Zone and are not proposed for this project:

(1) Waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);

(2) New feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;

(3) Land disposal of Class I wastes, as defined in 30 TAC §335.1;

(4) The use of sewage holding tanks as parts of organized collection systems; and

(5) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).

(6) New municipal and industrial wastewater discharges into or adjacent to water in the state that would create additional pollutant loading.

17. ☒ I am aware that the following activities are prohibited on the Transition Zone and are not proposed for this project:

(1) Waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground Injection Control);

(2) Land disposal of Class I wastes, as defined in 30 TAC §335.1; and

(3) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41 (b), (c), and (d) of this title.

Administrative Information

18. The fee for the plan(s) is based on:

☒ For a Water Pollution Abatement Plan or Modification, the total acreage of the site where regulated activities will occur.
☐ For an Organized Sewage Collection System Plan or Modification, the total linear footage of all collection system lines.
☐ For a UST Facility Plan or Modification or an AST Facility Plan or Modification, the total number of tanks or piping systems.
☐ A request for an exception to any substantive portion of the regulations related to the protection of water quality.
☐ A request for an extension to a previously approved plan.

19. ☒ Application fees are due and payable at the time the application is filed. If the correct fee is not submitted, the TCEQ is not required to consider the application until the correct fee is submitted. Both the fee and the Edwards Aquifer Fee Form have been sent to the Commission's:

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

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

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

Road Map

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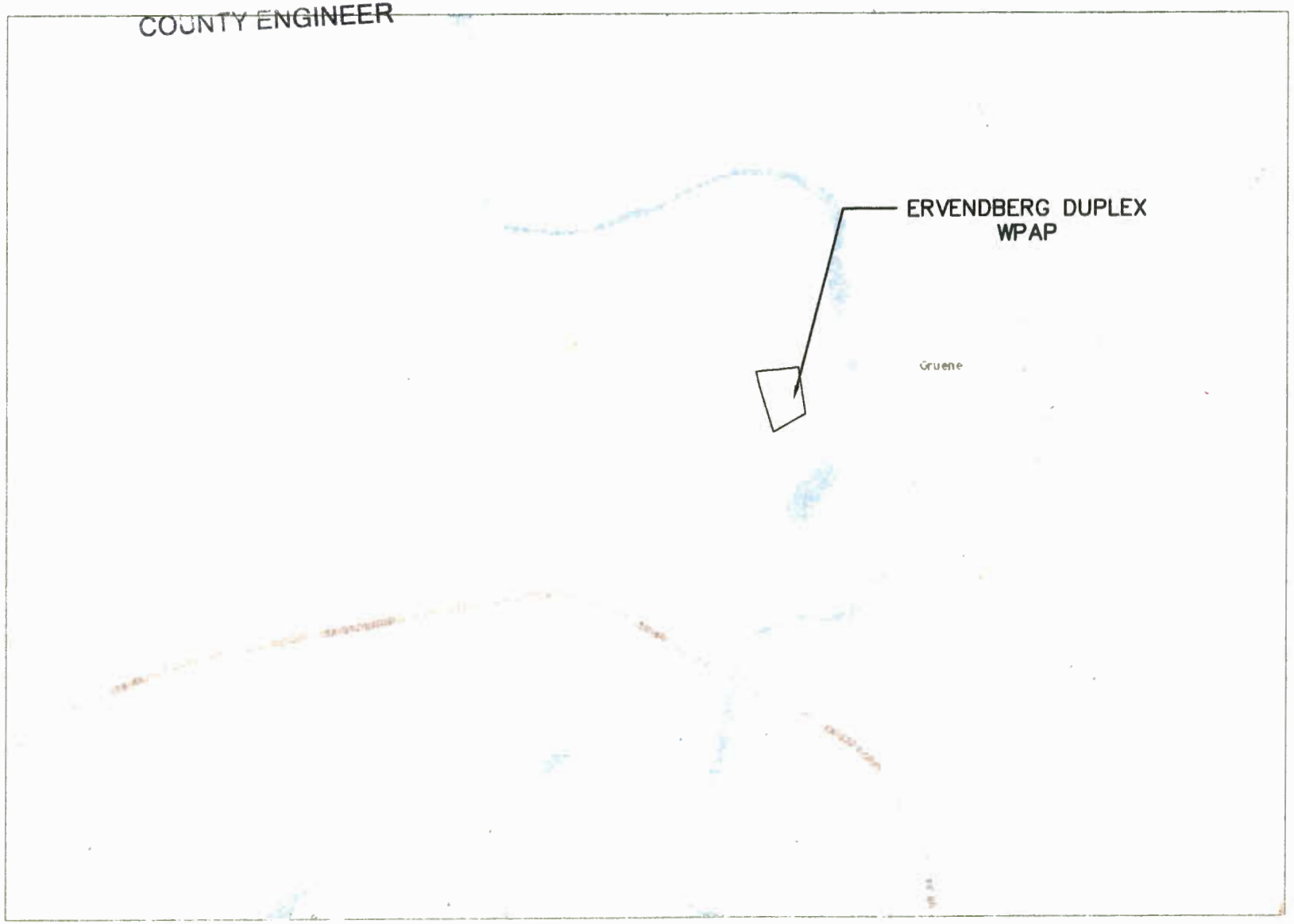
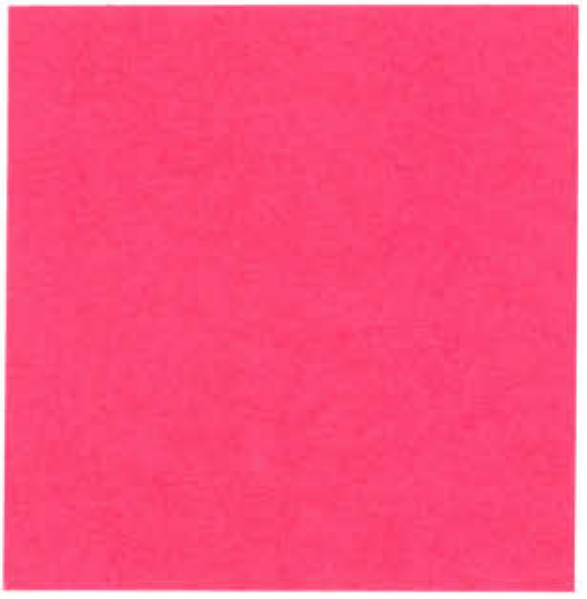
LOCATION MAP



USGS/Edwards Recharge Zone Map



Project Description

Attachment C

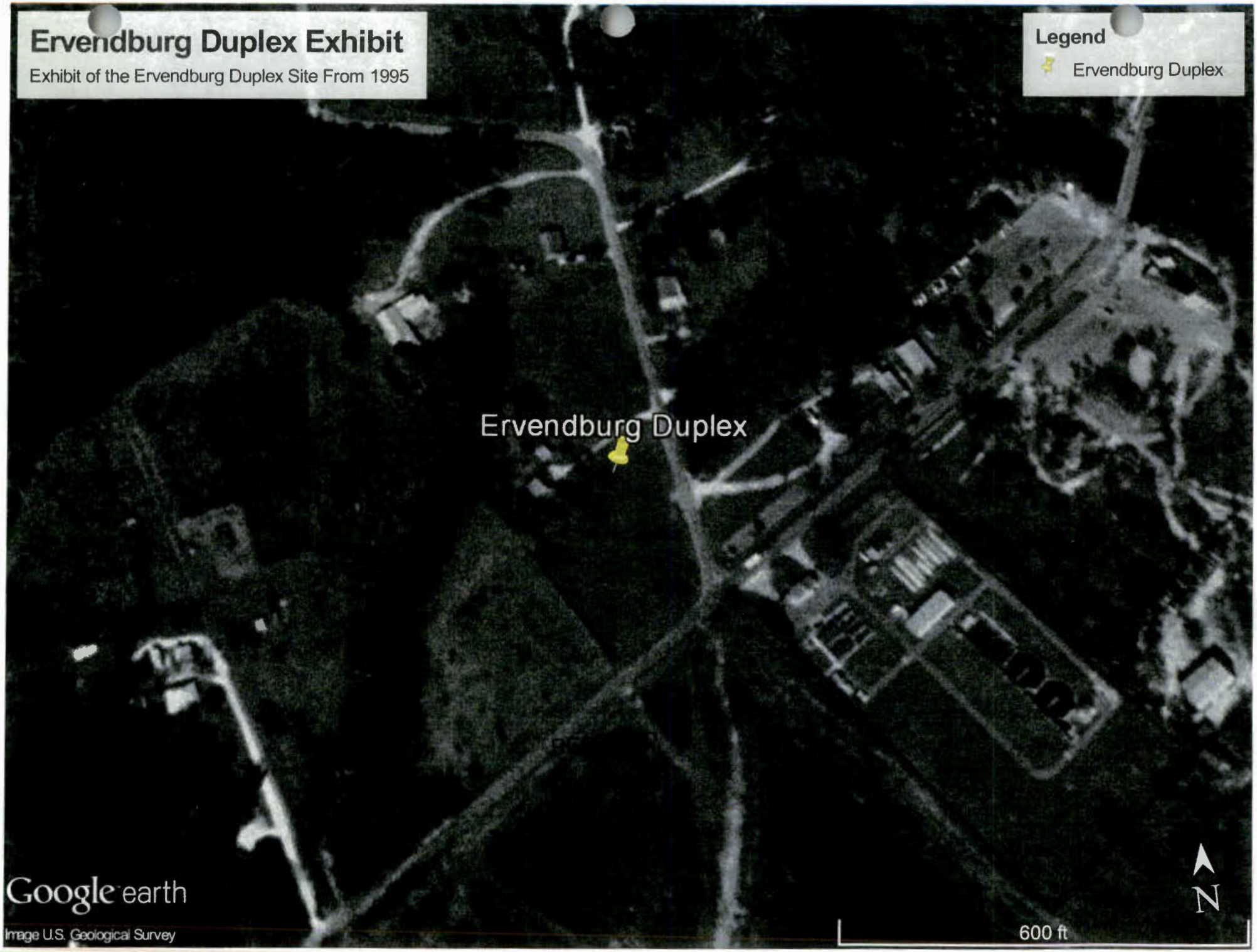
PROJECT DESCRIPTION

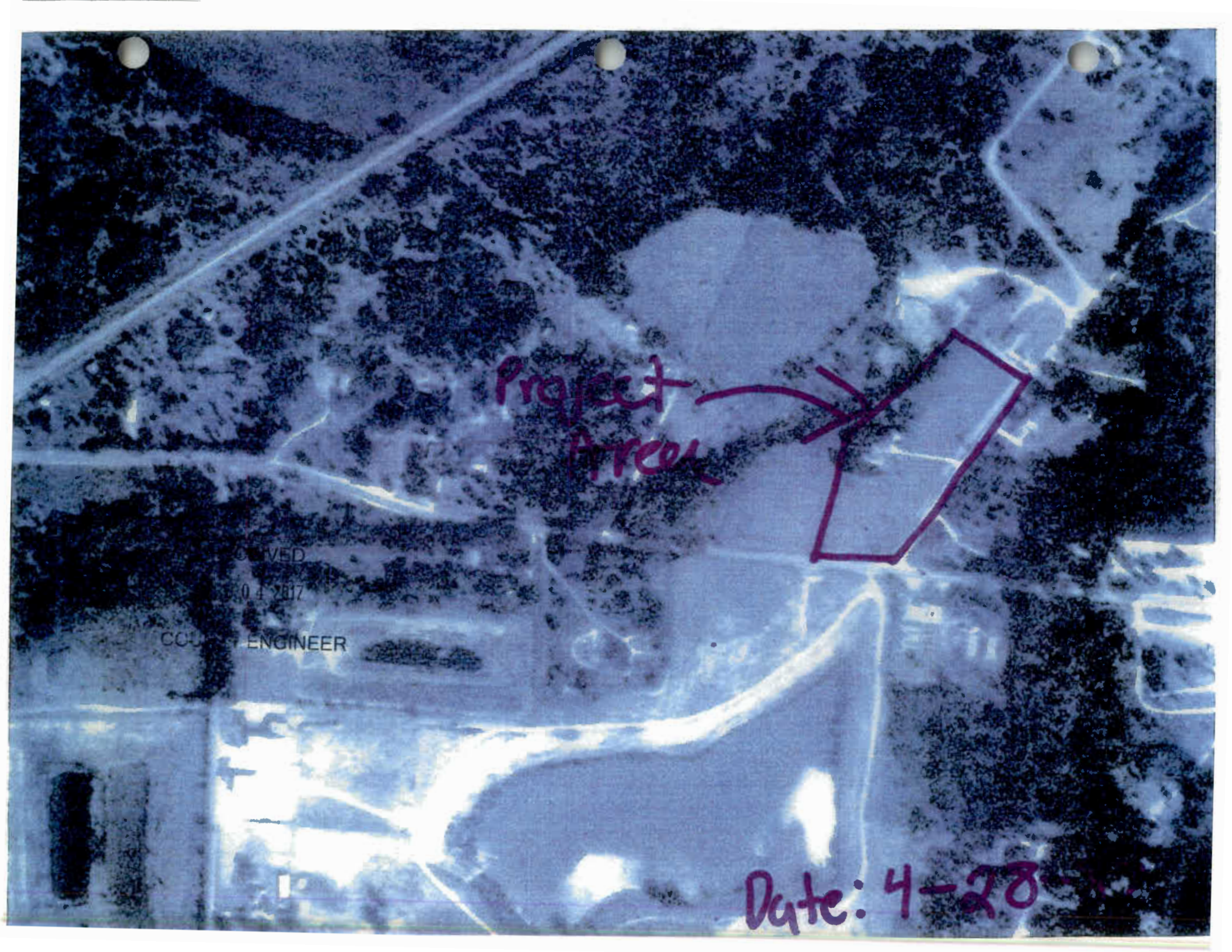
The area of the site is located in the city of New Braunfels. Currently, the 1.82 acre site consist of two residential lots. The existing impervious cover consist of a well house and a gravel driveway that leads to a one story house and adjacent shop (See Attached Existing Site Plan). For water quality calculations, only the gravel driveway, one story house and adjacent shop will be counted as existing impervious cover since they are grandfathered in (See Attached Google Earth Exhibit).

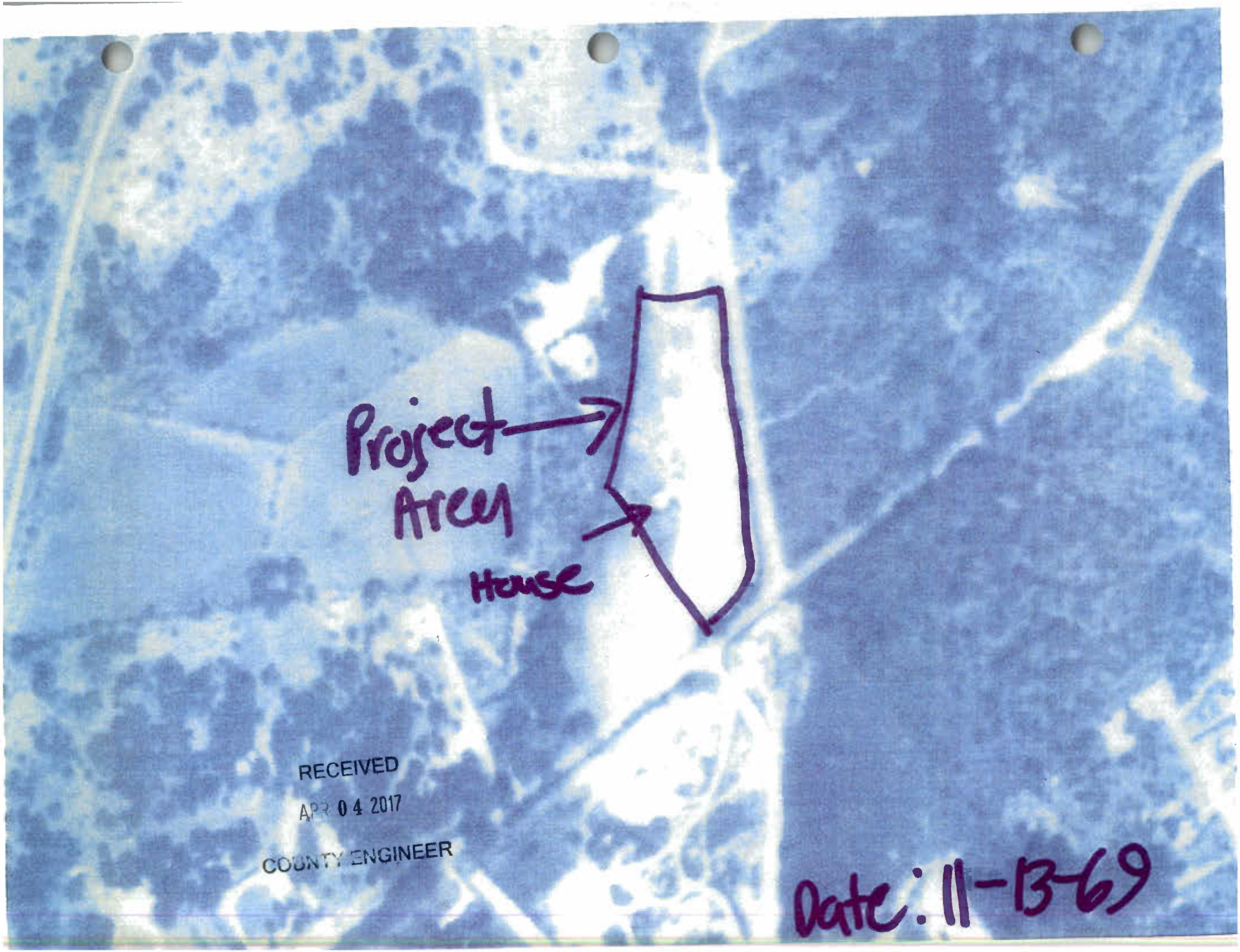
The proposed development is to replace the existing homestead with 5 duplexes. The existing gravel roadway will also be replaced with an asphalt drive. A detention pond will be constructed in the middle of the site and the outfall will discharge into a grassy swale before returning the natural drainage pattern. Rain barrels will be used to retain stormwater runoff from the roof of the duplexes. For this reason, the duplexes will not be included in the impervious cover calculation for water quality purposes (0.44 acres). The final impervious cover calculations for the site will be 0.85 acres of impervious cover (46.7%) that include the drives, ADA path, and the duplexes. The remaining area will be greenspace.

No portion of this site is located in the FEMA Floodplain based on Panel 48187C0105F, eff. 11/2/2007. The Ervendberg Duplex is located within the Guadalupe River watershed. The grassy swale and rain barrels are the permanent BMPs for this site. The grassy swale will be a trapezoidal channel with a 4 foot wide bottom with 3 to 1 side slopes. It will also have a slope less than 2.5%.

The rain barrels will be drained, based on TCEQ standards, within 72 hours after a given rain storm and can be used as irrigation water for green space areas. The tank will have a volume of 10800 gallons and will hold the roof rainstorm runoff of three duplexes. The tank for water harvesting unit will be capable of capturing 1.5 inches of rainfall from each duplexe's roof.


Ervendburg Duplex Exhibit
Exhibit of the Ervendburg Duplex Site From 1995
Legend
Ervendburg Duplex
Ervendburg Duplex
Google earth
Image U.S. Geological Survey
N
600 ft


Project Area
ENGINEER
Date: 4-28-



Date: 11-13-69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COMAL
1-3-3

Account

Property ID:	72028	Legal Description:	THOMAS FINK, LOT 3R, ACRES 1.348
Geographic ID:	550486000203	Agent Code:	
Type:	Real		
Property Use Code:			
Property Use Description:			

Location

Address:	1227 ERVENDBERG AVE NEW BRAUNFELS, TX 78130	Mapsco:	
Neighborhood:	GRUENE RD (LOOP 337 TO RIVER)	Map ID:	NB 39
Neighborhood CD:	424E701		

Owner

Name:	SCHNEIDER SCOTT	Owner ID:	917658
Mailing Address:	1227 ERVENDBERG AVE NEW BRAUNFELS, TX 78130-3313	% Ownership:	100.0000000000%
		Exemptions:	HS

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(+) Improvement Homesite Value:	+	$94,470	
(+) Improvement Non-Homesite Value:	+	$0	
(+) Land Homesite Value:	+	$91,720	
(+) Land Non-Homesite Value:	+	$0	Ag / Timber Use Value
(+) Agricultural Market Valuation:	+	$0	$0
(+) Timber Market Valuation:	+	$0	$0
(=) Market Value:	=	$186,190	
(–) Ag or Timber Use Value Reduction:	–	$0	
(=) Appraised Value:	=	$186,190	
(–) HS Cap:	–	$0	
(=) Assessed Value:	=	$186,190	

Owner: SCHNEIDER SCOTT
% Ownership: 100.0000000000%
Total Value: $186,190

Entity	Description	Tax Rate	Appraised Value	Taxable Value	Estimated Tax

046	COMAL COUNTY	0.292821	$186,190	$148,952	$436.16
CAD	CAD	0.000000	$186,190	$186,190	$0.00
CNB	CITY OF NEW BRAUNFELS	0.498230	$186,190	$148,952	$742.12
EDW	Edwards Water	0.000000	$186,190	$186,190	$0.00
LTR	Lateral Road	0.050100	$186,190	$145,952	$73.12
NBI	NEW BRAUNFELS ISD	1.339100	$186,190	$161,190	$2,158.50
ZZZ	Credit	0.000000	$186,190	$186,190	$0.00
	Total Tax Rate:	2.180251			
				Taxes w/Current Exemptions:	$3,409.90
				Taxes w/o Exemptions:	$4,059.41

Improvement #1: RESIDENTIAL **State Code:** A1 **Living Area:** 1477.0 sqft **Value:** $94,470

Type	Description	Class CD	Exterior Wall	Year Built	SQFT
RES	Residential Structure	LOW - RAQ		1955	1477.0
AGF1	Attached Garage	*			432.0
DGF1	Detached Garage Finished	FAIR - *		0	336.0
STPR	Det Storage	FAIR - *		1979	676.0

#	Type	Description	Acres	Sqft	Eff Front	Eff Depth	Market Value	Prod. Value
1	RES	Residential	1.3480	58718.88	0.00	0.00	$91,720	$0

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Year	Improvements	Land Market	Ag Valuation	Appraised	HS Cap	Assessed
2017	N/A	N/A	N/A	N/A	N/A	N/A
2016	$94,470	$91,720	0	186,190	$0	$186,190
2015	$82,050	$91,720	0	173,770	$0	$173,770
2014	$80,450	$91,720	0	172,170	$0	$172,170
2013	$70,230	$91,720	0	161,950	$0	$161,950
2012	$70,010	$93,490	0	163,500	$0	$163,500
2011	$84,280	$93,490	0	177,770	$0	$177,770
2010	$88,040	$93,490	0	181,530	$0	$181,530
2009	$92,440	$81,030	0	173,470	$0	$173,470
2008	$94,210	$81,030	0	175,240	$0	$175,240
2007	$89,970	$81,030	0	171,000	$32,715	$138,285
2006	$80,190	$73,670	0	153,860	$28,146	$125,714
2005	$78,550	$73,670	0	152,220	$37,935	$114,285
2004	$77,170	$73,670	0	150,840	$46,945	$103,895
2003	$76,300	$18,150	0	94,450	$0	$94,450
2002	$74,340	$18,150	0	92,490	$0	$92,490
2001	$68,700	$18,150	0	86,850	$0	$86,850
2000	$64,040	$18,150	0	82,190	$0	$82,190

1999	$62,760	$18,150	0	80,910	$1,864	$79,046
1998	$61,730	$10,130	0	71,860	$0	$71,860
1997	$58,420	$10,130	0	68,550	$0	$68,550
1996	$55,340	$10,130	0	65,470	$0	$65,470
1995	$53,960	$9,700	0	63,660	$0	$63,660
1994	$49,790	$9,700	0	59,490	$0	$59,490
1993	$47,970	$9,700	0	57,670	$0	$57,670

#	Deed Date	Type	Description	Grantor	Grantee	Volume	Page	Deed Number
1	12/31/2011	PART	PARTITION DEED	SCHNEIDER SCOTT & DON M KOEPP	SCHNEIDER SCOTT	201206000770		
2	12/5/2011	AFFH	AFFIDAVIT OF HEIRSHIP	FINK EMILY M	EVANS LORETTA ETAL	201106043055		
3	12/5/2011	WD	WARRANTY DEED	EVANS LORETTA ETAL	SCHNEIDER SCOTT & DON M KOEPP	201106043056		

Property Tax Information as of 11/30/2016

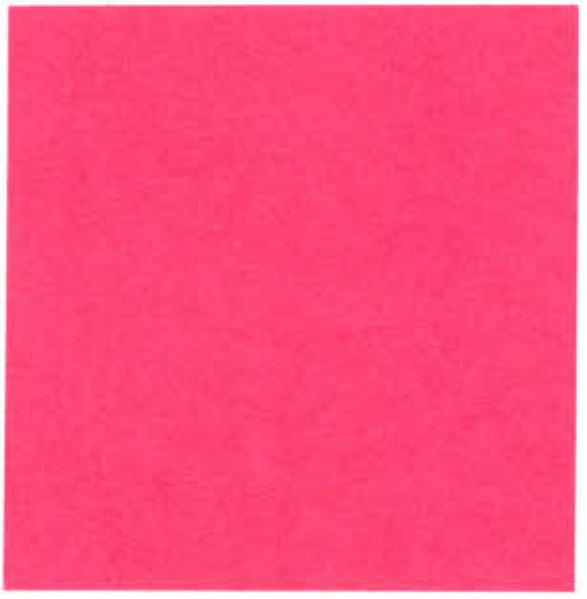
Amount Due if Paid on:

Year	Taxing Jurisdiction	Taxable Value	Base Tax	Base Taxes Paid	Base Tax Due	Discount / Penalty & Interest	Attorney Fees	Amount Due
2016	COMAL COUNTY	$148,952	$436.16	$0.00	$436.16	$0.00	$0.00	$436.16
2016	Lateral Road	$145,952	$73.12	$0.00	$73.12	$0.00	$0.00	$73.12
2016	NEW BRAUNFELS ISD	$161,190	$2158.50	$0.00	$2158.50	$0.00	$0.00	$2158.50
2016	CITY OF NEW BRAUNFELS	$148,952	$742.12	$0.00	$742.12	$0.00	$0.00	$742.12
	2016 TOTAL:		**$3409.90**	**$0.00**	**$3409.90**	**$0.00**	**$0.00**	**$3409.90**
2015	COMAL COUNTY	$139,016	$407.06	$407.06	$0.00	$0.00	$0.00	$0.00
2015	Lateral Road	$136,016	$68.14	$68.14	$0.00	$0.00	$0.00	$0.00
2015	NEW BRAUNFELS ISD	$148,770	$1992.18	$1992.18	$0.00	$0.00	$0.00	$0.00
2015	CITY OF NEW BRAUNFELS	$139,016	$692.62	$692.62	$0.00	$0.00	$0.00	$0.00
	2015 TOTAL:		**$3160.00**	**$3160.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
2014	COMAL COUNTY	$137,736	$403.32	$403.32	$0.00	$0.00	$0.00	$0.00
2014	Lateral Road	$134,736	$67.50	$67.50	$0.00	$0.00	$0.00	$0.00
2014	NEW BRAUNFELS ISD	$157,170	$2104.66	$2104.66	$0.00	$0.00	$0.00	$0.00
2014	CITY OF NEW BRAUNFELS	$137,736	$686.24	$686.24	$0.00	$0.00	$0.00	$0.00
	2014 TOTAL:		**$3261.72**	**$3261.72**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
2013	COMAL COUNTY	$129,560	$407.23	$407.23	$0.00	$0.00	$0.00	$0.00
2013	Lateral Road	$126,560	$45.69	$45.69	$0.00	$0.00	$0.00	$0.00
2013	NEW BRAUNFELS ISD	$146,950	$1967.80	$1967.80	$0.00	$0.00	$0.00	$0.00
2013	CITY OF NEW BRAUNFELS	$129,560	$645.51	$645.51	$0.00	$0.00	$0.00	$0.00
	2013 TOTAL:		**$3066.23**	**$3066.23**	**$0.00**	**$0.00**	**$0.00**	**$0.00**

2012	COMAL COUNTY	$130,800	$411.13	$411.13	$0.00	$0.00	$0.00	$0.00
2012	Lateral Road	$127,800	$46.14	$46.14	$0.00	$0.00	$0.00	$0.00
2012	NEW BRAUNFELS ISD	$148,500	$1988.56	$1988.56	$0.00	$0.00	$0.00	$0.00
2012	CITY OF NEW BRAUNFELS	$130,800	$611.28	$611.28	$0.00	$0.00	$0.00	$0.00
	2012 TOTAL:		**$3057.11**	**$3057.11**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
	SCHNEIDER SCOTT TOTAL:		**$15954.96**	**$12545.06**	**$3409.90**	**$0.00**	**$0.00**	**$3409.90**
2011	COMAL COUNTY	$177,770	$542.95	$542.95	$0.00	$0.00	$0.00	$0.00
2011	Lateral Road	$177,770	$80.00	$80.00	$0.00	$0.00	$0.00	$0.00
2011	NEW BRAUNFELS ISD	$177,770	$2380.51	$2380.51	$0.00	$0.00	$0.00	$0.00
2011	CITY OF NEW BRAUNFELS	$177,770	$797.05	$797.05	$0.00	$0.00	$0.00	$0.00
	2011 TOTAL:		**$3800.51**	**$3800.51**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
2010	COMAL COUNTY	$181,530	$524.62	$524.62	$0.00	$0.00	$0.00	$0.00
2010	Lateral Road	$181,530	$81.69	$81.69	$0.00	$0.00	$0.00	$0.00
2010	NEW BRAUNFELS ISD	$181,530	$2430.86	$2430.86	$0.00	$0.00	$0.00	$0.00
2010	CITY OF NEW BRAUNFELS	$181,530	$744.02	$744.02	$0.00	$0.00	$0.00	$0.00
	2010 TOTAL:		**$3781.19**	**$3781.19**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
2009	COMAL COUNTY	$173,470	$455.97	$455.97	$0.00	$0.00	$0.00	$0.00
2009	Lateral Road	$173,470	$86.91	$86.91	$0.00	$0.00	$0.00	$0.00
2009	NEW BRAUNFELS ISD	$173,470	$2322.94	$2322.94	$0.00	$0.00	$0.00	$0.00
2009	CITY OF NEW BRAUNFELS	$173,470	$710.99	$710.99	$0.00	$0.00	$0.00	$0.00
	2009 TOTAL:		**$3576.81**	**$3576.81**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
2008	COMAL COUNTY	$175,240	$443.22	$443.22	$0.00	$0.00	$0.00	$0.00
2008	Lateral Road	$175,240	$96.56	$96.56	$0.00	$0.00	$0.00	$0.00
2008	NEW BRAUNFELS ISD	$175,240	$2346.12	$2346.12	$0.00	$0.00	$0.00	$0.00
2008	CITY OF NEW BRAUNFELS	$175,240	$718.24	$718.24	$0.00	$0.00	$0.00	$0.00
	2008 TOTAL:		**$3604.14**	**$3604.14**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
2007	COMAL COUNTY	$92,975	$180.74	$180.74	$0.00	$0.00	$0.00	$0.00
2007	Lateral Road	$92,975	$28.24	$28.24	$0.00	$0.00	$0.00	$0.00
2007	NEW BRAUNFELS ISD	$109,535	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2007	CITY OF NEW BRAUNFELS	$100,335	$313.73	$313.73	$0.00	$0.00	$0.00	$0.00
	2007 TOTAL:		**$522.71**	**$522.71**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
2006	COMAL COUNTY	$83,832	$180.74	$180.74	$0.00	$0.00	$0.00	$0.00
2006	Lateral Road	$83,832	$28.24	$28.24	$0.00	$0.00	$0.00	$0.00
2006	NEW BRAUNFELS ISD	$96,964	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2006	CITY OF NEW BRAUNFELS	$91,192	$313.73	$313.73	$0.00	$0.00	$0.00	$0.00
2006	Credit	$125,714	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	2006 TOTAL:		**$522.71**	**$522.71**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
2005	COMAL COUNTY	$72,731	$180.74	$180.74	$0.00	$0.00	$0.00	$0.00
2005	CITY OF NEW BRAUNFELS	$80,091	$313.73	$313.73	$0.00	$0.00	$0.00	$0.00
2005	Lateral Road	$72,731	$28.24	$28.24	$0.00	$0.00	$0.00	$0.00
2005	NEW BRAUNFELS ISD	$85,535	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2005	Credit	$114,285	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	2005 TOTAL:		**$522.71**	**$522.71**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
2004	COMAL COUNTY	$62,617	$180.74	$180.74	$0.00	$0.00	$0.00	$0.00
2004	Lateral Road	$62,617	$28.24	$28.24	$0.00	$0.00	$0.00	$0.00
2004	NEW BRAUNFELS ISD	$75,145	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2004	CITY OF NEW BRAUNFELS	$69,977	$313.73	$313.73	$0.00	$0.00	$0.00	$0.00

2004	Credit	$103,895	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	2004 TOTAL:		**$522.71**	**$522.71**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
2003	NEW BRAUNFELS ISD	$0	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2003	CITY OF NEW BRAUNFELS	$0	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2003	COMAL COUNTY	$64,450	$186.03	$186.03	$0.00	$0.00	$0.00	$0.00
2003	Lateral Road	$64,450	$29.07	$29.07	$0.00	$0.00	$0.00	$0.00
2003	Credit	$94,450	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	2003 TOTAL:		**$215.10**	**$215.10**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
2002	COMAL COUNTY	$62,882	$181.50	$181.50	$0.00	$0.00	$0.00	$0.00
2002	Lateral Road	$62,882	$28.36	$28.36	$0.00	$0.00	$0.00	$0.00
2002	NEW BRAUNFELS ISD	$0	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2002	CITY OF NEW BRAUNFELS	$0	$260.67	$260.67	$0.00	$0.00	$0.00	$0.00
	2002 TOTAL:		**$470.53**	**$470.53**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
2001	NEW BRAUNFELS ISD	$0	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2001	CITY OF NEW BRAUNFELS	$0	$209.35	$209.35	$0.00	$0.00	$0.00	$0.00
2001	COMAL COUNTY	$58,370	$162.64	$162.64	$0.00	$0.00	$0.00	$0.00
2001	Lateral Road	$58,370	$26.32	$26.32	$0.00	$0.00	$0.00	$0.00
	2001 TOTAL:		**$398.31**	**$398.31**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
2000	Lateral Road	$0	$27.37	$27.37	$0.00	$0.00	$0.00	$0.00
2000	COMAL COUNTY	$0	$149.76	$149.76	$0.00	$0.00	$0.00	$0.00
2000	NEW BRAUNFELS ISD	$0	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2000	CITY OF NEW BRAUNFELS	$0	$194.44	$194.44	$0.00	$0.00	$0.00	$0.00
	2000 TOTAL:		**$371.57**	**$371.57**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
1999	COMAL COUNTY	$0	$142.87	$142.87	$0.00	$0.00	$0.00	$0.00
1999	Lateral Road	$0	$26.12	$26.12	$0.00	$0.00	$0.00	$0.00
1999	NEW BRAUNFELS ISD	$0	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
1999	CITY OF NEW BRAUNFELS	$0	$190.36	$190.36	$0.00	$0.00	$0.00	$0.00
	1999 TOTAL:		**$359.35**	**$359.35**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
1998	NEW BRAUNFELS ISD	$0	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
1998	CITY OF NEW BRAUNFELS	$0	$168.26	$168.26	$0.00	$0.00	$0.00	$0.00
1998	Lateral Road	$0	$25.56	$25.56	$0.00	$0.00	$0.00	$0.00
1998	COMAL COUNTY	$0	$121.98	$121.98	$0.00	$0.00	$0.00	$0.00
	1998 TOTAL:		**$315.80**	**$315.80**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
	FINK EMILY M TOTAL:		**$18984.15**	**$18984.15**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
	GRAND TOTAL (ALL OWNERS):		**$34939.11**	**$31529.21**	**$3409.90**	**$0.00**	**$0.00**	**$3409.90**

NOTE: Penalty & Interest accrues every month on the unpaid tax and is added to the balance. Attorney fees may also increase your tax liability if not paid by July 1. If you plan to submit payment on a future date, make sure you enter the date and RECALCULATE to obtain the correct total amount due.



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: John Langan Telephone: 210/342-9377

Date: 09/16/16 Fax: 210/342-9401

Representing: PSI TBPG No. 50128 (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:

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APR 04 2017

COUNTY ENGINEER

Regulated Entity Name: Ervendberg Duplex Tract

Project Information

1. Date(s) Geologic Assessment was performed: 9/8/16
2. Type of Project:
   - ☒ WPAP
   - ☐ SCS
   - ☐ AST
   - ☐ UST
3. Location of Project:
   - ☒ Recharge Zone
   - ☐ Transition Zone
   - ☐ Contributing Zone within the Transition Zone

STATE OF TEXAS
John Langan
Geology
4871
LICENSED
PROFESSIONAL GEOSCIENTIST
9/16/16

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

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

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
Boerne fine sandy loam, 1 to 3% slopes	B	4

** Soil Group Definitions (Abbreviated)*

A. Soils having a high infiltration rate when thoroughly wetted.

B. Soils having a moderate infiltration rate when thoroughly wetted.

C. Soils having a slow infiltration rate when thoroughly wetted.

D. Soils having a very slow infiltration rate when thoroughly wetted.

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

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

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

   Applicant's Site Plan Scale: 1" = 20'
   Site Geologic Map Scale: 1" = 20'
   Site Soils Map Scale (if more than 1 soil type): 1" = 400'

9. Method of collecting positional data:

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

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

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

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

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

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

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

    ☒ There are 1 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
    - ☐ The wells are not in use and have been properly abandoned.
    - ☐ The wells are not in use and will be properly abandoned.
    - ☒ The wells are in use and comply with 16 TAC Chapter 76.

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

Administrative Information

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

GEOLOGIC ASSESSMENT

For

ERVENDBERG DUPLEX TRACT
227 ERVENDBERG AVE
NEW BRAUNFELS, COMAL COUNTY, TEXAS

Prepared for

M&S ENGINEERING LTD.
376 LANDA STREET
NEW BRAUNFELS, TEXAS 78130

Prepared by

Professional Service Industries, Inc.
3 Burwood Lane
San Antonio, Texas 78216
Telephone (210) 342-9377

PSI PROJECT NO.: 0435- 2882

September 16, 2016

Information To Build On
Engineering • Consulting • Testing

September 16, 2016

M&S Engineering
376 Landa Street
New Braunfels, Texas 78130

Attn: Mr. Jeremy More, E.I.T.

Re: Geologic Assessment
Ervendberg Duplex Tract
227 Ervendberg Avenue
New Braunfels, Comal County, Texas
PSI Project No. 435-2882

Dear Mr. More:

Professional Service Industries, Inc. (PSI) has completed a geologic recharge assessment for the above referenced project in compliance with the Texas Commission on Environmental Quality (TCEQ) requirements for regulated developments located on the Edwards Aquifer Recharge Zone (EARZ). The purpose of this report is to describe surficial geologic units and identify the locations and extent of significant recharge features present in the development area.

AUTHORIZATION

Authorization to perform this assessment was given by a signed copy of PSI Proposal No. 189256 between M&S Engineers and PSI dated September 1, 2016.

PROJECT DESCRIPTION

The subject site is located on the west side of Ervendberg Avenue approximately 200' north of the intersection with Gruene Road in New Braunfels, Comal County, Texas. The Ervendberg Duplex tract is approximately 2.2-acres in size, and is an irregularly shaped parcel of land developed with four residential structures and a well house. The topography has a gentle slope to the east, towards the Guadalupe River, located approximately 1,100 feet to the east. The site vegetation consists primarily of manicured lawns/grasses and pecan trees as the site has been structurally developed since the 1960's, based on historic aerial photographs and topographic maps that were reviewed.

REGIONAL GEOLOGY

Physiography

Comal County lies within two physiographic provinces, the Edwards Plateau and the Blackland Prairie. Most of Comal County lies within the Edwards Plateau, which is

characterized by rugged and hilly terrain, with elevations in excess of 1,400' feet above sea level in the northwestern portion of the county. This area is underlain by beds of limestone that dip gently to the southeast. South of the Edwards Plateau is the Balcones Fault Zone, which is also the northernmost limit of the Blackland Prairie. The Balcones Fault Zone extends northeast-southwest across Comal County and is composed of fault blocks of limestone, chalk, shale and marl. The undulating, hilly topography of the Blackland Prairie ranges in elevation from about 650 feet to 1100 feet above sea level. The regional dip of the lower Cretaceous rocks in Comal County is approximately 15 feet per mile towards the southeast. The faults are predominantly normal, down-to-the southeast with near vertical throws. Elevations at the Ervendberg Duplex tract range from approximately 646 feet above mean sea level in the western portion of the tract to approximately 636 feet above mean sea level along the eastern property line.

Stratigraphy and Structure

The formations mapped on-site are the Navarro Group and Taylor Group, undivided, Knt. The upper part is marl, clay, sandstone, and siltstone; marl and clay, glauconitic, contains concretions of limonite and siderite; sandstone, fine grained, and siltstone, yellow brown, contains concretions of hard bluish-gray siliceous limestone 2 to 10 feet in diameter; sandstone beds have little lateral continuity and become more abundant westward; thickness up to 600 feet. The lower part is clay, dominantly montmorillonitic, unctuous, greenish gray to brownish gray; weathers to a very thick, black, clayey soil.
According to "The Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Outcrop, Comal County Texas" written by the USGS, the Navarro and Taylor Groups, undivided is approximately 600 feet thick.

No sensitive features scoring more than 40 points on the F-0585 form were observed on the subject tract. A water well is located near the western property line. No other non-sensitive recharge features were found as well. Small chert and limestone fragments were present but no distinct rock outcrops were observed.

SITE INVESTIGATION

The site investigation was performed by systematically traversing the subject tract, and mapping fractured or vuggy rock outcrops, closed depressions, sinkholes, caves, or indications of fault/fracture zones. The purpose of the site investigation was to delineate features with recharge potential that may warrant special protection or consideration. The results of the site investigation are included in the attached TCEQ report format.

SUMMARY

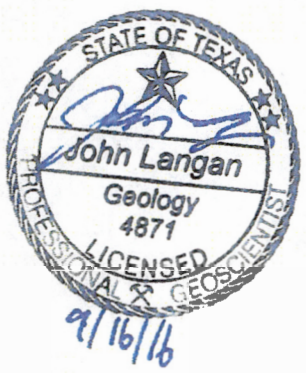
No sensitive features were observed on the subject tract. Please note that subtle features, buried or obscured from view, may be present on the tract. It is possible that clearing/construction activities will reveal the presence of features currently hidden by thick vegetation and/or soil cover. If caves, sinkholes, or solution cavities are encountered during future clearing/construction activities, please contact our office for additional assistance.

We appreciate this opportunity to be of service to you. If you have any questions, please do not hesitate to contact our office.

Respectfully submitted,

PROFESSIONAL SERVICE INDUSTRIES, INC.

John Langan, P.G.
Environmental Department Manager



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COUNTY ENGINEER

WARRANTY

The field observations and research reported herein are considered sufficient in detail and scope to form a reasonable basis for a general geological recharge assessment of this site. PSI warrants that the findings and conclusions contained herein have been promulgated in accordance with generally accepted geologic methods, only for the site described in this report. These methods have been developed to provide the client with information regarding apparent indications of existing or potential conditions relating to the subject site and are necessarily limited to the conditions observed at the time of the site visit and research. This report is also limited to the information available at the time it was prepared. In the event additional information is provided to PSI following the report, it will be forwarded to the client in the form received for evaluation by the client. There is a possibility that conditions may exist which could not be identified within the scope of the assessment or which were not apparent during the site visit. PSI believes that the information obtained from others during the review of public information is reliable; however, PSI cannot warrant or guarantee that the information provided by others is complete or accurate.

This report has been prepared for the exclusive use of M&S Engineers. for the site discussed herein. Reproductions of this report cannot be made without the expressed approval M&S Engineers. The general terms and conditions under which this assessment was prepared apply solely to M&S Engineers. No other warranties are implied or expressed.

psi

STRATIGRAPHIC COLUMN

Ervendberg Duplex Tract
Ervendberg Avenue
New Braunfels, Comal County, Texas

FORMATION	THICKNESS	LITHOLOGIC DESCRIPTION
Navarro & Taylor Groups, undivided	600	Calcareous, clayey, chalky limestone and marl
Austin Chalk	325-420	Chalk and marl, microgranular calcite with foraminifera microfossils and calcareous nannoplankton; forms ledges, gray to white in color, alternates with marl and bentonitic seams, with pyrite nodules and abundant marine fossils including pelecypods and ammonites
Eagle Ford Group	25-45	Shale and limestone, with silty shale in the upper part, the middle part consists of a silty limestone grading into a calcareous siltstone, flaggy, medium gray, weathering to a pale yellowish brown.
Buda Limestone	45	Fine-grained, massive, poorly bedded to nodular, bioclastic, commonly glauconitic, pyritiferous, weathers to a dark gray to brown, with abundant pelecypods
Del Rio Clay	40-50	Calcareous and gypsiferous, with pyrite common, with a blocky structure that weathers to light gray or yellowish gray. The characteristic marine megafossil, *Ilmatogyra arietina* (formerly *exogyra arietina*) is widespread throughout the formation.
Georgetown Formation	2-20'	Light tan limestone identified by proximity to Del Rio clay and diagnostic marker fossil: *waconella wacoensis* brachiopod; low porosity and permeability development.

psi

SOILS NARRATIVE

According to the Soil Survey of Comal County, published by the United States Department of Agriculture, Soil Conservation Service, in cooperation with the Texas Agricultural Extension Service, reissued in 1984, the soils beneath the subject property have been classified as Boerne fine sandy loam, 1 to 3% slopes (BoB).

These soils are deep, gently sloping soils on convex slopes of low stream terraces near rivers and large creeks. The surface layer is a grayish brown, moderately alkaline fine sandy loam about 17 inches thick, and overlies a subsoil of pale brown moderately alkaline fine sandy loam to a depth of approximately 41 inches. The underlying material is a very pale brown moderately alkaline fine sandy loam, to a depth of 65 inches. The soil is well drained, with slow surface runoff, moderately rapid permeability, and medium available water capacity. The soil is used as pasture and range land and habitat for open land wildlife, but inadequate cover for deer and turkey.

psi

SITE GEOLOGIC NARRATIVE

Physiography

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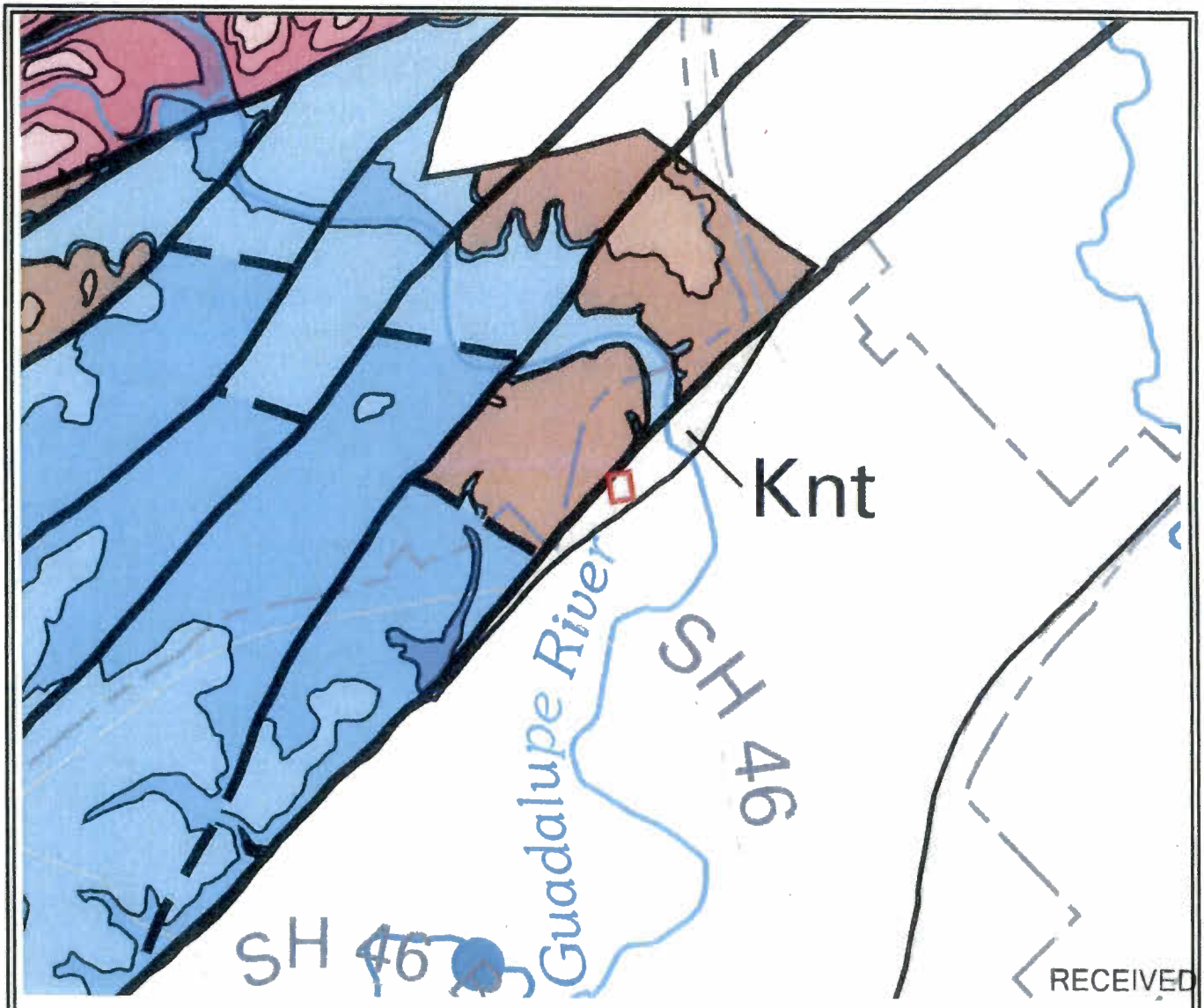
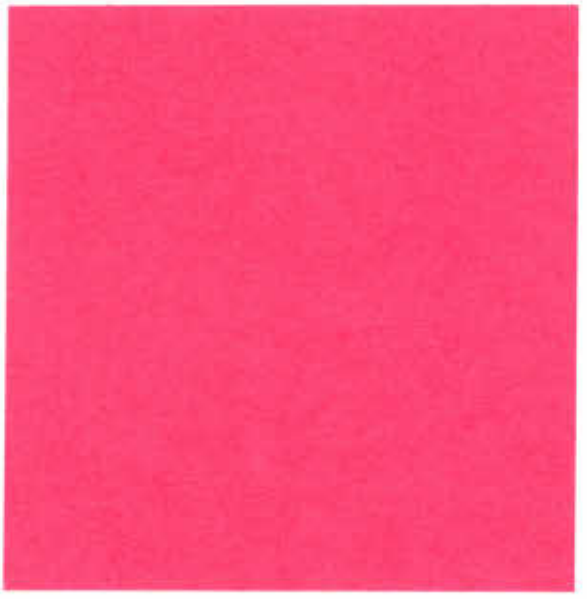


PSI Information To Build On Engineering • Consulting • Testing PSI, Inc. 3 Burwood Lane San Antonio Texas 78216	**PROJECT NAME:** Ervenberg Duplex Tract 227 Ervernberg Ave. New Braunfels, Texas PROJECT NO :435-2882	**Geologic Map of Edwards Aquifer Recharge Zone, South-Central Texas** (USGS. 2005)	N



GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: Ervendberg Duplex Tract

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C *	2A	2B	3	4				5A	6	7	8A	8B	9	10		11		12
FEATURE ID	ATTITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			(AZIMUTH (DEGREES)	DIP	DENSITY (NO/FT)	APERTURE (FEET	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	>40	≤1.6	>1.6	
S-1	29-44-13.8	98-6-35.9	MB	30	Knt	0.6	0.6	>100						5	35	X		X		water well

* DATUM

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

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

12 TOPOGRAPHY

Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

I have read, I 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 9/16/16

Sheet 1 of 3 1

STATE OF TEXAS
John Langan
Geology
4871
LICENSED
PROFESSIONAL GEOSCIENTIST
9/16/16

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

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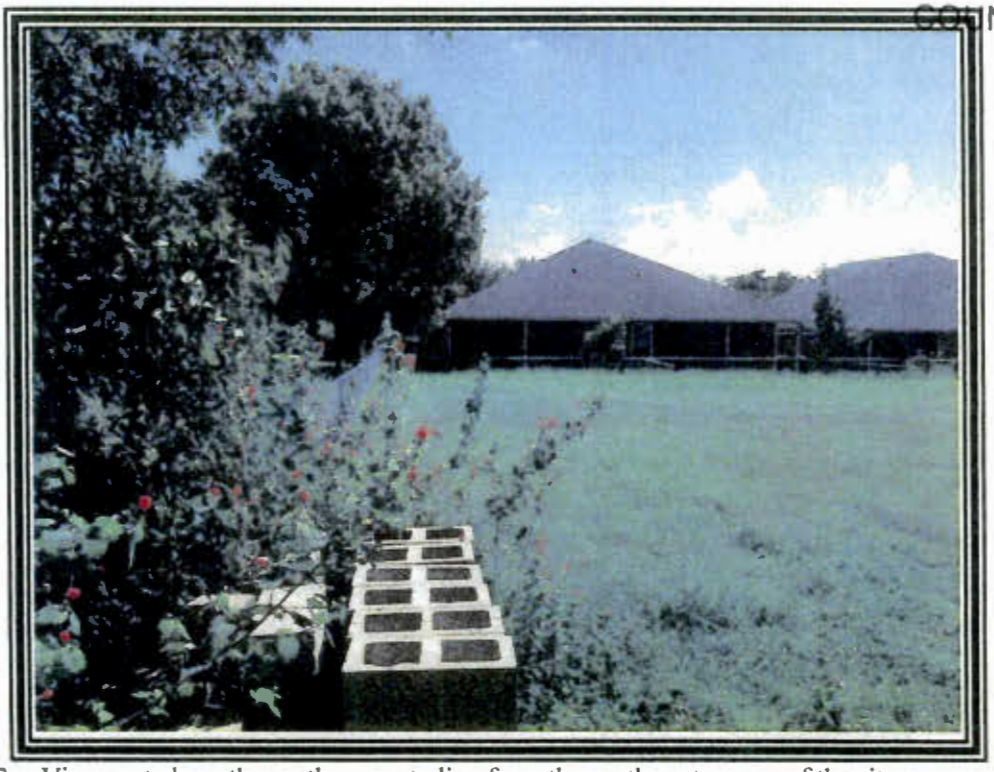
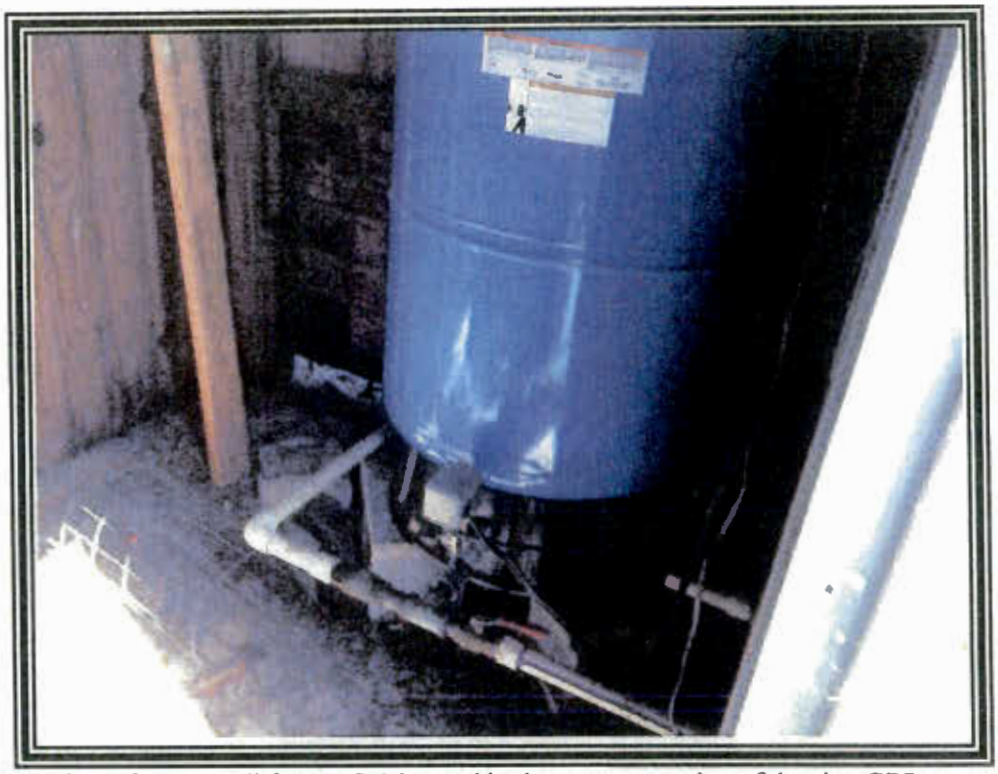
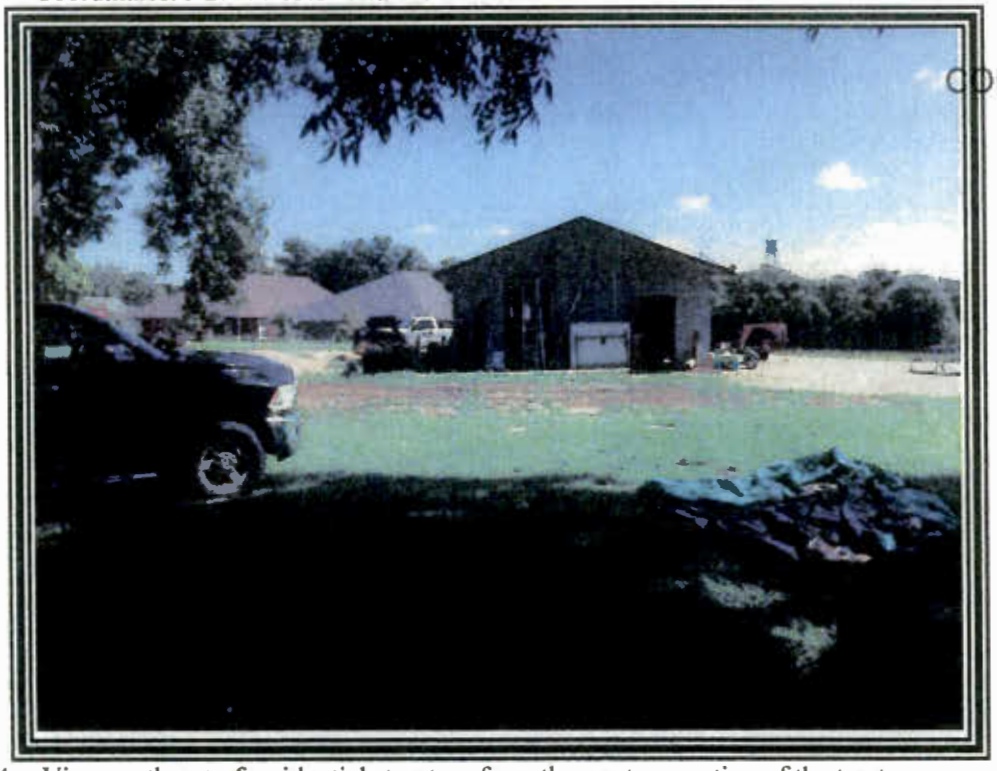
1. View south along the west property line from the northwest corner of the Ervedberg Duplex tract in New Braunfels, Texas.



2. View east along the north property line from the northwest corner of the site.

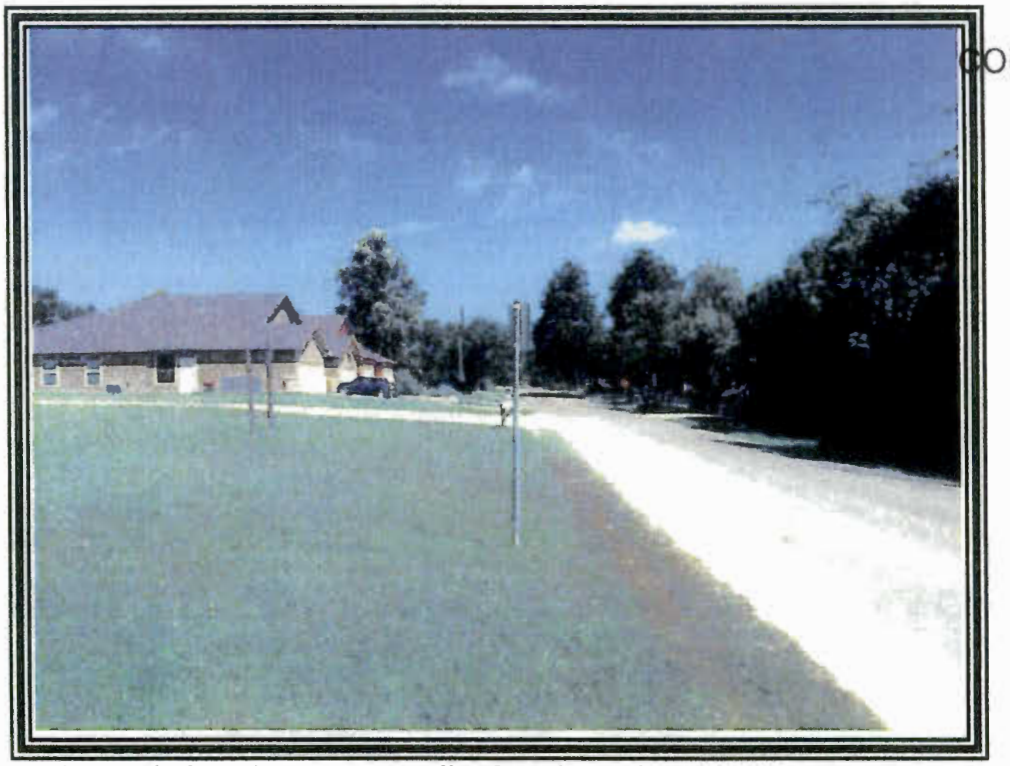


3. View of water well feature S-1 located in the western portion of the site. GPS Coordinates: N29°44'13.8" and W98°6'35.9"

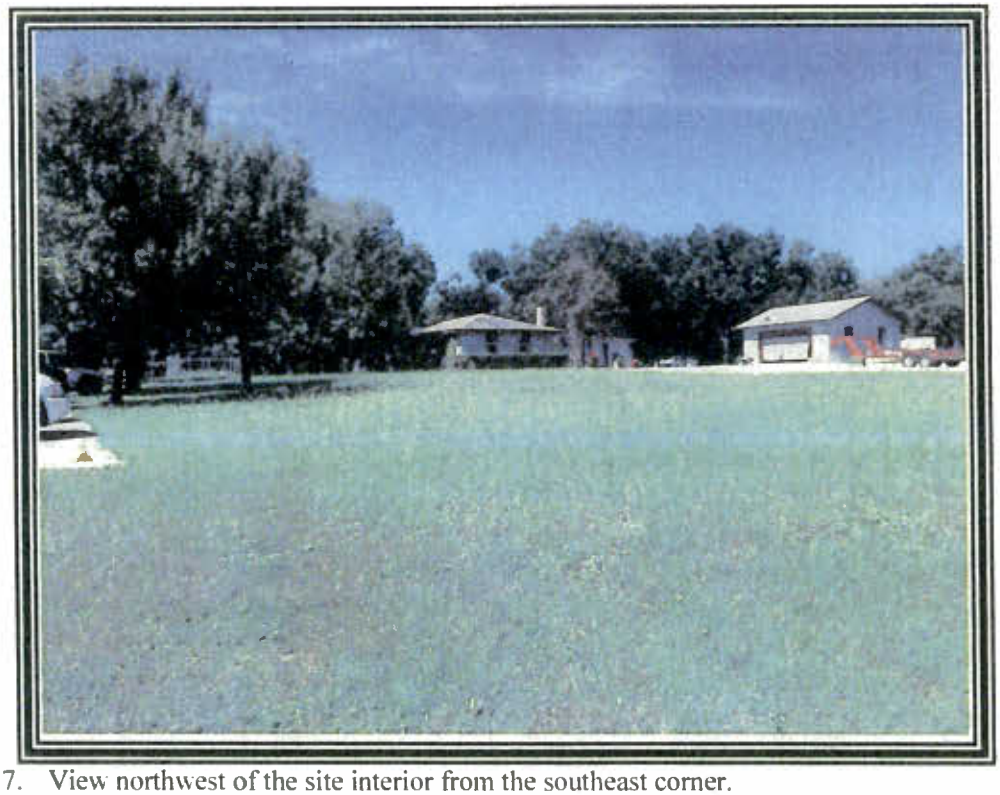


4. View northeast of residential structure from the western portion of the tract.

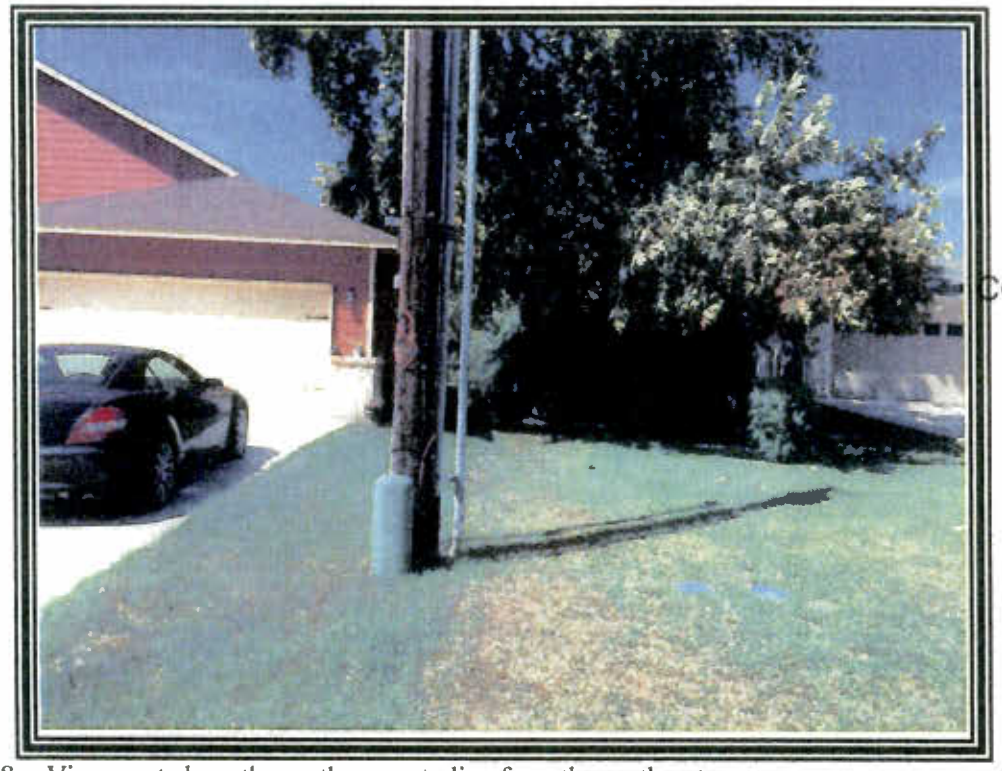
5. View north along the west property line.



6. View north along the east property line from the southeast corner.



7. View northwest of the site interior from the southeast corner.



8. View west along the north property line from the northeast corner.

9. View south along Ervendberg Ave. from the northeast corner of the tract.

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: Lance Klein, PE, PH, CFM

Date: 10/4/16

Signature of Customer/Agent:

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COUNTY ENGINEER

Regulated Entity Name: Ervendberg Duplex WPAP

Regulated Entity Information

1. The type of project is:

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

2. Total site acreage (size of property):1.82

3. Estimated projected population:25

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

Table 1 - Impervious Cover Table

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	19166.4	÷ 43,560 =	0.44
Parking	6407.4	÷ 43,560 =	0.15
Other paved surfaces	11325.6	÷ 43,560 =	0.26
Total Impervious Cover	36899.4	÷ 43,560 =	0.85

Total Impervious Cover 0.85 ÷ **Total Acreage** 1.82 **X 100 =** 46.7**% Impervious Cover**

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

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

For Road Projects Only

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

7. Type of project:

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

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

☐ Concrete
☐ Asphaltic concrete pavement
☐ Other: _____

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

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

10. Length of pavement area: _____ feet.

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

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

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

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

Stormwater to be generated by the Proposed Project

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

Wastewater to be generated by the Proposed Project

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

100% Domestic	2,450Gallons/day
_____% Industrial	_____Gallons/day
_____% Commingled	_____Gallons/day
TOTAL gallons/day 2,450	

15. Wastewater will be disposed of by:

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

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

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

☒ Sewage Collection System (Sewer Lines):

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

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

☒ The SCS was previously submitted on October 7, 2016.

☐ 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 New Braunfels Utilities Gruene Road Wastewater (name) Treatment Plant. The treatment facility is:

☒ Existing.
☐ Proposed.

16. ☒ All private service laterals will be inspected as required in 30 TAC §213.5.

Site Plan Requirements

Items 17 – 28 must be included on the Site Plan.

17. ☒ The Site Plan must have a minimum scale of 1" = 400'.

Site Plan Scale: 1" = 20'.

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): Panel 48187C0105F effective 11/2/2007 from the FEMA Floodplain Maps

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

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

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

☒ There are 1 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)

☐ The wells are not in use and have been properly abandoned.
☐ The wells are not in use and will be properly abandoned.
☒ The wells are in use and comply with 16 TAC §76.

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

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

☐ All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.
☒ No sensitive geologic or manmade features were identified in the Geologic Assessment.

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

22. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.
23. ☒ Areas of soil disturbance and areas which will not be disturbed.
24. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.
25. ☒ Locations where soil stabilization practices are expected to occur.
26. ☐ Surface waters (including wetlands).

    ☒ N/A
27. ☐ Locations where stormwater discharges to surface water or sensitive features are to occur.

    ☒ There will be no discharges to surface water or sensitive features.
28. ☒ Legal boundaries of the site are shown.

Administrative Information

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

Factors Affecting Water Quality

Attachment A

Factors Affecting Water Quality

Potential sources of pollution that may be expected to affect the quality of storm water discharges from the site during construction include:

- Soil erosion due to clearing of site.
- Oil, grease, fuel and hydraulic fluid contamination from construction equipment and vehicle drippings.
- Hydrocarbons from asphalt paving.
- Trash and litter from construction workers and material wrappings.
- Concrete truck washout.
- Tar, fertilizers, cleaning solvents, detergents, and petroleum based products.

Potential sources of pollution that may be expected to affect the quality of storm water discharges from the site after development include:

- Oil, grease fuel and hydraulic fluid contamination from vehicle drippings.
- Dirt and dust from vehicles.
- Trash and litter.

Volume and Character of Stormwater

Attachment B

Volume and Character of Stormwater

The overall contributing drainage area for Ervendberg Duplex is comprised of 2 sub-basins (1A and 1B) which total to approximately 3.02 acres (Basin 1). The stormwater runoff for the pre-project conditions of this project would be across soil closely resembling Boerne fine sandy loam and comfort-rock outcrop complex, with native grasses covering. The site has an average slope ranging from 2% to 30% for existing conditions and 2% to 33% for proposed conditions. The modified rational methods was used to calculate the peak discharge of each sub-basin. A summary of the pre- and post-project conditions follows.

Pre- and Post-Project Stormwater Data

Drainage Area Name: BASIN 1

Existing T_c (minutes): 20.61

Proposed T_c (minutes): 20.99

	A (acres)	C	2 -Year I (in/hr)	2 -Year Q (cfs)	5 -Year I (in/hr)	5 -Year Q (cfs)	10 -Year I (in/hr)	10 -Year Q (cfs)	25 -Year I (in/hr)	25 -Year Q (cfs)	50 -Year I (in/hr)	50 -Year Q (cfs)	100 -Year I (in/hr)	100 -Year Q (cfs)
Existing Hydrology	3.02	0.49	3.51	5.19	4.56	6.73	5.39	7.96	6.50	10.56	7.44	13.19	8.51	15.72
Proposed Hydrology	3.02	0.58	3.48	6.05	4.52	7.85	5.34	9.28	6.44	12.31	7.37	15.38	8.44	18.33
K				1.00		1.00		1.00		1.10		1.20		1.25
Increase in runoff due to development:				**0.86**		**1.12**		**1.32**		**1.75**		**2.19**		**2.61**

Drainage Area Name: BASIN 1A

Existing T_c (minutes): 13.40

Proposed T_c (minutes): 10.56

	A (acres)	C	2 -Year I (in/hr)	2 -Year Q (cfs)	5 -Year I (in/hr)	5 -Year Q (cfs)	10 -Year I (in/hr)	10 -Year Q (cfs)	25 -Year I (in/hr)	25 -Year Q (cfs)	50 -Year I (in/hr)	50 -Year Q (cfs)	100 -Year I (in/hr)	100 -Year Q (cfs)
Existing Hydrology	0.91	0.58	4.35	2.31	5.61	2.98	6.66	3.54	8.00	4.67	9.17	5.84	10.51	6.97
Proposed Hydrology	0.91	0.68	4.82	2.98	6.20	3.84	7.39	4.58	8.87	6.04	10.18	7.56	11.67	9.03
K				1.00		1.00		1.00		1.10		1.20		1.25
Increase in runoff due to development:				**0.67**		**0.86**		**1.04**		**1.37**		**1.72**		**2.06**

Drainage Area Name: BASIN 1B

Existing T_c (minutes): 20.53

Proposed T_c (minutes): 18.16

	A (acres)	C	2 -Year I (in/hr)	2 -Year Q (cfs)	5 -Year I (in/hr)	5 -Year Q (cfs)	10 -Year I (in/hr)	10 -Year Q (cfs)	25 -Year I (in/hr)	25 -Year Q (cfs)	50 -Year I (in/hr)	50 -Year Q (cfs)	100 -Year I (in/hr)	100 -Year Q (cfs)
Existing Hydrology	2.11	0.44	3.52	3.28	4.57	4.26	5.40	5.03	6.51	6.68	7.46	8.34	8.53	9.94
Proposed Hydrology	2.11	0.53	3.76	4.20	4.86	5.44	5.75	6.43	6.93	8.53	7.93	10.65	9.08	12.70
K				1.00		1.00		1.00		1.10		1.20		1.25
Increase in runoff due to development:				**0.92**		**1.18**		**1.40**		**1.85**		**2.31**		**2.75**

The characteristics of the post-project stormwater generated onsite will be influenced by site features that generate non-point pollution. This non-point pollution will include oil and grease from the paved areas, suspended solids, sedimentation, and nutrients for lawn care, and possible

pesticides and herbicides. The stormwater runoff will flow across pervious areas of soil with native grasses, into an earthen detention pond, and through a grassy swale before discharging into the right-of-way of Ervendberg Avenue. The stormwater runoff eventually enters the Guadalupe River.

Suitability Letter from Authorized Agent

Attachment C

Suitability Letter From Authorized Agent

N/A

Attachment D

Exception to the Required Geologic Assessment

Not Applicable

Attachment D

Exception To The Required Geologic Assessment

NOT APPLICABLE

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: Lance Klein, PE, PH, CFM

Date: 10/4/16

Signature of Customer/Agent:

RECEIVED

APR 04 2017

COUNTY ENGINEER

Regulated Entity Name: Ervendberg Duplex WPAP

Project Information

Potential Sources of Contamination

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

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

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

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

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

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

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

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

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

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

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

Sequence of Construction

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

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

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

6. ☒ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Guadalupe River

Temporary Best Management Practices (TBMPs)

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

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

☒ A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.

☒ A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.

☒ A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.

☒ A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.

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

☐ **Attachment E - Request to Temporarily Seal a Feature**. A request to temporarily seal a feature is attached. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

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

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

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

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.

☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

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

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

☒ N/A

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

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

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

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

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

Soil Stabilization Practices

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

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

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

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

Administrative Information

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

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

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

Spill Response Actions

Attachment A

Spill Response Action

Spill Prevention and Control

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 an 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 fro spills and leaks.

(3) Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).

(4) Establish a continuing education program to indoctrinate new employees.

(5) Have contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

(1) To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110, 117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.

(2) Store hazardous materials and wastes in covered containers and protect form 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 runon 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 equipment 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

(1) Clean up leaks and spills immediately.

(2) Use a rag for small spills on paved surfaces, a damp mop for general 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 as 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 material on small spills rather than hosing down or burying the spill.

(3) Absorbent material 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 material.

(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 be 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) He 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 County Sheriff Office, Fire Departments, etc.

More information on spill rules and appropriate responses is available on the TCEQ website at http://www.tnrcc.state.tx.us/enforcement/emergency_response.html

Vehicle and Equipment Fueling

(1) If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runon 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 recycle 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.

(10) If fueling must occur on site, use designated areas, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.

(11) Discourage "topping off" of fuel tanks.

(12) Always use secondary containment, such as a drain pan, when fueling to catch spills/leaks.

Potential Sources of Contamination

Attachment B

Potential Sources of Contamination

1. Oil, grease, fuel and hydraulic contamination from construction equipment and vehicle leakage.
   Remedy: Lubrication and fueling will be preformed in a designated area. This area will be monitored daily for contamination.

2. Miscellaneous trash and litter form construction workers.
   Remedy: Designated receptacles will be strategically located and workers will be directed to deposit trash there.

3. Construction debris.
   Remedy: Debris will be collected weekly and deposited in bins for offsite disposal. Situations requiring immediate attention will be handled on a case by case basis.

4. Asphalt products.
   Remedy: After placement of asphalt, emulsion or coatings, the contractor will be responsible for immediate cleanup should an unexpected rain occur. For the duration of the asphalt product curing time, the contractor will maintain standby personnel and equipment to maintain and asphalt wash-off should and unexpected rain occurs. The contractor will be instructed not to place asphalt products on the ground within 48 hours of a forecasted rain.

5. Tar, fertilizers, cleaning solvents, detergents, and petroleum based products.
   Remedy: The contractor will be responsible for immediate cleanup should an unexpected rain occur. Debris will be collected weekly and deposited in bins for offsite disposal. Situations requiring immediate attention will be handled on a case by case basis.

Sequence of Major Activities

Attachment C

Sequence of Major Activities

1. Install erosion and sedimentation controls (i.e. Silt Fences, Rock Berms, and Stabilized Construction Entrances) as indicated on the approved construction plans
2. Construct duplexes and drives
   Duplexes: 0.44 acres disturbed
   Drives (Main Drive and Driveways): 0.41 acres disturbed
3. Install landscaping or hydromulch to disturbed areas where applicable
4. Re-vegetate disturbed areas
5. Remove temporary erosion and sedimentation controls

Construction entrances for site will be accessed from Ervendberg Ave.

Attachment D

Temporary Best Management Practices and Measures

Attachment D

Temporary Best Management Practices and Measures

All TBMPs will be installed prior to the beginning of site preparation and construction activities as per the Site Plan. The TBMPs will remain in place and will be maintained until all construction has ceased and a perennial vegetative cover with a density of 70 percent has been established.

a. Stabilized Construction Entrance, Silt fences and rock berms will be used to protect disturbed soils during construction in order to prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.

b. Stabilized Construction Entrance, Silt fences and rock berms will be used to protect disturbed soils during construction in order to 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.

c. A 50-foot radius natural buffer zone adjacent to and upgradient of any sensitive features will remain undisturbed so that rainfall may continue to enter the feature. The natural vegetated areas will ensure that pre-development stormwater quantity and quality will continue to recharge the aquifer via the feature. Rock berms and silt fences will be placed downgradient of all construction activities so that potentially contaminated stormwater may be treated before leaving the sited and entering downstream surface water.

d. No construction will occur within a 50-foot radius of naturally-occurring sensitive features. The vegetative buffer zone will serve as both TMBP and BMP for the sensitive features. In the case that construction activities occur upgradient of a sensitive feature (greater than the 50-foot radius) the disturbed soils will be protected from erosion by silt fences as outlined above.

Request to Temporarily Seal a Feature

Attachment E

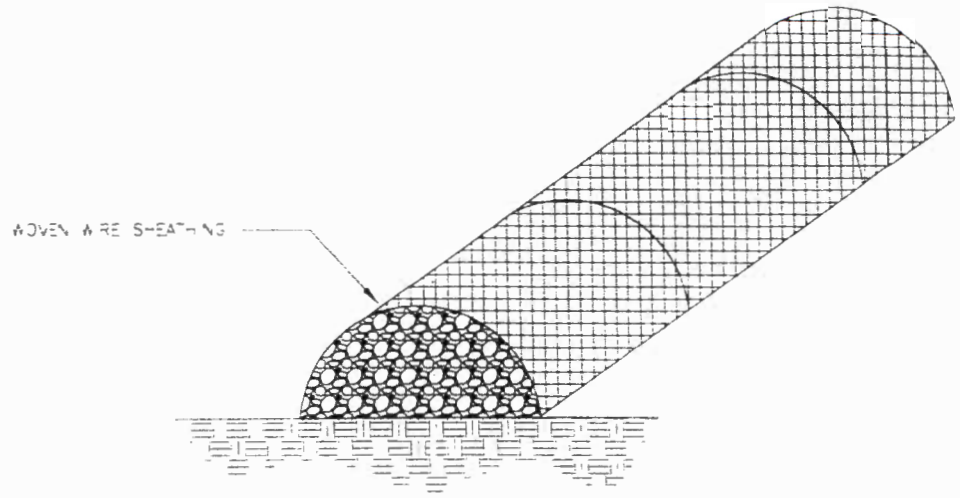
Request to Temporarily Seal a Feature

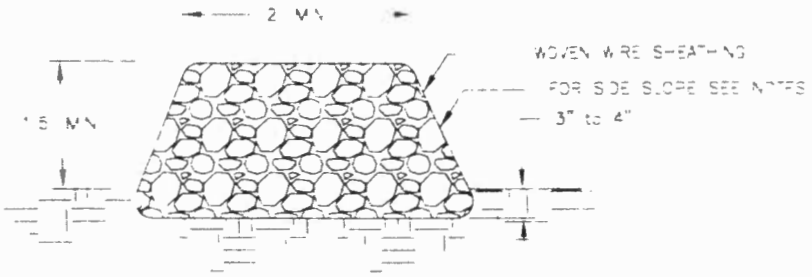
NOT APPLICABLE

Attachment F

Structural Practices

The structural practices that will limit runoff discharge of pollutants form exposed areas of the site will be the use of a stabilized construction entrance, rock berms and silt fences to prevent the excavated material from leaving the site.





NOTES

1. USE ONLY CLEAN, OPEN GRADED ROCK 6" TO 8" INCH DIAMETER FOR STREAM FLOW CONDITIONS, USE OPEN GRADED ROCK 3" TO 6" INCHES DIAMETER FOR OTHER CONDITIONS

2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 1" INCH OPENINGS AND MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED

3. THE BERM SHALL BE BURIED IN A TRENCH APPROXIMATELY 3" TO 4" INCHES DEEP

4. FOR INSTALLATIONS IN ACTIVE STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE

5. ROCK BERMS PLACED IN STATE RIGHT OF WAY WILL BE INSTALLED WITH A MAXIMUM SIDE SLOPE OF 1:1 OR FLATTER FOR ALL SLOPES PARALLEL TO THE FRONTAGE ROAD EDGE OF PAVEMENT

MAINTENANCE AND REMOVAL

6. REPAIR ANY DAMAGE WOVEN WIRE SHEATHING.

THE BERM SHALL BE RESHAPED AS NEEDED DURING INSPECTION.

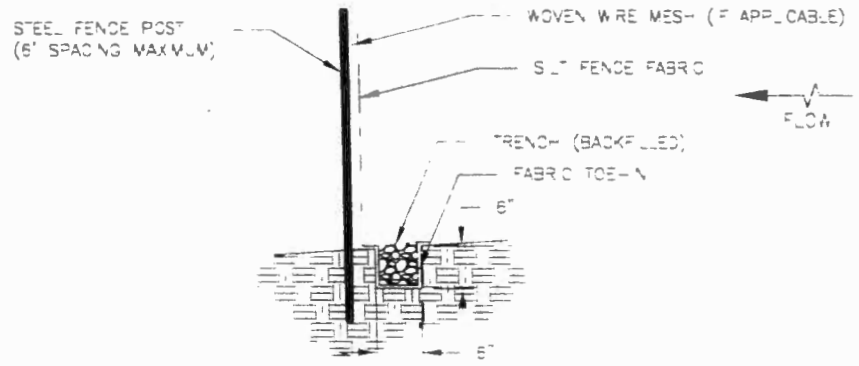
7. THE STONE AND OR FABRIC SUPPORT WOVEN WIRE SHEATHING SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS MASS-OUT CONSTRUCTION TRAFFIC DAMAGE, ETC.

8. WHEN SILT REACHES A DEPTH EQUAL TO ONE THIRD THE HEIGHT OF THE BERM OR ONE FOOT (1') WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER THAT WILL NOT CAUSE ANY ADDITIONAL SILTATION.

9. WHEN THE SITE IS COMPLETELY STABILIZED THE BERM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER

ROCK BERM

EXHIBIT 1



NOTES:

1. TRIANGULAR SEDIMENT FILTER DIKES MAY BE SUBSTITUTED FOR SILT FENCE IN AREAS WHERE INSTALLATION OF SILT FENCE IS NOT POSSIBLE OR WHERE VEHICLE ACCESS MUST BE MAINTAINED PROVIDED THE CONTRIBUTING DRAINAGE AREA IS LESS THAN ONE ACRE

2. SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC WIDTH SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/IN², ULTRAVIOLET STABILITY EXCEEDING 70% AND A MAXIMUM APPARENT OPENING SIZE OF U.S. SIEVE NO. 30

3. FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR Y-BAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM NOMINAL WEIGHT 1.25 LB/FT², AND BRINELL HARDNESS EXCEEDING 140

4. WOVEN WIRE BACKING IS REQUIRED IN THE EDWARDS AQUIFER RECHARGE AND CONTRIBUTING ZONE; OPTIONAL ELSEWHERE. WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2"X4" WELDED WIRE, 12 GAUGE MINIMUM

5. SILT FENCE SHOULD BE INSTALLED FOLLOWING THE CONTOURS AS CLOSE AS POSSIBLE. THE ENDS SHOULD BE CURVED UPSTREAM TO CREATE AN AREA OF WATER IMPOUNDMENT AND PREVENT FLOW FROM ESCAPING AROUND THE FENCE

STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT AND SPACED NOT MORE THAN 6 FEET ON CENTER

THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G. PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3" OF WASHED GRAVEL ON EACH SIDE TO PREVENT FLOW UNDER FENCE.

6. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE ANCHORED IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL

7. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE WHICH IS THEN ATTACHED TO THE STEEL FENCE POST. WHERE ENDS MUST BE JOINED, OVERLAP TWO FEET AND SECURELY FASTEN

MAINTENANCE AND REMOVAL:

1. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES APPROXIMATELY 6 INCHES. THE SILT SHALL BE DISPOSED OF IN AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.

2. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE. 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

SILT FENCE

EXHIBIT 2

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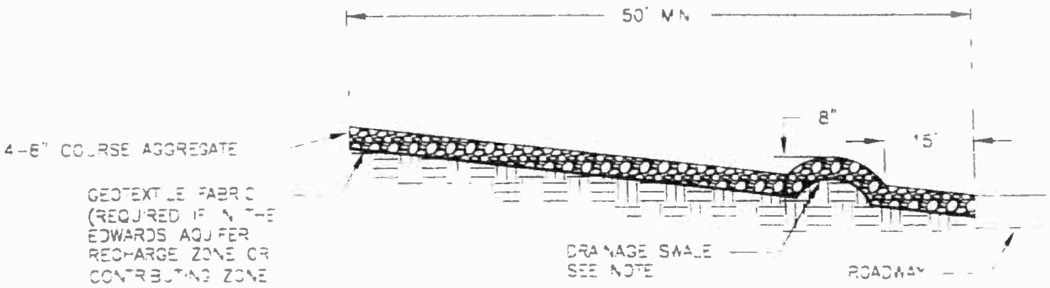
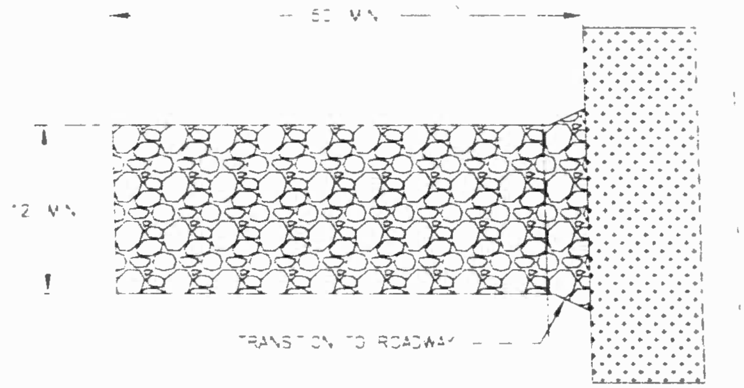
APR 04 2017

COUNTY ENGINEER



PROFILE
N.T.S.



PLAN VIEW — ROW
N.T.S.

NOTES

1. THE AGGREGATE SHOULD CONSIST OF 4 TO 8 INCH WASHED STONE OVER A STABLE FOUNDATION WITH A MINIMUM THICKNESS OF 8 INCHES.

2. IF THE SLOPE TOWARDS THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE 8 INCHES HIGH WITH 3:1 (H:V) SIDESLOPES ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.

3. THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OZ/YD², A MULLEN BURST RATING OF 140 LB/IN², AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SIEVE.

4. THE MINIMUM WIDTH OF THE ENTRANCE SHOULD BE 12 FT OR THE FULL WIDTH OF THE EXIT ROADWAY, WHICHEVER IS GREATER.

5. [illegible]

6. WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH 4 INCH MINIMUM CRUSHED STONE OR COMMERCIAL RACK WHICH DRAINS INTO A SEDIMENT TRAP OR BASIN.

MAINTENANCE:
THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.

8. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

STABILIZED CONSTRUCTION ENTRANCE

EXHIBIT 3

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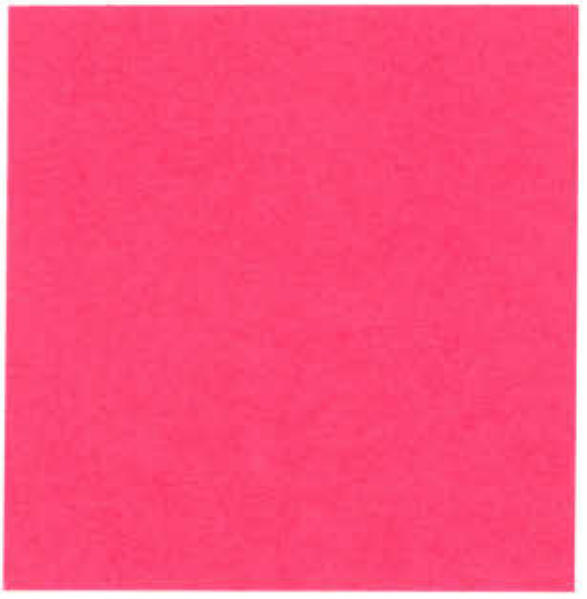
COUNTY ENGINEER

Drainage Area Map

Attachment G

Drainage Area Map

Temporary sediment basins are not attainable in this development due to the size of the property and drainage areas. Instead, silt fences will be used to limit pollutant discharges before becoming concentrated channel flow. The entrance to the site will be protected with a construction entrance. A rock berm will be used to further limit runoff discharge of pollutants from the site. Please refer to the attached Existing and Proposed Drainage Maps for calculated runoff; refer to the Site Plan at the end of the report for placement of temporary BMPs.



Attachment H

Temporary Sediment Pond(s) Plans and Calcualtions

Attachment H

Temporary Sediment Pond(s) Plans and Calculations

NOT APPLICABLE

Inspection and Maintenance of BMPs

Attachment I

Inspection and Maintenance for BMPs

The BMPs for the construction of this project will be the use of rock berms and silt fencing. The following inspection and maintenance procedures will be implemented:

1. Stabilized Construction Entrance/Exit, Silt fencing and rock berms must be in place prior to the start of construction and will remain in place until construction has been complete and the site stabilized from further erosion.

2. The contractor will inspect the rock berms and silt fencing at least once a week and within 24 hours of a storm of 0.5 inches or more in depth. The contractor will repair or replace any damaged TBMPs. The contractor shall correct damage or deficiencies as soon as practical after the inspection but no later than 7 days after the inspection.
   a. For Rock Berms:
      1. Contractor shall remove sediment and other debris when buildup reaches 6 inches and dispose of the accumulated silt in an approval manner that will not cause any additional siltation.
      2. The berm should be replaced when the structures ceases to function as intended due to silt accumulation among the rocks, washout, construction traffic damage, etc.
   b. For Temporary Construction Entrance/Exit:
      1. All sediment spilled, dropped, washed or tracked onto public right-of-way should be removed immediately by contractor.
      2. When necessary, wheels should be cleaned to remove sediment prior to entrance onto right-of-way.
      3. 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.
   c. For Silt Fence:
      1. Remove sediment when buildup reaches 6 inches.
      2. When construction is complete, the sediment should be disposed of in a manner that will not cause additional siltation and the prior location if the silt fence should be revegetated. The fence itself should be disposed of in an approved landfill.

3. Contractor will place trench excavation on the upgradient side of the trench.

4. All soil, sand, gravel, and excavated material stockpiled on-site will have appropriately sized silt fencing placed upgradient and down gradient.

5. The contractor will keep a record of the weekly inspections, noting the condition of the rock berms, silt fencing and construction entrance and any corrective action taken to maintain the erosion control structures. In addition to the inspection and maintenance reports, the operator should keep records of the construction activity on-site, in particular, the following information should be kept.

   a. The dates when major grading activities occur in a particular area.

b. The dates when construction activities cease in an area, temporarily or permanently.

c. The dates when an area is stabilized, temporarily or permanently.

d. Records to be maintained in SWPPP.

Attachment J

Schedule of Interim and Permanent Soil Stabilization Practices

Attachment J

Schedule of Interim and Permanent Soil Stabilization Practices

The schedule of interim and permanent soil stabilization will be as follows:

1. Once construction of the project has commenced, the construction activity is planned to continue until the project is complete. The water, electrical, cable TV and telephone trenches will be excavated. The trenches will then be re-excavated and the water, electrical, cable TV and telephone lines will be installed. This work is intended to continue until all the lines are installed. The utility lines are located within the project boundaries as shown on the site plan. As soon as the underground utilities are installed, the road base will be installed and compacted providing the interim soil stabilization for the paved area and the permanent soil stabilization for the parking areas. Once the individual residential buildings are built and landscaped this will provide permanent soil stabilization for the building areas.

2. Much of the excavation for this project will be in solid rock, helping to minimize the amount of loose soil which has the potential to become suspended in runoff and washed downstream.

3. 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 temporary or permanently ceased. Where the initiation of stabilization measures by the 14th day after construction activity temporary or permanently cease in precluded by weather conditions, stabilization measures shall be initiated as soon as practicable. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 21 days, temporary stabilization measures do not have to be initiated on that portion of site. In areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

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: Lance Klein, PE, PH, CFM

Date: 10/4/16

Signature of Customer/Agent

RECEIVED

APR 04 2017

COUNTY ENGINEER

Regulated Entity Name: Ervendberg Duplex WPAP

Permanent Best Management Practices (BMPs)

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

1. ☒ Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.

   ☐ N/A

2. ☒ These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.

   ☒ The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

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

☐ N/A

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

   ☐ N/A

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

   ☐ The site will be used for low density single-family residential development and has 20% or less impervious cover.
   ☐ The site will be used for low density single-family residential development but has more than 20% impervious cover.
   ☒ The site will not be used for low density single-family residential development.

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

   ☐ **Attachment A - 20% or Less Impervious Cover Waiver**. The site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is attached.
   ☒ The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.
   ☐ The site will not be used for multi-family residential developments, schools, or small business sites.

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

☒ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is attached.

☐ No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.

☐ Permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, and an explanation is attached.

7. ☒ **Attachment C - BMPs for On-site Stormwater**.

☒ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is attached.

☐ Permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached.

8. ☒ **Attachment D - BMPs for Surface Streams**. A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is attached. Each feature identified in the Geologic Assessment as sensitive has been addressed.

☐ N/A

9. ☒ The applicant understands that to the extent practicable, BMPs and measures must maintain flow to naturally occurring sensitive features identified in either the geologic assessment, executive director review, or during excavation, blasting, or construction.

☒ The permanent sealing of or diversion of flow from a naturally-occurring sensitive feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed.

☐ **Attachment E - Request to Seal Features**. A request to seal a naturally-occurring sensitive feature, that includes, for each feature, a justification as to why no reasonable and practicable alternative exists, is attached.

10. ☒ **Attachment F - Construction Plans**. All construction plans and design calculations for the proposed permanent BMP(s) and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. The plans are attached and, if applicable include:

☒ Design calculations (TSS removal calculations)
☒ TCEQ construction notes
☒ All geologic features
☒ All proposed structural BMP(s) plans and specifications

☐ N/A

11. ☒ **Attachment G - Inspection, Maintenance, Repair and Retrofit Plan**. A plan for the inspection, maintenance, repairs, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan includes all of the following:

    ☒ Prepared and certified by the engineer designing the permanent BMPs and measures
    ☒ Signed by the owner or responsible party
    ☒ Procedures for documenting inspections, maintenance, repairs, and, if necessary retrofit
    ☒ A discussion of record keeping procedures

    ☐ N/A

12. ☐ **Attachment H - Pilot-Scale Field Testing Plan**. Pilot studies for BMPs that are not recognized by the Executive Director require prior approval from the TCEQ. A plan for pilot-scale field testing is attached.

    ☒ N/A

13. ☒ **Attachment I -Measures for Minimizing Surface Stream Contamination**. A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is attached. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity, which increase erosion that results in water quality degradation.

    ☐ N/A

Responsibility for Maintenance of Permanent BMP(s)

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

14. ☒ The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.

    ☐ N/A

15. ☒ A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development, or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.

    ☐ N/A

20% or Less Impervious Cover Waiver

Attachment A

20% Or Less Impervious Cover Waiver

NOT APPLICABLE

BMPs for Ungradient Stormwater

ATTACHMENT B

BMPs for Upgradient Stormwater

The upgradient stormwater would continue to be accepted onto the project site. The stormwater runoff from the areas that are immediately upgradient of the site are currently developed as a residential lots and commercial lots. To treat the stormwater runoff, a grassy swale will be installed at the outlet of the detention pond. Rain harvesting system will be used to capture the stormwater runoff from the roofs of the three proposed duplexes. The rain water will then be used for irrigation purposes. Filter strips has been added to the end of the proposed drive to add additional treatment. The site will also be re-vegetated after construction is complete.

BMPs for On-site Stormwater

Attachment C

BMPs for On-Site Stormwater

To treat the stormwater runoff for the Ervendberg Duplex, a grassy swale will be installed at the outlet of the detention pond. Rain harvesting system will be used to capture the stormwater runoff from the roofs of the three proposed duplexes. The rain water will then be used for irrigation purposes. Filter strips has been added to the end of the proposed drive to add additional treatment. The site will also be re-vegetated after construction is complete.

BMPs for Surface Streams

Attachment D

BMPs for Surface Streams

The proposed Ervendberg Duplex does not enter directly into any surface streams on the site. To treat the stormwater runoff for the Ervendberg Duplex, a grassy swale will be installed at the outlet of the detention pond. Rain harvesting system will be used to capture the stormwater runoff from the roofs of the three proposed duplexes. The rain water will then be used for irrigation purposes. Filter strips has been added to the end of the proposed drive to add additional treatment. The site will also be re-vegetated after construction is complete.

According to the geologic assessment, there are no sensitive features that require a buffering zone during construction.

Request to Seal Features

Attachment E

Request To Seal Features

NOT APPLICABLE

Construction Plans

Attachment F

Construction Plans

To treat the stormwater runoff for the Ervendberg Duplex, a grassy swale will be installed at the outlet of the detention pond. Rain barrels will be used to capture the stormwater runoff from the roofs of the proposed duplexes. The rain water will then be used for irrigation. The placement of the grassy swale can be seen on the SWPPP plan and will be constructed based on TCEQ RG-348 requirements. The rain retention/irrigation system will be designed based on The Texas Water Development Board's Texas Manual on Rainwater Harvesting and TCEQ RG-348 requirements. The possible irrigation areas are hatched on the site plan. The following are the constants for the grassy swale and the rain retention/irrigation system:

Retention/Irrigation System

- Runoff Storage Facility Configuration and Sizing – The size of the rain catchment containers should be sized based on The Texas Water Development Board's Texas Manual on Rainwater Harvesting
- Pump and Wet Well System – A reliable pump, wet well, and rainfall or soil moisture sensor system should be used to distribute the water quality volume. System specifications must be approved by the TCEQ. These systems should be similar to those used for wastewater effluent irrigation, which are commonly used in areas where "no discharge" wastewater treatment plant permits are issued.
- Pumps – A pump capable of delivering 100% of the design capacity should be provided. Valves should be located outside the wet well on the discharge side of each pump to isolate the pumps for maintenance and for throttling if necessary. Pumps should be selected to operate within 20% of their best operating efficiency. A high/low-pressure pump shut off system (in case of line clogging or breaking) should be installed in the pump discharge piping. 3-43
- Detention Time – The irrigation schedule should allow for complete drawdown of the water quality volume within 72 hours. Irrigation should not begin within 12 hours of the end of rainfall so that direct storm runoff has ceased and soils are not saturated. Consequently, the length of the active irrigation period is 60 hours. The irrigation should include a cycling factor of ½, so that each portion of the area will be irrigated for only 30 hours during the total of 60 hours allowed for disposal of the water quality volume. Continuous application on any area should not exceed 2-hours. Division of the irrigation area into two or more sections such that irrigation occurs alternately in each section is an acceptable way to meet this recommendation. Irrigation also should not occur during subsequent rainfall events.
- Irrigation System – All irrigation system distribution and lateral piping (i.e. from the pumps to the spray heads) should be Schedule 80 PVC. All pipes and electrical bundles passing beneath driveways or paved areas should be sleeved with PVC Class 200 pipe with solvent welded joints. Sleeve diameter must equal twice that of the pipe or electrical bundle. All pipes and valves should be marked to indicate that they contain non-potable water. All piping must be buried to protect it from weather, vandalism, and vehicular traffic. Velocities in all pipelines should be sufficient to prevent settling of solids. 3-44
- Valves – All valves should be designed specifically for sediment bearing water, and be of appropriate design for the intended purpose. All remote control, gate, and quick coupling valves should be located in ten-inch or larger plastic valve boxes.

- Sprinklers – All sprinkler heads should have full or partial circle rotor pop-up heads and must be capable of delivering the required rate of irrigation over the designated area in a uniform manner. Irrigation must not occur beyond the limits of the designated irrigation area. Partial circle sprinkler heads can be used as necessary to prevent irrigation beyond the designated limits. Sprinkler heads should be capable of passing solids that may pass through the intake. Sprinkler heads should be flush mounted and encased within a 2' x 2' concrete housing capable of protecting the head from mowing and service equipment. An example is presented in Figure 3-16 of the RG-348 on page 3-44.
- Irrigation Site Criteria – The area selected for irrigation must be pervious, on slopes of less than 10%. A geological assessment is required for proposed irrigation areas to assure that there is a minimum of 12 inches of soil cover and no geologic/sensitive features that could allow the water to directly enter the aquifer. Rocky soils are acceptable for irrigation; however, the coarse material (diameter greater than 0.5 inches) should not account for more than 30% of the soil volume. Optimum sites for irrigation include recreational and greenbelt areas as well as landscaping in commercial developments. The stormwater irrigation area should be distinct and different from any areas used for wastewater effluent irrigation. Finally, the area designated for irrigation should have at least a 100-foot buffer from wells, septic systems, natural wetlands, and streams.
- Irrigation Area – The irrigation rate must be low enough so that the irrigation does not produce any surface runoff; consequently, the irrigation rate may not exceed the permeability of the soil. The minimum required irrigation area should be calculated using the following formula on page 3-45 of the RG- 348. The permeability of the soils in the area proposed for irrigation should be determined using a double ring infiltrometer (ASTM D 3385-94) or from county soil surveys prepared by the Natural Resource Conservation Service (previously known as the Soil Conservation Service). If a range of permeabilities is reported, the average value should be used in the calculation. If no permeability data is available, a value of 0.1 inches/hour should be assumed. It should be noted that the minimum area requires intermittent irrigation over a period of 60 hours at low rates to use the entire water quality volume. This intensive irrigation may be harmful to vegetation that is not adapted to long periods of wet conditions. In practice, a much larger irrigation area will provide better use of the retained water and promote a healthy landscape. Irrigation must not occur on land with slopes greater than 10 percent.
- Vegetation – The irrigation area should have native vegetation or be restored or re-established with native vegetation, unless approved by the Executive Director. These areas should not receive any fertilizers, pesticides, or herbicides. Vegetation on the pond embankments should be mowed as appropriate to prevent the establishment of woody vegetation.

Grassy Swales

- The swale should have a length that provides a minimum hydraulic residence time of at least 5 minutes. The maximum bottom width is 10 feet unless a dividing berm is provided (Figure 3-2) and should not exceed 16 feet. If the flow is greater than that which can be handled by a single swale consider installing drop inlets to a storm drain system at intervals to reduce the volume of runoff or select a capture and treat type control. The depth of flow should not exceed 4 inches during a 1.1 inch/hour storm.
- The channel slope should be at least 0.5% and no greater than 2.5%.

- The swale can be sized as both a treatment facility for the design storm and as a conveyance system to pass the peak hydraulic flows of the 100-year storm if it is located "on-line."
- The geometry of the channel is not critical as long as a broad, relatively flat bottom is provided. The side slopes should be no steeper than 3:1 (H:V).
- Roadside ditches should be regarded as significant potential swale/buffer strip sites and should be utilized for this purpose whenever possible.
- If flow is to be introduced through curb cuts, place pavement slightly above the elevation of the vegetated areas. Curb cuts should be at least 12 inches wide to prevent clogging.
- Swales must have at least 80 percent vegetated cover in order to provide adequate treatment of runoff.
- It is important to maximize water contact with vegetation and the soil surface. For general purposes, select fine, close-growing, water-resistant grasses.
- Swales should generally not receive construction-stage runoff. If they do, presettling of sediments should be provided. Such swales should be evaluated for the need to remove sediments and restore vege tation following construction.
- If possible, divert runoff (other than necessary irrigation) during the period of vegetation establishment. Where runoff diversion is not possible, cover graded and seeded areas with suitable erosion control materials.

Vegetative Filter Strips

- The filter strip will extend along the entire length of the contributing area
- The slope will not exceed 10% for natural and 20% for engineered
- The length (in the direction of flow) will be 50ft.
- All filter strips lie above the elevation of the 2 yr, 3-hr storm of any adjacent drainage.
- There is no requirement for vegetation density or type.

Inspection, Maintenance, Repair and Retrofit Plan

Inspection, Maintenance, Repair, and Retrofit Plan

Grassy Swales

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:
Lawn mowing should be performed routinely, as needed, throughout the growing season. Grass height should not exceed 18 inches. Grass cuttings should be collected and disposed of offsite, or a mulching mower can be used. 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.

Inspection:
Inspect swales at least twice annually for erosion or damage to vegetation; however, additional inspection after periods of heavy runoff is most desirable. The swale 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 should 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 swale areas, particularly along highways. Any swale structures (i.e. check dams) 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 two times per year (Urbonas et al., 1992).

Sediment Removal:
Sediment accumulating near culverts and in channels needs to be removed when they build up to 3 inches at any spot, or cover vegetation. Excess sediment should be removed by hand or with flat-bottomed shovels. If areas are eroded, they should be filled, compacted, and reseeded so that the final grade is level with the bottom of the swale. Sediment removal should be performed periodically, as determined through inspection.

Grass Reseeding and Mulching:
A healthy dense grass should be maintained in the channel and side slopes. Grass damaged during the sediment removal process should be promptly replaced using the same seed mix used during swale establishment. If possible, flow should be diverted from the damaged areas until the grass is firmly established.

Public Education:
Private homeowners are often responsible for roadside swale maintenance. Unfortunately, overzealous lawn care on the part of homeowners can present some problems. For example, mowing the swale too close to the ground, or excessive application of fertilizer and pesticides will all be detrimental to the performance of the swale. Pet waste can also be a problem in swales, and should be removed to avoid contamination from fecal coliform and other waste-associated bacteria. The delegation of maintenance responsibilities to individual landowners is a cost benefit to the locality. However, localities should provide an active educational program to encourage the recommended practices.

Rainwater Harvesting

Inspection:
The rainwater harvesting system should be empty within 72 hours of a rain event. Captured water should be disposed over greenspaces and used for irrigation. Tank Pump system should be inspected at least twice a year.

Sediment / Debris Removal:
Removal of sediment and debris should be removed weekly from the tank and gutter system to maintain the performance efficiency of the rainwater harvesting system. Debris can include (not limited to) tree limbs, leafs, and dirt.

Filter Strip

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 will 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. Healthy grass can be maintained without using fertilizers because runoff usually contains sufficient nutrients. Irrigation of the site can help assure a dense and healthy vegetative cover.

Inspection:
Inspect filter strip 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 establish shallow overland flow.

Debris and Litter Removal:
Trash tends to accumulate in vegetated areas, particularly along highways. Any filter strip structures 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 inspections, but should be performed no less than 4 times a 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-bottom 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.

Responsibility of Maintenance

I Scott Schneider,
Print Name

Co-Owner
Title - Owner/President/Other

Ervendberg Duplex
Corporation/Partnership/Entity Name

Agree to assume the responsibility of maintaining the permanent BMPs constructed as part of the Ervendberg Duplex Development in accordance with the rules and regulations of the Texas Commission on Environmental Quality (TCEQ).

I also understand that:

1. I am 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.

2. 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.

Applicant's Signature

9/30/16
Date

RECEIVED
APR 04 2017
COUNTY ENGINEER

Contact Person: Scott Schneider
Entity: Ervendberg Duplex
Mailing Address: 1227 Ervendberg Ave.
City, State: New Braunfels Zip:78130
Telephone: (830)237-3494 FAX:N/A

Responsibility of Maintenance

I Don Koepp,
Print Name

Co-Owner
Title - Owner/President/Other

Ervendberg Duplex
Corporation/Partnership/Entity Name

Agree to assume the responsibility of maintaining the permanent BMPs constructed as part of the Ervendberg Duplex Development in accordance with the rules and regulations of the Texas Commission on Environmental Quality (TCEQ).

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1. I am 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.

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Applicant's Signature

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Date

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Contact Person: Scott Schneider
Entity: Ervendberg Duplex
Mailing Address: 1227 Ervendberg Ave.
City, State: New Braunfels Zip:78130
Telephone: (830)237-3494 FAX:N/A

Pilot-Scale Field Testing Plan

Attachment H

Pilot-Scale Field Testing Plan

NOT APPLICABLE

Measures for Minimizing Surface Stream Contamination

Attachment I

Measures for Minimizing Surface Stream Contamination

The proposed Ervendberg Duplex does not drain to an adjacent stream. A detention pond will be constructed to mitigate the effects of development. In accordance with Comal County regulations, the pond will reduce the peak 100-year discharges to pre-development rates. The pond will be excavated. The pond will discharge through a weir with an emergency overflow weir to the grassy swale. Exit velocities will be controlled by Landlok Model 300 turf reinforcement mat or any approved substitute. Additionaly, Filter strips has been placed at the end section of the proposed road to add addition treatment.

According to the geologic assessment, there are no sensitive features on the site that require a buffering zone.

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

I Don Koepp,
Print Name

Co-Owner,
Title - Owner/President/Other

of Ervendberg Duplex,
Corporation/Partnership/Entity Name

have authorized Lance Klein
Print Name of Agent/Engineer

of M &S Engineering
Corporation/Partnership/Entity Name

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.

RECEIVED

APR 04 2017

COUNTY ENGINEER

SIGNATURE PAGE:

Applicant's Signature

9-30-16
Date

THE STATE OF Tx §

County of Comal §

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 30 day of SEPT, 2016

NOTARY PUBLIC

GRACE SHARP
Notary ID # 130767259
My Commission Expires
August 5, 2020

GRACE SHARP
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 8/5/2020

RECEIVED

APR 04 2017

COUNTY ENGINEER

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

I Scott Schneider,
Print Name

Co-Owner,
Title - Owner/President/Other

of Ervendberg Duplex,
Corporation/Partnership/Entity Name

have authorized Lance Klein
Print Name of Agent/Engineer

of M & S Engineering
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to $10,000 per day per violation.

2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

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RECEIVED

APR 04 2017

COUNTY ENGINEER

SIGNATURE PAGE:

Applicant's Signature

9/30/16
Date

THE STATE OF TX §

County of COMAL §

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 30 day of SEPT, 2016

NOTARY PUBLIC

GRACE SHARP
Typed or Printed Name of Notary

GRACE SHARP
Notary ID # 130767259
My Commission Expires
August 5, 2020

MY COMMISSION EXPIRES: 8/5/2020

RECEIVED

APR 04 2017

COUNTY ENGINEER

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Ervendberg Duplex WPAP
Regulated Entity Location: 1227 and 1231 Ervendberg Ave. New Braunfels, Texas.
Name of Customer: Scott Schneider and Don Koepp
Contact Person: Lance Klein, PE, PH, CFM Phone: (830)629-2988
Customer Reference Number (if issued):CN 603027152 & 602010415
Regulated Entity Reference Number (if issued):RN 102438689

Austin Regional Office (3373)

☐ Hays ☐ Travis ☐ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☒ Comal ☐ Kinney

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

☐ Austin Regional Office
☐ Mailed to: TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☒ San Antonio Regional Office
☐ Overnight Delivery to: TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
(512)239-0357

Site Location (Check All That Apply):

☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	*Size*	*Fee Due*
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	1.82 Acres	$ 4,000.00
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	$
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

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APR 04 2017
COUNTY ENGINEER

Signature: _____ Date: 10/4/16

TCEQ-0574 (Rev. 02-24-15)

Application Fee Schedule

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

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Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

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

Organized Sewage Collection Systems and Modifications

Project	*Cost per Linear Foot*	*Minimum Fee-Maximum Fee*
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

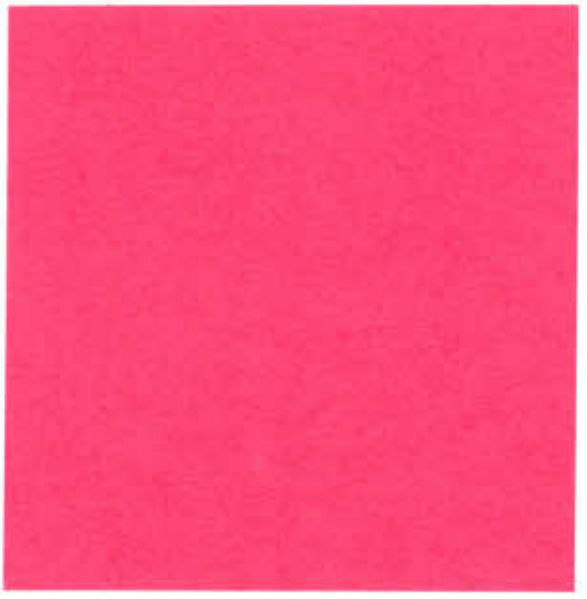
Project	*Cost per Tank or Piping System*	*Minimum Fee-Maximum Fee*
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*
Extension of Time Request	$150



CAST IRON SPRINKLER UTILITY PUMP

APPLICATIONS

Ideal for pressure boosting, sprinkler systems, and general purpose applications where portability is important.

FEATURES & BENEFITS

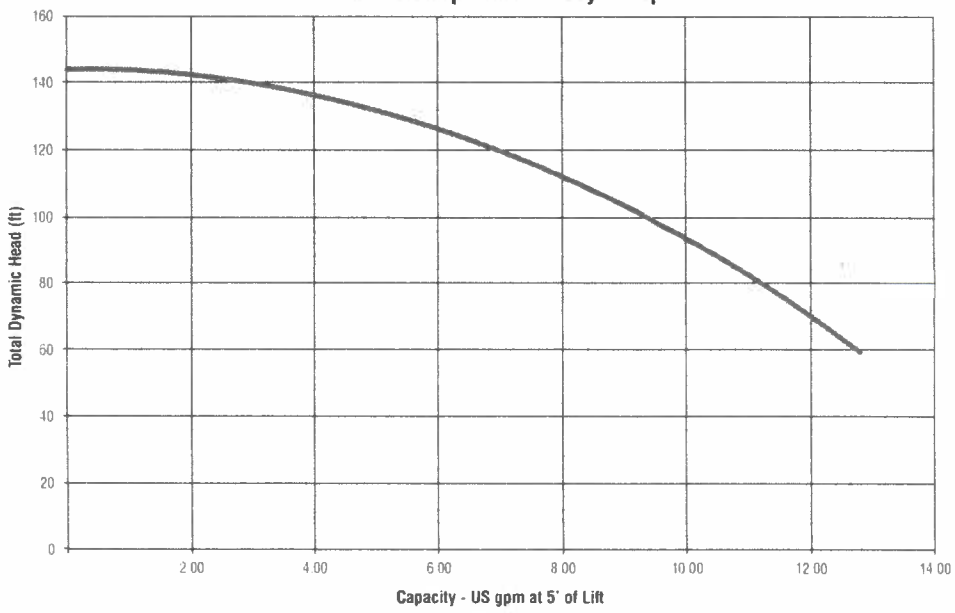
- 115 Volt motor with 8' power cord
- Rugged cast iron construction
- Steel handle for portability
- Self-priming to 25'
- Garden hose adapter included

Model	Item Number	UPC	HP	Volts	Amps	Cord Length	Intake	Discharge	Suction Lift	Discharge Pressure (PSI) 20	25	30	35	40	45	50	55	60	Max Pressure PSI	Max Flow GPM
										Gallons Per Minute										
									5'	12.8	12.5	12.3	12.1	11.2	9.5	6.9	4.3	2.0	64.2	
									10'	11.5	11.3	11.0	10 8	10.4	8.5	6.0	3 4	1.0	62.0	
RJSE-50	614430	0 10121 12456 1	1/2	115	12.4 A @ 115 V	8'	1-1/4" FNPT	1" FNPT	15'	9.8	9.7	9.6	9.5	9.4	7.3	4.7	2.0	-	59.9	12.8
									20'	8.3	8.1	7 8	7.7	7.6	5.7	3.5	1.0	-	57.7	
									25'	5.6	5.55	5.5	5.4	5.3	4.1	2.3	0.2	-	55.5	

Carton Specifications

Model	Length	Width	Height	Weight (lbs)	Carton Cubes (cu ft)	Pallet Quantity	Qty. per Layer	Layers per Pallet
RJSE-50	10"	20.25"	11.5"	36	1.35	32	8	4

Cast Iron Sprinkler Utility Pump



Plastic MPR Nozzles

Matched Precipitation Rate Nozzles

Features

- Matched precipitation rates across sets and patterns in 5 Series, 8 Series, 10 Series, 12 Series, and 15 Series for even water distribution and design flexibility
- MPR Nozzles are installed by more contractors than all other brands combined
- Quickly identify radius and arc with Top Color-coded™ nozzles even when system is not operating
- Three year trade warranty

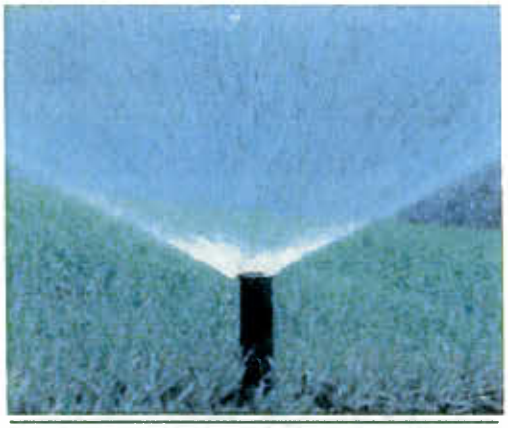
Operating Range

- Spacing: 3 to 15 feet (0.9 to 4.6 m)[1]
- Pressure: 15 to 30 psi (1 to 2.1 bar)
- Optimum pressure: 30 psi (2.1 bar)[2]

Models

- 5 Series: Quarter, Half, Full Nozzles
- 5 Series: Bubbler Nozzles
- 8 Series: Quarter, Half, Full Nozzles
- 8 FLT Series: Designed for lower trajectory applications, such as windy areas
- 10 Series Nozzles
- 12 Series Nozzles
- 15 Series: Quarter, Half, Full Nozzles
- 15 Strip Series Nozzles

[1] *These ranges are based on proper pressure at nozzle.*
[2] *Rain Bird recommends using 1800 PRS Spray Bodies to maintain optimum nozzle performance in higher pressure situations.*



Rain Bird® MPR Nozzles, The Industry Standard

MPR Nozzle and Screen

How To Specify

5 F

- Pattern
  - F: Full
  - H: Half
  - Q: Quarter

MPR Radius Range
5: 5 feet (1.5 m)
8: 8 feet (2.4 m)
12: 12 feet (3.7 m)
15: 15 feet (4.6 m)

5 Series MPR

5° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
5F	15	3	0.29	3.10	3.58
	20	4	0.33	1.99	2.29
	25	4	0.37	2.23	2.57
	30	5	0.41	1.58	1.83
5H	15	3	0.14	3.00	3.46
	20	4	0.16	1.93	2.22
	25	4	0.18	2.17	2.50
	30	5	0.20	1.54	1.78
5Q	15	3	0.07	3.00	3.46
	20	4	0.08	1.93	2.22
	25	4	0.09	2.17	2.50
	30	5	0.10	1.54	1.78

Note: *All MPR nozzles tested on 4" (10.2 cm) pop-ups*
■ *Square spacing based on 50% diameter of throw*
▲ *Triangular spacing based on 50% diameter of throw*

5 Series MPR — METRIC

5° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
5F	1.0	1.1	0.06	1.1	79	91
	1.5	1.3	0.08	1.4	51	58
	2.0	1.5	0.09	1.6	57	65
	2.1	1.5	0.09	1.6	40	46
5H	1.0	1.1	0.03	0.5	76	88
	1.5	1.3	0.04	0.7	49	56
	2.0	1.5	0.04	0.7	55	64
	2.1	1.5	0.05	0.9	39	45
5Q	1.0	1.1	0.02	0.4	76	88
	1.5	1.3	0.02	0.4	49	56
	2.0	1.5	0.02	0.4	55	64
	2.1	1.5	0.02	0.4	39	45

Performance data taken in zero wind conditions
Note: *Specify spray body and nozzles separately.*
Note: *Radius reduction over 25% of the normal throw of the nozzle is not recommended*

15 Series MPR

30° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip in/h	▲ Precip in/h
15F	15	11	2.60	2.07	2.39
	20	12	3.00	2.01	2.32
	25	14	3.30	1.62	1.87
	30	15	3.70	1.58	1.83
15H	15	11	1.30	2.07	2.39
	20	12	1.50	2.01	2.32
	25	14	1.65	1.62	1.87
	30	15	1.85	1.58	1.83
15Q	15	11	0.65	2.07	2.39
	20	12	0.75	2.01	2.32
	25	14	0.82	1.62	1.87
	30	15	0.92	1.58	1.83

Note: *All MPR nozzles tested on 4" (10.2 cm) pop-ups*
■ *Square spacing based on 50% diameter of throw*
▲ *Triangular spacing based on 50% diameter of throw*

15 Series MPR METRIC

30° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
15F	1.0	3.4	0.60	9.8	52	60
	1.5	3.9	0.72	11.8	47	55
	2.0	4.5	0.84	13.7	41	48
	2.1	4.6	0.84	14.0	40	46
15H	1.0	3.4	0.30	4.9	52	60
	1.5	3.9	0.36	5.9	47	55
	2.0	4.5	0.42	6.8	41	48
	2.1	4.6	0.42	7.0	40	46
15Q	1.0	3.4	0.15	2.5	52	60
	1.5	3.9	0.18	2.9	47	55
	2.0	4.5	0.21	3.4	41	48
	2.1	4.6	0.21	3.5	40	46

Performance data taken in zero wind conditions
Note: *Specify spray body and nozzles separately.*
Note: *Radius reduction over 25% of the normal throw of the nozzle is not recommended*

5 Series MPR Stream Bubbler Nozzles

0° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm
5F-B	15	5	1.50
	20	5	1.50
	25	5	1.50
	30	5	1.50
5H-B	15	5	1.00
	20	5	1.00
	25	5	1.00
	30	5	1.00
5Q-B	15	5	0.50
	20	5	0.50
	25	5	0.50
	30	5	0.50
5CST-B	15	5	0.50
	20	5	0.50
	25	5	0.50
	30	5	0.50

Note: *Indicates adjusted radius at psi shown*
Note: *Flow at adjusted radius of 5 feet (1.5 m)*

5 Series MPR Stream Bubbler Nozzles METRIC

0° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m
5F-B	1.0	1.5	0.35	5.7
	1.5	1.5	0.35	5.7
	2.0	1.5	0.35	5.7
	2.1	1.5	0.35	5.7
5H-B	1.0	1.5	0.23	3.8
	1.5	1.5	0.23	3.8
	2.0	1.5	0.23	3.8
	2.1	1.5	0.23	3.8
5Q-B	1.0	1.5	0.12	1.9
	1.5	1.5	0.12	1.9
	2.0	1.5	0.12	1.9
	2.1	1.5	0.12	1.9
5CST-B	1.0	1.5	0.12	1.9
	1.5	1.5	0.12	1.9
	2.0	1.5	0.12	1.9
	2.1	1.5	0.12	1.9

Area of Interest (AOI) | Soil Map | Download Soils Data | Shopping Cart (Free)

View Soil Information By Use: All Uses | Printable Version | Add to Shopping Cart

Intro to Soils | Suitabilities and Limitations for Use | Ecological Site Assessment | Soil Reports

Clear | Search

Basic Search

Enter keywords 1228 ervendberg

Advanced Search

Clear | Search

"1228 ervendberg": No match.

Open All | Close All

- Soil Chemical Properties
- Soil Erosion Factors
- Soil Health
- **Soil Physical Properties**
  - Available Water Capacity
  - Available Water Storage
  - Available Water Supply, 0 to 100 cm
  - Available Water Supply, 0 to 150 cm
  - Available Water Supply, 0 to 25 cm
  - Available Water Supply, 0 to 50 cm
  - Bulk Density, 15 Bar
  - Bulk Density, One-Tenth Bar
  - Bulk Density, One-Third Bar
  - Linear Extensibility
  - Liquid Limit
  - Organic Matter
  - Percent Clay
  - Percent Sand
  - Percent Silt
  - Plasticity Index

View Description | View Rating

View Options

Map ✓

Table ✓

Description of Rating ✓

Rating Options

Detailed Description

Advanced Options

Aggregation Method: Dominant Component

Component Percent Cutoff

Tie-break Rule: Slowest / Fastest

Interpret Nulls as Zero: Yes / No

View Options

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable) / Depth Range (Weighted Average)

Top Depth 0

Bottom Depth 60

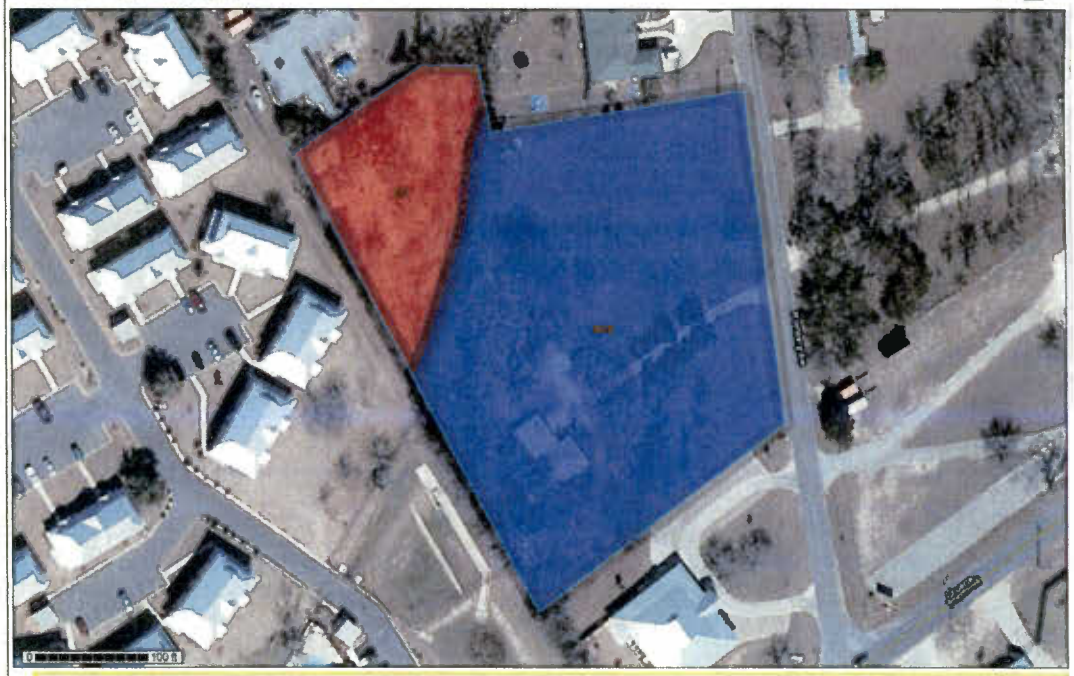
Inches / Centimeters

All Layers (Weighted Average)

View Description | View Rating

- Saturated Hydraulic Conductivity (Ksat), Standard Classes
- Surface Texture
- Water Content, 15 Bar
- Water Content, One-Third Bar
- il Qualities and Features
- Water Features

Scale (not to scale)



Warning: Soil Ratings Map may not be valid at this scale.

You have zoomed in beyond the scale at which the soil map for this area is intended to be used. Mapping of soils is done at a particular scale. The soil surveys that comprise your AOI were mapped at 1:20,000. The design of map units and the level of detail shown in the resulting soil map are dependent on that map scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Summary by Map Unit — Comal and Hays Counties, Texas (TX604)

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
BoB	Boerne fine sandy loam, 1 to 3 percent slopes, rarely flooded	28.0000	2.3	80.2%
CrD	Comfort-Rock outcrop complex, 1 to 8 percent slopes	3.1882	0.6	19.8%
Totals for Area of Interest			**2.9**	**100.0%**

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

Units of Measure: micrometers per second
Aggregation Method: Dominant Component
Component Percent Cutoff: *None Specified*
Tie-break Rule: Slowest
Interpret Nulls as Zero: No
Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)
Top Depth: 0
Bottom Depth: 60
Units of Measure: Inches

Soil Interpretation	Map or Table Name	Tab of Soil Data Explorer	Menu	Sub Menu	Map or Table	User Options		Notes
						Minor Soils	Depth Range	
Topsoil Source	Topsoil Source	Suitabilities and Limitations for Use	Construction Materials		M,T	●		
	ENG-Construction Materials, Topsoil	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
	Source of Reclamation Material, Roadfill, and Topsoil	Soil Reports	Construction Materials		T	●		
	Conservation Tree and Shrub Group	Suitabilities and Limitations for Use	Land Classifications		M,T			
	Conservation Tree and Shrub Group	Soil Reports	Land Classifications		T			
	Forestland Productivity	Soil Reports	Vegetative Productivity		T			
Unified Soil Classification	Unified Soil Classification, Surface	Soil Properties and Qualities	Soil Qualities and Features		M,T			
	Engineering Properties	Soil Reports	Soil Physical Properties		T	●		report uses typical depths
Vehicle Trafficability	MIL-Trafficability Vehicles (DOD)	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		more than 20 reports
	Vehicle Trafficability	Suitabilities and Limitations for Use	Military Operations		M,T	●		more than 20 reports
Wastewater Disposal	Disposal of Wastewater by Irrigation	Suitabilities and Limitations for Use	Waste Management		M,T	●		
	Disposal of Wastewater by Rapid Infiltration	Suitabilities and Limitations for Use	Waste Management		M,T	●		
	Overland Flow Treatment of Wastewater	Suitabilities and Limitations for Use	Waste Management		M,T	●		
	Slow Rate Treatment of Wastewater	Suitabilities and Limitations for Use	Waste Management		M,T	●		
	AWM - Irrigation Disposal of Wastewater	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
	AWM - Overland Flow Process Treatment of Wastewater	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
	AWM - Rapid Infiltration Disposal of Wastewater	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
	AWM - Slow Rate Process Treatment of Wastewater	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
	Agricultural Disposal of Wastewater by Irrigation and Overland Flow	Soil Reports	Waste Management		T	●		
	Agricultural Disposal of Wastewater by Rapid Infiltration and Slow Treatment Rate	Soil Reports	Waste Management		T	●		

Soil Interpretation	Map or Table Name	Tab of Soil Data Explorer	Menu	Sub Menu	Map or Table	User Options		Notes
						Minor Soils	Depth Range	
Runoff	**Water Features**	Soil Reports	Water Features		T	●		
Salinity	**Chemical Soil Properties**	Soil Reports	Soil Chemical Properties		T	●		report uses typical depths
Sand Content	**Percent Sand**	Soil Properties and Qualities	Soil Physical Properties		M,T	●	●	
	RUSLE2 Attributes	Soil Reports	Soil Erosion		T	●		report uses typical value
	Physical Soil Properties	Soil Reports	Soil Physical Properties		T	●		report uses typical value
Sand Source	**ENG-Construction Materials, Sand Source**	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
Sanitary Landfill	**Sanitary Landfill, Area**	Suitabilities and Limitations for Use	Sanitary Facilities		M,T	●		
	Sanitary Landfill, Trench	Suitabilities and Limitations for Use	Sanitary Facilities		M,T	●		
	ENG-Sanitary Landfill (Area)	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
	ENG-Sanitary Landfill (Trench)	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
Saturated Hydraulic Conductivity	**Saturated Hydraulic Conductivity (Ksat)**	Soil Properties and Qualities	Soil Physical Properties		M,T	●	●	
	Saturated Hydraulic Conductivity (Ksat), standard classes	Soil Properties and Qualities	Soil Physical Properties		M,T	●	●	
	Physical Soil Properties	Soil Reports	Soil Physical Properties		T			report uses typical depths
Selected Soil Interpretations	**Selected Soil Interpretations**	Soil Reports	AOI Inventory		T			user selects up to 3 interpretations
Septic Tank Absorption Fields	**Septic Tank Absorption Fields**	Suitabilities and Limitations for Use	Sanitary Facilities		M,T	●		
	ENG-Septic Tank Absorption Fields	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
	Sewage Disposal	Soil Reports	Sanitary Facilities		T	●		
Sewage	**Sewage Lagoons**	Suitabilities and Limitations for Use	Sanitary Facilities		M,T	●		
	ENG-Sewage Lagoons	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
	Sewage Disposal	Soil Reports	Sanitary Facilities		T	●		
	AWM - Land Application of Municipal Sewage Sludge	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		

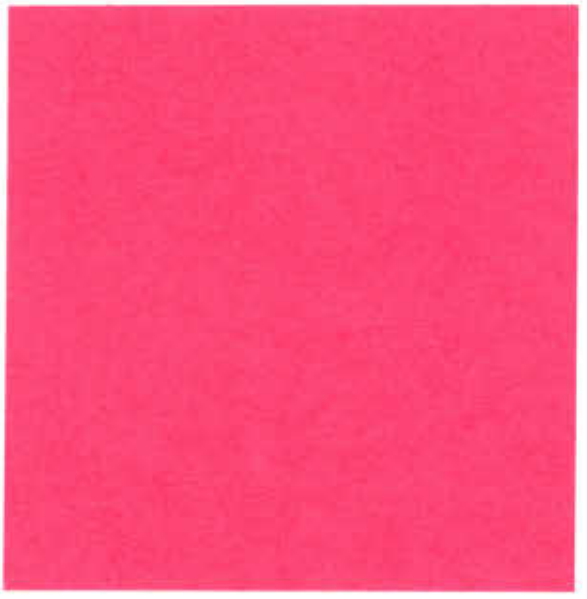
Soil Interpretation	Map or Table Name	Tab of Soil Data Explorer	Menu	Sub Menu	Map or Table	User Options		Notes
						Minor Soils	Depth Range	
Manure	Manure and Food Processing Waste	Suitabilities and Limitations for Use	Waste Management		M,T	●		
	AWM - Manure and Food Processing Waste	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
	Agricultural Disposal of Manure, Food Processing Waste, and Sewage Sludge	Soil Reports	Waste Management		T	●		
Map Unit Description	Map Unit Description	Soil Reports	AOI Inventory		T			tabular, default description in WSS, longest MUD
	Map Unit Description, Brief - SOI	Soil Reports	AOI Inventory		T			a few paragraphs, profile description
	Map Unit Description, Brief - Generated	Soil Reports	AOI Inventory		T			one paragraph per component
Map Unit Name	Map Unit Name	Soil Properties and Qualities	Soil Qualities and Features		M,T			
Organic Matter	Physical Soil Properties	Soil Reports	Soil Physical Properties		T			report uses typical depths
	Organic Matter	Soil Properties and Qualities	Soil Physical Properties		M, T		●	
Parent Material	Parent Material Name	Soil Properties and Qualities	Soil Qualities and Features		M,T			
Permeability	See Saturated Hydraulic Conductivity							
pH	pH (1:1 water)	Soil Properties and Qualities	Soil Chemical Properties		M,T	●	●	
	Chemical Soil Properties	Soil Reports	Soil Chemical Properties		T			report uses typical depths
Plasticity Index	Plasticity Index	Soil Properties and Qualities	Soil Physical Properties		M,T	●	●	
	Engineering Properties	Soil Reports	Soil Physical Properties		T			report uses typical depths
Ponding	Water Features	Soil Reports	Water Features		T	●		
	Ponding Frequency Class	Soil Properties and Qualities	Water Features		M,T			user selects start and end month

Soil Interpretation	Map or Table Name	Tab of Soil Data Explorer	Menu	Sub Menu	Map or Table	User Options		Notes
						Minor Soils	Depth Range	
Fighting Position	Excavations for Fighting Positions	Suitabilities and Limitations for Use	Military Operations		M,T	●		3 reports
	MIL-Excavations Crew-Served Weapon Fighting Position (DOD)	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
	MIL-Excavations for Individual Fighting Position (DOD)	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
	MIL-Excavations for Vehicle Fighting Position (DOD)	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
Flooding Frequency	Water Features	Soil Reports	Water Features		T	●		
	Flooding Frequency Class	Soil Properties and Qualities	Water Features		M,T			user selects start and end month
Forest Productivity	Forest Productivity	Suitabilities and Limitations for Use	Vegetative Productivity		M,T			user selects tree species
Forest Understory	Rangeland and Forest Vegetation Classification	Soil Reports	Vegetative Productivity		T	●		forest understory only
Fragment content	Engineering Properties	Soil Reports	Soil Physical Properties		T	●		report uses typical depths
Frost Action	Frost Action	Soil Properties and Qualities	Soil Qualities and Features		M,T	●		
	Soil Features	Soil Reports	Soil Qualities and Features		T	●		
Frost Free Days	Frost-Free Days	Soil Properties and Qualities	Soil Qualities and Features		M,T	●		
Golf Fairway	ENG-Lawn, Landscape, Golf Fairway	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
Gravel Source	ENG-Construction Materials, Gravel Source	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
Gypsum	Gypsum	Soil Properties and Qualities	Soil Chemical Properties		M,T	●	●	
	Chemical Soil Properties	Soil Reports	Soil Chemical Properties		T	●		report uses typical depths
Helicopter Landing	MIL-Helicopter Landing Zones (DOD)	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
	Helicopter Landing Zones	Suitabilities and Limitations for Use	Military Operations		M, T	●		
	Hydric Soils	Soil Reports	Land Classifications		T			

Soil Interpretation	Map or Table Name	Tab of Soil Data Explorer	Menu	Sub Menu	Map or Table	User Options		Notes
						Minor Soils	Depth Range	
Composting Facility	Composting Facility, Subsurface	Suitabilities and Limitations for Use	Disaster Recovery Planning		M,T	●		
	Composting Facility, Surface	Suitabilities and Limitations for Use	Disaster Recovery Planning		M,T	●		
	DHS - Site for Composting Facility, Subsurface	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
	DHS - Site for Composting Facility, Surface	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
Composting Medium	Composting Medium and Final Cover	Suitabilities and Limitations for Use	Disaster Recovery Planning		M,T	●		
	DHS - Suitability for Composting Medium and Final Cover	Soil Reports	AOI Inventory	Selected Soil Interpretations	T			
Concrete	See Corrosion							
Corrosion	Corrosion of Concrete	Suitabilities and Limitations for Use	Building Site Development		M,T	●		
	Corrosion of Steel	Suitabilities and Limitations for Use	Building Site Development		M,T	●		
	Soil Features	Soil Reports	Soil Qualities and Features		T	●		
Crop Yields	Yield of Non-Irrigated Crops by map unit component	Suitabilities and Limitations for Use	Vegetative Productivity		M,T			user selects crop
	Irrigated and Non-Irrigated Yields by Map Unit Component	Soil Reports	Vegetative Productivity		T	●		user selects up to 3 crops
Data Summary	Survey Area Data Summary	Soil Reports	AOI Inventory		T			date of interp design and generation
Debris Disposal	Rubble and Debris Disposal, Large Scale Event	Suitabilities and Limitations for Use	Disaster Recovery Planning		M,T	●		
	DHS - Rubble and Debris Disposal, Large Scale Event	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
Dikes	Embankments, Dikes, and Levees	Suitabilities and Limitations for Use	Water Management		M,T	●		
	WMS-Embankments, Dikes, and Levees	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		

Soil Data Explorer Tab -- Web Soil Survey

Topic	Map or Table Name	Tab of Soil Data Explorer	Menu	Sub Menu	Map or Table	User Options		Notes
						Minor Soils	Depth Range	
AASHTO	**AASHTO Group Classification, Surface**	Soil Properties and Qualities	Soil Qualities and Features		M,T	●		
	Engineering Properties	Soil Reports	Soil Physical Properties		T	●		report uses typical depths
Animal Disposal	**Catastrophic Mortality, Large Animal Disposal, Pit**	Suitabilities and Limitations for Use	Disaster Recovery Planning		M,T	●		
	Catastrophic Mortality, Large Animal Disposal, Trench	Suitabilities and Limitations for Use	Disaster Recovery Planning		M,T	●		
	DHS - Catastrophic Mortality, Large Animal Disposal, Pit	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
	DHS - Catastrophic Mortality, Large Animal Disposal, Trench	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
	Large Animal Carcass Disposal	Soil Reports	Waste Management		T	●		
Available Water Capacity	**Available Water Capacity**	Soil Properties and Qualities	Soil Physical Properties		M,T	●	●	
	Available Water Capacity, 0 to 100 cm	Soil Properties and Qualities	Soil Physical Properties		M,T	●		
	Available Water Capacity, 0 to 150 cm	Soil Properties and Qualities	Soil Physical Properties		M.T	●		
	Available Water Capacity, 0 to 25 cm	Soil Properties and Qualities	Soil Physical Properties		M,T	●		
	Available Water Capacity, 0 to 50 cm	Soil Properties and Qualities	Soil Physical Properties		M,T	●		
	Physical Soil Properties	Soil Reports	Soil Physical Properties		T			report uses typical depths
Bivouac Areas	**Bivouac Areas**	Suitabilities and Limitations for Use	Military Operations		M,T	●		
	MIL-Bivouac Areas (DOD)	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
Buildings, Small Commercial	**Small Commercial Buildings**	Suitabilities and Limitations for Use	Building Site Development		M,T	●		
	ENG-Small Commercial Buildings	Soil Reports	AOI Inventory	Selected Soil Interpretations	T	●		
	Dwellings and Small Commercial Buildings	Soil Reports	Building Site Development		T	●		



Comal county

Transmittal Letter

M&S Engineering, L.L.C.
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Phone: (830) 228-5446 / Fax: (830) 885-2170
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TCEQ-R13 (EAPP)
FEB 13 2017
SAN ANTONIO

Attention:
Lillian Butler
14250 Judson Rd
San Antonio, TX 78233

From: Jeremy More
Date: February 7, 2017
Re: Ervendberg Duplex
Job Number: 15SSCHR001

We are sending you							
☐	Under Separate Cover: [Subject/Regarding]						
☒	Attached	☐	Copy of Letter	☐	Specifications	☐	Legal Documents
☒	Original Drawings	☐	Plats	☐	Change Order	☒	Other: See Below
☒	Copy of Drawings	☒	Reports	☐	Invoices/Billing		

Detailed Description	Seal/Sign Date	Revised Date	DWG. Page #	Qty
Plan (Sheet 10, 10.1, 10.2)				6 each
Response Letter				1
Page (2, 3, 4, 6, 7, 8)				6 each
Attachmnet C (Project Discription)				6
OSSF Engineering Report	RECEIVED			6
Attachment F (Structural Practice)	FEB 23 2017			6 each
	COUNTY ENGINEER			

These are transmitted as checked below					
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NEW BRAUNFELS , TX 78130
830.629-2988 PH | 830.228.4197 FX
FIRM FI-394
WWW.MSENGR.COM

February 7, 2017

Lillian Butler
14250 Judson Rd
San Antonio, TX 78233

RE: Permit No. 13000264- Ervendberg Duplex SCS

Dear Ms. Butler:

We received a second round of comments on the submitting of Ervendberg Duplex Project on November 22, 2016 and December 12, 2016. The list below is how we responded to the comments and how they were addressed:

NOD1

1. Item No. 14, Attachment C – Project Description; please review and revise the description to include the proposed SCS lines will be pressure rated SDR 26, ASTM D-2241 due to water line crossings.
   Attachment C has been updated.

2. Item No. 5, the character and volume of wastewater is stated to be 2,450 gallons/day. A typo is noticed in the total gallons/day. Please review and revise.
   The typo has been corrected.

3. Item No. 13, states there are no deviations from straight alignment in this sewage collection system without manholes.
   All deviations has been removed from gravity system.

4. Table 2 illustrates the same manhole for each line (P1, P2, & P3). The manhole is actually at the end of line P1. Lines P2 and P3 do not have manholes or cleanouts at the end of their lines. The utility plan illustrates end caps, instead. Please revise table 2 to demonstrate one specific manhole, because it can be misconstrued to represent three different manholes.
   The table has been updated to reflect the current layout.

5. Item No. 17, states all manholes will be monolithic, cast-in-place concrete. The detail sheet, Sheet 12, illustrates pre-cast manholes for this project. Please review and revise the selection or provide the appropriate detail on Sheet 12.
   Item No. 17 has been corrected.

6. Item No. 30 states no lateral stub-outs are to be installed during the construction of this sewage collection system. Approximately 10 building laterals are illustrated on Sheet 10. Please review and revise selection.
   Item No. 30 has been corrected.

7. Item No. 35 Table 9 – Standard Details; please review and revise the following items for Table 9.
   Item No.35 has been corrected.

8. Item No. 36 states all organized sewage collection system general construction notes are included. Please provide SCS Construction notes, form TCEQ-0596 (July 15, 2015), which can be found at the following link: https://www.tceq.texas.gov/field/eapp/material.html
   A sheet has been added with the notes.

9. Please provide a utility service agreement from New Braunfels Utilities for this proposed SCS.
   A Utility service agreement has been added to the report.

10. Please review and revise the peak flow rate calculation. Peak Flow rate can be calculated using 2.9.3 Wastewater System (A) Determination of Wastewater Flow found in Section 2 Water and Wastewater Design Criteria under New Braunfels Utilities.
    The peak flow rate calculations has been corrected.

11. Please note the area formula illustrated in the EDR is not correct.
    The area formula has been corrected.

12. It is noted the SCS line will have the effects of live loads due to location. Please provide structural analysis according to 30 TAC 217.53(k) within the EDR. Provide the calculations and/or reference material used to obtain the values.
    A structural analysis has been performed and added to the report.

13. Please reiterate what is provided in Attachment B – Justification and Calculations for Deviation in Straight Alignment without Manholes within the EDR or add manholes at points of deflection.
    No calculations are needed because there are no deviations.

14. Please address the applicable pipe embedment, compaction, embedment thickness, and trench width for the proposed SCS according to 30 TAC 217.54 within the EDR..
    A section has been added to the report addressing the rules of pipe embedment, compaction, embedment thickness, and trench width.

15. Please review and revise the EDR to include the specification.
    A section has been added to the report addressing manhole specifications.

16. Please review and revise the proposed SCS to be tested according to 30 TAC 217.57 and 30 TAC 217.58. Include details within the EDR.
    The testing section of the report has been updated.

17. Item No. 9, Attachment F – Structural Practices; please review and revise exhibits 1-3 to correspond with maintenance guidelines provided in RG 348 Technical Guidance on Best Management Practices.
    The three exhibits have been updated.

NOD1.5

1. Please provide two cleanouts at the end of lines P2 and P3 instead of end caps.

Cleanouts have been added to the end of the lines.

2. Please provide the existing manhole or approved method of line P1 tying into the existing New Braunfels Utility wastewater line. Once the changes have been implemented, please update the following attachment/sections illustrating the updated information:
    a. Item No. 14, Table 2 – Manhole and Cleanouts
    b. Proposed Utility Plan
    c. Pipe Profile
    d. Utility Plan Details
    e. Item No. 35, Table 9 – Standard Details

P1 will be connected to the existing wastewater line via the installation of a manhole. All documents effected by this change has been updated.

If you have any questions or require additional information, please contact me or Lance Klein at (830) 629-2988.

Sincerely,

Jeremy More
M&S Engineering

RECEIVED

FEB 23 2017

COUNTY ENGINEER

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: _____
   ☒ Multi-family: Number of residential units: 10
   ☐ Commercial
   ☐ Industrial
   ☐ Off-site system (not associated with any development)
   ☐ Other: _____

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

   100% Domestic — 2,450 gallons/day
   _____% Industrial — _____ gallons/day
   _____% Commingled — _____ gallons/day
   Total gallons/day: 2,450

6. Existing and anticipated infiltration/inflow is 750 gallons/day. This will be addressed by: following NBU's Water and Wastewater Design Criterias for Wastewater Collection Systems.

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 _____. 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)*
P1: 8	136	SDR 26	ASTM-D-2241
P2: 8	119	SDR 26	ASTM-D-2241
P3: 8	50	SDR 26	ASTM-D-2241

Total Linear Feet: 305

(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 New Braunfels Utilities Gruene Road Wastewater (name) Treatment Plant. The treatment facility is:

   ☒ Existing
   ☐ Proposed

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

   ☒ The City of New Braunfels standard specifications.
   ☐ 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.

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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)

Table 2 - Manholes and Cleanouts

Line	*Shown on Sheet*	*Station*	*Manhole or Clean-out?*
P1	10.1	1+36	Manhole
P1	10.1	0+00	Manhole
P2	10.1	0+00	Cleanout
P3	10.1	0+00	Cleanout
	Of		
	Of		
	Of		

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. ☒ The Site Plan must have a minimum scale of 1" = 400'.

Site Plan Scale: 1" = 20'.

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:

☐ 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.

Attachment C

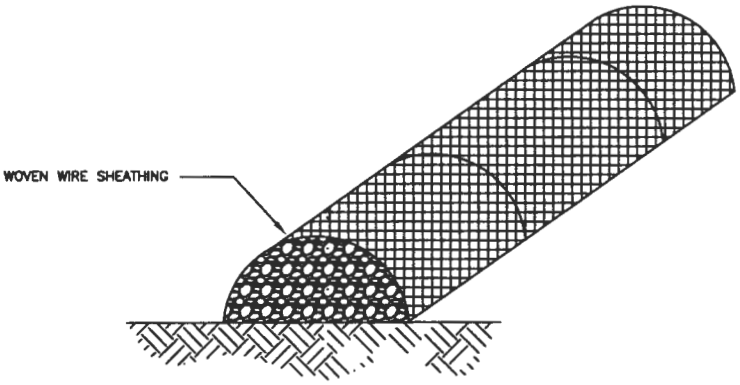
PROJECT DESCRIPTION

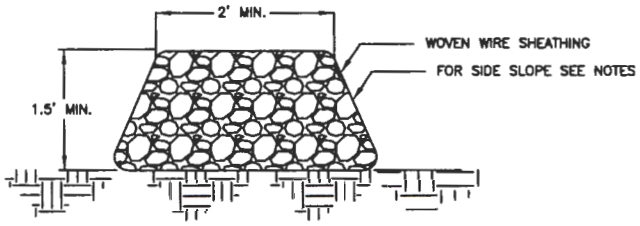
The area of the site is located in the city of New Braunfels. Currently, the 1.82 acre site consist of two residential lots. The existing impervious cover consist of a well house and a gravel driveway that leads to a one story house and adjacent shop (See Attached Existing Site Plan).

The organized sewage collection system that is being proposed for The Ervendberg Duplex is a gravity-fed sewer system. There is a proposed branch off from the main sewer line that follows the drive and branches off from toward Duplex 1. Five duplexes will be serviced by this sewage system. This system was selected due to the state of the proposed site. Currently, is a connection to an existing sewer system; therefor onsite treatment is not needed. Also, the size of the lots are not large enough to hold a septic system to treat each unit. Lastly, the terrain of the site follows a common change in elevation (down towards the road), which is conducive to a gravity system.

This system will be developed in one phases. The system will consist of 305 linear feet of pipe. The size of the pipe is 8" and the pipes will maintain a slope between 0.33% and 8.40%. All velocity through the pipes are above 2 feet per second and below 10 feet per second. The proposed system will consist of lines pressure rated SDR 26, ASTM D-2241 due to water line crossings. The proposed system will be connected to and maintained by New Braunfels Utilities (NBU). All effluent will be conveyed to the offsite NBU Gruene Road Wastewater Treatment Plant.

No water quality BMPs are being proposed with regards to the SCS. A joint WPAP for this site will be submitted on the same day as this SCS Application. As stated in the WPAP, a detention pond will be constructed in the middle of the site and the outfall will discharge into a grassy swale before returning the natural drainage pattern. Rain barrels will be used to retain stormwater runoff from the roof of the duplexes. No portion of this site is located in the FEMA Floodplain based on Panel 48187C0105F, eff. 11/2/2007. The Ervendberg Duplex is located within the Guadalupe River watershed.





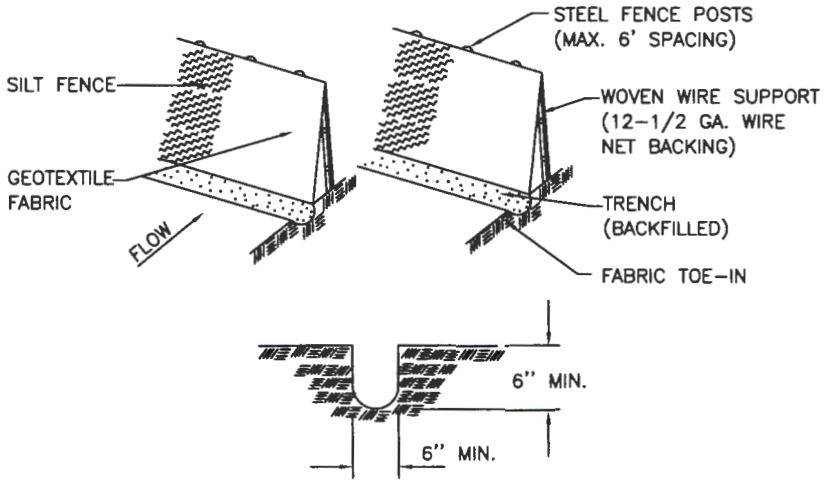
NOTES:

1. USE ONLY CLEAN, OPEN GRADED ROCK 4–8 INCH DIAMETER FOR STREAM FLOW CONDITIONS; USE OPEN GRADED ROCK 3–5 INCHES DIAMETER FOR OTHER CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 1 INCH OPENINGS AND MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED.
3. THE ROCK BERM SHALL BE INSPECTED WEEKLY OR AFTER EACH RAIN, AND THE STONE, AND/OR FABRIC CORE–WOVEN WIRE SHEATHING, SHALL BE REPLACED WHEN THE STRUCTURE CEASED TO FUNCTION AS INTENDED, DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
4. WHEN SILT REACHES A DEPTH EQUAL TO ONE–THIRD THE HEIGHT OF THE BERM OR ONE FOOT, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CREATE A SILTATION PROBLEM.
5. DAILY INSPECTION SHALL BE MADE ON SEVERE SERVICE ROCK BERMS, SILT SHALL BE REMOVED WHEN ACCUMULATION REACHES 6 INCHES.
6. WHEN THE SITE IS COMPLETELY STABILIZED, THE BERM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

ROCK BERM

EXHIBIT B1

SCALE – NTS		MAIN OFFICE P.O. BOX 970 SPRING BRANCH, TEXAS 78070 PHONE # (830) 228–5448 FAX # (830) 885–2170 M & S ENGINEERING, L.L.C. ENGINEERS, PLANNERS, AND SURVEYORS TEXAS REGISTERED ENGINEERING FIRM F–1384 BRANCH OFFICES P.O. BOX 391 McQUEENEY, TEXAS 78123 387 WEST MILL STREET NEW BRAUNFELS, TEXAS 78130
DATE – MAY 2013		
DRAWN – BGM		
SHEET – 1 OF 1		



TRENCH CROSS-SECTION

NOTES:

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

SILT FENCE

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SILT FENCE NOTE:
SILT FENCE WILL BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE/100 FT OF FENCE. (AS REQUIRED BY TCEQ RG-348, INSTALLATION: ITEM 2)

EXHIBIT B2

SCALE - NTS	
DATE - MAY 2013	
DRAWN - BGM	
SHEET - 1 OF 1	

MAIN OFFICE
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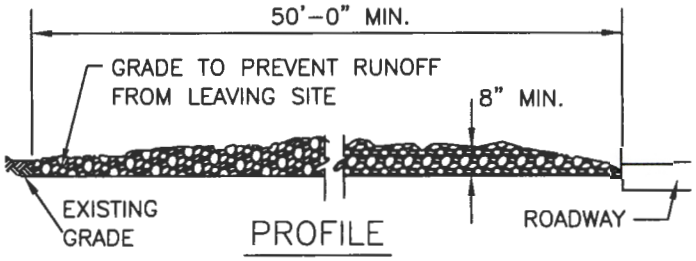
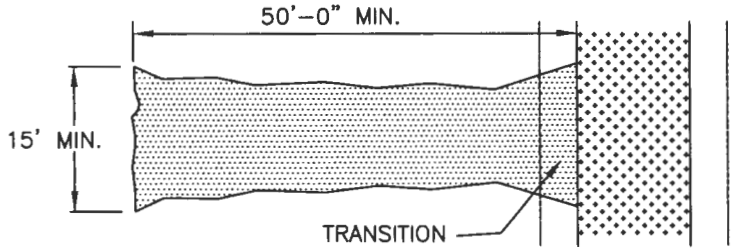
ENGINEERS, PLANNERS, AND SURVEYORS
TEXAS REGISTERED ENGINEERING FIRM F-1384

BRANCH OFFICES
P.O. BOX 391
McQUEENEY, TEXAS 78123
387 WEST MILL STREET
NEW BRAUNFELS, TEXAS 78130



PROFILE



PLAN VIEW

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NOTES:

1. STONE SIZE- 3 TO 5 INCH OPEN GRADED ROCK.

2. LENGTH- AS EFFECTIVE, BUT NOT LESS THAN 50 FEET.

3. THICKNESS- NOT LESS THAN 8 INCHES.

4. WIDTH- NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.

5. WASHING-WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED STRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH, OR WATERCOURSE USING APPROVED METHODS.

6. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.

7. DRAINAGE- ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

STABILIZED CONSTRUCTION ENTRANCE

EXHIBIT B3

SCALE - NTS	
DATE - MAY 2013	
DRAWN - BGM	
SHEET - 1 OF 1	

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NEW BRAUNFELS, TEXAS 78130

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*
P3	0+29.29	Crossing	2' MIN.	2' MIN.
P3	0+44.47	Crossing	2' MIN.	2' MIN.

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	N/A	N/A	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(l)(2)(H).

Table 7 - Drop Manholes

Line	*Manhole*	*Station*	*Sheet*
N/A	N/A	N/A	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.

Table 8 - Flows Greater Than 10 Feet per Second

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

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(l)(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:

Table 9 - Standard Details

Standard Details	*Shown on Sheet*
Lateral stub-out marking **[Required]**	10 & 12
Manhole, showing inverts comply with 30 TAC §217.55(l)(2) **[Required]**	12
Alternate method of joining lateral to existing SCS line for potential future connections **[Required]**	12
Typical trench cross-sections **[Required]**	11
Bolted manholes **[Required]**	N/A
Sewer Service lateral standard details **[Required]**	N/A
Clean-out at end of line **[Required, if used]**	11
Baffles or concrete encasement for shock/erosion protection **[Required, if flow velocity of any section of pipe >10 fps]**	N/A
Detail showing Wastewater Line/Water Line Crossing **[Required, if crossings are proposed]**	11
Mandrel detail or specifications showing compliance with 30 TAC §217.57(b) and (c) **[Required, if Flexible Pipe is used]**	N/A

SEWER COLLECTION SYSTEM ENGINEERING DESIGN REPORT

Ervendberg Duplex
Comal County, Texas

Owner:

Scott Schneider
1227 Ervendberg Ave.
New Braunfels, Texas 78130

Prepared by:

M&S ENGINEERING
CIVIL | ELECTRICAL | STRUCTURAL | MEP

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02/13/2017

Prepared by:
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Jeremy More, EIT
M&S Engineering, L.L.C.
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February 2017

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I. TABLE OF CONTENTS

II. LIST OF FIGURES AND TABLES

III. INTRODUCTION

M&S Engineering has prepared this report for the Sewer Collection System (SCS) application for the Ervendberg Duplex Project. The site is located at 1227 & 1231 Ervendberg Avenue in New Braunfels, Texas. There is currently no Wastewater Pollution Abatement Plan (WPAP) for this project on file, but one will be turned in at the same time as this SCS. The proposed project takes place on 1.82 acres of land witch consist of two residential lots. The existing site consist of a well house and a gravel driveway that leads to a one story house with an adjacent shop. The proposed site is to be 5 duplexes (10 units) and a drive connecting the duplexes to Ervendberg Avenue.

M&S Engineering is preparing this report, plans, and other required documentation to acquire construction authorization from TCEQ for the SCS to be constructed for the Ervendberg Duplex Project. The SCS application includes information on the overall sewer collection system, pipe material and sizing, ad supporting calculations. The development of this SCS follow the rules of TCEQ as well as New Braunfels Utilities (NBU); NBU is the owner and operator of the current wastewater line that we will be adding onto.

IV. PROJECT OVERVIEW

LOCATION

The Ervendberg project is located at 1227 & 1231 Ervendberg Avenue in New Braunfels, Texas. The entrance the site is about 330 feet north from the intersection of Ervendberg Avenue and Gruene Road. Portions of both the New Braunfels Utilities' Gruene Road Wastewater Treatment Facility and the service area are in the Edwards Aquifer's Recharge Zone. The existing site is currently used as a residential lot with a one story house and adjacent shop.

LOCATION MAP

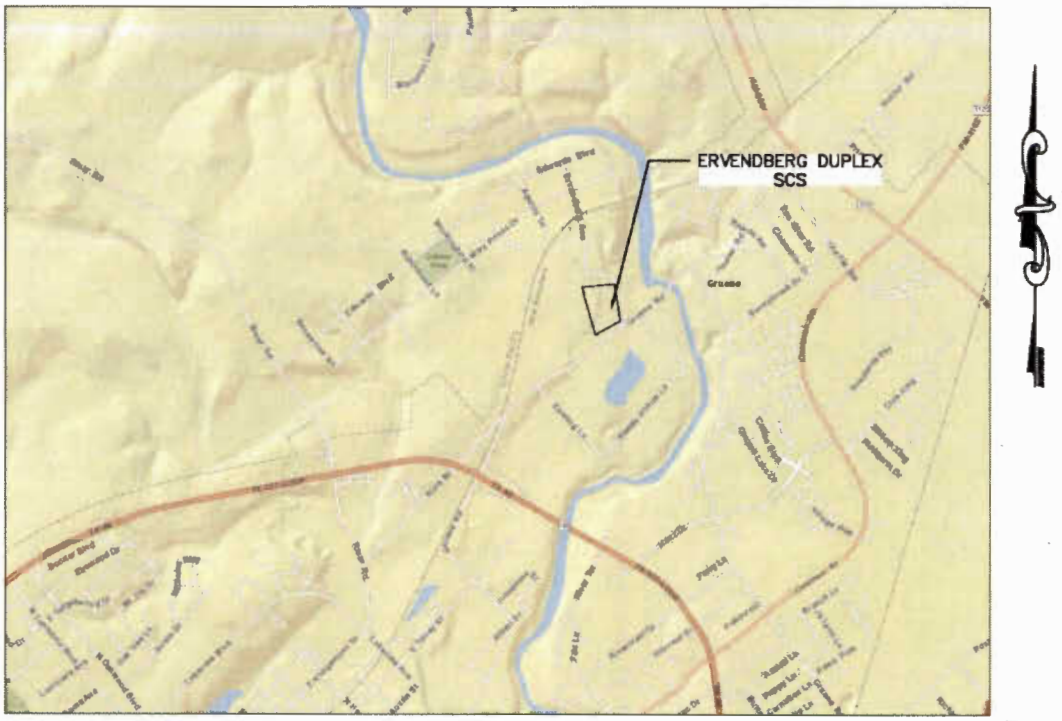


Figure 1: Vicinity Map

GEOLOGY AND SOILS

The geological assessment was performed by Professional Service Industries, Inc. for this site. The geological assessment is associated with the Ervendberg Duplex WPAP that will be submitted at the same time as this SCS .There were no sensitive features identified within the SCS zone. The geological assessments have been included in the Organized Sewage Collection System Application and location of site features are on site plans produced by John Langan.

SERVICE AREA

The proposed gravity driven sewer system is sized to service the proposed 5 duplexes within the project boundary. This are falls under the NBU's jurisdiction and has been designed to adhere to their requirements. Each unit will have a cleanout, located in the front, and a service lateral to the proposed sewage system. PVC-SDR 26 will be used for the system; the specification for the pipe is ASTM-D-2241 which is a 160 psi rated pipe. The Organized Sewage Collection System will be maintained and operated by New Braunfels Utilities. A service agreement has been attached to Appendix B.

Figure 2: Service Area

100-YEAR FLOODPLAIN

No Portion of the SCS is located in a FEMA 100-year floodplain based on parcel map 48187C0105F, effective 11/2/2007 from the FEMA Flood Insurance Rate Map.

WATER POLLUTION ABATEMENT PLAN

The WPAP for the Ervendberg Duplex will be submitted at the same time as this SCS.

DESIGN FLOW – AVERAGE DAILY FLOW

The design flow was calculated based on the number of units being serviced during the construction and the design standards set by New Braunfels Utilities Water and Wastewater Design Criteria 2.9.3 Wastewater Systems. Based on said standards, it is assumed that a single family unit shall produce an average wastewater flow of 245 gallons/day.

Since there are a total of 10 units being served (2 per duplex) that makes the average wastewater flow for the site to be 2450 gallons/day. In addition to this, the New Braunfels utilities Water and Wastewater Design Manual states that 750 gallons/day of additional wastewater is to be included in pipe sizing calculation to account for infiltration and inflow. This flow was included in the final calculations for the proposed system.

DESIGN FLOW – PEAK FLOW

The design peak flow rate is calculated based on the NBU 2.9.3 Wastewater System (A) Determination of Wastewater Flow. It is assumed that each equivalent dwelling unit (EDU) has an occupancy of 3.5 people. Both the Dry Weather Flow and Wet Weather Flow were calculated. The following is the governing equation:

Peak Dry Weather Condition

$$Qpd = \left([18+(0.0206 \times F)^{0.5}]/4+(0.0206 \times F)^{0.5}\right) \times F$$

where: F = 70 gal./person/day x population/1440
= average dry-weather flow in gpm

Qpd= 8.0544 gpm

Peak Wet Weather Condition

Qpw = 8.0544 gpm + Infiltration Rate
Qpw = 8.0544 gpm + 0.5208 gpm
Qpw= 8.5752 gpm

Using said equations, the design flow rate for the whole site is 8.05 gpm for peak dry weather conditions and 8.58 gpm for peak wet weather conditions.

WASTEWATER CHARACTERISTICS

Influent Characteristics

The influent of the site is classified as domestic residential sewage. Based on classification the following concentrations for BOD_5 and TSS were set. The following list shows the concentration for the influent of this project:

Parameter	Concentration
BOD_5 - Raw Wastewater	300 mg/l
TSS -Domestic Wastewater	240 mg/l

COLLECTION SYSTEM DESIGN

Due to the characteristics and constraints of the site, the collection system will be a gravity fed line that takes the influent from the duplexes to the existing 8" main that is off site from the project. There will be a total of 305 linear feet of pipe used and PVC caps at the end of pipe P2 and P3. The pipes within the collection system are PVC-SDR 26 as outlined in ASTM-D-2241. PVC –SDR 26 has a pressure rating of

160 psi and is compliance with 30 TAC Chapter 290 for all water line crossings. See I.P.S. Pressure Report in Appendix A. The pipe size for this system is 8" per NBU Water and Wastewater Design Manual. In addition to the installation of the pipes, a manhole and covering will be installed in the drive based on NBU Design Detail on Sheet 12 included in the Organized Sewage Collection System Application portion of the SCS. No vented manhole is proposed for this SCS due to the location of the site in relation to the 100-yr floodplain.

All proposed water lines have 9' of separation from the wastewater lines. There are two areas where proposed water lines will cross the proposed wastewater lines. In those areas, Section 217.53 (d)(3)(A)(i) requires the collection system pipe to be constructed of a cast iron, ductile iron, or PVC meeting ASTM specifications with at least a 150 psi rating for both the pipe and joints. The proposed system complies with these requirements.

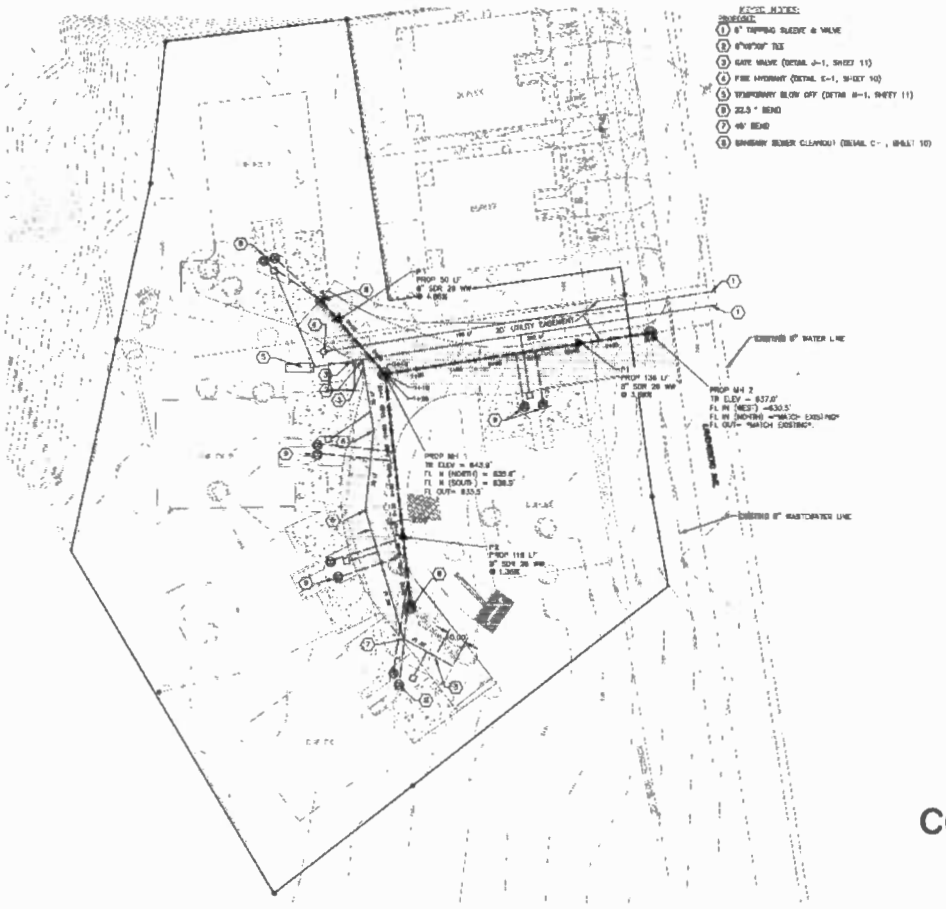


Figure 3: Gravity Fed System Schematic

DESIGN CRITERIA

The gravity fed sewage system design conforms to the TCEQ 217 requirements. The line size is determined based on the NBU minimum size requirements, peak flow rates, and slopes of the site. The velocities in pipes are above 2.0 feet per seconds per TCEQ Section 217.96. All pipes have a minimum

slope that is above the required 0.33% and below the 8.4% per TCEQ-0582. The following are the calculations for the selected PVC, SDR 26, ASTM-D-2241:

Capacity Calculations

Nominal Size=8"
Outer Diameter (Do) =8.625"
Minimum Wall Thickness (t) =0.332"
Inner Diameter (Di)= 7.921"

Manning's Equations:
$Q = (k/n)(A)(R^{2/3})(S^{1/2})$
$v = Q/A$

Where :
Q=Discharge (cfs)
k= Constant (1.49 ft $^{1/3}$/sec)
n= Manning's roughness coefficient (0.013 for PVC)
A= Flow area (ft^2)
R= Hydraulic Radius (ft)
S= Slope (ft/ft)
V= Velocity of flow (ft/s)

$$A = \frac{\pi(D_i^2)}{4} = 0.342ft^2$$

$$P = \pi(D_i) = 2.07ft$$

$$R = \frac{A}{P} = 0.165ft$$

Pipe 1:
$\boldsymbol{S = 0.0463}$
$\boldsymbol{Q = 2.537cfs = 1138.6gpm\ full}$
$\boldsymbol{v = 7.418ft/s}$

Pipe 2:
$\boldsymbol{S = 0.0067}$
$\boldsymbol{Q = 0.965cfs = 433.1gpm\ full}$
$\boldsymbol{v = 2.821ft/s}$

Pipe 3:
$\boldsymbol{S = 0.0333}$
$\boldsymbol{Q = 2.151cfs = 965.43gpm\ full}$
$\boldsymbol{v = 6.289ft/s}$

After examining the calculations, the proposed 8" pipe, as shown in the proposed site plan, has sufficient capacity to convey the projected average and peak flows.

Structural Analysis Calculations

Structural Analysis was conducted on the worst case situation for this site where the pipe is running in the road. The Modified Iowa Formula Program was use to conduct the calculations. The following are the input for the program, as well as the results from the calculations.

External Load Menu

File Help

Calculation of External Loads for use in the Modified Iowa Formula.

To modify a parameter, CLICK ON or TYPE the number of that parameter.
To begin calculating, CLICK ON or TYPE the letter N or C . PRESS F1 for Help.

1	External Load Conditions	Prism Load, Wp	Lb / Ft
2	Weight of Backfill	120	Lb / Ft ^ 3
3	Additional Live Load (H20)	Yes	
	Moving Live Load		
4	Pipe Dimension Units	ins.	
5	Burial Depth Units	Ft	
6	Depth of Burial (Start, Stop, Increment)	1.00 / 5.00 / 1.00	Ft
7	Iowa Formula Parameters		
N	Enter New Outside Diameters		
C	Execute with Entered Diameters		

PIPE DEFLECTION, % (H20 Live Load) — Including a MOVING Wheel Load

DLF = 1.00 K = 0.100 PS = 46 psi E' = 1000 psi

Prism Load, Wp, Condition — Backfill Weight = 120 Lb / Ft ^ 3

(Note: If 'Over' is printed, the calculated deflection exceeded the allowable deflection)

Depth, Ft	Outside Diameter, Ins. 8.000
1.00	2.01 %
2.00	1.36 %
3.00	1.03 %
4.00	0.93 %
5.00	0.87 %

EXTERNAL LOAD, Lb / Ft (H20 Live Load) — Including a MOVING Wheel Load

Prism Load, Wp, Condition — Backfill Weight = 120 Lb / Ft ^ 3

Depth, Ft	Outside Diameter, Ins. 8.000
1.00	1307.4
2.00	884.7
3.00	670.1
4.00	607.6
5.00	566.7

With this being the worst case situation, it is clear to see that the max defection takes place at 1ft of depth which is 2.01%. Since most of the pipe is lower than that the percentage of deflection decreases as the depth increases.

Manholes and Related Structures

In accordance with 30 TAC 217.55 (k) (1) (E) the owner must follow an appropriate national reference standard for manhole gaskets. The detail for the proposed manholes were provided by NBU and is attached to Sheet 12.

Criteria for Laying Pipe

The criteria for laying pipes follows 30 TAC 217.54. Profiles for the proposed SCS can be seen on Sheet 10.1. The proposed wastewater lines are to have at least 3ft of cover. The distant between the proposed water line and the proposed wastewater line is to be a minimum of 2ft apart. Details of these can be seen on Sheet 11.

A rigid pipe must be laid with bedding, haunching, and initial backfill that will meet the appropriate standards and will support the anticipated load. The bedding classes that are allowed are A, B, or C, as described in American Society for Testing and Materials (ASTM) C 12, American National Standards Institute (ANSI) A 106.2, Water Environment Federation Manual of Practice No. 9, or American Society of Civil Engineers (ASCE) MOP 37. Debris, large clods, and stones that are greater than six inches in

diameter, organic matter, and other unstable materials are prohibited as bedding, haunching, or initial backfill. Backfill must not disturb the alignment of a collection system pipe.

Compaction of the pipe embedment must meet the manufacturer's recommendations for the collection system pipes used in a project. Compaction of the pipe embedment must provide the modulus of soil reaction for the bedding material necessary to ensure a collection system pipe's structural integrity. The placement of the backfill above a pipe must not affect the structural integrity of a pipe.

A minimum clearance of 6.0 inches below and on each side of the bell of all pipes to the trench walls and floor is required. The embedment material used for haunching and initial backfill must be installed to a minimum depth of 12 inches above the crown of a pipe.

The width of a trench must allow a pipe to be laid and jointed properly and must allow the backfill to be placed and compacted as needed. The maximum and minimum trench width needed for safety and a pipe's structural integrity must be included in the engineering report. The width of a trench must allow proper and safe placement and compaction of haunching materials. The space between a pipe and a trench wall must be wider than the compaction equipment used in the pipe zone.

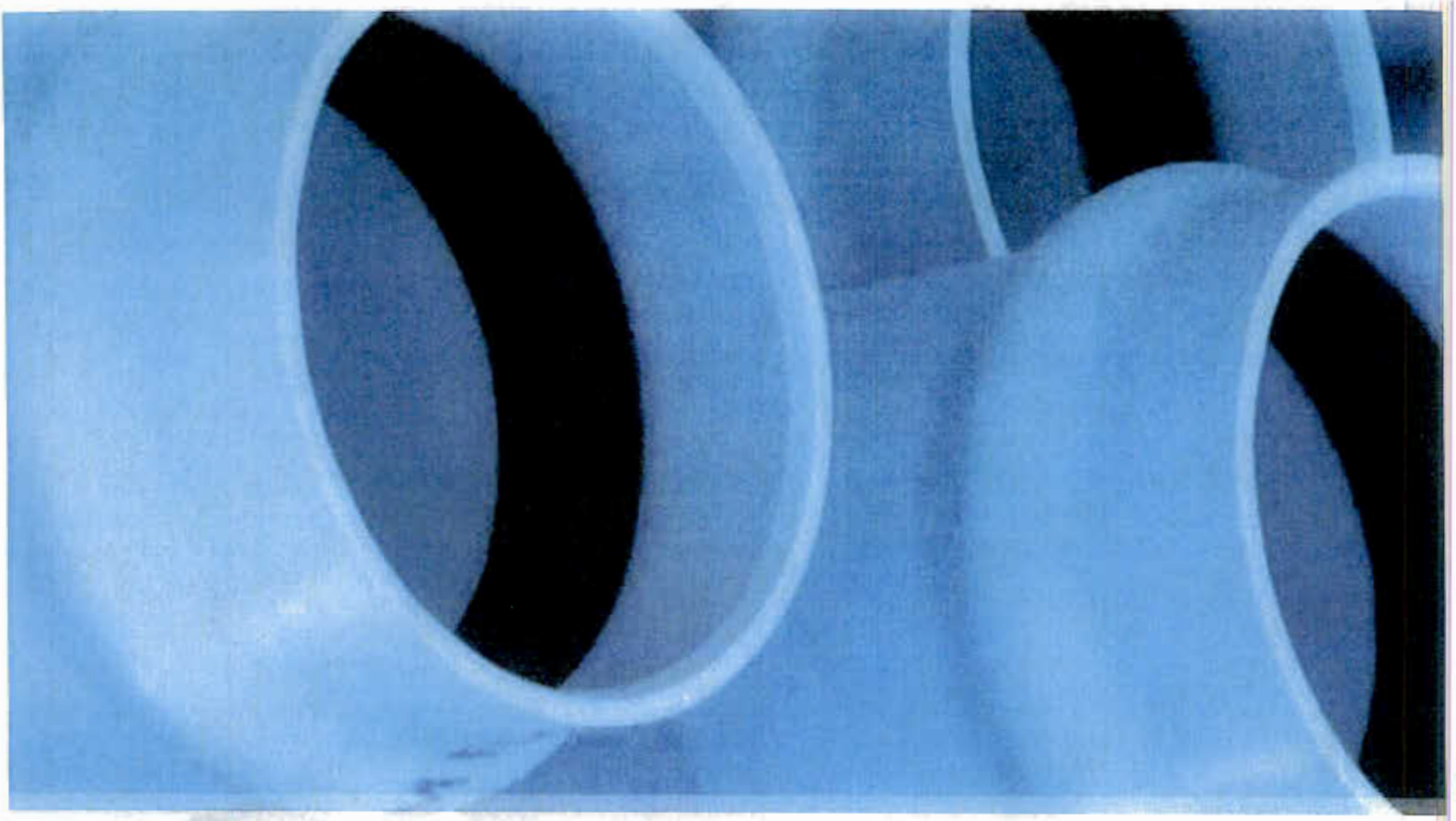
ODOR CONTROL

Oder Control is not required on this project because the proposed sewer system is a gravity fed line and there will be no condition to where the sewage is standing and will become septic.

TESTING REQUIREMENTS FOLLOWING INSTALLATION

Following construction, the gravity fed system shall be tested to meet or exceed 30 TCEQ 217.57 and 30 TAC 217.58 for collection pipe. TCEQ and NBU will be notified upon the completion of the system and the testing results. In addition, when testing is required after the initial test, TCEQ and NBU will receive the required testing results.

Appendix A: PVC PIPE INFORMATION

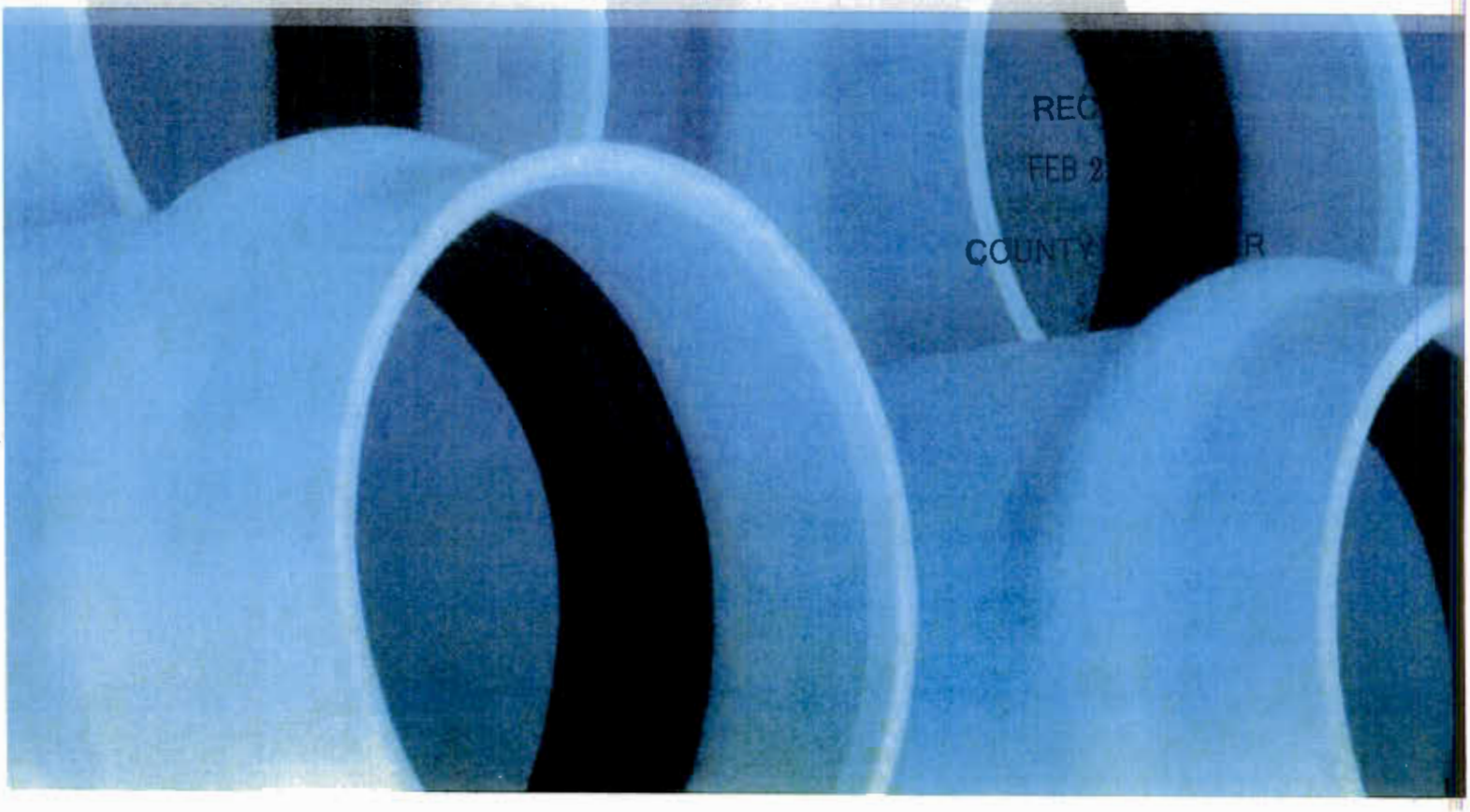


I.P.S. PRESSURE

MEETS ASTM D2241

JM Eagle™

Building essentials for a better tomorrow™



I.P.S. PRESSURE

PVC I.P.S. Pressure Rate Pipe
SDR 64 / SDR 41 / SDR 32.5 / SDR 26 / SDR 21 / SDR 17

Pressure Rated 63, 100, 125, 160, 200 & 250 psi
Ring - Tite™ Joints 1.5" - 12"

I.P.S. PRESSURE

CONTENTS

PRODUCT DESCRIPTION

IPS PRESSURE ASTM D2241

FOR USE IN RURAL, AGRICULTURAL WATER SYSTEMS AND OTHER SERVICES

DESCRIPTION

JM Eagle's I.P.S. Pressure PVC Pipe conforms to ASTM D2241 for standard dimension ratios and is available in SDR 64 (63 psi) SDR 41 (100 psi), SDR 32.5 (125 psi), SDR 26 (160 psi), SDR 21 (200 psi) and SDR 17 (250 psi). PVC compounds used in the extrusion of this pipe meet or exceed the requirements of ASTM D1784 cell class 12454. Gaskets conform to ASTM F477. Joint design is tested to the requirements of ASTM D3139.

LONG LAYING LENGTHS

The standard laying length of I.P.S. Pressure PVC water pipe is 20 feet. This means that more ground can be covered during installation while eliminating the cost of unnecessary joints.

ANSI/NSF 14 AND NSF 61 LISTED, IAPMO LISTED, UL LISTED

Listing availability may vary by shipping location.

APPLICATIONS

These products are typically used in rural water, agricultural and turf irrigation pipelines; however, they may also be used for gravity sewer, force main, and water reclamation projects. The pressure rating of the pipe indicates the maximum allowable sustained pressure capacity with a long-term 2 to 1 safety factor.

PURPLE RECLAIM AND GREEN SEWER FORCE MAIN

JM Eagle™ also manufactures this pipe in purple, specifically for reclaimed water systems and green for sewer force main applications. This pipe is made and tested to the same requirements as our standard products, except that the pigment used is purple or green. These products will not be marked with the NSF listing marks. Additionally, the purple pipe will be marked: "Reclaimed Water... Do Not Drink" and the green pipe will be marked "Forced Sewer."

QUALITY CONTROL

This pipe is tested in accordance with the provisions of ASTM D2241 and subject to inspection by our quality control inspectors throughout every step of the manufacturing process. JM Eagle's Quality Management System is ISO 9001: 2000 registered.* Copies of the registration certificates are available on our website at *http://www.jmeagle.com.*

* JM Eagle™ is in the process of obtaining the ISO 9001-2000 registration of Quality Management System for all locations

CORROSION RESISTANCE

I.P.S. Pressure PVC pipe is unaffected by electrolytic or galvanic corrosion, or any known corrosive soil or water condition. You don't have to worry about tuberculation, or the need for costly lining, wrapping, coating, or cathodic protection.

FLOW CAPACITY

This PVC water pipe has a smooth interior that stays smooth over long years of service with no loss in carrying capacity. It's coefficient of flow is C=150 (Hazen & Williams) the best available in common use water systems. This capacity often allows savings in pumping costs as well as savings on the size of pipe required.

SAVE IN HANDLING COSTS

I.P.S. Pressure Pipe is designed for installed cost savings. Most sizes can be handled manually, so there is no need for costly installation equipment. Use the backhoe for excavating and backfilling only. Dig more trench, lay pipe faster and save more in cost per foot installed.

FIELD CUTTING AND BEVELING

I.P.S. Pressure pipe can be field cut with a power saw or ordinary handsaw. This eliminates the need to invest in costly cutting equipment. The pipe can also be beveled without the use of any expensive or complicated machinery.

LIGHT WEIGHT

A 20 foot length of Pressure Rated 200 psi, 8" I.P.S. Pressure PVC water pipe weighs approximately 144 pounds. That makes it easy to load, easy to transport, and easy to handle. Installers prefer it because it goes into the ground quickly-thus saving on installation costs.

SERVICE LIFE

Since PVC does not corrode and is resistant to most chemicals, the pipe does not lose strength due to either potable water corrosion or external galvanic soil conditions. The design of the pipe allows for a 2 to 1 long-term safety factor at the marked capacity of the pipe.

INSTALLATION

This product should be installed in accordance with JM Eagle™ Publication JME-06B, "I.P.S. Pressure and Irrigation Pipe Installation Guide" and JME-06B, Uni-Bell® Publication UNI-PUB-08-07, "Tapping Guide for PVC Pressure Pipe."

Note: JM Eagle™ does not recommend direct tapping of the IPS Pressure Pipe

PRODUCT DESCRIPTION

(CONTINUED)

I.P.S. O.D.

Available in 1.5" through 12" diameter sizes, this pipe can be connected directly to most plumbing fixtures and IPS appurtenances. It can also be connected into cast and ductile iron fittings with the appropriate adapters, or transition gaskets.

RING-TITE™ JOINTS WITH LOCKED-IN GASKETS

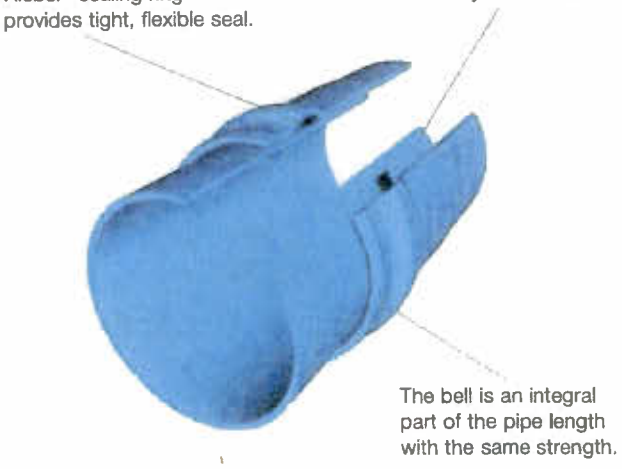
JM Eagle's Ring-Tite™ joint can be assembled quickly. Seated in a deep groove, the flexible elastomeric Rieber®* gasket provides a tight seal that protects the line from shock, vibration, earth movement, and compensates for expansion and contraction of pipe lengths. There's no field mixing or application of cement. It's a simple push-together joint that remains tight under normal operating conditions.

The factory installed Rieber® gaskets provide a tight, flexible seal, that resists rolling during installation. Special gasket types are available for use with certain chemical and petroleum products. Spigot pipe ends are supplied from the factory with bevels. The bell is an integral part of the pipe length with the same strength. Joints meet or exceed ASTM D3139 for joint tightness, including a 22 in. Hg vacuum for one hour, under deflection, with no leakage.

Note: Other types of gaskets may be provided. JM Eagle* is in the process of converting all gasketed products to the Rieber® ring gasket

* Rieber® is a registered trademark of Ti Specialty Products Inc.

RING-TITE™ JOINT



ACCESSORIES

JM Eagle's I.P.S. Pressure PVC pipe is compatible with all the items required for smooth installation of plumbing and irrigation pipelines.

SURGE DESIGN

SURGE PRESSURES IN VARIOUS PRESSURE PIPE

It is important to note that for the same conditions of interrupted flow, the surge pressures generated in pipe with high tensile moduli will be greater than the surges in low moduli (PVC) pipe of similar dimensions.

As the modulus of tensile elasticity for a piping material increases, the resultant pressure surge, or "water hammer", caused by a change in flow velocity also increases. For example, an instantaneous 2 fps (0.6 mps) flow velocity change in an 6" water main will create surge pressures as shown in **Table 1** for different pipe materials. For all system designs, surge pressures should be examined with the pipe material in use.

TABLE 1

PRESSURE SURGES IN 6 IN. WATER MAIN

In Response to 2 fps (0.6 mps) Instantaneous Flow Velocity Change

PIPE PRODUCT	PRESSURE SURGE	
	psi	kPa
Class 350 DI Pipe	**109.0**	**751**
DR 26 PVC Pipe	**28.8**	**202**

Pressure surges in PVC pipe (12454) of different dimension ratios in response to a 1 fps (0.3 mps) instantaneous flow velocity change are shown in **Table 2**.

TABLE 2

DESIGN TABLE FOR PVC PIPE-PRESSURE SURGE VS. DIMENSION RATIO

SDR	PRESSURE SURGE	
	psi	kPa
13.5	**20.2**	**139**
14	**19.8**	**137**
17	**17.9**	**123**
18	**17.4**	**120**
21	**16.0**	**110**
25	**14.7**	**101**
26	**14.4**	**99**
32.5	**12.8**	**88**
41	**11.4**	**79**
51	**10.8**	**74**
64	**9.0**	**62**

SHORT FORM SPECIFICATION

IPS PRESSURE ASTM D2241

SCOPE

This specification designates general requirements for 1.5" through 12" unplasticized polyvinyl chloride (PVC) plastic pressure pipe with integral bell and spigot joints for the conveyance of water and other fluids.

MATERIALS

This pipe shall meet the requirements of ASTM D2241 "Standard Specification for Polyvinyl Chloride (PVC) Pressure Rated Pipe (SDR Series)." All pipe shall be made from quality PVC resin, compounded to provide physical and mechanical properties that equal or exceed cell class 12454 as defined in ASTM D1784.

HYDROSTATIC TESTING

Random samples at given intervals are tested in compliance with ASTM D2241 for hydrostatic capability in the quick burst test.

STANDARD LAYING LENGTHS

Standard laying lengths shall be 20 feet for all sizes.

PIPE

All pipe shall be suitable for use as pressure conduit. Provisions must be made for expansion and contraction at each joint with an elastomeric ring. The bell shall consist of an integral wall section with a factory installed, solid cross section Rieber® elastomeric gasket which meets the requirements of ASTM F477. The bell section shall be designed to be at least as hydrostatically strong as the pipe barrel and meet the requirements of ASTM D2241. The joint design meets the requirements of ASTM D3139, under both pressure and 22 in. Hg vacuum. Sizes and dimensions shall be as shown in this specification.

Pipe installation and usage shall be in compliance with JM Eagle™ Publication JME-06B "I.P.S. Pressure and Irrigation Pipe Installation Guide" and Uni-Bell® Publication UNI-PUB-0807, "Tapping Guide for PVC Pressure Pipe."

QUICK BURST TEST

Randomly selected samples tested in accordance with ASTM D1599 shall withstand, without failure, the pressure listed below when applied in 60-70 seconds.

SDR	PRESSURE RATING (psi)	MINIMUM BURST PRESSURE AT 73°F (psi)
64	63	200
41	100	315
32.5	125	400
26	160	500
21	200	630
17	250	800

DROP IMPACT TEST

The pipe shall withstand ASTM D2241 Impact Test requirements using Tup 'B' and Flate Plate Holder 'B' at the energy specified in the following table.

PIPE SIZE (IN)	IMPACT (FT/LBS)	PIPE SIZE (IN)	IMPACT (FT/LBS)
1.5	30	5	100
2	30	6	120
2.5	40	8	160
3	60	10	160
4	90	12	160

There shall be no visible evidence of shattering or splitting when the energy is imposed.

TESTING REQUIREMENTS FOR RING-TITE™ PVC PRESSURE PIPE

TEST	ASTM 2241					
	63 psi	100 psi	125 psi	160 psi	200 psi	250 psi
LONG TERM PRESSURE TEST 1000 hours (psi)	130	210	270	340	420	530
SHORT TERM BURST TEST (psi)	200	315	400	500	630	800
EXTRUSION QUALITY OF PVC PIPE BY ACETONE IMMERSION TEST METHOD ASTM D2152	20 min	20 min	20 min	20 min	20 min	20 min
FLATTENING TEST Tests extrusion quality and ductility under slow loading conditions (Flattening Capability)	40% of OD between the plates within 2-5 min	40% of OD between the plates within 2-5 min	40% of OD between the plates within 2-5 min	40% of OD between the plates within 2-5 min	40% of OD between the plates within 2-5 min	40% of OD between the plates within 2-5 min

TYPICAL PHYSICAL AND CHEMICAL PROPERTIES AND CAPACITIES

PROPERTY	ASTM D2241 PRESSURE PVC PIPE	ASTM TEST METHOD
Fiber Stress at 73°F		
Short Term Bursting Strength (psi)	6400	D1599
1,000 Hour Strength (psi)	4200	D1598
Working Pressure Rating		
73°F (% of rating at 73°F)	100%	
80°F (% of rating at 73°F)	88%	
100°F (% of rating at 73°F)	62%	
Chemical Resistance at 73°F		
Acids	Excellent	
Salts-Bases	Excellent	
Aliphatic Hydrocarbons (including crude oil)	Good	
Physical Properties of Compound Std. Test Specimens		
Minimum Tensile Strength (psi) at 73°F	7000	D638
Thermal Expansion (in/100 ft/50°F Change)	2"	—
Fire Resistance	Self Extinguishing	—
Flame Spread	10	E162
Smoke Development	330	E84
Coefficient of Flow Hazen & Williams	C=150	—
Mannings N Value	N=0.009	—

* Please contact sales for availability and product range.

DIMENSIONS AND WEIGHTS

SUBMITTAL AND DATA SHEET

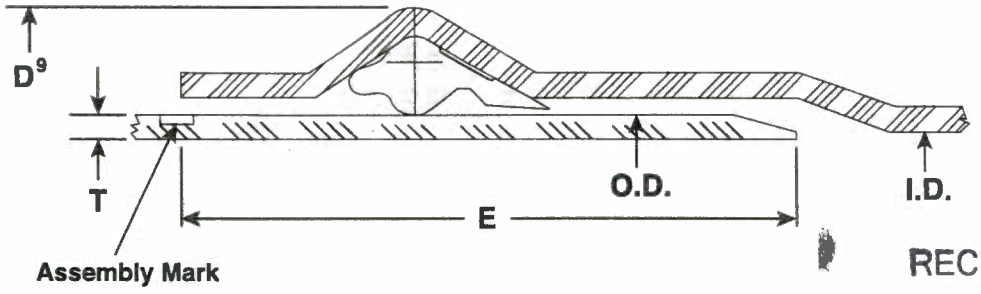
PIPE SIZE (IN)	AVERAGE O.D. (IN)	NOM. I.D. (IN)	MIN. T. (IN)	MIN. E (IN)	APPROX. D[9] (IN)	APPROX. WEIGHT (LBS/FT)
Rated 63 psi (SDR 64)						
6	6.625	6.40	0.104	5.50	7.20	1.60
8	8.625	8.33	0.135	6.25	9.30	2.40
10	10.750	10.39	0.168	6.75	11.50	3.80
12	12.750	12.32	0.199	8.00	13.80	5.30
Rated 100 psi (SDR 41)*						
3	3.500	3.320	0.085	4.20	3.84	—
4	4.500	4.267	0.110	4.50	4.94	1.03
5	5.563	5.27	0.136	4.65	6.10	1.60
6	6.625	6.282	0.162	5.20	7.27	2.23
8	8.625	8.180	0.210	5.90	9.47	3.75
10	10.750	10.195	0.262	6.70	11.80	5.86
12	12.750	12.091	0.311	8.10	13.99	8.28
Rated 125 psi (SDR 32.5)*						
1.5	1.900	1.773	0.060	3.45	2.14	0.23
2	2.375	2.220	0.073	3.70	2.67	0.35
2.5	2.875	2.688	0.088	3.95	3.23	0.51
3	3.500	3.271	0.108	4.20	3.93	0.77
4	4.500	4.207	0.138	4.50	5.05	1.28
5	5.563	5.200	0.171	4.65	6.25	2.00
6	6.625	6.193	0.204	5.20	7.44	2.79
8	8.625	8.063	0.265	5.90	9.69	4.70
10	10.750	10.048	0.331	6.70	12.07	7.35
12	12.750	11.919	0.392	8.10	14.32	10.36
Rated 160 psi (SDR 26)* (G) (P)						
1.5	1.900	1.745	0.073	3.45	2.19	0.28
2	2.375	2.182	0.091	3.70	2.74	0.44
2.5	2.875	2.642	0.110	3.50	3.32	0.64
3	3.500	3.214	0.135	4.10	4.04	0.95
4	4.500	4.133	0.173	4.50	5.19	1.58
5	5.563	5.109	0.214	4.65	6.42	2.40
6	6.625	6.084	0.255	5.20	7.65	3.44
8	8.625	7.921	0.332	5.90	9.95	5.85
10	10.750	9.874	0.413	6.70	12.40	9.12
12	12.750	11.711	0.490	8.10	14.71	12.89

* Please contact sales for availability and product range.

SUBMITTAL AND DATA SHEET

PIPE SIZE (IN)	AVERAGE O.D. (IN)	NOM. I.D. (IN)	MIN. T. (IN)	MIN. E (IN)	APPROX. D[9] (IN)	APPROX. WEIGHT (LBS/FT)
Rated 200 psi (SDR 21)* (G) (P)						
1.5	1.900	1.709	0.090	3.45	2.26	0.44
2	2.375	2.135	0.113	3.70	2.83	0.54
2.5	2.875	2.585	0.137	3.95	3.42	0.79
3	3.500	3.146	0.167	4.20	4.17	1.17
4	4.500	4.046	0.214	4.50	5.36	1.93
6	6.625	5.955	0.316	5.20	7.89	4.23
8	8.625	7.754	0.410	5.90	10.27	7.18
10	10.750	9.667	0.511	6.70	12.79	11.20
12	12.750	11.465	0.606	8.10	15.17	15.82
Rated 250 psi (SDR 17)* (G) (P)						
1.5	1.900	1.641	0.112	3.45	2.39	0.58
2	2.375	2.078	0.140	3.70	2.94	0.66
2.5	2.875	2.517	0.169	3.95	3.55	0.94
3	3.500	3.063	0.206	4.20	4.32	1.42
4	4.500	3.938	0.265	4.50	5.56	2.36
6	6.625	5.803	0.390	5.20	8.19	5.11
8	8.625	7.553	0.508	5.90	10.66	8.69
10	10.750	9.410	0.632	6.70	13.28	13.55
12	12.750	11.160	0.750	8.10	15.75	19.20

* Prior to ordering or specifying, please consult JM Eagle™ for product and/or listing availability.
(G) Green pipe available in sizes 4"-12"
(P) Purple pipe available in sizes 2"-12"



I.D. : Inside Diameter
O.D. : Outside Diameter
T. : Wall Thickness
D[9]: Bell Outside Diameter
E: Distance between Assembly Mark to the end of spigot

FLOW/FRICTION CHARTS

FLOW/FRICTION LOSS, RING-TITE™ PRESSURE PVC PIPE

1.5" I.P.S. O.D. (ASTM D2241) ACTUAL O.D. 1.900 INCH

FLOW (GAL/MIN)	SDR 32.5 (125 psi)		SDR 26 (160 psi)		SDR 21 (200 psi)	
	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT
10	1.320	0.194	1.360	0.208	1.400	0.223
20	2.640	0.699	2.720	0.751	2.799	0.806
30	3.960	1.481	4.079	1.592	4.199	1.708
40	5.280	2.523	5.439	2.713	5.598	2.910
50	6.600	3.814	6.799	4.101	6.998	4.399
60	7.920	5.347	8.159	5.748	8.397	6.165
70	9.240	7.113	9.519	7.647	9.797	8.203
80	10.559	9.109	10.879	9.793	11.196	10.504
90	11.879	11.329	12.238	12.180	12.596	13.064
100	13.199	13.770	13.598	14.804	13.996	15.879
110	14.519	16.429	14.958	17.662	15.395	18.945
120	15.839	19.301	13.318	20.751	16.795	22.257
130	17.159	22.385	17.678	24.066	18.194	25.814
140	18.479	25.679	19.037	27.607	19.594	29.611
150	19.799	29.178	20.397	31.370	20.993	33.647
160	21.119	32.883	21.757	35.352	22.393	37.919
170	22.439	36.790	23.117	39.553	23.793	42.425
180	23.759	40.898	24.477	43.970	25.192	47.162

Based on calculation methods and design tables set forth by the Uni-Bell® PVC Pipe Association, "Handbook of PVC Pipe Design and Construction."

FLOW/FRICTION LOSS, RING-TITE™ PRESSURE PVC PIPE

2" I.P.S. O.D. (ASTM D2241) ACTUAL O.D. 2.375 INCH

FLOW (GAL/MIN)	SDR 32.5 (125 psi)		SDR 26 (160 psi)		SDR 21 (200 psi)		SDR 17 (250 psi)	
	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT
10	0.838	0.064	0.866	0.069	0.897	0.076	0.947	0.086
20	1.676	0.231	1.732	0.251	1.793	0.273	1.893	0.311
30	2.514	0.490	2.598	0.531	2.690	0.578	2.840	0.659
40	3.352	0.835	3.464	0.905	3.586	0.985	3.787	1.121
50	4.189	1.263	4.329	1.368	4.483	1.489	4.733	1.695
60	5.027	1.770	5.195	1.917	5.380	2.087	5.680	2.374
70	5.865	2.355	6.061	2.551	6.276	2.776	6.627	3.158
80	6.703	3.015	6.927	3.266	7.173	3.555	7.573	4.043
90	7.541	3.750	7.793	4.062	8.069	4.422	8.520	5.027
100	8.379	4.558	8.659	4.938	8.966	5.375	9.467	6.109
110	9.217	5.438	9.525	5.891	9.863	6.412	10.413	7.287
120	10.055	6.389	10.391	6.921	10.759	7.534	11.360	8.560
130	10.893	7.410	11.256	8.027	11.656	8.737	12.307	9.926
140	11.730	8.500	12.122	9.208	12.553	10.023	13.254	11.385
150	12.568	9.659	12.988	10.463	13.449	11.389	14.200	12.935
160	13.406	10.885	13.854	11.791	14.346	12.835	15.147	14.575
170	14.244	12.178	14.720	13.192	15.242	14.360	16.094	16.305
180	15.082	13.538	15.586	14.665	16.139	15.963	17.040	18.123

Based on calculation methods and design tables set forth by the Uni-Bell® PVC Pipe Association, "Handbook of PVC Pipe Design and Construction."

FLOW/FRICTION CHARTS
(CONTINUED)

FLOW/FRICTION LOSS, RING-TITE™ PRESSURE PVC PIPE

2.5" I.P.S. O.D. (ASTM D2241) ACTUAL O.D. 2.875 INCH

FLOW (GAL/MIN)	SDR 32.5 (125 psi)		SDR 26 (160 psi)		SDR 21 (200 psi)		SDR 17 (250 psi)	
	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT
10	0.570	0.025	0.589	0.027	0.612	0.030	0.646	0.034
20	1.139	0.091	1.178	0.098	1.224	0.108	1.291	0.123
30	1.709	0.192	1.767	0.208	1.836	0.228	1.937	0.260
40	2.279	0.327	2.355	0.354	2.448	0.389	2.582	0.442
50	2.848	0.494	2.944	0.535	3.060	0.588	3.228	0.668
60	3.418	0.692	3.533	0.750	3.672	0.824	3.873	0.936
70	3.988	0.921	4.122	0.998	4.285	1.097	4.519	1.245
80	4.557	1.180	4.711	1.278	4.897	1.405	5.164	1.594
90	5.127	1.467	5.300	1.590	5.509	1.747	5.810	1.983
100	5.697	1.783	5.889	1.933	6.121	2.123	6.455	2.409
125	7.121	2.696	7.361	2.922	7.651	3.210	8.069	3.641
150	8.545	3.778	8.833	4.095	9.181	4.499	9.683	5.101
175	9.969	5.027	10.305	5.449	10.711	5.986	11.297	6.784
200	11.394	6.437	11.777	6.977	12.241	7.665	12.910	8.685
225	12.818	8.006	13.249	8.678	13.772	9.534	14.524	10.800
250	14.242	9.731	14.722	10.548	15.302	11.588	16.138	13.124
275	15.666	11.610	16.194	12.584	16.832	13.825	17.752	15.655
300	17.090	13.640	17.666	14.784	18.362	16.242	19.366	18.389

Based on calculation methods and design tables set forth by the Uni-Bell® PVC Pipe Association, "Handbook of PVC Pipe Design and Construction."

FLOW/FRICTION LOSS, RING-TITE™ PRESSURE PVC PIPE

3" I.P.S. O.D. (ASTM D2241) ACTUAL O.D. 3.500 INCH

FLOW (GAL/MIN)	SDR 32.5 (125 psi)		SDR 26 (160 psi)		SDR 21 (200 psi)		SDR 17 (250 psi)	
	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT
10	0.384	0.010	0.397	0.010	0.413	0.011	0.436	0.012
20	0.768	0.035	0.794	0.038	0.826	0.041	0.871	0.041
30	1.151	0.073	1.190	0.080	1.239	0.088	1.307	0.088
40	1.535	0.125	1.587	0.136	1.652	0.150	1.743	0.150
50	1.919	0.189	1.984	0.205	2.066	0.226	2.179	0.226
75	2.878	0.400	2.976	0.434	3.098	0.479	3.268	0.478
100	3.838	0.682	3.968	0.740	4.131	0.816	4.357	0.814
125	4.797	1.031	4.960	1.118	5.164	1.234	5.446	1.231
150	5.757	1.445	5.952	1.567	6.197	1.729	6.536	1.724
200	7.676	2.462	7.936	2.670	8.262	2.946	8.714	2.936
225	8.635	3.062	8.928	3.321	9.295	3.664	9.804	3.651
250	9.594	3.722	9.920	4.037	10.328	4.453	10.893	4.437
275	10.554	4.441	10.912	4.816	11.361	5.313	11.982	5.292
300	11.513	5.217	11.904	5.659	12.393	6.242	13.071	6.216
325	12.473	6.051	12.896	6.563	13.426	7.239	14.161	7.209
350	13.432	6.941	13.888	7.528	14.459	8.304	15.250	8.268
375	14.392	7.887	14.880	8.554	15.492	9.436	16.339	9.393
400	15.351	8.889	15.872	9.640	16.525	10.634	17.429	10.585

Based on calculation methods and design tables set forth by the Uni-Bell® PVC Pipe Association, "Handbook of PVC Pipe Design and Construction."

FLOW/FRICTION CHARTS
(CONTINUED)

FLOW/FRICTION LOSS, RING-TITE™ PRESSURE PVC PIPE

4" I.P.S. O.D. (ASTM D2241) ACTUAL O.D. 4.500 INCH

FLOW (GAL/MIN)	SDR 41 (100 psi)		SDR 32.5 (125 psi)		SDR 26 (160 psi)		SDR 21 (200 psi)		SDR 17 (250 psi)	
	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT
25	0.563	0.014	0.578	0.015	0.598	0.017	0.624	0.018	0.659	0.021
50	1.126	0.052	1.157	0.055	1.197	0.060	1.249	0.066	1.318	0.076
75	1.690	0.110	1.735	0.117	1.795	0.127	1.873	0.141	1.977	0.161
100	2.253	0.187	2.313	0.199	2.393	0.216	2.497	0.240	2.636	0.273
125	2.816	0.282	2.892	0.301	2.992	0.327	3.122	0.363	3.295	0.413
150	3.379	0.396	3.470	0.422	3.590	0.458	3.746	0.508	3.954	0.579
175	3.943	0.526	4.048	0.561	4.188	0.610	4.370	0.676	4.613	0.770
200	4.506	0.674	4.627	0.719	4.787	0.781	4.994	0.866	5.272	0.986
225	5.069	0.838	5.205	0.894	5.385	0.971	5.619	1.077	5.931	1.226
250	5.632	1.019	5.784	1.087	5.983	1.180	6.243	1.309	6.591	1.489
300	6.759	1.428	6.940	1.523	7.180	1.654	7.492	1.834	7.909	2.087
350	7.885	1.900	8.097	2.026	8.377	2.201	8.740	2.440	9.227	2.775
400	9.012	2.433	9.254	2.595	9.573	2.818	9.989	3.125	10.545	3.553
450	10.138	3.026	10.410	3.227	10.770	3.505	11.237	3.887	11.863	4.418
500	11.265	3.678	11.567	3.922	11.966	4.260	12.486	4.724	13.181	5.369
550	12.391	4.388	12.724	4.680	13.163	5.082	13.735	5.636	14.499	6.404
600	15.518	5.155	13.880	5.498	14.360	5.971	14.983	6.622	15.817	7.523
650	14.644	5.979	15.037	6.376	15.556	6.925	16.232	7.680	17.135	8.723

Based on calculation methods and design tables set forth by the Uni-Bell® PVC Pipe Association, "Handbook of PVC Pipe Design and Construction."

FLOW/FRICTION LOSS, RING-TITE™ PRESSURE PVC PIPE

5" I.P.S. O.D. (ASTM D2241) ACTUAL O.D. 5.563 INCH

FLOW (GAL/ MIN)	SDR 41 (100 psi)		SDR 32.5 (125 psi)		SDR 26 (160 psi)		SDR 21 (200 psi)		SDR 17 (250 psi)	
	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT
25	0.368	0.005	0.378	0.005	0.392	0.006	0.409	0.007	0.431	0.007
50	0.736	0.018	0.756	0.020	0.783	0.021	0.817	0.024	0.862	0.027
75	1.104	0.039	1.134	0.042	1.175	0.045	1.226	0.050	1.293	0.057
100	1.472	0.066	1.512	0.071	1.566	0.077	1.635	0.086	1.724	0.097
125	1.840	0.100	1.890	0.107	1.958	0.117	2.043	0.129	2.155	0.147
150	2.207	0.140	2.268	0.150	2.349	0.163	2.452	0.181	2.586	0.206
175	2.575	0.187	2.646	0.199	2.741	0.217	2.861	0.241	3.017	0.274
200	2.943	0.239	3.024	0.255	3.132	0.278	3.269	0.309	3.448	0.351
250	3.679	0.361	3.780	0.386	3.916	0.421	4.087	0.467	4.310	0.531
300	4.415	0.507	4.536	0.541	4.699	0.590	4.904	0.654	5.172	0.744
350	5.151	0.674	5.292	0.720	5.482	0.784	5.721	0.870	6.034	0.989
400	5.886	0.863	6.048	0.922	6.265	1.005	6.539	1.115	6.896	1.266
450	6.622	1.074	6.804	1.147	7.048	1.249	7.356	1.386	7.758	1.574
500	7.358	1.305	7.560	1.394	7.831	1.519	8.173	1.685	8.620	1.913
600	8.830	1.829	9.072	1.954	9.397	2.129	9.808	2.362	10.345	2.681
700	10.301	2.434	10.584	2.600	10.964	2.832	11.443	3.142	12.069	3.565
800	11.773	3.116	12.097	3.329	12.530	3.626	13.077	4.024	13.793	4.564
900	13.244	3.876	13.609	4.140	14.096	4.510	14.712	5.005	15.517	5.676

Based on calculation methods and design tables set forth by the Uni-Bell® PVC Pipe Association, "Handbook of PVC Pipe Design and Construction."

FLOW/FRICTION CHARTS
(CONTINUED)

FLOW/FRICTION LOSS, RING-TITE™ PRESSURE PVC PIPE

6" I.P.S. O.D. (ASTM D2241) ACTUAL O.D. 6.625 INCH

FLOW (GAL/ MIN)	SDR 64 (63 psi)		SDR 41 (100 psi)		SDR 32.5 (125 psi)		SDR 26 (160 psi)		SDR 21 (200 psi)		SDR 17 (250 psi)	
	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT
50	0.498	0.007	0.518	0.008	0.533	0.008	0.552	0.009	0.576	0.010	0.608	0.012
75	0.747	0.015	0.777	0.017	0.800	0.018	0.828	0.019	0.865	0.021	0.912	0.025
100	0.996	0.026	1.036	0.028	1.066	0.030	1.104	0.033	1.153	0.037	1.216	0.042
125	1.246	0.039	1.295	0.043	1.333	0.046	1.381	0.050	1.441	0.055	1.520	0.063
150	1.495	0.055	1.555	0.060	1.599	0.064	1.657	0.070	1.729	0.078	1.824	0.088
175	1.744	0.073	1.814	0.080	1.866	0.085	1.933	0.093	2.018	0.103	2.128	0.117
200	1.993	0.094	2.073	0.102	2.132	0.109	2.209	0.119	2.306	0.132	2.432	0.150
225	2.242	0.117	2.332	0.127	2.399	0.136	2.485	0.148	2.594	0.164	2.736	0.187
250	2.491	0.142	2.591	0.154	2.666	0.165	2.761	0.180	2.882	0.200	3.040	0.227
300	2.989	0.199	3.109	0.216	3.199	0.231	3.313	0.252	3.459	0.280	3.648	0.318
400	3.986	0.338	4.146	0.368	4.265	0.394	4.418	0.429	4.612	0.477	4.865	0.542
500	4.982	0.511	5.182	0.556	5.331	0.596	5.522	0.649	5.765	0.721	6.081	0.819
600	5.979	0.717	6.218	0.779	6.397	0.835	6.627	0.910	6.918	1.010	7.297	1.148
700	6.975	0.954	7.255	1.037	7.463	1.111	7.731	1.211	8.070	1.344	8.513	1.527
800	7.971	1.221	8.291	1.328	8.530	1.423	8.836	1.550	9.223	1.721	9.729	1.955
900	8.968	1.519	9.327	1.652	9.596	1.770	9.940	1.928	10.376	2.141	10.945	2.430
1000	9.964	1.846	10.364	2.008	10.662	2.151	11.044	2.344	11.529	2.602	12.162	2.954
1100	10.961	2.203	11.400	2.395	11.728	2.566	12.149	2.796	12.682	3.104	13.378	3.523

Based on calculation methods and design tables set forth by the Uni-Bell® PVC Pipe Association, "Handbook of PVC Pipe Design and Construction."

FLOW/FRICTION LOSS, RING-TITE™ PRESSURE PVC PIPE

8" I.P.S. O.D. (ASTM D2241) ACTUAL O.D. 8.625 INCH

FLOW (GAL/ MIN)	SDR 64 (63 psi)		SDR 41 (100 psi)		SDR 32.5 (125 psi)		SDR 26 (160 psi)		SDR 21 (200 psi)		SDR 17 (250 psi)	
	VELOCITY FT/S	PRESSURE DROP PSI/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT
100	0.588	0.007	0.611	0.008	0.629	0.008	0.652	0.009	0.680	0.010	0.718	0.012
150	0.882	0.15	0.917	0.017	0.943	0.018	0.977	0.019	1.020	0.021	1.076	0.025
200	1.176	0.026	1.222	0.028	1.258	0.030	1.303	0.033	1.359	0.037	1.435	0.042
250	1.469	0.039	1.528	0.043	1.572	0.046	1.629	0.050	1.699	0.055	1.794	0.063
300	1.763	0.055	1.833	0.060	1.887	0.064	1.955	0.070	2.039	0.077	2.153	0.088
350	2.057	0.073	2.139	0.079	2.201	0.085	2.281	0.093	2.379	0.103	2.512	0.118
400	2.351	0.094	2.444	0.102	2.515	0.109	2.607	0.119	2.719	0.132	2.871	0.150
450	2.645	0.117	2.750	0.127	2.830	0.136	2.932	0.148	3.059	0.164	3.229	0.187
500	2.939	0.142	3.055	0.154	3.144	0.165	3.258	0.180	3.399	0.199	3.588	0.227
600	3.527	0.199	3.666	0.216	3.773	0.231	3.910	0.252	4.078	0.279	4.306	0.319
800	4.702	0.339	4.889	0.367	5.031	0.394	5.213	0.429	5.438	0.476	5.741	0.542
1000	5.878	0.512	6.111	0.555	6.289	0.595	6.516	0.649	6.797	0.719	7.176	0.820
1200	7.053	0.718	7.333	0.778	7.546	0.835	7.820	0.910	8.157	1.008	8.612	1.149
1400	8.229	0.955	8.555	1.036	8.804	1.110	9.123	1.211	9.516	1.342	10.047	1.528
1600	9.404	1.223	9.777	1.326	10.062	1.422	10.426	1.550	10.875	1.718	11.482	1.956
1800	10.590	1.521	10.999	1.649	11.320	1.769	11.729	1.928	12.235	2.137	12.918	2.432
2000	11.755	1.848	12.221	2.005	12.577	2.150	13.033	2.344	13.594	2.597	14.353	2.955
2200	12.931	2.205	13.444	2.392	13.835	2.565	14.336	2.796	14.954	3.099	15.788	3.525

Based on calculation methods and design tables set forth by the Uni-Bell® PVC Pipe Association, "Handbook of PVC Pipe Design and Construction."

FLOW/FRICTION CHARTS
(CONTINUED)

FLOW/FRICTION LOSS, RING-TITE™ PRESSURE PVC PIPE

10" I.P.S. O.D. (ASTM D2241) ACTUAL O.D. 10.750 INCH

FLOW (GAL/ MIN)	SDR 64 (63 psi)		SDR 41 (100 psi)		SDR 32.5 (125 psi)		SDR 26 (160 psi)		SDR 21 (200 psi)		SDR 17 (250 psi)	
	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT
200	0.757	0.009	0.787	0.010	0.810	0.010	0.839	0.011	0.875	0.013	0.923	0.014
300	1.135	0.019	1.180	0.020	1.215	0.022	1.258	0.024	1.313	0.026	1.385	0.030
400	1.513	0.032	1.574	0.035	1.620	0.037	1.677	0.041	1.750	0.045	1.847	0.052
500	1.892	0.049	1.967	0.053	2.025	0.057	2.097	0.062	2.188	0.068	2.309	0.078
600	2.270	0.068	2.360	0.074	2.430	0.079	2.516	0.086	2.625	0.096	2.770	0.109
700	2.648	0.091	2.754	0.098	2.835	0.105	2.935	0.115	3.063	0.127	3.232	0.145
800	3.027	0.116	3.147	0.126	3.240	0.135	3.355	0.147	3.500	0.163	3.694	0.186
900	3.405	0.144	3.541	0.157	3.644	0.168	3.774	0.183	3.938	0.203	4.156	0.231
1000	3.783	0.176	3.934	0.190	4.049	0.204	4.193	0.222	4.375	0.246	4.617	0.281
1100	4.162	0.209	4.327	0.227	4.454	0.243	4.613	0.265	4.813	0.294	5.079	0.335
1400	5.297	0.327	5.508	0.355	5.669	0.381	5.871	0.414	6.126	0.459	6.464	0.523
1700	6.431	0.469	6.688	0.508	6.884	0.545	7.129	0.594	7.438	0.658	7.849	0.749
2000	7.566	0.634	7.868	0.687	8.099	0.737	8.387	0.802	8.751	0.889	9.235	1.012
2300	8.701	0.821	9.048	0.890	9.314	0.954	9.645	1.039	10.064	1.152	10.620	1.311
2600	9.836	1.030	10.229	1.116	10.529	1.198	10.902	1.304	11.376	1.446	12.005	1.644
2900	10.971	1.261	11.409	1.367	11.743	1.466	12.160	1.596	12.689	1.770	13.390	2.012
3200	12.106	1.513	12.589	1.640	12.958	1.759	13.418	1.915	14.001	2.124	14.775	2.414
3500	13.241	1.786	13.769	1.936	14.173	2.077	14.676	2.261	15.314	2.507	16.160	2.850

Based on calculation methods and design tables set forth by the Uni-Bell® PVC Pipe Association, "Handbook of PVC Pipe Design and Construction."

FLOW/FRICTION CHARTS
(CONTINUED)

FLOW/FRICTION LOSS, RING-TITE™ PRESSURE PVC PIPE

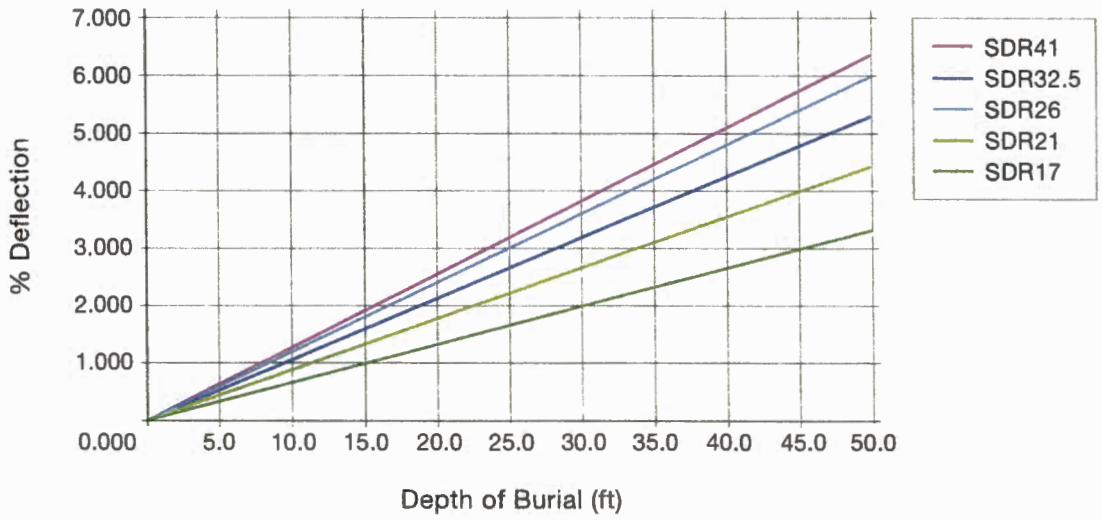
12" I.P.S. O.D. (ASTM D2241) ACTUAL O.D. 12.750 INCH

FLOW (GAL/ MIN)	SDR 64 (63 psi)		SDR 41 (100 psi)		SDR 32.5 (125 psi)		SDR 26 (160 psi)		SDR 21 (200 psi)		SDR 17 (250 psi)	
	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT	VELOCITY FT/S	PRESSURE DROP psi/100 FT
300	0.807	0.008	0.839	0.009	0.863	0.010	0.894	0.010	0.933	0.012	0.985	0.013
400	1.076	0.014	1.119	0.015	1.151	0.016	1.192	0.018	1.244	0.020	1.313	0.022
500	1.345	0.021	1.398	0.023	1.439	0.025	1.491	0.027	1.555	0.030	1.641	0.034
600	1.614	0.030	1.678	0.032	1.727	0.035	1.789	0.038	1.866	0.042	1.970	0.048
700	1.882	0.040	1.958	0.043	2.015	0.046	2.087	0.050	2.177	0.055	2.298	0.063
800	2.151	0.051	2.238	0.055	2.302	0.059	2.385	0.064	2.488	0.071	2.626	0.081
900	2.420	0.063	2.517	0.068	2.590	0.073	2.683	0.080	2.799	0.088	2.955	0.101
1000	2.689	0.077	2.797	0.083	2.878	0.089	2.981	0.097	3.110	0.107	3.283	0.123
1100	2.958	0.091	3.077	0.099	3.166	0.106	3.279	0.116	3.421	0.128	3.611	0.146
1200	3.227	0.107	3.356	0.116	3.454	0.125	3.577	0.136	3.732	0.151	3.939	0.172
1300	3.496	0.124	3.636	0.135	3.741	0.145	3.875	0.157	4.043	0.175	4.268	0.199
1400	3.765	0.143	3.916	0.155	4.029	0.166	4.174	0.181	4.354	0.200	4.596	0.228
1500	4.034	0.162	4.195	0.176	4.317	0.188	4.472	0.205	4.666	0.228	4.924	0.259
2000	5.378	0.276	5.594	0.299	5.756	0.321	5.962	0.350	6.221	0.388	6.566	0.442
2500	6.723	0.418	6.992	0.453	7.195	0.485	7.453	0.529	7.776	0.586	8.207	0.668
3000	8.068	0.586	8.391	0.635	8.634	0.680	8.943	0.741	9.331	0.822	9.849	0.935
3500	9.412	0.779	9.789	0.844	10.073	0.905	10.434	0.986	10.886	1.093	11.490	1.244
4000	10.757	0.998	11.188	1.081	11.512	1.159	11.924	1.262	12.441	1.400	13.131	1.593

Based on calculation methods and design tables set forth by the Uni-Bell® PVC Pipe Association, "Handbook of PVC Pipe Design and Construction."

DEFLECTION CHART

IPS Deflection By Depth of Burial : : †



: : Deflections computed using a unit weight of backfill at 120 lbs/cft and assume no internal pressure or live load.

: : Pipe embedment used in calculations is Class 1, 2, 3, or 4, as defined in ASTM D2321 with appropriate compaction to achieve an E'=1000 psi.

† Based on calculation methods and design tables set forth by the Uni-Bell® PVC Pipe Association, "Handbook of PVC Pipe Design and Construction."

SHORT FORM INSTALLATION GUIDE/ WARNING

This information is furnished in order to provide a brief review of the installation requirements for JM Eagle™ I.P.S. PVC pipe. It is not intended to serve as or replace the function of the FULL VERSION product installation guide available upon request.

1. Check to see that the Rieber® gasket is properly seated in the bell groove, and that the bell and spigot are clean before assembly.
2. Apply the approved lubricant supplied with the pipe to the spigot end of the pipe, paying particular attention to the bevel. The coating should be equivalent to a brush coat of enamel paint.
3. Assemble the joint only to the reference mark provided on the spigot end.
4. If undue resistance to insertion of the spigot is encountered, or the reference mark does not reach the flush position, disassemble the joint and check the position of the rubber gasket, and remove any debris.
5. Curvature of the pipe shall be accomplished through longitudinal bending of the pipe barrel in accordance with the following table. Deflection of the joint is not allowed and may cause leakage.

PIPE SIZE (IN)	RADIUS (FT)	PIPE SIZE (IN)	RADIUS (FT)	PIPE SIZE (IN)	RADIUS (FT)
1.5	38	3	75	8	200
2	50	4	100	10	250
2.5	63	6	150	12	300

6. Prior to backfilling, check to see that the reference mark is flush with the end of the bell.
7. All taps performed on JM Eagle's pressure products, shall be in accordance with Uni-Bell® Publication UNI-PUB-08-07, "Tapping Guide for PVC Pressure Pipe."

Note: JM Eagle™ does not recommend direct tapping of IPS Pressure Pipe

⚠ WARNING : RUPTURE HAZARD

IMPROPER INSTALLATION OR MISUSE OF TAPPING TOOLS MAY CAUSE PIPES UNDER HIGH PRESSURE TO RUPTURE AND RESULT IN HIGH VELOCITY AIRBORNE FRAGMENTATION LEADING TO SERIOUS INJURIES AND/OR DEATH.

BEFORE AND DURING INSTALLATION, ALWAYS:

- Consult and follow the FULL VERSION of the product installation guide
- Closely follow job specifications
- Use protective gear and equipment

BEFORE AND DURING TAPPING, ALWAYS:

- Consult and follow Uni-Bell® Publication UNI-PUB-08-07, "Tapping Guide for PVC Pressure Pipe."
- Use the correct tapping tools
- Bleed air from pipes at high spot before tapping
- Use protective gear and equipment

Please contact JM Eagle™ Product Assurance at (800) 621-4404 to obtain FULL VERSION of the appropriate installation guide or for further assistance.

WARRANTY

JM EAGLE™ PRODUCTS LIMITED WARRANTY

J-M Manufacturing Co., Inc. (JM Eagle™) warrants that its standard polyvinyl chloride (PVC), polyethylene (PE), conduit/plumbing/solvent weld and Acrylonitrile-Butadiene-Styrene (ABS) pipe Products ("Products") are manufactured in accordance with applicable industry specifications referenced on the Product and are free from defects in workmanship and materials. Every claim under this warranty shall be void unless in writing and received by JM Eagle™ within thirty (30) days of the date the defect was discovered, and within one (1) year of the date of shipment from the JM Eagle™ plant. Claims for Product appearance defects, such as sun-bleached pipe etc., however, must be made within thirty (30) days of the date of the shipment from the JM Eagle™ plant. This warranty specifically excludes any Products allowed to become sun-bleached after shipment from the JM Eagle™ plant. Proof of purchase with the date thereof must be presented to the satisfaction of JM Eagle™, with any claim made pursuant to this warranty. JM Eagle™ must first be given an opportunity to inspect the alleged defective Products in order to determine if it meets applicable industry standards, if the handling and installation have been satisfactorily performed in accordance with JM Eagle™ recommended practices and if operating conditions are within standards. Written permission and/or a Return Goods Authorization (RGA) must be obtained along with instructions for return shipment to JM Eagle™ of any Products claimed to be defective.

The limited and exclusive remedy for breach of this Limited Warranty shall be, at JM Eagle's sole discretion, the replacement of the same type, size and like quantity of non-defective Product, or credits, offsets, or combination of thereof, for the wholesale purchase price of the defective unit.

This Limited Warranty does not apply for any Product failures caused by user's flawed designs or specifications, unsatisfactory applications, improper installations, use in conjunction with incompatible materials, contact with aggressive chemical agents, freezing or overheating of liquids in the product and any other misuse causes not listed here. This Limited Warranty also excludes failure or damage caused by fire stopping materials, thread sealants, plasticized vinyl Products or damage caused by the fault or negligence of anyone other than JM Eagle™, or any other act or event beyond the control of JM Eagle™.

JM Eagle's liability shall not, at any time, exceed the actual wholesale purchase price of the Product. The warranties in this document are the only warranties applicable to the Product and there are no other warranties, expressed or implied. This Limited Warranty specifically excludes any liability for general damages, consequential or incidental damages, including without limitation, costs incurred from removal, reinstallation, or other expenses resulting from any defect. IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE SPECIFICALLY DISCLAIMED AND JM EAGLE™ SHALL NOT BE LIABLE IN THIS RESPECT NOTWITHSTANDING JM EAGLE'S ACTUAL KNOWLEDGE THE PRODUCT'S INTENDED USE.

JM Eagle's Products should be used in accordance with standards set forth by local plumbing and building laws, codes, or regulations and the applicable standards. Failure to adhere to these standards shall void this Limited Warranty. Products sold by JM Eagle™ that are manufactured by others are warranted only to the extent and limits of the warranty of the manufacturer. No statement, conduct or description by JM Eagle™ or its representative, in addition to or beyond this Limited Warranty, shall constitute a warranty. This Limited Warranty may only be modified in writing signed by an officer of JM Eagle™.

PLANT LOCATIONS

ADEL
2101 J-M Drive
Adel, Georgia 31620

BATCHELOR
2894 Marion Monk Road
Batchelor, Louisiana 70715

BUCKHANNON
Old Drop 33, Mudlick Road
Buckhannon, West Virginia 26201

BUTNER
2602 West Lyon Station Road
Creedmoor, North Carolina 27522

CAMERON PARK
3500 Robin Lane
Cameron Park, California 95682

COLUMBIA
6500 North Brown Station Road
Columbia, Missouri 65202

CONROE
101 East Avenue M
Conroe, Texas 77301

FONTANA
10990 Hemlock Avenue
Fontana, California 92337

HASTINGS
146 North Maple Avenue
Hastings, Nebraska 68901

KINGMAN
4620 Olympic Way
Kingman, Arizona 86401

MAGNOLIA
2220 Duracrete Drive
Magnolia, Arkansas 71753

MCNARY
31240 Roxbury Road
Umatilla, Oregon 97882

MEADVILLE
15661 Delano Road
Cochranton, Pennsylvania 16314

PERRIS
23711 Rider Street
Perris, California 92570

PUEBLO
1742 E. Platteville Boulevard
Pueblo West, Colorado 81007

STOCKTON
1051 Sperry Road
Stockton, California 95206

SUNNYSIDE
1820 South First Street
Sunnyside, Washington 98944

TACOMA
2330 Port of Tacoma Road
Tacoma, Washington 98421

TULSA
4501 West 49th Street
Tulsa, Oklahoma 74107

VISALIA
8875 Avenue 304
Visalia, California 93291

WHARTON
10807 US 59 RD
Wharton, Texas 77488

WILTON
1314 W. Third Street
Wilton, Iowa 52778

MEXICO
PLASTICS TECHNOLOGY
DE MÉXICO S DE R.L. DE S.A.
Av. Montes Urales No. 8 y 10
Parque Industrial Opción, Carretera
57 Qro. -S.L.P. Km. 57.8
C.P. 37980 San José Iturbide,
Guanajuato México

** Our Mexico location is a joint venture between JM Eagle™ and Plastics Technology*

GLOBAL HEADQUARTERS
5200 West Century Boulevard
Los Angeles, California 90045

REGIONAL OFFICE
Nine Peach Tree Hill Road
Livingston, New Jersey 07039

J-M Manufacturing Co., Inc. and PW Eagle, Inc. are doing business as JM Eagle™.

JM Eagle

- THE LEADER IN PIPE INNOVATION
- THE HIGHEST LEVEL OF QUALITY
- THE LARGEST BREADTH OF PRODUCT
- THE WIDEST CAPACITY
- EXPRESS DELIVERY

PLANT LOCATIONS

Revised January 2009
JME-66A

JM Eagle™

Building essentials for a better tomorrow™

GLOBAL HEADQUARTERS:

5200 West Century Blvd
Los Angeles, CA 90045
T: 800.621.4404
F: 800.451.4170

REGIONAL OFFICE:

Nine Peach Tree Hill Road
Livingston, NJ 07039
T: 973.535.1633
F: 973.533.4185

www.JMEagle.com

APPENDIX B: NBU SERVICE AGREEMENT

NBU
New Braunfels Utilities

January 10, 2017

TCEQ San Antonio Regional Office
14250 Judson Road
San Antonio, Texas 78233-4480

RE: Ervendberg Duplex Project, 1227 & 1231 Ervendberg Avenue
Comal, New Braunfels, Texas

To Whom It May Concern:

New Braunfels Utilities has the wastewater collection and treatment facilities to handle the additional flows from the proposed residential development, Ervendberg Duplex, that will be tied into the existing New Braunfels Utilities sewer mains. It is my understanding that the proposed project is a 1.82 acre residential development that will have two lots and that the effluent from this development will be characteristic of residential wastewater.

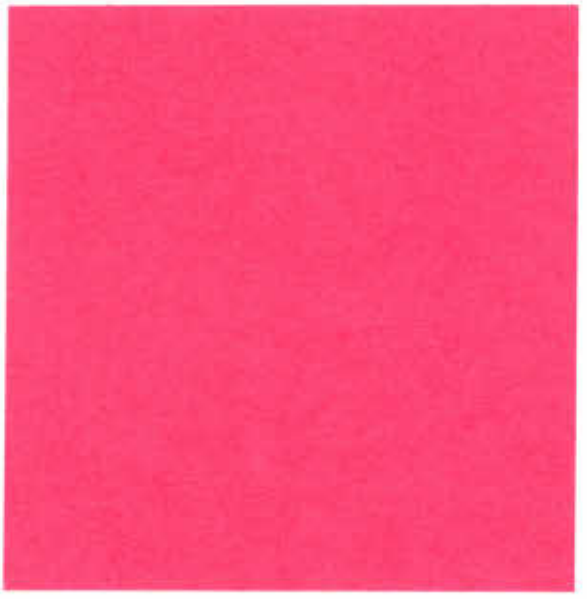
Although this letter is a commitment to capacity, the wastewater plans for this project have not been approved by NBU for construction. The wastewater collection system must be designed according to New Braunfels Utilities' Water Systems Connection and Construction Policy and 30 TAC 217.

Should you have any questions or need any additional information, please do not hesitate to contact me.

Respectfully,

Doug Draeger
Executive Director of Operations
Phone: 830.608.8885
Email: ddraeger@nbutexas.com

cc: M & S Engineering / Jeremy More, jmore@msengr.com



M&S ENGINEERING
CIVIL | ELECTRICAL | STRUCTURAL | MEP

376 LANDA STREET
NEW BRAUNFELS , TX 78130
830.629-2988 PH | 830.228.4197 FX
FIRM FI-394
WWW.MSENGR.COM

May 30, 2017

Dianne Pavlicek-Mesa, P.G.
14250 Judson Rd
San Antonio, TX 78233

RE: Permit No. 13000376- Ervendberg Duplex WPAP

Dear Ms. Pavlicek-Mesa:

We received a second round of comments on the submitting of Ervendberg Duplex Project on May 22, 2017. The list below is how we responded to the comments and how they were addressed:

1. **The Project Description still makes reference to rain barrels in paragraph three. Please review and revise accordingly.**

   The Project Description has been updated to read rain holding tank not barrels.

2. **Comments regarding BMP Treatment Chart**

   1) **Please explain impervious cover total on the chart versus the total on the TSS removal calculations. Note 0.296 + 0.032 + 0.091 = 0.4190 acres on the chart while 0.5745 - 0.17 pre-existing = 0.4045 acres. In addition, please note that 0.4190 + 0.27 rooftops + 0.17 = 0.859 total acres of impervious cover.**

      The first calculation shows that 0.419 acres of impervious cover is being treated; while the second calculations shows that we are only required to treat 80% of the TSS produced from 0.4045 acres of impervious cover. More IC is being treated which is not a problem. Also, the total impervious value of the site has been extended a decimal place and updated both the project description and page 2 of TCEQ-0584.

   2) **Please clarify which VFS (vegetative filter strip) is in series with the grassy swale as there are two VFSs depicted in DA3, in particular, explain the VFS in close proximity to Duplex 1.**

      The VFS that is in series with the grassy swale is the one that is marked DA3. The calculations have been revised to show that only one VFS is in series with the grassy swale.

   3) **Please clarify that the VFS in DA2 is treating pre-existing impervious cover to help compensate for the 70% removal efficiency of the grassy swale.**

      The VFS in DA2 is shown on Sheet 5 and treats proposed IC.

   4) **Please clarify that the VFS in DA3 in series with the grassy swale has been implemented to compensate for the 70% removal efficiency of the grassy swale.**

      The VFS in DA2 is shown on Sheet 5 and treats proposed IC. It is in series with the grassy swale making the efficiency higher.

3. **Comments regarding Rainwater Harvesting System**

   1) **Please review this summary of the rainwater harvesting system for accuracy and comment as needed: A rainwater harvesting system is proposed for 0.27 acres of rooftop area including a 10,800 gallon holding tank and an irrigation system. The stormwater holding tank is sized to hold the runoff from a 1.5 inch**

rainfall event. The holding tank will be drained within 72 hours after a rainfall event. Irrigation of 904.78 square feet of green space will be provided by 18 sprinklers.

A correction has been made to the size the tank must be. The project description has also been updated

2) **Please provide calculations for volume of the holding tank totaling 10,800 gallons.**

Volume=Length* Width*Height

Volume=3 Duplexes*(55feet*70 feet)*(1.5 inches)/12inches *Divide by 12 inches for conversion of in to feet*

Volume=1443.75 cubic feet or 10800 gallons

3) **Please provide calculations for the irrigation area totaling 904.78 square feet.**

The Area of each sprinkler was calculated on Exhibit C

This will be the spray area for all 18 sprinklers

Area=pi*r^2

Area=3.14159*(4feet)^2=50.265 square feet per sprinkler

Total Area= Area * number of sprinklers

Total Area =50.265 square feet* 18 sprinklers=904.78 square feet

4) **Please provide calculations showing that the holding tank can be emptied within 72 hours by the irrigation system.**

The Calculations Showing the Time it takes to empty the Tank was calculated on Exhibit C

Volume= Number of sprinklers*Spray rate * time

Volume= 18*0.37 gpm *60min in one hour *30 hours of total sprinkler run time

Volume= 11988 gallons.

If you have any questions or require additional information, please contact me or Lance Klein at (830) 629-2988.

Sincerely,

Jeremy More
M&S Engineering

Attachment C

PROJECT DESCRIPTION

The area of the site is located in the city of New Braunfels. Currently, the 1.82 acre site consist of two residential lots. The existing impervious cover consist of a well house and a gravel driveway that leads to a one story house and adjacent shop (See Attached Existing Site Plan). For water quality calculations, only the gravel driveway, one story house and adjacent shop will be counted as existing impervious cover since they are grandfathered in (See Attached Google Earth Exhibit).

The proposed development is to replace the existing homestead with 5 duplexes. The existing gravel roadway will also be replaced with an asphalt drive. A detention pond will be constructed in the middle of the site and the outfall will discharge into a grassy swale before returning the natural drainage pattern. A holding tank will be used to retain stormwater runoff from the roof of three of the duplexes. For this reason, the three duplexes will not be included in the impervious cover calculation for water quality purposes (0.27 acres). The final impervious cover calculations for the site will be 0.859 acres of impervious cover (47.2%) that include the drives, ADA path, and the duplexes. The remaining area will be greenspace.

No portion of this site is located in the FEMA Floodplain based on Panel 48187C0105F, eff. 11/2/2007. The Ervendberg Duplex is located within the Guadalupe River watershed. The grassy swale, VFS, and rain holding tank are the permanent BMPs for this site. The grassy swale will be a trapezoidal channel with a 6.5 foot wide bottom with 3 to 1 side slopes. It will also have a slope less than 2.5%.

The rain holding tank will be drained, based on TCEQ standards, within 72 hours after a given rain storm and can be used as irrigation water for green space areas. The tank will have a volume of 10800 gallons and will hold the roof rainstorm runoff of three duplexes. The tank for water harvesting unit will be capable of capturing 1.5 inches of rainfall from each duplexe's roof. Four Vegetative Filter Strips (VFS) is also proposed for the site. The VFS follow the regulations layout in the RG-348 as required by TCEQ.

Table 1 - Impervious Cover Table

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	19166.4	÷ 43,560 =	0.44
Parking	6407.4	÷ 43,560 =	0.15
Other paved surfaces	11325.6	÷ 43,560 =	0.26
Total Impervious Cover	36899.4	÷ 43,560 =	0.859

Total Impervious Cover 0.859 **÷ Total Acreage** 1.82 **X 100 =** 47.2**% Impervious Cover**

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

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

For Road Projects Only

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

7. Type of project:

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

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

   ☐ Concrete
   ☐ Asphaltic concrete pavement
   ☐ Other: _____

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

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

10. Length of pavement area: _____ feet.

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

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

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

MOELLER & ASSOCIATES
Engineering Solutions

LETTER OF TRANSMITTAL

ATTN: Monica Reyes	DATE: 05/24/2017
To: TCEQ	RE: Second Crossing Campground, LLC

WE ARE SENDING YOU
☐ attached ☐ under separate cover the following:
☐ shop drawings ☐ prints ☐ standards ☐ specifications
☐ plans ☐ copy of letter ☐ ordinance ■ other: Letter

COPIES	ITEM	DESCRIPTION
6	PDF	Letter showing small business criteria is met.
1	PDF	Comment Response Letter

THESE ARE TRANSMITTED AS CHECKED BELOW:
■ for approval ☐ approved as submitted ☐ resubmit ☐ copies for approval
■ for your use ☐ approved as noted ☐ submit ☐ copies for distribution
☐ as requested ☐ returned for corrections ☐ return ☐ corrected prints
☐ for review and comment ☐ other:

Signed

Hand Delivered
MAY 24 2017
TCEQ Reg 13

Nash Noel, EIT

MOELLER & ASSOCIATES
Engineering Solutions

May 24, 2017

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program
Attn: Monica Reyes
14250 Judson Rd
San Antonio TX 78233-4480

Hand Delivered
MAY 24 2017
TCEQ Reg 13

RE: Second Crossing Campground; located at 6515 River Road; New Braunfels, Texas.

Plan Type: Request for approval of a Water Pollution Abatement Plan (WPAPMOD); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer;
Regulated Entity No. RN109696567; Additional ID No. 13000359

This letter is in response to the fax received 05/08/2017 from The Texas Commission on Environmental Quality/ Edwards Aquifer Protection Program Division as it pertains to the Second Crossing Campground Project. The comments received are in italics and our responses are in bold.

Permanent Stormwater Section (TCEQ-0600)

1. *Attachment A: please provide a notarized letter from Second Crossing Campground, LLC ownership stating that they meet the following small business criteria.*
   - *A small business, which shall be defined as any person, firm, or business which employs, by direct payroll and/or through contract, fewer than 100 full-time employees.*
   - *A business that is a wholly owned subsidiary of a corporation shall not qualify as a small business if the parent organization does not qualify as a small business under this policy. When making this determination for a business, the entire company/corporation/agency should be looked at, not just the particular facility location under enforcement.*

   Attachment A, a notarized letter showing Second Crossing Campground, LLC meets the small business criteria listed above, is provided. Please see attached documents.

Please accept these comments and revisions for the referenced project. If you need additional information or have any questions, please do not hesitate to contact me.

Sincerely,

Shane Klar, P.E.
Attachments

Jeffrey Bair
25839 White Eagle Dr.
San Antonio TX 78260
214-878-2305

5/22/17

To Whom It May Concern:

I am the Managing Partner in the Second Crossing Campground, LLC and I do hereby certify that this business meets the requirements to qualify as a Small Business under the following guidelines:

- A small business, which shall be defined as any person, firm, or business which employs, by direct payroll and/or through contract, fewer than 100 full-time employees.

Please advise if you require any further information regarding this.

Sincerely,

Jeffrey Bair

STATE OF TEXAS
COUNTY OF ~~BEXAR~~ Comal

In New Braunfels on the 22 day of May, 2017, before me, a Notary Public in and for the above state and county, personally appeared _Jeffrey Bair_, known to me or proved to be the person named in and who executed the foregoing instrument, and being first duly sworn, such person acknowledged that he or she executed said instrument for the purposes therein contained as his or her free and voluntary act and deed.

NOTARY PUBLIC
My Commission Expires: 8/14/19

(SEAL) TALIA TOMLINSON
NOTARY PUBLIC
STATE OF TEXAS
MY COMM. EXP. 8/14/19

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

June 7, 2017

Mr. Scott Schneider
Ervendberg Duplex
1227 Ervendberg Ave.
New Braunfels, Texas 78130

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: Ervendberg Duplex; Located at 1227 and 1231 Ervendberg Ave.; New Braunfels, Texas

TYPE OF PLAN: Request for Approval of a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Regulated Entity No. RN109438689; Additional ID. No. 13000376

Dear Mr. Schneider:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP Application for the above-referenced project submitted to the San Antonio Regional Office by M & S Engineering, LLC on behalf of the Ervendberg Duplex on March 31, 2017. Final review of the WPAP was completed after additional material was received on May 16, 2017 and May 30, 2017. 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. 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.*

PROJECT DESCRIPTION

The proposed project will have an area of approximately 1.82 acres with approximately 0.84 acres (46.15 percent) of impervious cover. The construction of five duplexes, a sidewalk and associated driveways is proposed. Project wastewater will be disposed of by conveyance to the existing Gruene Road Wastewater Treatment Plant owned by New Braunfels Utilities.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or up-gradient of the site and potentially flowing across and off the site after construction, a rainwater harvesting system, a grassy swale, and four engineered vegetative filter strips (VFS) with one being in series with the grassy swale, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 359 pounds of TSS generated from 0.57 acres of impervious cover with 0.17 acres of pre-existing impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

A rainwater harvesting system is proposed for 0.27 acres of rooftop area including a 10,800 gallon holding tank and an irrigation system. The stormwater holding tank is sized to hold the runoff from a 1.5 inch rainfall event. The holding tank will be drained within 72 hours after a rainfall event. Irrigation of 905 square feet of green space will be provided by 18 sprinklers.

One grassy swale is proposed to treat 0.296 acres of impervious cover with 244 pounds of TSS removal. The longitudinal slope of the grassy swale is 1.11 percent with a bottom width of 6.5 feet, and side slopes with no greater than a 3:1 ratio. The grassy swale will have at least 80 percent vegetative cover to provide adequate treatment of runoff.

Three VFSs are proposed to treat 59 pounds of TSS generated from 0.066 acres impervious cover. A VFS in series with the grassy swale is proposed to treat 58 pounds of TSS generated from 0.057 acres of impervious cover. The VFSs shall have a uniform slope of less than 20 percent and vegetated cover of at least 80 percent which will extend along the entire length of the contributing area and will be free of gullies or rills that can concentrate overland flow. The contributing area shall be relatively flat to evenly distribute runoff, and the impervious cover in the direction of flow shall not exceed 72 feet.

GEOLOGY

According to the geologic assessment included with the application, the site is located on the Navarro and Taylor Group. One non-sensitive manmade feature was noted by the project geologist. The San Antonio Regional Office site assessment conducted on April 21, 2017 revealed that the site was generally as described in the application.

SPECIAL CONDITION

I. The permanent pollution abatement measures shall be operational prior to first occupancy of new facilities located within the measure's respective drainage area.

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

During Construction:

10. During the course of regulated activities related to this project, the applicant or agent shall comply with all applicable provisions of 30 TAC Chapter 213, 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 San Antonio Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.
13. One well exists on the site. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.
14. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
15. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
16. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
17. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

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

18. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the San Antonio Regional Office within 30 days of site completion.
19. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. The regulated entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.

20. 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.
21. An Edwards Aquifer protection plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Edwards Aquifer protection plan must be submitted to the San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.
22. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Dianne Pavlicek-Mesa, P.G., of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210-403-4074.

Sincerely,

Lynn Bumguardner, Water Section Manager
San Antonio Region
Texas Commission on Environmental Quality

LB/DPM/eg

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

cc: Mr. Lance Klein, P.E., M & S Engineering, LLC
Mr. Robert Camareno, City of New Braunfels
Mr. Thomas H. Hornseth, P.E., Comal County Engineer
Mr. Roland Ruiz, Edwards Aquifer Authority
Mr. H. L. Saur, Comal Trinity Groundwater Conservation District

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

March 20, 2015

Mr. Bryan Kastleman
River Retreat 1228 LLC
2714 Bee Cave Road #204
Austin, Texas 78748

RECEIVED
MAR 27 2015
COUNTY ENGINEER

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: Ervendberg Condos; Located at 1228 Ervendberg Avenue; New Braunfels, Texas

TYPE OF PLAN: Request for Approval of a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Investigation No.1215585; Regulated Entity No. RN107885618; Additional ID No. 13-14121201

Dear Mr. Kastleman:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP Application for the above-referenced project submitted to the San Antonio Regional Office by HMT Engineering & Surveying on behalf of River Retreat 1228 LLC on December 12, 2014. Final review of the WPAP was completed after additional material was received February 16, 2015 and March 16, 2015. As presented to the TCEQ, the Temporary 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. 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.*

PROJECT DESCRIPTION

The proposed commercial project will have an area of approximately 2.30 acres. It will include 15 condominium units, with a parking lot, sidewalk and utilities. The impervious cover will be 0.43 acres (18.65 percent). Project wastewater will be disposed of by conveyance to the existing New Braunfels Water Recycling Center owned by the New Braunfels Utilities.

PERMANENT POLLUTION ABATEMENT MEASURES

This multi-family commercial project will not have more than 20 percent impervious cover.

GEOLOGY

According to the geologic assessment included with the application, the site is located on the Kainer Formation. One manmade feature was noted in the assessment. This feature was assessed as not sensitive by the project geologist. The San Antonio Regional Office site assessment conducted on February 2, 2015 revealed that the site was generally as described in the application.

SPECIAL CONDITIONS

I. The applicant requested a waiver to the requirement for other permanent BMPs for this multi-family commercial project because the development will have less than 20 percent impervious cover. Based on the TCEQ's Review of the proposed activities and the site conditions, the required waiver is hereby granted. If the percent of impervious cover ever increases above 20 percent or the land use changes, the exemption for the whole site as described in the Water Pollution Abatement Plan may no longer apply and the property owner must notify the San Antonio Regional Office of these changes.

STANDARD CONDITIONS

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

Prior to Commencement of Construction:

4. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the San Antonio Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested form (Deed Recordation Affidavit, TCEQ-0625) that you may use to deed record the approved WPAP is enclosed.
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6. Modification to the activities described in the referenced WPAP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
7. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person. The executive director will use the notification to determine if the approved plan is eligible for an extension.
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<u>During Construction:</u>

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, 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 San Antonio Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.
13. One well exists on site. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.

14. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
15. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
16. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
17. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

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

18. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the San Antonio Regional Office within 30 days of site completion.
19. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. The regulated entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.
20. 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.
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22. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aqnifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Monica Reyes of the Edwards Aquifer Protection Program of the San Antonio Regional Office at (210) 403-4012.

Sincerely,

Lynn Bumguardner, Water Section Manager
San Antonio Region Office
Texas Commission on Environmental Quality

LB/MR/eg

Enclosure: Deed Recordation Affidavit, Form TCEQ-0625

cc: Mr. Arnoldo D. Martinez, P.E., HMT Engineering & Surveying
Mr. Thomas H. Hornseth, P.E., Comal County
Mr. James C. Klein, P.E., City of New Braunfels
Mr. Roland Ruiz, General Manager, Edwards Aquifer Authority
TCEQ Central Records, Building F, MC 212

TCEQ
Protecting Texas by Reducing and Preventing Pollution

F A X T R A N S M I T T A L

DATE: **February 2, 2015**

NUMBER OF PAGES *(including this cover sheet):* **2**

TO: Name **Mr. Bryan Kastleman**
Organization **River Retreat 1228 LLC**
FAX Number **bkastle@kastleman.com**

TO: Name **Mr. Arnolodo D. Martinez Jr., P.E.**
Organization **HMT Engineering & Surveying**
FAX Number **(830)625-8556**

FROM: TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
Name **Monica Reyes**
Division/Region **EAPP/San Antonio**
Telephone Number **210-403-4012**
FAX Number **210-545-4329**

RECEIVED
FEB 23 2015
COUNTY ENGINEER

NOTES:

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: Ervendberg Condos; Located at 1228 Ervendberg Avenue; New Braunfels, Texas.

TYPE OF PLAN: Request for Approval of a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Investigation No. 1215585; Regulated Entity No. RN107885618; Additional ID No. 13-14121201

RECEIVED TCEQ SAN ANTONIO REGION 2015 FEB 26 AM 11:00

Dear Mr. Kastleman:

We are in the process of technically reviewing the WPAP application you submitted for the above-referenced project. Before we can proceed with our review, the following comments relating to the application must be addressed:

Geologic Assessment comments:
1. Item #11, please indicate status of well.
2. GA map shows a fault, please add to table.

Water Pollution Abatement Application comments:
1. Attachment A; all pollutants from the construction equipment, trash and debris.

2. Item #4, impervious cover percent is 18.65% not 18.63%, please correct.
3. Item #22, add approximate slope for vegetative area draining to river. Please show on sheet 11 of 11.

Temporary Stormwater Section Comments:
1. Attachment A, missing TCEQ website.
2. Attachment G, should be WPAP not SCS.
3. Attachment I, add additional guidelines found in the Technical Guidance Mannual2005, for silt fence, in-let protection, construction entrance/exit, and concrete wash-out pit.

We ask that you submit **one original and four copies** of the amended materials to supplement the WPAP application to this office by no later than **14 days from the date of this fax** to avoid denial of the plan. If the response to this notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, a second notice will be sent to you requiring a response within 14 days from the notice date. If the response to the second is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, the application will be denied unless you provide written notification that the application is being withdrawn. Please note that the application fee will be forfeited if the plan is not withdrawn. If you have any questions or require additional information, please contact Monica Reyes of the Edwards Aquifer Protection Program of the San Antonio Regional Office at the number listed above.

6. Method of collecting positional data:
   - X Global Positioning System (GPS) technology.
   - __ Other method(s).

7. X The project site is shown and labeled on the Site Geologic Map.

8. X Surface geologic units are shown and labeled on the Site Geologic Map.

9. X 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.

10. X The Recharge Zone boundary is shown and labeled, if appropriate.

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

   X There are 1 wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
   - __ The wells are not in use and have been properly abandoned.
   - __ The wells are not in use and will be properly abandoned.
   - X 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.

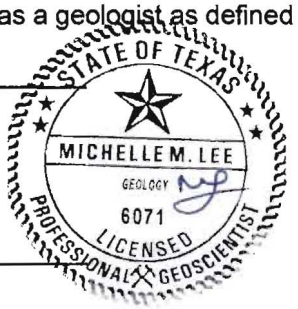
ADMINISTRATIVE INFORMATION

12. X 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.

Date(s) Geologic Assessment was performed: November4, 2013
Date(s)

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.

Michelle M. Lee, P.G.
Print Name of Geologist



210.831.6454
Telephone

—
Fax

Michelle M. Lee
Signature of Geologist

February 13, 2015
Date

Representing: HMT Surveying & Engineering
(Name of Company)

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

LEGEND:

- ● = FND IRON PIN
- = BARBWIRE FENCE
- = OVERHEAD ELECTRIC
- = POWER POLE
- Ⓦ = S-1
- KeK = EDWARDS LIMESTONE KAINER MEMBER
- EARZ BOUNDARY NOT ON SITE
- BoB = BOERNE FINE SANDY LOAM, 1-3% SLOPE
- OK = OAKALLA SILTY CLAY, 0-2% SLOPE
- = FAULT

0 10 20 40
SCALE: 1" = 20'

STATE OF TEXAS
MICHELLE M. LEE
6071
LICENSED
ENVIRONMENTAL GEOLOGIST
February 13, 2015

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24- HOURS PRIOR TO COMMENCING CONSTRUCTION.

410 N. SEGUIN AVE.
NEW BRAUNFELS, TEXAS 78130
PH: (830)625-8555
FAX: (830)625-8556
www.HMTNB.com
TBPE FIRM F-10961

HMT ENGINEERING & SURVEYING

GEOLOGIC MAP

CIVIL SITE CONSTRUCTION PLANS

ERVENDBERG CONDOS

RIVER RETREAT 1228 L.L.C.
2714 BEE CAVE RD #204
AUSTIN, TEXAS 78748

DATE: NOVEMBER, 2014
DRAWN BY: JAD
DESIGNED BY: AM
CHECKED BY: SCH
REVIEWED BY: SMH
PROJECT NO.: 072.003.103

SHEET 1 OF 1

Drawing Name: N:_Projects\072 - Kostlemon & Associates, Inc\072.003 - Ervendberg Condos\072.003.103 - TCEQ & SCS Combo\WPAP\Geologic Assessment\072.003.101_Geologist Exhibits.dwg User: cmoldm Feb 14, 2015 - 2:17pm

WATER POLLUTION ABATEMENT PLAN
ATTACHMENT A
Factors Affecting Water Quality

The Ervendberg Condos includes the construction of 130.51 L.F. of 8" gravity wastewater line, a lift station with 157.84 L.F. of 2" force main, a parking lot, sidewalk, and 15 condominium units. The factor affecting water quality is runoff sediment transport from the trench and construction work being performed, and all pollutants from the construction equipment, trash and debris. However, the plans include temporary BMP measures to insure water quality is not impaired by construction.

Water Pollution Abatement Plan Application
for Regulated Activities
on the Edwards Aquifer Recharge Zone
and Relating to 30 TAC §213.5(b), Effective June 1, 1999

REGULATED ENTITY NAME: Ervendberg Condos

REGULATED ENTITY INFORMATION

1. The type of project is:
   __ Residential: # of Lots: ____
   _X_ Residential: # of Living Unit Equivalents: 15
   __ Commercial
   __ Industrial
   __ Other: _____

2. Total site acreage (size of property): 2.30

3. Projected population: 38

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	5,263.64	÷ 43,560 =	0.121
Parking	11,721.55	÷ 43,560 =	0.269
Other paved surfaces	1,691.92	÷ 43,560 =	0.039
Total Impervious Cover	18,677.11	÷ 43,560 =	0.429
Total Impervious Cover ÷ Total Acreage x 100 =			18.65%

5. _X_ **ATTACHMENT A - Factors Affecting Water Quality.** A description of any factors that could affect surface water and groundwater quality is provided at the end of this form.

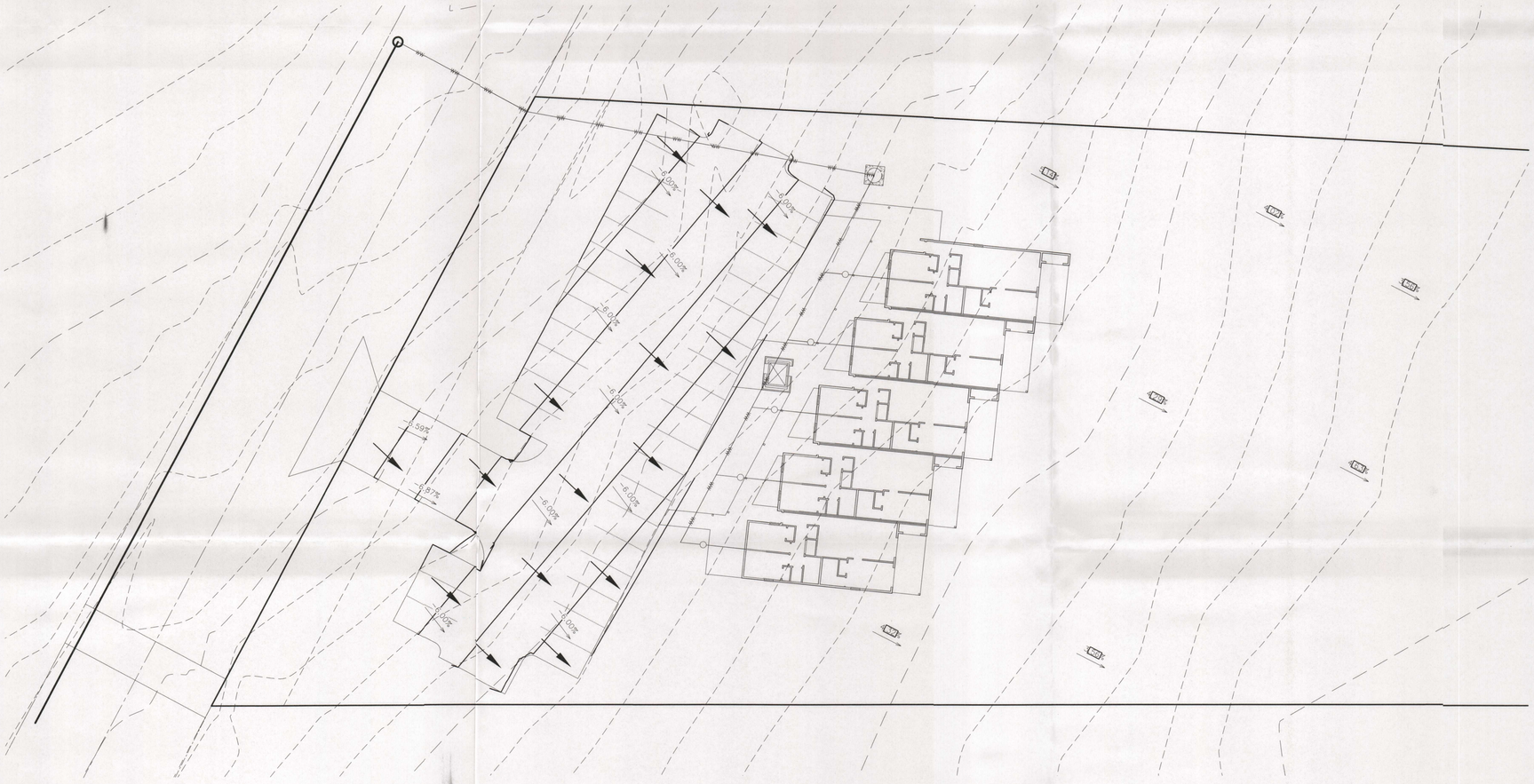
6. _X_ Only inert materials as defined by 30 TAC §330.2 will be used as fill material.

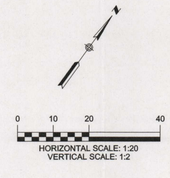
FOR ROAD PROJECTS ONLY
Complete questions 7-12 if this application is exclusively for a road project.

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: _____

Table 2 - Ervendberg Condos Proposed Conditions Hydrology Calculations																
Point of Concentration	Area	Area	"C" Value	T_c	I_2	I_{10}	I_{25}	I_{100}	K_2	K_{10}	K_{25}	K_{100}	Q_2	Q_{10}	Q_{25}	Q_{100}
A1	Pr-DA1	2.30	0.46	12	4.56	6.89	8.25	10.81	1.00	1.00	1.10	1.25	4.84	7.32	9.64	14.35





LEGEND

- 700 — EXISTING CONTOURS
- 700 — PROPOSED CONTOURS
- B.L. BUILDING SETBACK LINE
- U.E. UTILITY EASEMENT
- D.E. DRAINAGE EASEMENT
- (A) LOT GRADING SEE DETAILS SHEET 9
- DRAINAGE FLOW DIRECTION

NOTES:

1. DRAINAGE IMPROVEMENTS SUFFICIENT TO MITIGATE OFFSITE IMPACT OF CONSTRUCTION MUST BE COMPLETED AND IN PLACE PRIOR TO ADDING IMPERVIOUS COVER TO THE SITE.
2. ALL FINISHED FLOOR ELEVATIONS SHALL MEET THE FOLLOWING REQUIREMENTS:
   - 2.A. PER NOTE 10 ON PLAT SHEET **XX**.
   - 2.B. HUD DETAILS SHOWN ON SHEET **XX**.

EARTHWORK VOLUMES	
EXCAVATION & EMBANKMENT	VOLUME (CY)
CUT	0
FILL	0
NET	0 [CUT]

		Proposed			
Watershed -	Pr-DA1		2.3 Acres		
Time of Concentration	A1				
				hrs	min.
Sheet Flow	L (ft) =	75	Tt=	$.007(n*L)^{0.8}/P_2{}^{0.5}xS^{0.5}$	
	n=	0.1			
	S (%) =	4.67			
	P_2=	3.52	Tt=	0.06	3.8
Shallow Flow	L (ft) =	542	Tt=	(L*n)/(60*S^(0.5))	
	S (%) =	4.43	Tt=		
	n=	0.2			
			Tt=		8.58
Channel Flow	L (ft) =	0			
	Est. V (ft/sec)=	3.4	V (fps) =	3.40	
			Tt=	L/(60*V)	
			Tt=	0.00	0.0
TC =	12	min.		min	

I=	I=b/(TC+d)^e			
	2-year	10-year	25-year	100-year
b	71.5	71.9	79.5	95.1
d	13.09	8.69	8.01	7.17
e	0.85	0.77	0.751	0.731
I (in/hr)=	4.56	6.89	8.25	10.81
K=	1.00	1.00	1.10	1.25
"C" Value		0.46		
	2-year	10-year	25-year	100-year
Q (cfs)=	4.84	7.32	9.64	14.35

Weighted Runoff Coefficient		Area	
	"C"	(SF)	(AC)
Total Area		100188.00	2.30
Average Pasture/Range	0.38	81510.89	1.87
Asphaltic	0.81	11721.55	0.27
Concrete/Roof	0.83	6855.56	0.16
		C=	0.4615

REFER TO THE COVER SHEET FOR BENCHMARK INFORMATION.

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24– HOURS PRIOR TO COMMENCING CONSTRUCTION.

410 N. SEGUIN AVE.
NEW BRAUNFELS,
TEXAS 78130
PH: (830)625–8555
FAX: (830)625–8556
www.HMTNB.com
TBPE FIRM F–10961

HMT ENGINEERING & SURVEYING

STATE OF TEXAS
ARNOLDO MARTINEZ,JR
91894
LICENSED PROFESSIONAL ENGINEER
02–13–15

GRADING PLAN

CIVIL SITE CONSTRUCTION PLANS

ERVENDBERG CONDOS

RIVER RETREAT 1228 L.L.C.
2714 BEE CAVE RD #204
AUSTIN, TEXAS 78748

DATE: NOVEMBER, 2014
DRAWN BY:
DESIGNED BY:
CHECKED BY:
REVIEWED BY:
PROJECT NO.: 072.003.103

SHEET 11 OF 11

TEMPORARY STORMWATER SECTION
ATTACHMENT A
Spill Response Actions

Contractor to notify all appropriate authorities if more than 25 gallons of hydrocarbons are spilled. The construction plans include the required notes regarding appropriate spill response actions as directed by TECQ. There will be no temporary storage vessels of fuel or hydrocarbons to be stored on site.

If spills of any hydrocarbons occur, construction must contain spills by immediate action. Earthen materials must be kept readily available to provide a Dike. Sand should be used to help soak fuels. Property disposal of any materials used will be required.

Contractor must promote job site awareness to all employees involved. All employees must be made aware of the provisions in this report.

Spill Prevention and Control

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, 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 runoff during rainfall to the extent that it doesn't compromise cleanup activities.

(7) Do not bury or wash spills with water.

(8) Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.

(9) Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with applicable regulations.

(10) Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.

(11) Place Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.

(12) Keep waste storage areas clean, well-organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function

Clean up

(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 BMP's 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:

(a) Contain the spread of the spill.

(b) Recover spilled materials.

(c) 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 the 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. http://www.tceq.state.tx.us/

(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 of Police Department, County Sheriff Office, Fire Departments, etc.

More information on spill rules and appropriate responses is available on the TCEQ website at:

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 runon 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 allows 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 not 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 runon 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.

TEMPORARY STORMWATER SECTION
ATTACHMENT G
Drainage Area Map

The Existing Drainage Area Map and Proposed Drainage Area Map can be found on sheets 10 and 11, respectively, of the Ervendberg Condos WPAP Submittal Civil Site Construction Plans.

TEMPORARY STORMWATER SECTION
ATTACHMENT I
Inspection and Maintenance of BMPs

The Contractor will be directed to inspect and maintain all temporary BMPs. The design engineer will also make regular visits to the project and will provide visual inspections as well. Any deficiency noted must be corrected immediately by the contractor.

Maintenance:

1. Inspect all silt fence, concrete wash out areas, and stabilized concrete entrances and exits weekly and after any rainfalls. Inspect the filter curb inlet protection daily.
2. Remove sediment when buildup reaches 6 inches on silt fences or install a second line of silt fence parallel. Remove sediment when buildup reaches 2 inches in filter curb inlet protection.
3. Replace any torn fabric in the silt fence or filter curb inlet protection.
4. Replace or repair any sections crushed or collapsed in the course of construction.
5. See stormwater pollution plan details as shown in the construction plans for proper size and installation.
6. Contractor to maintain a daily log and note any deficiencies to temporary BMPs and corrective action taken. Rainfall events shall also be noted.

Temporary Construction Entrance

Inspection and Maintenance Guidelines:

(1) 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.

Silt Fencing

Inspection and Maintenance Guidelines:

(1) Inspect all fencing weekly, and after any rainfall.

(2) Remove sediment when buildup reaches 6 inches.

(3) Replace any torn fabric or install a second line of fencing parallel to the torn section.

(4) 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.

In-let Protection

Inspection and Maintenance Guidelines:

(1) Inspection should be made weekly and after each rainfall. Repair or replacement should be made promptly as needed by the contractor.

(2) Remove sediment when buildup reaches a depth of 3 inches. Removed sediment should be deposited in a suitable area and in such a manner that it will not erode.

(3) Check placement of device to prevent gaps between device and curb.

(4) Inspect filter fabric and patch or replace if torn or missing.

(5) Structures should be removed and the area stabilized only after the remaining drainage area has been properly stabilized.

Concrete Washout Areas

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

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

For onsite washout:

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

HMT
ENGINEERING & SURVEYING

LETTER OF TRANSMITTAL

ATTN: Monica Reyes	DATE: 3/16/15
To: TCEQ	RE: Ervendberg Condos

WE ARE SENDING YOU
- ☐ attached
- ☐ under separate cover the following:
- ☐ shop drawings
- ☐ prints
- ☐ standards
- ☐ specifications
- ■ plans
- ☐ copy of letter
- ☐ ordinance
- ☐ other:

COPIES	ITEM	DESCRIPTION
1	Response Letter Original	For Ervendberb Condos

THESE ARE TRANSMITTED AS CHECKED BELOW:
- ☐ for approval
- ☐ approved as submitted
- ☐ resubmit
- ☐ copies for approval
- ☐ for your use
- ☐ approved as noted
- ☐ submit
- ☐ copies for distribution
- ☐ as requested
- ☐ returned for corrections
- ☐ return
- ☐ corrected prints
- ☐ for review and comment
- ☐ other:

RECEIVED
MAR 24 2015
COUNTY ENGINEER

RECEIVED TCEQ
SAN ANTONIO REGION
2015 MAR 16 PM 4:57

3/16/15

Received: _____

HMT
ENGINEERING & SURVEYING

410 N. Seguin Ave.
New Braunfels, TX 78130
HMTNB.COM
830.625.8555 • FAX: 830.625.8556
TBPE FIRM F-10961

March 4, 2015

Monica Reyes
Edward Aquifer Protection Program
TCEQ-San Antonio Region
Phone (Direct): (210) 403-4012
Phone (Office): (210) 490-3096
Fax: (210) 545-4329
Monica.reyes@tceq.texas.gov

RE: Edwards Aquifer, Comal County

NAME OF PROJECT: Ervendberg Condos; Location at 1228 Ervendberg Avenue; New braunfels, Texas

TYPE OF PLAN: Request for approval of a Water Pollution Abatement Plan (WPAP); 30 Texas Administration Code (TAC) Chapter 213 Edwards Aquifer

Investigation No. 1215585; regulated Entity No. RN107885618; Additional ID No. 13-14121201

Ms. Reyes,

No faults were observed or inferred at the site after performing the site reconnaissance and review of the Bureau of Economic Geology Geologic Atlas San Antonio sheet. The thick line on the Geologic Map located near Ervenberg Ave represents the contact boundary between two different surficial soil types as noted in the map legend.

If you have any question please call or email me at the office.

Thanks,

Arnold Martinez, PE
Project Manager

Attachment

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

December 12, 2014

RECEIVED

DEC 15 2014

COUNTY ENGINEER

Mr. Thomas H. Hornseth, P.E.
Comal County Engineer
195 David Jonas Drive
New Braunfels TX 78132-3710

Re: Edwards Aquifer, Comal County
PROJECT NAME: Ervendberg Condos, located on the northeast side of Ervendberg Avenue between Gruene Road and Mary Preiss Drive, New Braunfels, Texas

PLAN TYPE: Application for Approval of Water Pollution Abatement Plan (WPAP) 30 Texas Administration Code (TAC) Chapter 213; Edwards Aquifer Protection Program
EAPP Additional ID: 13-14121201

Dear Mr. Hornseth:

The referenced application is being forwarded to you pursuant to the Edwards Aquifer Rules. The Texas Commission on Environmental Quality (TCEQ) is required by 30 TAC Chapter 213 to provide copies of all applications to affected incorporated cities and underground water conservation districts for their comments prior to TCEQ approval. More information regarding this project may be obtained from the TCEQ Central Registry website at http://www.tceq.state.tx.us/permitting/central_registry/.

Please forward your comments to this office by January 12, 2015.

The Texas Commission on Environmental Quality appreciates your assistance in this matter and your compliance efforts to ensure protection of the State's environment. If you or members of your staff have any questions regarding these matters, please feel free to contact the San Antonio Region Office at (210) 490-3096.

Sincerely

Todd Jones
Water Section Work Leader
San Antonio Regional Office

TJ/eg

Ervendberg Condos

A distinguished project by:

River Retreat 1228 LLC

Water Pollution Abatement Plan Report

New Braunfels, Texas
Submitted November 2014

Prepared by:

HMT
ENGINEERING & SURVEYING

410 N. Seguin Ave.
New Braunfels, TX 78130
HMTNB.COM
830.625.8555 • FAX: 830.625.8556
TBPE FIRM F-10961

HMT
ENGINEERING & SURVEYING

RECEIVED

DEC 15 2014

COUNTY ENGINEER

General Information Form
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

REGULATED ENTITY NAME: Ervendberg Condos
COUNTY: Comal County STREAM BASIN: Guadalupe River

EDWARDS AQUIFER: _X_ RECHARGE ZONE
__ TRANSITION ZONE

PLAN TYPE: _X_ WPAP __ AST __ EXCEPTION
___ SCS __ UST __ MODIFICATION

CUSTOMER INFORMATION

1. Customer (Applicant):

Contact Person: Bryan Kastleman
Entity: River Retreat 1228 LLC
Mailing Address: 2714 Bee Cave Road #204
City, State: Austin, Texas Zip: 78748
Telephone: 512-750-2714 FAX:

Agent/Representative (If any):

Contact Person: Arnoldo D Martinez Jr., PE
Entity: HMT Engineering & Surveying
Mailing Address: 410 N. Seguin Ave.
City, State: New Braunfels, Texas Zip: 78130
Telephone: 830-625-8555 FAX: 830-625-8556

2. _X_ This project is inside the city limits of New Braunfels, Texas.
__ This project is outside the city limits but inside the ETJ (extra-territorial jurisdiction) of _____.
__ This project is not located within any city's limits or ETJ.

3. 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.

Beginning at TCEQ San Antonio regional office, head south on Judson Road towards Villa Camino, turn left onto I-35 Frontage Road, take the ramp on the left onto I-35 North. Take exit 184 toward TX-337 Loop/Farm to Market Rd 482/Rueckle Rd, merge onto I-35 Frontage Road, turn left onto TX-337 Loop N/S Rueckle Rd, take the Rock Street exit, and turn left onto Rock Street. Take a slight left onto Gruene Road, then the first left onto Ervendberg Avenue, 1228 Ervendberg will be on the right.

4. _X_ **ATTACHMENT A - ROAD MAP**. A road map showing directions to and the location of the project site is attached at the end of this form.

5. _X_ **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 behind this sheet. The map(s) should clearly show:

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

6. X 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. **The TCEQ must be able to inspect the project site or the application will be returned.**

7. x **ATTACHMENT C - PROJECT DESCRIPTION**. Attached at the end of this form is a detailed narrative description of the proposed project.

8. Existing project site conditions are noted below:

__ Existing commercial site
__ Existing industrial site
X Existing residential site
__ Existing paved and/or unpaved roads
__ Undeveloped (Cleared)
__ Undeveloped (Undisturbed/Uncleared)
__ Other: _____

PROHIBITED ACTIVITIES

9. X 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).

10. __ I am aware that the following activities are prohibited on the **Transition Zone** and are not proposed for this project:

(1) waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground Injection Control);
(2) land disposal of Class I wastes, as defined in 30 TAC §335.1; and
(3) new municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41 (b), (c), and (d) of this title.

ADMINISTRATIVE INFORMATION

11. The fee for the plan(s) is based on:

_X_ For a Water Pollution Abatement Plan and Modifications, the total acreage of the site where regulated activities will occur.

_X_ For an Organized Sewage Collection System Plans and Modifications, the total linear footage of all collection system lines.

__ For a UST Facility Plan or an AST Facility Plan, 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.

12. Application fees are due and payable at the time the application is filed. If the correct fee is not submitted, the TCEQ is not required to consider the application until the correct fee is submitted. Both the fee and the Edwards Aquifer Fee Form have been sent to the Commission's:

__ TCEQ cashier

__ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)

_X_ San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

13. _X_ 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.

14. _X_ 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.

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:

Arnoldo D Martinez Jr., PE
Print Name of Customer/Agent

Signature of Customer/Agent

12-3-14
Date

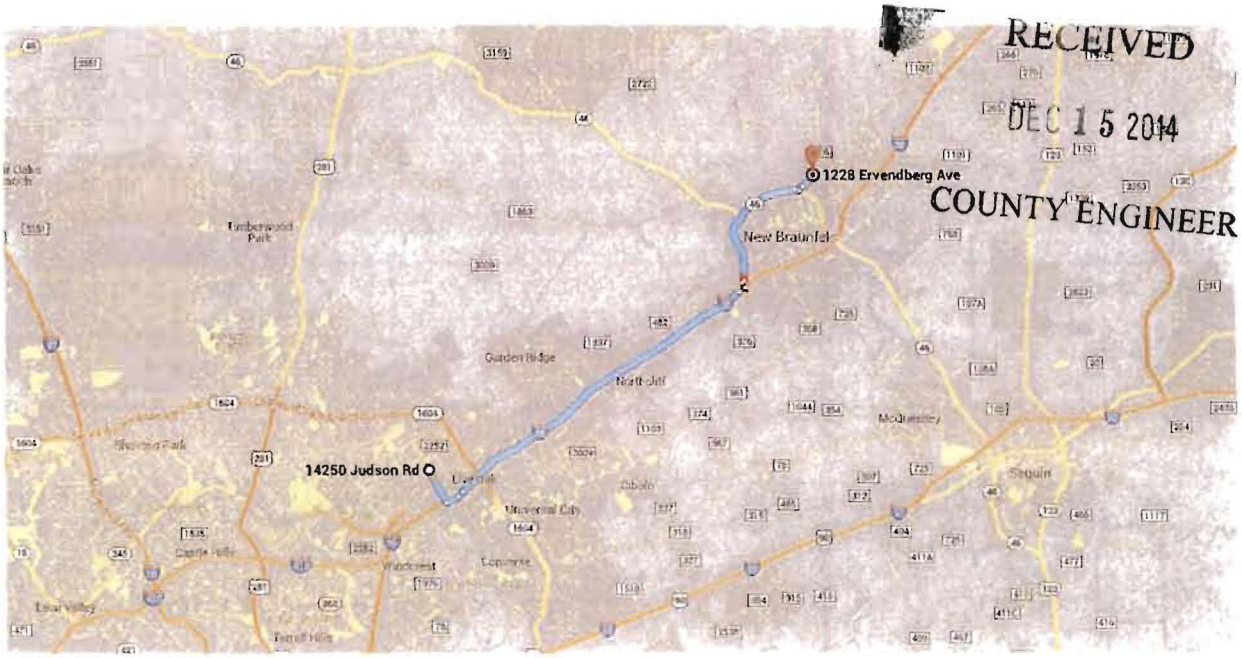
If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

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.

Google

Drive 22.9 miles, 27 min

Directions from 14250 Judson Rd to 1228 Ervendberg Ave

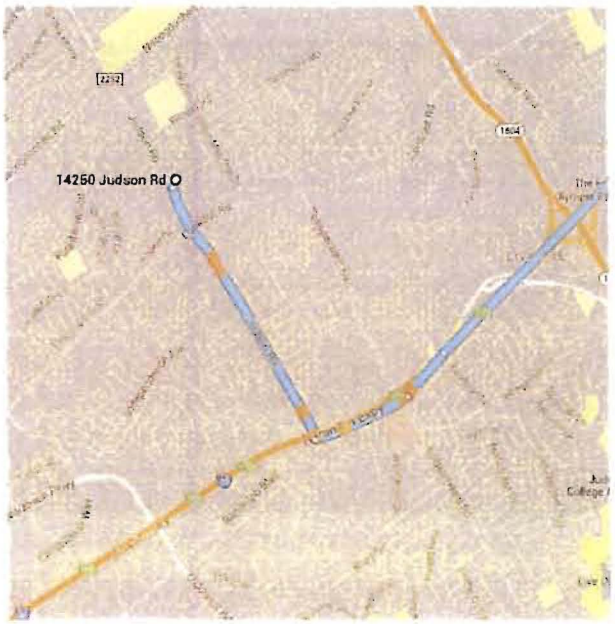


14250 Judson Rd

San Antonio, TX 78233

Get on I-35 N in Live Oak

2.3 mi / 4 min



1. Head south on Judson Rd toward Villa Camino

   1.5 mi

2. Turn left onto Interstate 35 Frontage Rd

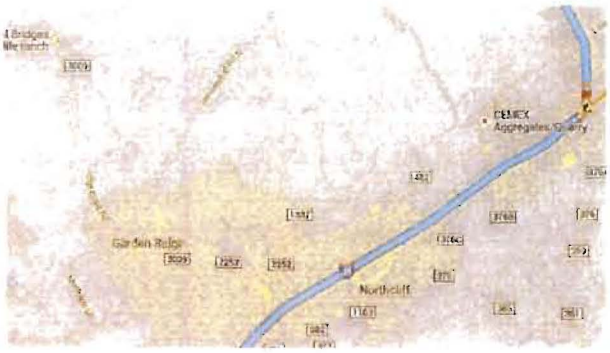
   0.5 mi

3. Take the ramp on the left onto I-35 N

   0.3 mi

Follow I-35 N to Interstate 35 Frontage Rd in New Braunfels. Take exit 184 from I-35 N

13.8 mi / 12 min

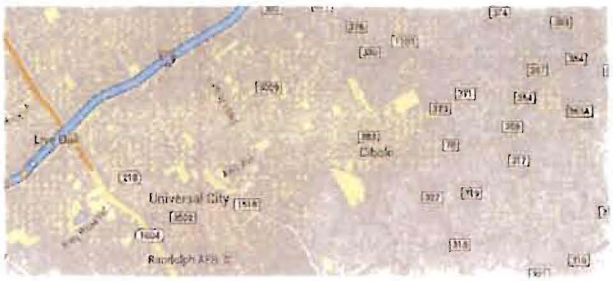


4. Merge onto I-35 N

   13.7 mi

5. Take exit 184 toward TX-337 Loop/Farm to Market Rd 482/Rueckle Rd

0.1 mi



Take TX-337 Loop N to Ervendberg Ave

6.8 mi / 11 min

6. Merge onto Interstate 35 Frontage Rd

0.2 mi

7. Turn left onto TX-337 Loop N/S Rueckle Rd

Continue to follow TX-337 Loop N

5.6 mi

8. Take the Rock St exit

0.1 mi

9. Turn left onto Rock St

0.3 mi

10. Slight left onto Gruene Rd

0.5 mi

11. Take the 1st left onto Ervendberg Ave

Destination will be on the right

0.1 mi

1228 Ervendberg Ave

New Braunfels, TX 78130

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

NEW BRAUNFELS EAST QUADRANGLE
TEXAS
7.5 MINUTE SERIES (TOPOGRAPHIC)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

RECEIVED
DEC 16 2014
COUNTY ENGINEER

NEW BRAUNFELS EAST, TEX.
29086-F1-TF-024
1958
REVISED 1994
DMA 5341 IV NE-SERIES V882

SITE

RECHARGE ZONE

TRANSITION ZONE

Produced by the United States Geological Survey in cooperation with the Defense Mapping Agency

FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225 OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

GENERAL INFORMATION FORM
ATTACHMENT C
Project Description

The proposed Ervendburg Condos project is located at 1228 Ervendburg Avenue, New Braunfels, Texas. The site is covers a total of 2.30 acres. This area includes an existing residential structure with the remainder of the area being undisturbed/undeveloped. The site is currently located in the City of New Braunfels, TX.

The site currently has one residential structure and a driveway. The proposed Ervendburg Condos site includes the construction of 130.51 L.F. of 8" gravity wastewater line, a lift station with 157.84 L.F. of 2" force main, a parking lot, sidewalk, and 15 condominium units. The existing impervious cover is 0.05 acres and the proposed conditions the impervious cover is 0.43 acres or 18.63% at full development of the site. This project is solely a road project and therefore sewer or septic is needed. The roadway project will be constructed in one phase.

River Retreat 1228 LLC is requesting a waiver for permanent BMPs because the proposed site will have less than 20% impervious cover.

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

REGULATED ENTITY NAME: Ervendberg Condos

TYPE OF PROJECT: _X_ WPAP __ AST _X_ SCS __ UST

LOCATION OF PROJECT: _X_ Recharge Zone __ Transition Zone __ Contributing Zone within the Transition Zone

PROJECT INFORMATION

1. _X_ Geologic or manmade features are described and evaluated using the attached **GEOLOGIC ASSESSMENT TABLE**.

2. 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 Units, Infiltration Characteristics & Thickness		
Soil Name	Group*	Thickness (feet)
BoB – Boerne fine sandy loam	D	<1' - 2'
Ok – Oakalla silty clay loam	D	<1' – 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.

3. _X_ A **STRATIGRAPHIC COLUMN** is attached at the end of this form that shows formations, members, and thicknesses. The outcropping unit should be at the top of the stratigraphic column.

4. _X_ A **NARRATIVE DESCRIPTION OF SITE SPECIFIC GEOLOGY** is attached at the end of this form. The description must include a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure, and karst characteristics of the site.

5. _X_ Appropriate **SITE GEOLOGIC MAP(S)** are attached:

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" = 20'
Site Geologic Map Scale	1" = 20'
Site Soils Map Scale (if more than 1 soil type)	1" = 20'

6. Method of collecting positional data:
   - X Global Positioning System (GPS) technology.
   - __ Other method(s).

7. X The project site is shown and labeled on the Site Geologic Map.

8. X Surface geologic units are shown and labeled on the Site Geologic Map.

9. X 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.

10. X The Recharge Zone boundary is shown and labeled, if appropriate.

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

   X There are 1 wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
   - __ The wells are not in use and have been properly abandoned.
   - __ The wells are not in use and will be properly abandoned.
   - __ The wells are in use and comply with 16 TAC Chapter 76.

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

ADMINISTRATIVE INFORMATION

12. X 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.

Date(s) Geologic Assessment was performed: November4, 2013
Date(s)

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.

Michelle M. Lee, P.G.
Print Name of Geologist

210.831.6454
Telephone

—
Fax

Michelle M. Lee
Signature of Geologist

November 17, 2014
Date

Representing: HMT Surveying & Engineering
(Name of Company)

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.

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: 1228 Ervendberg Ave., New Braunfels, Texas

LOCATION			FEATURE CHARACTERISTICS											EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11	12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)	TOPOGRAPHY
						X	Y	Z		10						<40	>40	<1.6	>1.6	
S-1	29.73740	98.10890	MB	30	Ked	?	?	?	none					5	35	X			X	HILLSIDE
															0					
															0					
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* DATUM: NAD 83

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

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

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

I have read, I 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.

STATE OF TEXAS
MICHELLE M. LEE
GEOLOGY
6071
LICENSED
PROFESSIONAL GEOSCIENTIST

Michelle M. Lee

Date November 17, 2014

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

GEOLOGIC ASSESSMENT

For:

Sewer Collection System

For:

River Front Property
1228 Ervenberg Rd
New Braunfels, Comal County, Texas

Prepared for:

HMT Engineering and Surveying
410 N. Seguin Avenue
New Braunfels, Texas 78130

November 17, 2014

Prepared by:
Michelle M. Lee, P.G.
Job No. 09-002

Michelle M. Lee
November 17, 2014

RIVER FRONT PROPERTY

1228 ERVENBERG AVE.

NEW BRAUNFELS, COMAL COUNTY, TEXAS

Hydrogeologic subdivision			Group formation or member			Hydrologic Function	Thickness (feet)	Lithology	Cavern development	Porosity / permeability type
Upper Cretaceous	Upper confining units		Buda Formation			CU	40-50	Buff, light gray, dense mudstone	Minor surface karst	Low porosity /low permeability
			Del Rio Clay			CU	40-50	Blue-green to yellow-brown clay	None	None / primary upper confining unit
Lower Cretaceous	I		Georgetown Formation			Karst AQ; not karst CU		Reddish-brown, gray to light tan marly limestone	None	Low porosity / low permeability
	II	Edwards Aquifer	Edwards Group	Person Fm	Cyclic & marine members undivided	AQ	89-90	Mudstone to packstone; miliolid grainstone; chert	Many sub-surface	Laterally extensive; water yielding
	III				Leached & collapsed members	AQ	70-90	Crystalline limestone; mudstone to grainstone; chert collapsed breccia	Extensive lateral development; large rooms	Majority not fabric / one of the most permeable
	IV				Regional dense members	CU	20-24	Dense, argillaceous mudstone	Very few; only vertical fracture enlargement	Not fabric / low permeability; vertical barrier
	V			Kainer Fm	Grainstone member	AQ	50-60	Miliolid grainstone; mudstone to wackestone; chert	Few	Not fabric / recrystallization reduces permeability
	VI				Kirschberg evaporite member	AQ	50-60	Highly altered crystalline limestone; chalky mudstone; chert	Probably extensive cave development	Majority fabric / one of the most permeable
	VII				Dolomitic member	AQ	110-130	Mudstone to grainstone; crystalline limestone; chert	Caves related to structure or bedding planes	Mostly not fabric; some bedding plane fabric / water-yielding
	VIII				Basal nodular member	Karst AQ; not karst CU	50-60	Shaly, nodular limestone; mudstone and miliolid grainstone	Large lateral caves at surface	Fabric; stratigraphically controlled/ large conduit flow at surface; no permeability in subsurface
	Lower confining unit		Upper member of the Glen Rose Limestone			CU; evaporite beds AQ	350-500	Yellowish tan, thinly bedded limestone and marl	Some surface cave development	Some water production at evaporite beds / relatively impermeable

Reference: U.S.G.S. Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Recharge Zone, Bexar County, Texas; Water-Resources Investigations Report 95-4030

Note: CU = Confining Unit; AQ = Aquifer

Indicates Mapped Surface Formation

SOIL NARRATIVE

RIVER FRONT PROPERTY
1228 ERVENBERG, RD
NEW BRAUNFELS, COMAL COUNTY, TEXAS

In accordance with the United States Department of Agriculture (USDA) Web Soil Survey, native surficial soils at the site during field reconnaissance belong to the BoB – Boerne fine sandy loam, 1 to 3 percent slopes & Ok – Oakalla silty clay loam, 0 to 2 percent slopes. The site has been cleared and landscaped. Native limestone outcrops were observed along the eastern perimeter of the site along the Guadalupe River.

BoB – Boerne Fine sandy loam, 1 – 3% slopes

- *Slope: 1 to 3 percent*
- *Depth to restrictive feature: More than 80 inches*
- *Natural drainage class: Well drained*
- *Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)*
- *Depth to water table: More than 80 inches*
- *Frequency of flooding: Rare*
- *Frequency of ponding: None*
- *Calcium carbonate, maximum in profile: 75 percent*
- *Available water storage in profile: Moderate (about 7.6 inches)*

Ok – Oakalla silty clay loam, 0 – 2% slopes

- *Slope: 0 to 2 percent*
- *Depth to restrictive feature: More than 80 inches*
- *Natural drainage class: Well drained*
- *Runoff class: Negligible*
- *Capacity of the most limiting layer to transmit water (Ksat):Moderately high to high (0.20 to 1.98 in/hr)*
- *Depth to water table: More than 80 inches*
- *Frequency of flooding: Frequent*
- *Frequency of ponding: None*
- *Calcium carbonate, maximum in profile: 60 percent*
- *Salinity, maximum in profile: Nonsaline (0.0 to 2.0 mmhos/cm)*
- *Available water storage in profile: Moderate (about 8.8 inches)*

SITE SPECIFIC GEOLOGY NARRATIVE

RIVER FRONT PROPERTY
1228 ERVENBERG, RD
NEW BRAUNFELS, COMAL COUNTY, TEXAS

Introduction
A Geologic Assessment (GA) was performed for the above-referenced site on November 4, 2013 by Michelle M. Lee, P.G. #6071. The GA was performed in accordance with the Texas Commission on Environmental Quality (TCEQ) *Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones, TCEQ-0585-Instructions (Rev. 10-01-04).* One potential recharge feature (S-1), as defined by TCEQ-0585, was observed on the surface of the ~6.1 acre Site at the time of this assessment. The feature observed during field reconnaissance was a water well which was in use and appeared to be in compliance with 16 TAC Chapter 76 and determined to be not sensitive.

Background
The proposed project area is located within a rural area of northern New Braunfels. The project area is situated on a hillside sloping generally to the south-southeast. The property has been selectively cleared in the past in the central portion of the site and covered with limestone fill material that appears to be from the Edwards Formation. The origin of the fill is unknown but is assumed to be from on site. There are several buildings and areas of pavement on the western portion of the property.

The fill material appears thickest along the drive way and central area. This material does not cover the entire surface of the site but mostly the eastern two-thirds of the site. Native bedrock outcrops were observed on the western and eastern perimeters of the site.

Stratigraphy
According to the *Geologic Map of the New Braunfels 30 x 60 Minute Quadrangle: Geologic Framework of an Urban-Growth Corridor along the Edwards Aquifer, South-Central Texas (Collins, 2000)*, the subject property is located over the Cretaceous aged Edwards Limestone Formation – Kainer Member (Kek). Native limestone outcrops were sparse but did appear to be in line with published descriptions of the Kainer Formation.

Structure
According to the *Geologic Map of the New Braunfels 30 x 60 Minute Quadrangle: Geologic Framework of an Urban-Growth Corridor along the Edwards Aquifer, South-Central Texas (Collins, 2000)*, there are no mapped structural features on the Site. Visual evidence of faulting was not observed during field reconnaissance.

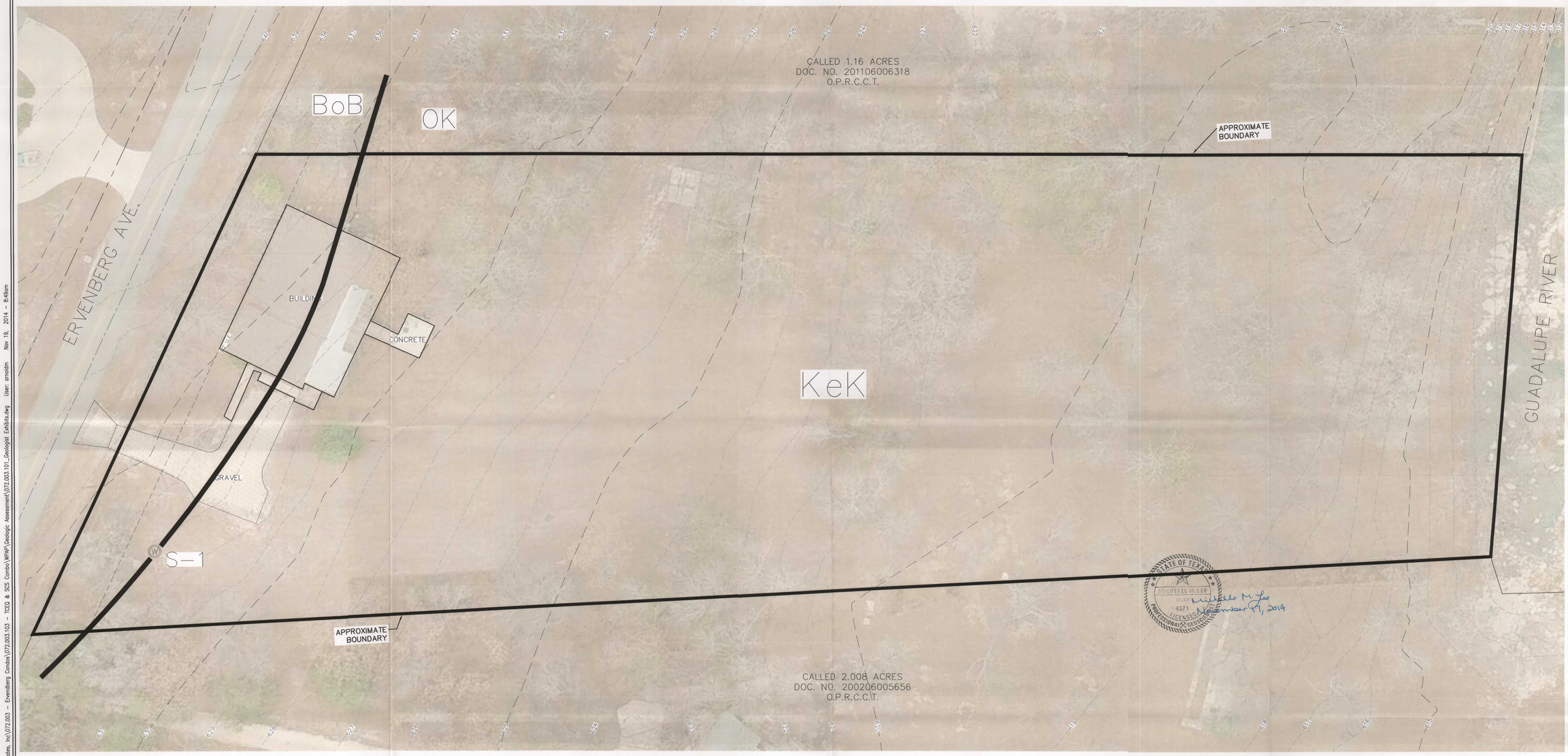
Karstic Characteristics
No karst features were observed on the Site at the time of this assessment.

Features

Man Made Feature in Bedrock

S-1 Water Well Not Sensitive

This feature was observed to be an operating water well located in the far western corner of the Site. The well appears to comply with 16 TAC Chapter 76. Probability of rapid infiltration through this feature is very low.



0 10 20 40
SCALE: 1" = 20'

RECEIVED
DEC 15 2014
COUNTY ENGINEER

LEGEND:

- ● = FND IRON PIN
- = BARBWIRE FENCE
- = OVERHEAD ELECTRIC
- = POWER POLE
- Ⓦ = S-1
- KeK = EDWARDS LIMESTONE KAINER MEMBER
- EARZ BOUNDARY NOT ON SITE
- BoB = BOERNE FINE SANDY LOAM, 1-3% SLOPE
- OK = OAKALLA SILTY CLAY, 0-2% SLOPE

STATE OF TEXAS
MICHELLE M. LEE
97071
LICENSED
PROFESSIONAL GEOSCIENTIST
Michelle M. Lee
November 19, 2014

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24- HOURS PRIOR TO COMMENCING CONSTRUCTION.

410 N. SEGUIN AVE.
NEW BRAUNFELS,
TEXAS 78130
PH:(830)625-8555
FAX:(830)625-8556
www.HMTNB.com
TBPE FIRM F-10961

HMT
ENGINEERING & SURVEYING

GEOLOGIC MAP

CIVIL SITE CONSTRUCTION PLANS

ERVENDBERG CONDOS

RIVER RETREAT 1228 L.L.C.
2714 BEE CAVE RD #204
AUSTIN, TEXAS 78748

DATE:	NOVEMBER, 2014
DRAWN BY:	JAD
DESIGNED BY:	AM
CHECKED BY:	SCH
REVIEWED BY:	SWH
PROJECT NO.:	072.003.103

SHEET 1 OF 1

Drawing Name: N:_Projects\072 - Kostlemon & Associates, Inc\072.003 - Ervendberg Condos\072.003.103 - TCEQ & SOS Comfort WPAP\Geologic Assessment\072.003.101_Geologist Exhibits.dwg Users: amoldm Nov 19, 2014 - 8:49am

Water Pollution Abatement Plan Application
for Regulated Activities
on the Edwards Aquifer Recharge Zone
and Relating to 30 TAC §213.5(b), Effective June 1, 1999

REGULATED ENTITY NAME: Ervendberg Condos

REGULATED ENTITY INFORMATION

1. The type of project is:
   - ___ Residential: # of Lots: ___
   - _X_ Residential: # of Living Unit Equivalents: 15
   - ___ Commercial
   - ___ Industrial
   - ___ Other: ___

2. Total site acreage (size of property): 2.30

3. Projected population: 38

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	5,263.64	÷ 43,560 =	0.121
Parking	11,721.55	÷ 43,560 =	0.269
Other paved surfaces	1,691.92	÷ 43,560 =	0.039
Total Impervious Cover	18,677.11	÷ 43,560 =	0.429
Total Impervious Cover ÷ Total Acreage x 100 =			18.63%

5. _X_ **ATTACHMENT A - Factors Affecting Water Quality.** A description of any factors that could affect surface water and groundwater quality is provided at the end of this form.

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

FOR ROAD PROJECTS ONLY
Complete questions 7-12 if this application is exclusively for a road project.

7. Type of project:
   - ___ TXDOT road project.
   - ___ County road or roads built to county specifications.
   - ___ City thoroughfare or roads to be dedicated to a municipality.
   - ___ Street or road providing access to private driveways.

8. Type of pavement or road surface to be used:
   - ___ Concrete
   - ___ Asphaltic concrete pavement
   - ___ Other: ___

9. Length of Right of Way (R.O.W.): ____feet.
Width of R.O.W.: ____feet.
L x W = _____ Ft^2 ÷ 43,560 Ft^2/Acre = ____acres.

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

11. __ A rest stop will be included in this project.
__ A rest stop will **not** be included in this project.

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

STORMWATER TO BE GENERATED BY THE PROPOSED PROJECT

13. _X_ **ATTACHMENT B - Volume and Character of Stormwater.** A description of the volume and character (quality) of the stormwater runoff which is expected to occur from the proposed project is provided at the end of this form. The estimates of stormwater runoff quality and quantity should be based on area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

WASTEWATER TO BE GENERATED BY THE PROPOSED PROJECT

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

100% Domestic	3,150 gallons/day
__% Industrial	_____gallons/day
__% Commingled	_____gallons/day

TOTAL 3,150 gallons/day

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. The appropriate licensing authority's (authorized agent) written approval is provided at the end of this form. It states that the land is suitable for the use of an on-site sewage facility or identifies areas that are not suitable.

__ 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.

_X_ Sewage Collection System (Sewer Lines):

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

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

__ The SCS was previously submitted on _____.

X 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 New Braunfels Utilities (name) Treatment Plant. The treatment facility is:
X existing.
__ proposed.

16. X All private service laterals will be inspected as required in 30 TAC §213.5.

SITE PLAN REQUIREMENTS

Items 17 through 27 must be included on the Site Plan.

17. The Site Plan must have a minimum scale of 1" = 400'.
Site Plan Scale: 1" = 60 '.

18. 100-year floodplain boundaries
X 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):
FIRM Panel 48091C0455F, effective September 2, 2009 (attached after this form for your reference)

19. X The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Show lots, recreation centers, buildings, roads, etc.
__ The layout of the development is shown with existing contours. Finished topographic contours will not differ from the existing topographic configuration and are not shown.

20. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):
X There are 1 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)
__ The wells are not in use and have been properly abandoned.
X The wells are not in use and will be properly abandoned.
__ The wells are in use and comply with 16 TAC §76.
___ There are no wells or test holes of any kind known to exist on the project site.

21. Geologic or manmade features which are on the site:
X 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**. An exception to the Geologic Assessment requirement is requested and explained at the end of this form.

22. X The drainage patterns and approximate slopes anticipated after major grading activities.

23. X Areas of soil disturbance and areas which will not be disturbed.

24. _X_ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.

25. _X_ Locations where soil stabilization practices are expected to occur.

26. _X_ Surface waters (including wetlands).

27. _X_ Locations where stormwater discharges to surface water or sensitive features.
_ There will be no discharges to surface water or sensitive features.

ADMINISTRATIVE INFORMATION

28. _X_ 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.

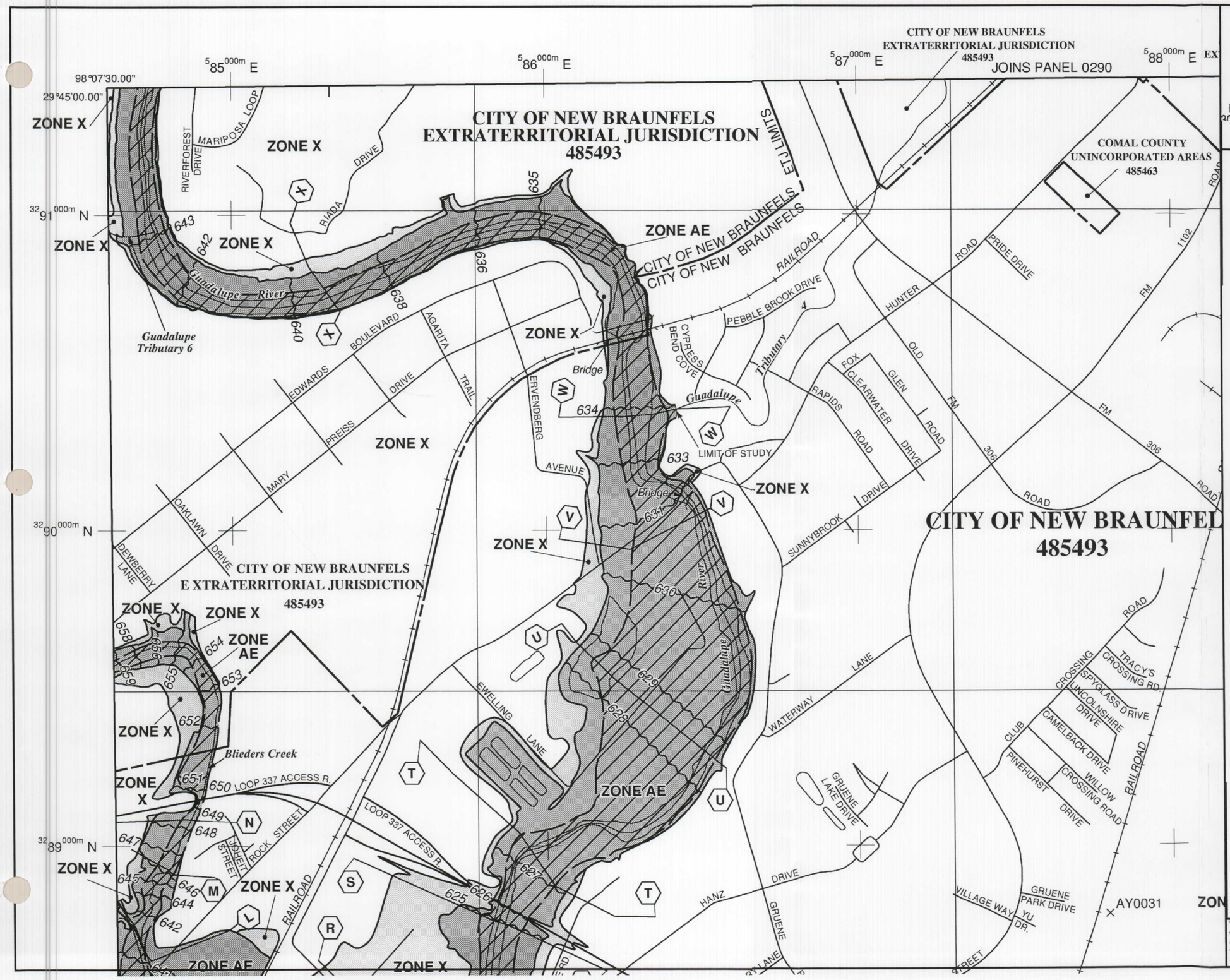
29. _X_ Any modification of this WPAP will require Executive Director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

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:

Arnoldo D Martinez Jr., PE
Print Name of Customer/Agent

Signature of Customer/Agent

12-3-14
Date



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 M

NFIP

PANEL 0455F

FIRM

FLOOD INSURANCE RATE MAP

COMAL COUNTY,
TEXAS
AND INCORPORATED AREAS

PANEL 455 OF 505
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COMAL COUNTY	485463	0455	F
NEW BRAUNFELS, CITY OF	485493	0455	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
48091C0455F

EFFECTIVE DATE
SEPTEMBER 2, 2009

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

WATER POLLUTION ABATEMENT PLAN
ATTACHMENT A
Factors Affecting Water Quality

The Ervendberg Condos includes the construction of 130.51 L.F. of 8" gravity wastewater line, a lift station with 157.84 L.F. of 2" force main, a parking lot, sidewalk, and 15 condominium units. The factor affecting water quality is runoff sediment transport from the trench and construction work being performed. However, the plans include temporary BMP measures to insure water quality is not impaired by construction.

WATER POLLUTION ABATEMENT PLAN
ATTACHMENT B
Volume and Character of Stormwater

The Ervendberg Condos site covers 2.30 acres. The Existing Drainage Area Map and Proposed Drainage Area Map can be found on pages 10 and 11, respectively, of the Ervendberg Condos Civil Site Construction Plans. In existing and proposed conditions, 2.30 acres flow northeast toward the Guadalupe River. In existing conditions, the flow towards the Guadalupe River is approximately 12.24 cfs for the 100-year storm. Under proposed conditions, the flow toward the Guadalupe River is approximately 14.35 cfs for the 100-year storm.

There is 0.05 acres of existing impervious cover on the 2.30 acre site. The proposed subdivision will increase the impervious cover to be 0.43 acres or 18.63% at full development of the site. The plans include no permanent BMPs because the impervious cover is less than 20% for the site and River Retreat 1228 LLC is requesting a waiver.

The existing runoff from the site was determined using the Rational Method. The weighted runoff coefficient for the existing site is 0.39 based on a combination of pasture/range on a 2-7% slope and concrete/roof. The proposed conditions weighted runoff coefficient is 0.46 for a combination of pasture/range on a 2-7% slope, asphalt, and concrete/roof. These values were derived from the most current revision of the City of New Braunfels Drainage Criteria Manual. Tables showing the drainage areas and resulting flows are shown on pages 10 and 11 of the construction plans.

Table 1 - Ervendberg Condos Existing Conditions Hydrology Calculations																
Point of Concentration	Area	Area	"C" Value	T_c	I_2	I_{10}	I_{25}	I_{100}	K_2	K_{10}	K_{25}	K_{100}	Q_2	Q_{10}	Q_{25}	Q_{100}
A1	Ex-DA1	2.30	0.39	12	4.61	6.97	8.35	10.94	1.00	1.00	1.10	1.25	4.12	6.24	8.22	12.24

Table 2 - Ervendberg Condos Proposed Conditions Hydrology Calculations																
Point of Concentration	Area	Area	"C" Value	T_c	I_2	I_{10}	I_{25}	I_{100}	K_2	K_{10}	K_{25}	K_{100}	Q_2	Q_{10}	Q_{25}	Q_{100}
A1	Pr-DA1	2.30	0.46	12	4.56	6.89	8.25	10.81	1.00	1.00	1.10	1.25	4.84	7.32	9.64	14.35

Existing

Watershed - **Ex-DA1** **2.3 Acres**

Time of Concentration **A1**

				hrs	min.
Sheet Flow	L (ft) =	75	Tt=	$.007(n*L)^{0.8}/P_2^{0.5}xS^{0.5}$	
	n=	0.1			
	S (%) =	4.67			
	P_2=	3.52	Tt=	**0.06**	**3.8**
Shallow Flow	L (ft) =	529	Tt=	(L*n)/(60*S^(0.5))	
	S (%) =	4.54	Tt=		
	n=	0.2			
				Tt=	**8.28**
Channel Flow	L (ft) =	0			
	Est. V (ft/sec)=	3.4	V (fps) =	3.40	
			Tt=	L/(60*V)	
			Tt=	**0.00**	**0.0**

TC =	**12**	**min.**

min

I=	**I=b/(TC+d)^e**			
	2-year	**10-year**	**25-year**	**100-year**
b	71.5	71.9	79.5	95.1
d	13.09	8.69	8.01	7.17
e	0.85	0.77	0.751	0.731
I (in/hr)=	**4.61**	**6.97**	**8.35**	**10.94**

K=	**1.00**	**1.00**	**1.10**	**1.25**

"C" Value		**0.39**

	2-year	**10-year**	**25-year**	**100-year**
Q (cfs)=	**4.12**	**6.24**	**8.22**	**12.24**

Weighted Runoff Coefficient

	"C"	Area (SF)	Area (AC)
Total Area		100188.00	2.30
Average Pasture/Range	0.38	98135.90	2.25
Concrete/Roof	0.83	2052.10	0.05

C= 0.3892

Proposed

Watershed - **Pr-DA1** **2.3 Acres**

Time of Concentration **A1**

				hrs	min.
Sheet Flow	L (ft) =	75	Tt=	$.007(n*L)^{0.8}/P_2{}^{0.5}xS^{0.5}$	
	n=	0.1			
	S (%) =	4.67			
	P_2=	3.52	Tt=	**0.06**	**3.8**
Shallow Flow	L (ft) =	542	Tt=	(L*n)/(60*S^(0.5))	
	S (%) =	4.43	Tt=		
	n=	0.2			
				Tt=	**8.58**
Channel Flow	L (ft) =	0			
	Est. V (ft/sec)=	3.4	V (fps) =	3.40	
			Tt=	L/(60*V)	
			Tt=	**0.00**	**0.0**

TC =	**12**	**min.**

min

I=	**I=b/(TC+d)^e**			
	2-year	**10-year**	**25-year**	**100-year**
b	71.5	71.9	79.5	95.1
d	13.09	8.69	8.01	7.17
e	0.85	0.77	0.751	0.731
I (in/hr)=	**4.56**	**6.89**	**8.25**	**10.81**

K=	**1.00**	**1.00**	**1.10**	**1.25**

"C" Value		**0.46**

	2-year	**10-year**	**25-year**	**100-year**
Q (cfs)=	**4.84**	**7.32**	**9.64**	**14.35**

Weighted Runoff Coefficient

	"C"	Area (SF)	Area (AC)
Total Area		100188.00	2.30
Average Pasture/Range	0.38	81510.89	1.87
Asphaltic	0.81	11721.55	0.27
Concrete/Roof	0.83	6955.56	0.16

C= 0.4615

Temporary Stormwater Section
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

REGULATED ENTITY NAME: Ervendberg Condos

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:

   ___ Aboveground storage tanks with a cumulative storage capacity of less that 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.
   _X_ Fuels and hazardous substances will not be stored on-site.

2. _X_ **ATTACHMENT A - Spill Response Actions**. A description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is provided at the end of this form.

3. _N/A_ 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. _X_ **ATTACHMENT B - Potential Sources of Contamination.** Describe in an attachment at the end of this form any other activities or processes which may be a potential source of contamination.
   ___ There are no other potential sources of contamination.

SEQUENCE OF CONSTRUCTION

5. _X_ **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 provided at the end of this form. For each activity described, an estimate of the total area of the site to be disturbed by each activity is given.

6. _X_ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Guadalupe River

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

on the site plan.

7. _X_ **ATTACHMENT D - Temporary Best Management Practices and Measures.** A description of the TBMPs and measures that will be used during and after construction are provided at the end of this form. For each activity listed in the sequence of construction, include appropriate control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

_X_ 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 has been provided in the attachment at the end of this form

a. 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.

b. 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.

c. A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.

d. 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.

_N/A_ **ATTACHMENT E - Request to Temporarily Seal a Feature.** A request to temporarily seal a feature is provided at the end of this form. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

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

9. _X_ **ATTACHMENT F - Structural Practices.** Describe 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. Placement of structural practices in floodplains has been avoided.

10. _X_ **ATTACHMENT G - Drainage Area Map**. A drainage area map is provided at the end of this form to support the following requirements.

__ 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.

X There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

11. N/A **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 has 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 provided as at the end of this form.

12. X **ATTACHMENT I - Inspection and Maintenance for BMPs.** A plan for the inspection of temporary BMPs and measures and for their timely maintenance, repairs, and, if necessary, retrofit is provided at the end of this form. A description of documentation procedures and recordkeeping practices is included in the plan.

13. X 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. X 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. X 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. X 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. X **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 at the end of this form.

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

ADMINISTRATIVE INFORMATION

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

21. X 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. X 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.

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:

Arnoldo D Martinez Jr., PE
Print Name of Customer/Agent

Signature of Customer/Agent

12-3-14
Date

TEMPORARY STORMWATER SECTION
ATTACHMENT A
Spill Response Actions

Contractor to notify all appropriate authorities if more than 25 gallons of hydrocarbons are spilled. The construction plans include the required notes regarding appropriate spill response actions as directed by TECQ. There will be no temporary storage vessels of fuel or hydrocarbons to be stored on site.

If spills of any hydrocarbons occur, construction must contain spills by immediate action. Earthen materials must be kept readily available to provide a Dike. Sand should be used to help soak fuels. Property disposal of any materials used will be required.

Contractor must promote job site awareness to all employees involved. All employees must be made aware of the provisions in this report.

Spill Prevention and Control

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

(l) To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110, 117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.

(2) Store hazardous materials and wastes in covered containers and protect from vandalism.

(3) Place a stockpile of spill cleanup materials where it will be readily accessible.

(4) Train employees in spill prevention and cleanup.

(5) Designate responsible individuals to oversee and enforce control measures.

(6) Spills should be covered and protected from stormwater runoff during rainfall to the extent that it doesn't compromise cleanup activities.

(7) Do not bury or wash spills with water.

(8) Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.

(9) Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with applicable regulations.

(10) Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.

(11) Place Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.

(12) Keep waste storage areas clean, well-organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function

Clean up

(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 BMP's 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:

(a) Contain the spread of the spill.

(b) Recover spilled materials.

(c) 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 the 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 of Police Department, County Sheriff Office, Fire Departments, etc.

More information on spill rules and appropriate responses is available on the TCEQ website at:

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 runon 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 allows 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 not 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 runon 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.

TEMPORARY STORMWATER SECTION
ATTACHMENT B
Potential Sources of Contamination

This project includes the construction of 157.84 L.F. of 2" gravity wastewater line and 130.51 L.F. of 8" gravity wastewater line, a wet well, and parking lot paving. The possible sources of contamination include sediment transport from runoff and fuel spills by the Contractor while refueling equipment. Other small quantities of solvent for construction may be present. Contractor shall keep all fuel transfers and any other contaminants used secure. Silt Fences and filter curb inlet protection will aid in the removal of transported sediment from the runoff.

Please see Attachment "A" for response actions.

TEMPORARY STORMWATER SECTION
ATTACHMENT C
Sequence of Major Activities

Construction sequencing- The construction will be performed in one phase.

1. Call New Braunfels Utilities and TCEQ 48-hours prior to beginning any work. Call Dig TESS for utilities locations.
2. Install temporary erosion controls prior to any clearing and grubbing
3. Inspect erosion controls at weekly intervals, before and after significant rainfall events to insure they are functioning properly.
4. Conduct demolition activities. (Phase 1-1.1 acres already disturbed)
5. Construct drainage improvements. (Phase 1-1.1 acres already disturbed)
6. Construct curb inlet protection at the time of curb inlet installation. (Phase 1-1.1 acres already disturbed)
7. Construct development per approved plans. (Phase 1-1.1 acres already disturbed)
8. Install Streetscape and/or landscaping improvements.
9. Complete all construction and stabilize all disturbed areas.
10. Contact project engineer to inspect site. Final City inspection to be scheduled.
11. Complete any necessary final dress up of areas that were disturbed.
12. Remove and dispose of temporary erosion controls after site re-vegetation has occurred.

TEMPORARY STORMWATER SECTION
ATTACHMENT D
Temporary Best Management Practices and Measures

Temporary erosion controls are proposed for this project to include silt fence, concrete wash out area, filter curb inlet protection, and a stabilized construction entrances and exits. A temporary sediment basin is not required because less than 10 acres is being disturbed on site.

Approximately 600 linear feet of silt fence will be used. This will be placed down gradient of all proposed construction. Please see sheet #4 of the plans.

A stabilized Construction entrance at the beginning of the project will be required. Please see sheet #4 of the plans.

Silt fence and areas that remain undisturbed with natural vegetation in place will keep sediment and containments out of the Guadalupe River.

From the TECQ RG 348 dated July, 2005, silt fences provide protection. In addition, the contractor has been directed to minimize disturbance to just the SCS line and reasonable working space.

TEMPORARY STORMWATER SECTION
ATTACHMENT F
Structural Practices

During construction, silt fences will be used until construction is complete and vegetation and paving has been established. Rough cutting of the proposed parking lot will divert flows from entering the trench area. Additionally, the contractor will pile the spoils from trench excavation on the uphill side of the trench, with a minimum of one foot between the trench and the pile, in order to prevent storm water from entering the trench.

In addition, the contractor will be directed to minimize site disturbance and avoid having equipment in areas that are not necessary for the construction of the SCS lines. Natural vegetation shall be left undisturbed and will help remove sediment if any bypass at silt fences or other structural measures occurs.

TEMPORARY STORMWATER SECTION
ATTACHMENT G
Drainage Area Map

The Existing Drainage Area Map and Proposed Drainage Area Map can be found on sheets 10 and 11, respectively, of the Ervendberg Condos SCS Submittal Civil Site Construction Plans.

TEMPORARY STORMWATER SECTION
ATTACHMENT I
Inspection and Maintenance of BMPs

The Contractor will be directed to inspect and maintain all temporary BMPs. The design engineer will also make regular visits to the project and will provide visual inspections as well. Any deficiency noted must be corrected immediately by the contractor.

Maintenance:

1. Inspect all silt fence, concrete wash out areas, and stabilized concrete entrances and exits weekly and after any rainfalls. Inspect the filter curb inlet protection daily.
2. Remove sediment when buildup reaches 6 inches on silt fences or install a second line of silt fence parallel. Remove sediment when buildup reaches 2 inches in filter curb inlet protection.
3. Replace any torn fabric in the silt fence or filter curb inlet protection.
4. Replace or repair any sections crushed or collapsed in the course of construction.
5. See stormwater pollution plan details as shown in the construction plans for proper size and installation.
6. Contractor to maintain a daily log and note any deficiencies to temporary BMPs and corrective action taken. Rainfall events shall also be noted.

SWPPP Inspection Report
Attachment I

Operator: _____ Date: _____

Job Name: _____ Receiving Waters: _____

Location: _____ Map Grid: _____

Inspector: _____ Inspector Qualifications: _____

Is this site over the Aquifer recharge or contributing zone ___ If this site is in compliance with the SWPPP and Permit _____

Visual Inspection of the Site	Y	N	N/A	Comments
NOI Posted?				
Site Notice Posted?				
Was a copy of the NOI sent to the Reporting agency?				
SWPPP Plan in Box?				
Copy of WPAP in the box? (If applies)				
SWPPP Information updates				
Material list updated?				
Project Milestone current with intended dates?				
All current locations of BMP's Identified on plans?				
Areas under operators control clearly Identified on site map?				
Trash Containers and Restrooms noted?				
Stabilized areas updated or noted on plans?				
Site Conditions				
Entrance and exits free from off site tracking?				
Trash and Debri being contained on site?				
Material storage area effectively controlling pollutants?				
Wash out pit working order?				
Are all pollutants contained on site?				
Erosion Control devices in working order?				
Are all BMP's Adequate for this site at this times				
Hazardous Waste				
Is there materials being exposed to storm water runoff?				
Any signs of major leaks or spills?				
Any leaks or spills of reputable Quanitiy need to be reported?				

SWPPP Inspection Report
Attachment I

Job Name: _____ Date: _____

Location	What Failed and Amount	Reason	Modification to be made	Correction Date

I certify under the penalty of law that this document and all attachments were prepared under my direction or Supervision in accordance with a system designed to assure that qualified personnel properly gathered and Evaluate the information submitted. Based on my inquiry of the person or persons who manage the system? Or those persons directly responsible for gathering the information, the information submitted is, too the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for Submitting false information, including the possibility of fine and imprisonment for knowing violations.

Qualified BMP Inspector: _____

SWPPP Inspection Report
Attachment I

Job Name: _____ Date: _____

Construction Activities and location

Block/Lot or Address	Work being done	Date

NOTES: _____

TEMPORARY STORMWATER SECTION
ATTACHMENT J
Schedule of Interim and Permanent Soil Stabilization Practices

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. Where the initiation of stabilization measures by the 14th day after construction activity temporary or permanently cease is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 21 days, temporary stabilization measures do not have to be initiated on that portion of site.

If after 21 days, and construction activity will not resume, hydromulch shall be applied to all disturbed areas except in drainage channels or where slopes exceed 3:1. In areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

All erosion control measures must remain in place until such stabilization has successfully occurred.

Owner shall consult with design engineer to determine all necessary measures to stabilize the site if construction does not resume.

TCEQ RG 348 dated July 2005 shall be used as a guide in determining these areas that may require stabilization.

Permanent Stormwater Section
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

REGULATED ENTITY NAME: Ervendberg Condos

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

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

2. N/A These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.

   N/A 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 provided below:

   _____

   _____

3. N/A 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.

4. N/A 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.

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

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

   X This site will not be used for low density single-family residential development.

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

_X_ **ATTACHMENT A - 20% or Less Impervious Cover Waiver.** This 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 found at the end of this form.

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

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

6. **ATTACHMENT B - BMPs for Upgradient Stormwater.**

__ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is identified as **ATTACHMENT B** at the end of this form.

_X_ If no surface water, groundwater or stormwater originates upgradient from the site and flows across the site, an explanation is provided as **ATTACHMENT B** at the end of this form.

__ If permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, an explanation is provided as **ATTACHMENT B** at the end of this form.

7. **ATTACHMENT C - BMPs for On-site Stormwater.**

__ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is identified as **ATTACHMENT C** at the end of this form.

_X_ If permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, an explanation is provided as **ATTACHMENT C** at the end of this form.

8. _X_ **ATTACHMENT D - BMPs for Surface Streams.** A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is provided at the end of this form. Each feature identified in the Geologic Assessment as "sensitive" has been addressed.

9. _N/A_ The applicant understands that to the extent practicable, BMPs and measures must maintain flow to naturally occurring sensitive features identified in either the geologic assessment, executive director review, or during excavation, blasting, or construction.

__ The permanent sealing of or diversion of flow from a naturally-occurring "sensitive" or "possibly sensitive" feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed for any naturally-occurring "sensitive" or "possibly sensitive" features on this site.

_N/A_ **ATTACHMENT E - Request to Seal Features.** A request to seal a naturally-occurring "sensitive" or "possibly sensitive" feature, that includes a justification as to why no reasonable and practicable alternative exists, is found at the end of this form. A request and justification has been provided for each feature.

10. _N/A_ **ATTACHMENT F - Construction Plans.** Construction plans and design calculations for the proposed permanent BMPs and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information have been signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed permanent BMPs and measures are provided at the end of this form. Design Calculations, TCEQ

Construction Notes, all man-made or naturally occurring geologic features, all proposed structural measures, and appropriate details must be shown on the construction plans.

11. N/A **ATTACHMENT G - Inspection, Maintenance, Repair and Retrofit Plan.** A plan for the inspection, maintenance, repair, and, if necessary, retrofit of the permanent BMPs and measures is provided at the end of this form. The plan has been prepared and certified by the engineer designing the permanent BMPs and measures. The plan has been signed by the owner or responsible party. The plan includes procedures for documenting inspections, maintenance, repairs, and, if necessary, retrofits as well as a discussion of record keeping procedures.

12. N/A The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

__ Pilot-scale field testing (including water quality monitoring) may be required for BMPs that are not contained in technical guidance recognized by or prepared by the executive director.

N/A **ATTACHMENT H - Pilot-Scale Field Testing Plan.** A plan for pilot-scale field testing is provided at the end of this form.

13. X **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 provided at the end of this form. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity which increase erosion that results in water quality degradation.

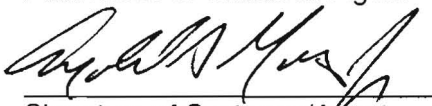
Responsibility for maintenance of permanent BMPs and measures after construction is complete.

14. N/A 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.

15. N/A 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.

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:

Arnoldo D Martinez Jr., PE
Print Name of Customer/Agent



Signature of Customer/Agent

12·3·14
Date

November 24, 2014

Texas Commission on Environmental Quality Region 8
14250 Judson Road
San Antonio, Texas 78233-4480

Re: Ervendberg Condos; Located northeast of Ervendberg Avenue between Gruene Road and Mary Preiss Drive; New Braunfels, Texas

Request for 20% or Less Impervious Cover Waiver

To Whom It May Concern,

We are requesting a waiver on behalf of River Retreat 1228 LLC for their proposed Ervendberg Condos site located at northeast of Ervendberg Avenue between Gruene Road and Mary Preiss Drive in New Braunfels, Texas. The existing impervious cover for the site is 0.05 acres and the proposed conditions impervious cover is 0.43 acres or 18.63% at full development of the site. The 18.63% impervious falls under the 20% or less impervious cover waiver eligibility. Therefore we wish to request to waive the requirements for other permanent BMPs and measures to be found on site.

If you have any questions or require additional information, please contact us.

Sincerely,

Arnoldo D Martinez Jr., PE
Engineer

PERMANENT STORMWATER SECTION
ATTACHMENT B
BMPs for Upgradient Stormwater

There are no BMPs for upgradient stormwater for the Ervendberg Condos because the upgradient area to the west will be intercepted by Ervendberg Avenue and flow south in channel flow. All flow east of Ervendberg Avenue will sheet flow into the Guadalupe River to the east.

PERMANENT STORMWATER SECTION
ATTACHMENT C
BMPs for On-Site Stormwater

There are no proposed Permanent BMPs for the on-site stormwater for the Ervendberg Condos site because the impervious cover is less than 20% for the site and River Retreat 1228 LLC is requesting a waiver.

PERMANENT STORMWATER SECTION
ATTACHMENT D
BMPs for Surface Stream

There are no proposed Permanent BMPs for the on-site stormwater for the Ervendberg Condos site because the impervious cover is less than 20% for the site and River Retreat 1228 LLC is requesting a waiver.

However, runoff from the site will travel over undisturbed vegetation on the east portion of the site that will provide natural filtration before it enters into the Guadalupe River. The vegetation will filter out runoff sediment from the proposed improvements and will reduce the velocity of the runoff therefore reducing the chance of erosion from the site. The storm water from the proposed subdivision will enter into the surface stream system as shallow flow, thereby further reducing the likelihood of erosion.

PERMANENT STORMWATER SECTION
ATTACHMENT I
Measures for Minimizing Surface Stream Contamination

The runoff from the site will travel over undisturbed vegetation on the east portion of the site that will provide natural filtration. The vegetation will filter out runoff sediment from the proposed improvements and will reduce the velocity of the runoff therefore reducing the chance of erosion from the site. The storm water from the proposed subdivision will enter into the surface stream system as shallow flow, thereby further reducing the likelihood of erosion.

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

I Bryan Kastleman,
Print Name

President,
Title - Owner/President/Other

of River Retreat 1228 LLC,
Corporation/Partnership/Entity Name

have authorized Arnoldo D Martinez Jr., PE
Print Name of Agent/Engineer

of HMT Engineering & Surveying
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to $10,000 per day per violation.

2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.

4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.

5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

SIGNATURE PAGE:

Applicant's Signature

8-18-14
Date

THE STATE OF TEXAS §

County of TRAVIS §

BEFORE ME, the undersigned authority, on this day personally appeared BRYAN KASTEMAN 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 18 day of Aug, 2014

NOTARY PUBLIC

AJAY KUMAR GUPTA
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 09/04/2016

NOTARY PUBLIC STATE OF TEXAS

Ajay Kumar Gupta
Notary Public
State of Texas
My Comm. Exp. 09/04/2016

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program
Application Fee Form

NAME OF PROPOSED REGULATED ENTITY: Ervendberg Condos
REGULATED ENTITY LOCATION: 1228 Ervendberg Avenue, New Braunfels, Texas 78130
NAME OF CUSTOMER: River Retreat 1228 LLC
CONTACT PERSON: Bryan Kastleman PHONE: 512-750-2714
(Please Print)

Customer Reference Number (if issued): CN _____ (nine digits)

Regulated Entity Reference Number (if issued): RN _____ (nine digits)

Austin Regional Office (3373) ☐ Hays ☐ Travis ☐ Williamson

San Antonio Regional Office (3362) ☐ Bexar ☒ Comal ☐ Medina ☐ Kinney ☐ Uvalde

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

☐ **Austin Regional Office**

☐ **Mailed to TCEQ:**
TCEQ – Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☒ **San Antonio Regional Office**

☐ **Overnight Delivery to TCEQ:**
TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
512/239-1278

Site Location (Check All That Apply): ☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	Size	Fee Due
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	2.30 Acres	$4,000
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature

12-11-14
Date

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.

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

Water Pollution Abatement Plans and Modifications
Contributing Zone Plans and Modifications

PROJECT	PROJECT AREA IN ACRES	FEE
One Single Family Residential Dwelling	< 5	$650
Multiple Single Family Residential and Parks	< 5 5 < 10 10 < 40 40 < 100 100 < 500 ≥ 500	$1,500 $3,000 $4,000 $6,500 $8,000 $10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1 1 < 5 5 < 10 10 < 40 40 < 100 ≥ 100	$3,000 $4,000 $5,000 $6,500 $8,000 $10,000

Organized Sewage Collection Systems and Modifications

PROJECT	COST PER LINEAR FOOT	MINIMUM FEE MAXIMUM FEE
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

PROJECT	COST PER TANK OR PIPING SYSTEM	MINIMUM FEE MAXIMUM FEE
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

PROJECT	FEE
Exception Request	$500

Extension of Time Requests

PROJECT	FEE
Extension of Time Request	$150

TCEQ

TCEQ Core Data Form

TCEQ Use Only

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

SECTION I: General Information

1. Reason for Submission *(If other is checked please describe in space provided)*

☒ New Permit, Registration or Authorization *(Core Data Form should be submitted with the program application)*

☐ Renewal *(Core Data Form should be submitted with the renewal form)* ☐ Other

2. Attachments **Describe Any Attachments:** *(ex. Title V Application, Waste Transporter Application, etc.)*

☒ Yes ☐ No — SCS and WPAP Application

3. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	4. Regulated Entity Reference Number *(if issued)*
CN		RN

SECTION II: Customer Information

5. Effective Date for Customer Information Updates (mm/dd/yyyy)

6. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check only one of the following:*

☒ Owner ☐ Operator ☐ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other: _____

7. General Customer Information

☒ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State) ☐ No Change**

If "No Change" and Section I is complete, skip to Section III – Regulated Entity Information.

8. Type of Customer:	☒ Corporation	☐ Individual	☐ Sole Proprietorship- D.B.A
☐ City Government	☐ County Government	☐ Federal Government	☐ State Government
☐ Other Government	☐ General Partnership	☐ Limited Partnership	☐ Other:

9. Customer Legal Name *(If an individual, print last name first: ex: Doe, John)*	*If new Customer, enter previous Customer below*	*End Date:*
River Retreat 1228 LLC		

10. Mailing Address:							
	2714 Bee Cave Road						
	#204						
City	Austin	State	TX	ZIP	78746	ZIP + 4	5682

11. Country Mailing Information *(if outside USA)*	12. E-Mail Address *(if applicable)*
	bkastleman.com

13. Telephone Number	14. Extension or Code	15. Fax Number *(if applicable)*
(512) 750-2714		( ) -

16. Federal Tax ID *(9 digits)*	17. TX State Franchise Tax ID *(11 digits)*	18. DUNS Number *(if applicable)*	19. TX SOS Filing Number *(if applicable)*
46-399911	32052298463	NA	801870947

20. Number of Employees

☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

21. Independently Owned and Operated?

☒ Yes ☐ No

SECTION III: Regulated Entity Information

22. General Regulated Entity Information *(If 'New Regulated Entity" is selected below this form should be accompanied by a permit application)*

☒ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information ☐ No Change** *(See below)*

If "NO CHANGE" is checked and Section I is complete, skip to Section IV, Preparer Information.

23. Regulated Entity Name *(name of the site where the regulated action is taking place)*

Ervendberg Condos

24. Street Address of the Regulated Entity: *(No P.O. Boxes)*	1228 Ervendberg Avenue							
	City	New Braunfels	State	TX	ZIP	78130	ZIP + 4	3313
25. Mailing Address:	2714 Bee Cave Road							
	#204							
	City	Austin	State	TX	ZIP	78746	ZIP + 4	5682

26. E-Mail Address:		
27. Telephone Number	28. Extension or Code	29. Fax Number *(if applicable)*
(512) 750-2714		( ) -

30. Primary SIC Code (4 digits)	31. Secondary SIC Code (4 digits)	32. Primary NAICS Code (5 or 6 digits)	33. Secondary NAICS Code (5 or 6 digits)
1522		236116	

34. What is the Primary Business of this entity? *(Please do not repeat the SIC or NAICS description.)*

Land Development of Condos

Questions 34 – 37 address geographic location. Please refer to the instructions for applicability.

35. Description to Physical Location:	On the northeast side of Ervendberg Avenue between Gruene Road and Mary Preiss Drive

36. Nearest City	County	State	Nearest ZIP Code
New Braunfels	Comal	TX	78130

37. Latitude (N) In Decimal:	29.738085		38. Longitude (W) In Decimal:	-98.108472	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	44	17.106	-98	6	30.4992

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 or the updates may not be made. If your Program is not listed, check other and write it in. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Industrial Hazardous Waste	☐ Municipal Solid Waste
☐ New Source Review – Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS	☐ Sludge
☐ Stormwater	☐ Title V – Air	☐ Tires	☐ Used Oil	☐ Utilities
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☒ Other: SCS

SECTION IV: Preparer Information

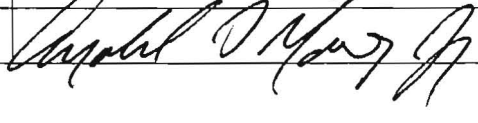
40. Name:	Jessica Calhoun, PE, CFM	41. Title:	Engineer

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(210) 255-7873		( ) -	jl.calhoun@gmail.com

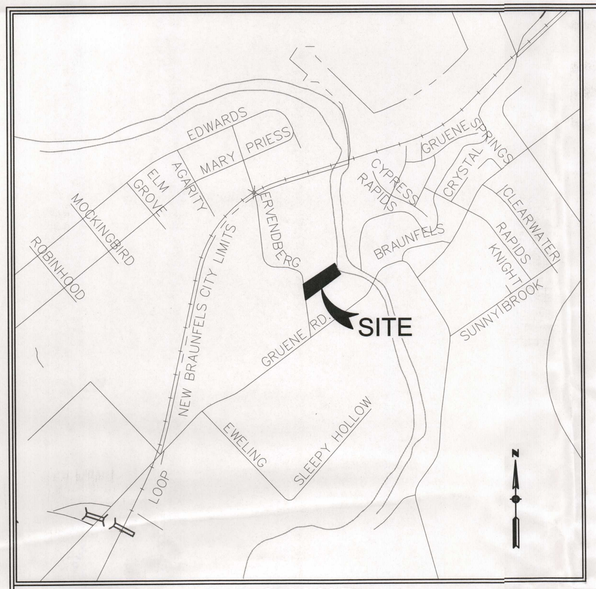
SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 9 and/or as required for the updates to the ID numbers identified in field 39.

(See the Core Data Form instructions for more information on who should sign this form.)

Company:	HMT Engineering & Surveying	Job Title:	Engineer	
Name *(In Print)*:	Arnoldo D Martinez Jr., PE		Phone:	(830) 625-8555
Signature:			Date:	12-11-2014

ERVENDBERG CONDOS
WPAP SUBMITTAL
NEW BRAUNFELS, TEXAS
CIVIL SITE CONSTRUCTION PLANS



PROJECT LOCATION MAP SCALE: N.T.S.

PROJECT BENCHMARK

SITE TBM #1
SET BM–DESC.–1
N: NORTHING–1
E: EASTING–1
ELEV: ELEV–1

SITE TBM #2
SET BM–DESC.–2
N: NORTHING–2
E: EASTING–2
ELEV: ELEV–2

LEGAL DESCRIPTION

BEING STATEMENT FOUND ON PLAT OR SURVEY

PLEASE NOTE: NBU REQUIRES GPS POINTS FOR CERTAIN ELECTRIC, WATER AND WASTEWATER ATTRIBUTES, SOME OF WHICH MUST BE TAKEN PRIOR TO BACKFILL DURING CONSTRUCTION.

GPS POINTS SHALL BE REQUIRED FROM THE DEVELOPER'S CONTRACTOR OR ENGINEER. A MINIMUM OF THREE COORDINATE POINTS FOR GEOREFERENCING SHALL BE REQUIRED. THE WATER AND WASTEWATER GPS POINTS SHALL BE TO SURVEY GRADE. THE ELECTRIC GPS POINTS SHALL BE TO MAP GRADE.

WATER
VERTICAL BENDS AND EDGE OF STEEL CASING (IF APPLICABLE) PRIOR TO BACKFILL
HORIZONTAL BENDS PRIOR TO BACKFILL
TEES PRIOR TO BACKFILL
FITTINGS (REDUCERS AND COUPLINGS) PRIOR TO BACKFILL
FIRE HYDRANTS (TOP OF FLANGE)
VALVES
METERS (TOP CENTER OF BOX)
BLOW OFF ASSEMBLY
CORNER SLAB OF WATER TANK & GATE VALVE ON WATER TANK

WASTEWATER
MANHOLES
CLEANOUTS
CORNER SLAB OF LIFT STATION

ELECTRIC
POLES
TRANSFORMERS, BOTH ABOVE AND UNDERGROUND (FRONT LOCK)
PULL BOXES
STREET LIGHTS

COORDINATE GPS REQUIREMENTS WITH NBU INSPECTOR

GENERAL NOTES:

1. IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE–YEAR OF CITY APPROVAL FOR CONSTRUCTION INSPECTION, THAT APPROVAL IS NO LONGER VALID.
2. THE MOST CURRENT EDITIONS OF THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS AND THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES SHALL FOLLOWED FOR ALL CONSTRUCTION EXCEPT AS AMENDED BY THE CITY OF NEW BRAUNFELS STANDARD DETAILS.
3. ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER OF RECORD. IN ACCEPTING THESE PLANS, THE CITY OF NEW BRAUNFELS MUST RELY UPON THE ADEQUACY OF THE WORK OF THE ENGINEER IN RECORD.
4. PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR SHALL CONTACT THE CITY OF NEW
5. BRAUNFELS TO SET A PRECONSTRUCTION MEETING. A 48–HOUR ADVANCED NOTIFICATION IS
6. REQUIRED FOR ALL INSPECTION REQUESTS.
   - 4.1 ALL INSPECTIONS ARE TO BE CALLED IN AT 830–221–4068 OR,
   - 4.2 FAXED IN AT 830–608–2117 OR,
   - 4.3 E–MAILED AT INSPECTIONS@NBTEXAS.ORG.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ALL TEMPORARY AND PERMANENT TRAFFIC CONTROL DEVICES ARE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE PLANS AND LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. IF THE NEED ARISES, ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES MAY BE ORDERED BY THE ENGINEERING REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.
8. DRAINAGE IMPROVEMENTS SUFFICIENT TO MITIGATE OFFSITE IMPACT OF CONSTRUCTION MUST BE COMPLETED AND IN PLACE PRIOR TO ADDING IMPERVIOUS COVER TO THE SITE.

RIVER RETREAT 1228 L.L.C.
2714 BEE CAVE RD #204
AUSTIN, TEXAS 78748

Sheet List Table	
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11	GRADING PLAN

ERVENDBERG CONDOS
CIVIL SITE CONSTRUCTION PLANS
072.003.103

DECEMBER 2014

STATE OF TEXAS
ARNOLDO MARTINEZ, JR
91894
LICENSED PROFESSIONAL ENGINEER
12/3/14

ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER OF RECORD. IN ACCEPTING THESE PLANS, THE CITY OF NEW BRAUNFELS MUST RELY UPON THE ADEQUACY OF THE WORK OF THE ENGINEER OF RECORD.

Arnoldo Martinez, Jr.
P.E. Registration No. 91894

PREPARED BY:

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410 N. SEGUIN AVE.
NEW BRAUNFELS,
TEXAS 78130
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NOTE TO CONTRACTOR:

BY THE ACT OF SUBMITTING A BID FOR THIS PROPOSED CONTRACT, THE BIDDER WARRANTS THAT THE BIDDER, AND ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS HE INTENDS TO USE HAVE CAREFULLY AND THOROUGHLY REVIEWED THE DRAWINGS, SPECIFICATIONS AND ALL OTHER CONTRACT DOCUMENTS AND HAVE FOUND THEM COMPLETE AND FREE FROM ANY AMBIGUITIES AND SUFFICIENT FOR THE PURPOSE INTENDED. THE BIDDER FURTHER WARRANTS THAT TO THE BEST OF HIS OR HIS SUBCONTRACTORS' AND MATERIAL SUPPLIERS' KNOWLEDGE, ALL MATERIALS AND PRODUCTS SPECIFIED OR INDICATED HEREIN ARE ACCEPTABLE FOR ALL APPLICABLE CODES AND AUTHORITIES.

THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS HAS BEEN BASED UPON RECORD INFORMATION ONLY AND MAY NOT MATCH LOCATIONS AND/OR DEPTHS AS CONSTRUCTED. THE CONTRACTOR SHALL CONTACT EACH OF THE INDIVIDUAL UTILITIES FOR ASSISTANCE IN DETERMINING EXISTING UTILITY LOCATIONS AND DEPTHS PRIOR TO BEGINNING ANY CONSTRUCTION. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL UTILITY CROSSINGS PRIOR TO BEGINNING ANY CONSTRUCTION.

GENERAL NOTES:

ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL COMPLY WITH:

A. CURRENT CITY OF NEW BRAUNFELS CONSTRUCTION SPECIFICATIONS AND STANDARDS AS OF THE DATE OF THIS CONTRACT

B. THE MOST CURRENT EDITION OF TEXAS DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS, AND BRIDGES".

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE MOST CURRENT TEXAS DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS, AND BRIDGES." ALONG WITH CURRENT CITY OF SAN ANTONIO AND **COMAL** COUNTY SPECIFICATIONS. ANY DISCREPANCIES BETWEEN SPECIFICATIONS SHALL BE RESOLVED BY THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.

CONTRACTOR SHALL PROCURE ALL PERMITS AND LICENSES, PAY ALL CHARGES, FEES, AND TAXES AREA ND GIVE ALL NOTICES NECESSARY AND INCIDENTAL TO THE DUE AND LAWFUL PROSECUTION OF THE WORK.

ANY EXISTING OFF-SITE IMPROVEMENTS THAT ARE DAMAGED OR UNDERCUT BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER AND APPROVED BY THE OWNER OF THE EXISTING IMPROVEMENT AT THE CONTRACTOR'S EXPENSE. (NO SEPARATE PAY ITEM)

WORK COMPLETED BY THE CONTRACTOR WHICH HAS NOT RECEIVED A WORK ORDER OR CONSENT OF THE OWNER OR ENGINEER WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.

CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL WASTE MATERIALS UPON PROJECT COMPLETION. THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIAL IN THE 100YR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN DEVELOPMENT PERMIT.

BARRICADES AND WARNING SIGNS SHALL CONFORM TO THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AND SHALL BE LOCATED TO PROVIDE MAXIMUM PROTECTION TO THE PUBLIC AS WELL AS CONSTRUCTION PERSONNEL AND EQUIPMENT WHILE PROVIDING CONTINUOUS TRAFFIC FLOW AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL DEVICES DURING CONSTRUCTION.

CONTRACTOR IS REQUIRED TO VERIFY PROJECT ELEVATIONS. THE TERM "MATCH EXISTING" SHALL BE UNDERSTOOD TO SIGNIFY BOTH HORIZONTAL AND VERTICAL ALIGNMENT.

WHEN MATCHING EXISTING PAVEMENTS, CURBS, DRIVES, AND WALKS, THEY SHALL BE SAW CUT FULL DEPTH AND REMOVED TO ALLOW FOR PROPOSED CONSTRUCTION. IF ANY EXISTING JOINT IS ENCOUNTERED, PRECAUTION SHALL BE TAKEN DURING REMOVAL OF CONCRETE SO AS NOT TO DAMAGE EXISTING DOWELS. ALL EXISTING DOWELS SHALL BE EXPOSED AND CLEANED.

ITEM OF WORK DESIGNATED "BY OTHERS" SHALL NOT BE CONSIDERED PART OF THIS CONTRACT.

ALL "COMPACTED SUBGRADE" SHALL CONSIST OF NATIVE MATERIAL SCARIFIED TO A MINIMUM DEPTH OF SIX INCHES AND COMPACTED TO 95% DENSITY ACCORDING TO DENSITY TEST METHOD TEX-115E OR ACCORDING TO ASTM D-698 AND TESTED BY ASTM D-2922.

ALL "FLEXIBLE BASE" SHALL BE TYPE "A", GRADE 4, ACCORDING TO TXDOT ITEM 247, COMPACTED TO 95% MODIFIED DENSITY AT A MOISTURE CONTENT BETWEEN −2 AND +3 OF OPTIMUM PERCENT MOISTURE ACCORDING TO ASTM D-1557 (MODIFIED PROCTOR) AND TESTED BY ASTM D-2922.

ASPHALT PAVEMENT SHALL BE THE TYPE SPECIFIED ON THE PLANS AND ACCORDING TO TXDOT ITEM 340 "HOT MIX ASPHALT CONCRETE PAVEMENT".

PRIME COAT USING MC-30 AT A RATE OF 0.2 GALLONS PER SQUARE YARD SHALL BE PLACED OVER PREPARED BASE AT LEAST ONE DAY PRIOR TO LAYING ASPHALTIC CONCRETE PAVEMENT. ANY NECESSARY TACK COAT SHALL BE MC-30 AT 0.05 GALLONS PER SQUARE YARD. IT IS REQUIRED THAT BOTH THE PRIME COAT AND THE TACK COAT BE APPLIED AT THE TEMPERATURE SPECIFIED UNDER TXDOT ITEM 300.3.

CONCRETE SHALL BE CLASS "A" ACCORDING TO TXDOT ITEM 421 UNLESS OTHERWISE ON PLANS.

REINFORCING STEEL SHALL BE FROM NEW BILLET AND SHALL CONFORM TO TXDOT ITEM 440. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS EXCEPT WHEN REFERRING TO CLEARANCE.

ALL SAWED JOINTS SHALL BE SAWED WITHIN 24 HOURS OF POURING,

ABSOLUTELY NO WELDING OF REINFORCING BARS OR TORCHING TO BEND REINFORCING BARS SHALL BE ALLOWED WITHOUT THE SPECIFIC APPROVAL OF THE ENGINEER.

ORDINARY COMPACTION CONTROL IS REQUIRED ON THIS PROJECT.

ALL ROLLING FOR COMPACTION OF ASPHALTIC CONCRETE PAVEMENT SHALL BE COMPLETED BEFORE THE MIXTURE TEMPERATURE DROPS BELOW 175 DEG. (F).

ALL FILL MATERIAL SHALL BE SUBJECT TO THE ENGINEER'S APPROVAL.

CONTRACTOR AGREES TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND SHALL NOT BE LIMITED TO THE NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNERS AND THE ENGINEER AND HIS EMPLOYEES, PARTNERS, OFFICES, DIRECTORS, OR CONSULTANTS, HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF THE WORK ON THIS PROJECT, EXCEPTING FROM LIABILITY ARISING FROM SOLE NEGLIGENCE OF THE OWNER OR ENGINEER, ENGINEER'S DIRECTORS, OFFICERS, EMPLOYEES, OR CONSULTANTS.

ALL CMP (CORRUGATED METAL PIPE) USED ON THIS PROJECT SHALL HAVE A MANNING'S "N" VALUE OF 0.024., UNLESS OTHERWISE SHOWN ON PLANS.

CONTRACTOR WILL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTING PER CURRENT CITY OF NEW BRAUNFELS REQUIREMENTS. ALL TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL. ENGINEER AND OWNER RESERVE THE RIGHT TO HAVE THE CONTRACTOR REMOVE AND REPLACE ANY MATERIAL THAT WAS NOT TESTED OR FAILED TESTING. ALL COST ASSOCIATED WITH THE REMOVAL, REPLACEMENT AND TESTING SHALL BE PAID BY THE CONTRACTOR.

ALL PVC SLEEVES SHALL BE INSTALLED 3 FEET BELOW FINISHED GRADE AND ENDS SHALL BE MARKED SO THAT LOCATIONS OF SLEEVES CAN BE EASILY IDENTIFIED.

PRE-CONSTRUCTION CONFERENCE IS REQUIRED, ENGINEER WILL ARRANGE SUCH CONFERENCE IN COORDINATION WITH CITY OF NEW BRAUNFELS STREET INSPECTOR & NEW BRAUNFELS UTILITIES INSPECTOR. NO CONSTRUCTION MAY BEGIN PRIOR TO THE PRE-CONSTRUCTION CND SHARED TRENCHING SHALL BE UTILIZED. CUTTING THE STREETS AFTER COMPLETION BY DRY UTILITIES SHALL NOT BE ACCEPTABLE.

AS PER PLATTING ORDINANCE SECTION 118-38M.: WHEN ALL IMPROVEMENTS ARE FOUND TO BE CONSTRUCTED AND COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS AND WITH THE CITY'S STANDARDS, AND UPON RECEIPT OF ONE SET OF "RECORD DRAWINGS" PLANS, AND A DIGITAL COPY OF ALL PLANS (AUTOCAD 2000 MINIMUM) THE CITY ENGINEER SHALL ACCEPT SUCH IMPROVEMENTS FOR THE CITY OF NEW BRAUNFELS, SUBJECT TO THE GUARANTY OF MATERIAL AND WORKMANSHIP PROVISIONS IN THIS SECTION.

EROSION / SEDIMENTATION CONTROL:

AT A MINIMUM, THESE CONTROLS SHALL CONSIST OF ROCK BERMS AND/OR SILT FENCES CONSTRUCTED PARALLEL TO AND DOWN GRADIENT FROM THE TRENCHES. THE ROCK BERM OR SILT FENCES SHALL BE INSTALLED IN A MANNER SUCH THAT ANY RAINFALL RUNOFF SHALL BE FILTERED. HAY BALES SHALL NOT BE USED FOR TEMPORARY EROSION AND SEDIMENTATION CONTROLS.

ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS MUST BE INSTALLED PRIOR TO CONSTRUCTION AND SHALL BE MAINTAINED DURING CONSTRUCTION BY THE CONTRACTOR. THE CONTRACTOR SHALL REMOVE THE CONTROLS WHEN VEGETATION IS ESTABLISHED AND THE CONSTRUCTION AREA IS STABILIZED {31 TAC 313.5 (C)(12)}. ADDITIONAL PROTECTION MAY BE REQUIRED IF EXCESSIVE SOLIDS ARE BEING DISCHARGED FROM THE SITE.

ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS SHALL BE REMOVED BY THE CONTRACTOR AT FINAL ACCEPTANCE OF THE PROJECT BY THE OWNER/ENGINEER.

PLACEMENT OF TEMPORARY EROSION AND SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE CONSTRUCTION PLANS. ACTUAL LOCATIONS MAY VARY SLIGHTLY FROM THE PLANS, BUT WILL BE VERIFIED BY THE ENGINEER/INSPECTOR IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL INSPECT THE CONTROLS AT WEEKLY INTERVALS AND AFTER EVERY SIGNIFICANT RAINFALL TO INSURE DISTURBANCE OF THE STRUCTURES HAS NOT OCCURRED. SEDIMENT DEPOSITED AFTER A RAINFALL SHALL BE REMOVED FROM THE SITE OR PLACED IN AN ENGINEER APPROVED DESIGNATED DISPOSAL AREA.

CONTRACTOR SHALL BE RESPONSIBLE TO INSURE THAT NO EROSION CONTROL MEASURES BLOCK THE DRAINAGE SYSTEM FROM WORKING AS DESIGNED.

UTILITIES

LOCATION AND DEPTH OF EXISTING UTILITIES SHOWN HERE ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF ALL EXISTING UTILITIES ENCOUNTERED DURING CONSTRUCTION, INCLUDING THOSE NOT SHOWN ON THE DRAWINGS.

ANY EXISTING UTILITIES, ON OR OFF THE SITE, THAT ARE DAMAGED OR UNDERCUT BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER AND APPROVED BY THE RESPECTIVE UTILITY COMPANY AT THE CONTRACTOR'S EXPENSE.

CONTRACTOR SHALL NOTIFY APPROPRIATE UTILITY COMPANIES AND GOVERNMENTAL AGENCIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION AT:

THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES 48 HOURS PRIOR TO EXCAVATION

NEW BRAUNFELS UTILITIES (WATER AND SEWER)	(830) 608-8971
NEW BRAUNFELS UTILITIES (ELECTRIC)	(830) 608-8951
TIME WARNER CABLE	(830) 625-3408
CENTERPOINT ENERGY (GAS)	(830) 643-6434
AT&T	(830) 303-1333
TEXAS ONE CALL SYSTEM	(800) 245-4545

DUE TO FEDERAL REGULATIONS TITLE 49, PART 192(8), GAS COMPANIES MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT THE WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.

CONTRACTOR SHALL REFERENCE NEW BRAUNFELS UTILITIES PLANS FOR FINAL ELECTRICAL LINE DESIGNS AND LAYOUT.

SEWER NOTES

1. THE CONTRACTOR SHALL MAINTAIN SERVICE TO EXISTING SANITARY SEWERS AT ALL TIMES DURING CONSTRUCTION.
2. A MINIMUM OF 8" WASTEWATER PIPE AND FITTINGS (PVC SDR-26, ASTM D-3034, D-3212, F-477) ARE REQUIRED ON ALL NEW INSTALLATION.
3. ALL RESIDENTIAL WASTEWATER SERVICE LATERALS SHALL BE EXTENDED TO THE PROPERTY LINE AND A CLEANOUT SHALL BE INSTALLED AT THE PROPERTY LINE. SERVICES TO LOTS WILL EXTEND SEVEN (7) FEET PAST THE UNDERGROUND ELECTRIC CONDUIT IF ELECTRIC IS INSTALLED IN THE FRONT EASEMENT.
4. PIPE BEDDING OF WASTEWATER LINES SHALL BE MANUFACTURED SAND OR PEA GRAVEL AS PER NBU SPECIFICATIONS.
5. SECONDARY BACKFILL OF SEWER LINES SHALL GENERALLY CONSIST OF MATERIALS REMOVED FROM THE TRENCH AND SHALL BE FREE FROM BRUSH, DEBRIS, AND TRASH, NO ROCKS OR STONES HAVING ANY DIMENSION LARGER THAN 6 INCHES AT THE LARGEST DIMENSION.
6. ALL SEWER PIPES SHALL HAVE COMPRESSION OR MECHANICAL JOINTS AS PER 30 TAC 217.53 (C) (2).
7. FOR WASTEWATER LINES LESS THAN 24" IN DIAMETER, SELECT INITIAL BACKFILL MATERIAL SHALL BE PLACED IN TWO LIFTS.
   A. THE FIRST LIFT SHALL BE SPREAD UNIFORMLY AND SIMULTANEOUSLY ON EACH SIDE AND UNDER THE SHOULDERS OF THE PIPE TO THE MID POINT OF SPRING LINE OF THE PIPE.
   B. THE SECOND LIFT SHALL BE PLACED TO A DEPTH AS SHOWN ON THE PIPE BACKFILL DETAIL. FOR PIPES LARGER THAN 24", 12" MAXIMUM LIFTS SHALL BE USED.
8. ALL MANHOLES MUST BE WATER TIGHT. EITHER MONOLITHIC, CAST-IN-PLACE CONCRETE STRUCTURES OR PREFABRICATED MANHOLES SPECIFICALLY APPROVED BY NBU. THE MANHOLES SHALL HAVE WATER TIGHT RINGS AND COVERS. WHEREVER THEY ARE WITHIN THE 100 YEAR FLOODPLAIN, THE MANHOLE COVERS SHALL BE BOLTED. EVERY FOURTH MANHOLE IN SEQUENCE SHALL HAVE AN ALTERNATIVE MEANS OF VENTING [30 TAC 213.5(C)(3)(A) AND 30 TAC 217.55(O).
9. ALL MANHOLES SHALL BE CONSTRUCTED SO THAT THE TOP OF THE RING IS 2" ABOVE THE SURROUNDING GROUND EXCEPT WHEN LOCATED IN PAVED AREAS. IN PAVED AREAS, THE MANHOLE RING SHALL BE FLUSH WITH PAVEMENT.
10. ALL NEW MANHOLES ARE TO HAVE COVERS WITH 32" OPENINGS. MANHOLES SHALL BE CONSTRUCTED OF OR LINED WITH A CORROSION MATERIAL RESISTANT MATERIAL. WHERE NEW CONSTRUCTION TIES INTO AN EXISTING MANHOLE, THE EXISTING MANHOLE MUST BE LINED, COATED, OR REPLACED WITH A CORROSION RESISTANT MATERIAL.
11. WASTEWATER PIPE CONNECTIONS TO PRE-CAST MANHOLES WILL BE COMPRESSION JOINTS OF MECHANICAL "BOOT TYPE" JOINT AS APPROVED BY NBU.
12. WASTEWATER LINES SHALL BE TESTED FROM MANHOLE TO MANHOLE.
13. IN AREAS WHERE A NEW WASTEWATER MANHOLE IS TO BE CONSTRUCTED OVER AN EXISTING WASTEWATER SYSTEM, IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO TEST THE EXISTING MANHOLES BEFORE CONSTRUCTION. AFTER PROPOSED MANHOLE HAS BEEN BUILT, THE CONTRACTOR SHALL RE-TEST THE EXISTING SYSTEM TO THE SATISFACTION OF THE CONSTRUCTION INSPECTOR. (NO SEPARATE PAY ITEM).
14. WHERE THE MINIMUM 9 FOOT SEPARATION DISTANCE BETWEEN WASTEWATER LINES AND WATER LINES/MAINS CANNOT BE MAINTAINED, THE INSTALLATION OF WASTEWATER LINES SHALL BE IN STRICT ACCORDANCE WITH TCEQ. THE WASTEWATER LINE SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON, OR PVC MEETING THE ASTM SPECIFICATION FOR BOTH PIPES AND JOINTS OF 150 PSI AND SHALL BE IN ACCORDANCE WITH 30 TAC 217.53(D)(3)(A)(I).
15. AFTER CONSTRUCTION TESTING WILL BE DONE BY TV CAMERA BY THE CONTRACTOR AND OBSERVED BY THE INSPECTOR OR WATER SYSTEMS ENGINEERING PERSONNEL. AS THE CAMERA IS RUN THROUGH THE LINES (NSPI). ANY ABNORMALITIES FOUND IN THE LINE, SUCH AS BROKEN PIPE OR MISALIGNED JOINTS, MUST BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE. CONTRACTOR TO PROVIDE TV TAPES TO CONSTRUCTION INSPECTION FOR REVIEW PRIOR TO FINAL INSPECTION OF THE PROJECT.
16. WATER JETTING THE BACKFILL WITHIN A STREET WILL NOT BE PERMITTED. SANITARY SEWER TRENCHES SUBJECT TO TRAFFIC SHALL CONFORM TO NBU CONNECTION & CONSTRUCTION POLICY MANUAL.
17. NO TESTING WILL BE PERFORMED PRIOR TO 30 DAYS FROM COMPLETE INSTALLATION OF THE SANITARY SEWER LINES. THE FOLLOWING SEQUENCE WILL BE STRICTLY ADHERED TO:
   A. PULL MANDREL
   B. PERFORM AIR TEST
   C. CLEANING OF ANY DEBRIS
   D. FLUSHING OF SYSTEM
   E. TV INSPECTION (WITHIN 72 HOURS OF FLUSHING)
18. A MINIMUM OF 3 FEET OF COVER IS TO BE MAINTAINED OVER THE SANITARY SEWER MAIN AND LATERALS AT SUBGRADE, OTHERWISE CONCRETE ENCASEMENT WILL BE REQUIRED.
19. SANITARY SEWER MAIN CONNECTIONS MADE DIRECTLY TO EXISTING MANHOLES WILL REQUIRE SUCCESSFUL TESTING OF THE MANHOLE IN ACCORDANCE WITH NBU CONNECTION & CONSTRUCTION POLICY MANUAL.
20. TCEQ AND EPA REQUIRE EROSION AND SEDIMENTATION CONTROL FOR CONSTRUCTION OF SEWER COLLECTION SYSTEMS. CONTRACTOR SHALL PROVIDE EROSION AND SEDIMENTATION CONTROL PER THE PROJECT PLANS. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS SHALL BE REMOVED BY THE CONTRACTOR AT FINAL ACCEPTANCE OF THE PROJECT BY NBU WATER SYSTEMS.
21. ALL MANHOLES NOT WITHIN PAVED STREETS SHALL HAVE LOCKING CONCRETE COLLAR TO SECURE RING AND COVER TO MANHOLE CONE PER NBU DETAIL DRAWING #329. (NO SEPARATE PAY ITEM)
22. ALL MANHOLES OVER THE EDWARD'S AQUIFER RECHARGE ZONE SHALL HAVE LOCKING CONCRETE COLLAR TO SECURE RING AND COVER TO MANHOLE CONE PER NBU DETAIL DRAWING #329. (NO SEPARATE PAY ITEM)
23. ALL SEWER SERVICES SHALL HAVE CLEANOUTS INSTALLED AT PROPERTY LINE PER NBU DRAWING #302 AND #303. (NO SEPARATE PAY ITEM)
24. EACH LOT OWNER SHALL BE RESPONSIBLE FOR VERIFYING THE DEPTH OF THE SEWER SERVICE STUB OUT, AND DETERMINE THE MINIMUM SERVICEABLE FINISHED FLOOR ELEVATION.
25. VERTICAL SEWER SERVICE STACKS SHALL BE REQUIRED WHERE THE TOP OF THE SEWER MAIN IS AT A DEPTH OF 8 FEET OF GREATER, UNLESS SHOWN OTHERWISE ON PLANS.
26. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181 CENTER POINT ENERGY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND GAS VALVES THAT ARE IN THE PROJECT AREAS.

WATER NOTES:

1. ALL WATER MAINS SHALL BE AWWA C900 (CLASS 150 OR GREATER).
2. WATER SERVICES SHALL BE SINGLE 1" COPPER TUBING.
3. WATER LINE IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE NBU SYSTEMS CONNECTION & CONSTRUCTION POLICY.
4. WATER MAIN SHALL HAVE A MINIMUM OF 42 INCHES OF COVER, OTHERWISE CONCRETE ENCASEMENT WILL BE REQUIRED.
5. EACH UNIT IN A DUPLEX, TRIPLEX, FOURPLEX, OR CONDOMINIUM SHALL BE PROVIDED WITH AN INDIVIDUAL WATER METER. A MASTER METER CAN BE CONSIDERED FOR SEPARATE BUILDINGS, HOWEVER, THOSE BUILDINGS MUST BE PLUMBED TO ALLOW SEPARATE METERS FOR FUTURE CONSIDERATION.
6. CONTRACTOR WILL KEEP THE AREA ON TOP OF AND AROUND THE WATER METER BOX FREE OF ALL OBJECTS AND DEBRIS.
7. INITIAL BACKFILL OF WATER LINES SHALL BE MANUFACTURED SAND OR PEA GRAVEL AS PER NBU SYSTEMS CONNECTION & CONSTRUCTION POLICY.
8. SECONDARY BACKFILL OF WATER LINES SHALL GENERALLY CONSIST OF MATERIAL REMOVED FROM THE TRENCH AND SHALL BE FREE FROM BRUSH, DEBRIS AND TRASH OR STONES HAVING ANY DIMENSION LARGER THAN 6" INCHES AT THE LARGEST DIMENSION.
9. HYDROSTATIC TESTING IS DONE FROM VALVE TO VALVE.
10. NO METER BOXES TO BE SET IN DRIVEWAYS OR SIDEWALKS. ANY METER BOXES SET IN DRIVEWAYS OR SIDEWALKS WILL BE RELOCATED AT CONTRACTOR'S AND/OR DEVELOPER'S EXPENSE.
11. METER BOXES MUST BE SET AT THE PROPOSED GRADE. ANY METER BOXES THAT ARE NOT SET AT THE FINAL GRADE WILL BE ADJUSTED AT CONTRACTOR'S AND/OR DEVELOPER'S EXPENSE.
12. ACCEPTABLE METER BOXES ARE D13-BAMR AND D15-BAMR. NEW RESIDENTIAL LOTS ARE REQUIRED TO USE THE D15-BAMR METER BOXES (DOUBLE AMR). COMMERCIAL LOTS SHOULD CHOOSE WHICH BOX APPLIES TO THE DOMESTIC AND/OR IRRIGATION METER LAYOUT.
13. THRUST BLOCKS WILL NOT BE ALLOWED ON THE SYSTEM WITHOUT SPECIAL APPROVAL. JOINTS WILL BE RESTRAINED WITH RESTRAINING SYSTEMS APPROVED BY NBU AND RESTRAINT LENGTH SHALL BE SUBMITTED TO NBU AT THE TIME OF PLAN SUBMITTAL.
14. CONTRACTOR SHALL PLACE TRACER WIRE ON TOP OF THE WATER MAINS. TRACER WIRE SHOULD RUN FROM VALVE TO VALVE AND EXIT AT THE VALVE BOX. THE TRACER WIRE SHOULD BE ATTACHED TO THE TOP OF THE PIPE USING TAPE. EXCESS WIRE SHOULD BE LEFT WITHIN VALVE BOXES TO BE PLACED WITHIN LID OF COVER.

CITY OF NEW BRAUNFELS CONSTRUCTION NOTES

GROUNDWATER

IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER, CONTRACTOR, SUBCONTRACTORS, BUILDERS, GEOTECHNICAL ENGINEER, AND PROJZ E ECT ENGINEER TO IMMEDIATELY NOTIFY THE OFFICE OF THE CITY
ENGINEER AND PROJECT ENGINEER IF THE PRESENCE OF GROUNDWATER WITHIN THE SITE IS EVIDENT. UPON NOTIFICATION THE PROJECT ENGINEER SHALL RESPOND WITH PLAN REVISIONS FOR THE MITIGATION OF THE GROUNDWATER ISSUE. THE CITY ENGINEER SHALL RESPOND WITHIN TWO (2) BUSINESS DAYS UPON RECEIPT OF THE MITIGATION PLAN. ALL CONSTRUCTION ACTIVITY, IMPACTED BY THE DISCOVERY OF GROUNDWATER, SHALL BE SUSPENDED UNTIL THE CITY ENGINEER GRANTS A WRITTEN APPROVAL OF THE GROUNDWATER MITIGATION PLAN.

RECORD DRAWINGS

AS PER PLATTING ORDINANCE SECTION 118-38M.: WHEN ALL OF THE IMPROVEMENTS ARE FOUND TO BE CONSTRUCTED AND COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS AND WITH THE CITY'S STANDARDS, AND UPON RECEIPT OF ONE SET OF "RECORD DRAWING" PLANS, AND A DIGITAL COPY OF ALL PLANS (AUTOCAD 2000 MINIMUM) THE CITY ENGINEER SHALL ACCEPT SUCH IMPROVEMENTS FOR THE CITY OF NEW BRAUNFELS, SUBJECT TO THE GUARANTY OF MATERIAL AND WORKMANSHIP PROVISIONS IN THIS SECTION.

CONSTRUCTION NOTE

ENGINEER OF RECORD IS RESPONSIBLE TO INSURE THAT EROSION CONTROL MEASURES AND STORMWATER CONTROL SUFFICIENT TO MITIGATE OFF SITE IMPACTS ARE IN PLACE AT ALL STAGES OF CONSTRUCTION.

DRAINAGE NOTE

DRAINAGE IMPROVEMENTS SUFFICIENT TO MITIGATE THE IMPACT OF CONSTRUCTION SHALL BE INSTALLED PRIOR TO ADDING IMPERVIOUS COVER.

FINISHED FLOOR ELEVATIONS

THE ELEVATION OF THE LOWEST FLOOR SHALL BE AT LEAST 10 INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND, WHICH SHALL BE SLOPED IN A FASHION SO AS TO DIRECT STORMWATER AWAY FROM THE STRUCTURE. PROPERTIES ADJACENT TO STORMWATER CONVEYANCE STRUCTURES MUST HAVE FLOOR SLAB ELEVATION OR BOTTOM OF FLOOR JOISTS A MINIMUM OF ONE FOOT ABOVE THE 100-YEAR WATER FLOW ELEVATION IN THE STRUCTURE. DRIVEWAYS SERVING HOUSES ON THE DOWNHILL SIDE OF THE STREET SHALL HAVE A PROPERLY SIZED CROSS SWALE PREVENTING RUNOFF FROM ENTERING THE GARAGE.

ROADWAY

ALL ROADWAY COMPACTION TESTS SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FLEXIBLE BASE OR FILL MATERIAL, INCLUSIVE OF SUBGRADE, SHALL BE COMPACTED AS A SPECIFIED AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER WILL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FLEXIBLE BASE, AND FILL MATERIAL, AND SUBGRADE, HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

ITEM 340

ASPHALTIC CONCRETE PAVEMENT SHALL BE TYPE "D" HOT MIX ASPHALT AS DEFINED IN TXDOT'S STANDARD SPECIFICATIONS FOR TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREET AND BRIDGES, 2004.

THE CITY OF NEW BRAUNFELS WILL NOT ACCEPT THE USE OF RECLAIMED ASPHALT PAVEMENT (RAP) IN ASPHALT MIXTURES FOR NEW ROADWAYS.

THE ASPHALTIC CONCRETE SURFACE COURSE SHALL BE PLANT MIXED, HOT LAID TYPE "D" MEETING THE SPECIFICATION REQUIREMENTS OF 2004 TXDOT ITEM 340. THE MIX SHALL BE DESIGNED FOR A STABILITY OF AT LEAST 35 AND SHALL BE COMPACTED TO BETWEEN 91 AND 95 PERCENT OF THE MAXIMUM THEORETICAL DENSITY AS DETERMINED BY TXDOT TEST METHOD TEX-227-F. THE ASPHALT CEMENT CONTENT BY PERCENT OF TOTAL MIXTURE WEIGHT SHALL FALL WITHIN A TOLERANCE OF +0.5 PERCENT FROM A SPECIFIC MIX DESIGN.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

CURB CUT

DUE TO CONSTRUCTION OF NEW RIGHT-OF-WAY CONSTRUCTION:
1. SAWCUT EXISTING STREET AND MATCH TO NEW CONSTRUCTION.
2. SAWCUT EXISTING CURB TO TIE INTO EXISTING CONSTRUCTION.

CONSTRUCTION STABILIZED ENTRANCE

SAWCUT CURB FOR CONSTRUCTION ENTRANCE.
STABILIZED CONSTRUCTION AREA SHALL BE CONSTRUCTED OF 3"X5" ROCK TO BE PLACED A MINIMUM LENGTH OF 25-FT. AND MAINTAINED SO THAT CONSTRUCTION DEBRIS DOES NOT FALL WITHIN THE CITY RIGHT-OF-WAY. RIGHT-OF-WAY MUST BE CLEARED FROM MUD, ROCKS, ETC. AT ALL TIMES.

SIGNING AND PAVEMENT MARKING PLAN NOTES

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REGULATORY AND WARNING SIGNS, STREET NAME SIGNS AND SIGN MOUNTS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CITY WILL INSPECT ALL SIGNS AT FINAL INSPECTION.

THE CONTRACTOR SHALL INSTALL ALL PAVEMENT MARKINGS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CONTRACTOR SHALL NOTIFY THE CITY AT LEAST TWENTY-FOUR (24) HOURS PRIOR TO THE INSTALLATION OF AL SEALER AND FINAL MARKINGS. THE CITY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.

SIGNAGE NOTES

INSTALLATION

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REGULATORY, WARNING AND STREET NAME SIGNS AND SIGN MOUNTS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS.

MOUNTING

THE WEDGE ANCHOR STEEL SYSTEM AND THIN-WALLED TUBING POST SHALL BE USED FOR SIGNS WITH UP TO 10 SQUARE FEET OF SIGN AREA. MATERIALS AND INSTALLATION SHOULD FOLLOW THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) TRAFFIC STANDARDS SMD (GEN) – 08 AND SMD (TWT) – 08.

THE TRIANGULAR SLIP BASE SYSTEM AND 10 BWG TUBING POST SHALL BE USED FOR SIGNS THAT HAVE 10 TO 16 SQUARE FEET OF SIGN AREA. MATERIALS AND INSTALLATION SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS SMD (GEN) – 08 AND SMD (SLIP-1-3)– 08.

OBJECT MARKERS MATERIALS AND INSTALLATION SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS D & OM (1 – 5) – 10.

MATERIALS

SIGN MATERIALS INCLUDING ALUMINUM SIGN BLANKS AND SIGN FACE MATERIALS SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS TSR (1 – 5) – 08 AND DEPARTMENTAL MATERIAL SPECIFICATIONS DMS-7110 AND DMS-8300.

THE CITY OF NEW BRAUNFELS WILL INSPECT ALL SIGNS AT FINAL INSPECTION.

SEQUENCE OF CONSTRUCTION

1. INSTALL EROSION CONTROLS PER APPROVED PLAN.
2. TEMPORARY CONTROLS TO BE INSPECTED AND MAINTAINED WEEKLY AND PRIOR TO ANTICIPATED RAINFALL EVENTS, AND AFTER RAINFALL EVENTS, AS NEEDED. CONTRACTOR/OWNER SHALL PROVIDE A CONTACT NAME AND NUMBER FOR EROSION CONTROL ISSUES.
3. CONDUCT DEMOLITION ACTIVITIES, IF APPLICABLE.
4. CONSTRUCT DRAINAGE IMPROVEMENT, IF APPLICABLE.
5. CONSTRUCT CURB INLET PROTECTION AT THE TIME OF CURB INLET INSTALLATION.
6. CONSTRUCT DEVELOPMENT PER APPROVED PLANS.
7. INSTALL STREETSCAPE AND/OR LANDSCAPING IMPROVEMENTS.
8. CONTRACTOR TO VEGETATE ANY DISTURBED AREAS ONCE FINAL GRADING IS COMPLETE, AND ESTABLISH A MIN OF 80% VEGETATION PRIOR TO COMPLETION
9. REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.

410 N. SEGUIN AVE.
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HMT
ENGINEERING & SURVEYING

STATE OF TEXAS
ARNOLDO MARTINEZ,JR
91894
LICENSED
PROFESSIONAL ENGINEER
12-3-14

SCS CONSTRUCTION NOTES

CIVIL SITE CONSTRUCTION PLANS

ERVENDBERG CONDOS
WPAP SUBMITTAL

RIVER RETREAT 1228 L.L.C.
2714 BEE CAVE RD #204
AUSTIN, TEXAS 78748

DATE:	NOVEMBER, 2014
DRAWN BY:	JAD
DESIGNED BY:	AM
CHECKED BY:	SWH
REVIEWED BY:	SCH
PROJECT NO.:	072.003.103

SHEET
2
OF 11

Drawing Name: N:_Projects\072 - Kastleman & Associates, Inc\072.003 - Ervendberg Condos\072.003.103 - TCEQ & SCS Combo\SCS\Construction Drawings072.003.103_COVER.dwg User: armoldm Dec 11, 2014 - 1:16pm

SUBDIVISION PLAT ESTABLISHING

ADAM'S RIVER RESORT

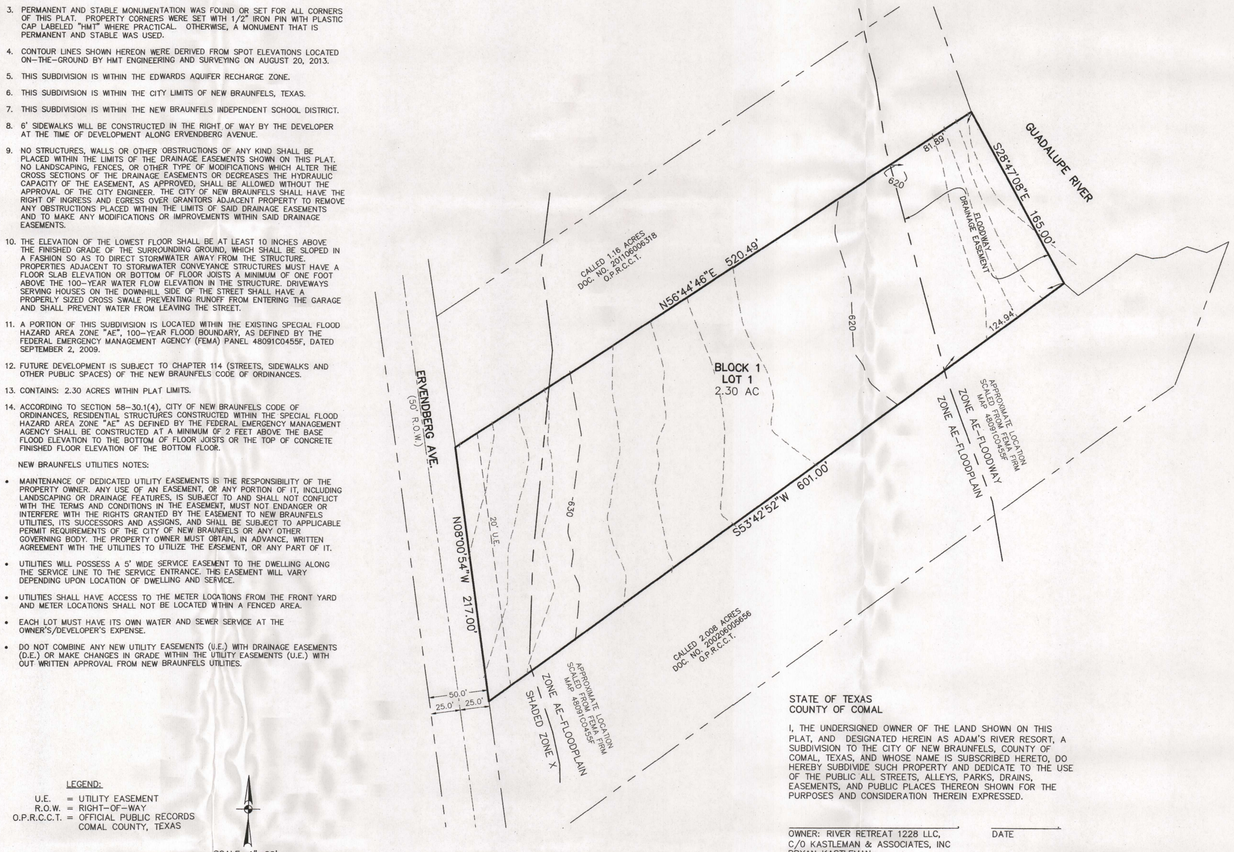
BEING A 2.30 ACRE TRACT, RECORDED IN VOL. 121, PG. 353, DEED RECORDS, OF COMAL COUNTY, TEXAS.

NOTES:

1. ALL LOTS WITHIN THE SUBDIVISION WILL BE SERVED BY PUBLIC WATER, SEWER AND ELECTRICITY PROVIDED BY NEW BRAUNFELS UTILITIES. TELEPHONE SERVICE WITHIN THE SUBDIVISION WILL BE PROVIDED BY AT&T COMMUNICATIONS AND/OR TIME WARNER.
2. BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM 1983.
3. PERMANENT AND STABLE MONUMENTATION WAS FOUND OR SET FOR ALL CORNERS OF THIS PLAT. PROPERTY CORNERS WERE SET WITH 1/2" IRON PIN WITH PLASTIC CAP LABELED "HMT" WHERE PRACTICAL. OTHERWISE, A MONUMENT THAT IS PERMANENT AND STABLE WAS USED.
4. CONTOUR LINES SHOWN HEREON WERE DERIVED FROM SPOT ELEVATIONS LOCATED ON-THE-GROUND BY HMT ENGINEERING AND SURVEYING ON AUGUST 20, 2013.
5. THIS SUBDIVISION IS WITHIN THE EDWARDS AQUIFER RECHARGE ZONE.
6. THIS SUBDIVISION IS WITHIN THE CITY LIMITS OF NEW BRAUNFELS, TEXAS.
7. THIS SUBDIVISION IS WITHIN THE NEW BRAUNFELS INDEPENDENT SCHOOL DISTRICT.
8. 6' SIDEWALKS WILL BE CONSTRUCTED IN THE RIGHT OF WAY BY THE DEVELOPER AT THE TIME OF DEVELOPMENT ALONG ERVENDBERG AVENUE.
9. NO STRUCTURES, WALLS OR OTHER OBSTRUCTIONS OF ANY KIND SHALL BE PLACED WITHIN THE LIMITS OF THE DRAINAGE EASEMENTS SHOWN ON THIS PLAT. NO LANDSCAPING, FENCES, OR OTHER TYPE OF MODIFICATIONS WHICH ALTER THE CROSS SECTIONS OF THE DRAINAGE EASEMENTS OR DECREASES THE HYDRAULIC CAPACITY OF THE EASEMENT, AS APPROVED, SHALL BE ALLOWED WITHOUT THE APPROVAL OF THE CITY ENGINEER. THE CITY OF NEW BRAUNFELS SHALL HAVE THE RIGHT OF INGRESS AND EGRESS OVER GRANTORS ADJACENT PROPERTY TO REMOVE ANY OBSTRUCTIONS PLACED WITHIN THE LIMITS OF SAID DRAINAGE EASEMENTS AND TO MAKE ANY MODIFICATIONS OR IMPROVEMENTS WITHIN SAID DRAINAGE EASEMENTS.
10. THE ELEVATION OF THE LOWEST FLOOR SHALL BE AT LEAST 10 INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND, WHICH SHALL BE SLOPED IN A FASHION SO AS TO DIRECT STORMWATER AWAY FROM THE STRUCTURE. PROPERTIES ADJACENT TO STORMWATER CONVEYANCE STRUCTURES MUST HAVE A FLOOR SLAB ELEVATION OR BOTTOM OF FLOOR JOISTS A MINIMUM OF ONE FOOT ABOVE THE 100-YEAR WATER FLOW ELEVATION IN THE STRUCTURE. DRIVEWAYS SERVING HOUSES ON THE DOWNHILL SIDE OF THE STREET SHALL HAVE A PROPERLY SIZED CROSS SWALE PREVENTING RUNOFF FROM ENTERING THE GARAGE AND SHALL PREVENT WATER FROM LEAVING THE STREET.
11. A PORTION OF THIS SUBDIVISION IS LOCATED WITHIN THE EXISTING SPECIAL FLOOD HAZARD AREA ZONE "AE", 100-YEAR FLOOD BOUNDARY, AS DEFINED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) PANEL 48091C0455F, DATED SEPTEMBER 2, 2009.
12. FUTURE DEVELOPMENT IS SUBJECT TO CHAPTER 114 (STREETS, SIDEWALKS AND OTHER PUBLIC SPACES) OF THE NEW BRAUNFELS CODE OF ORDINANCES.
13. CONTAINS: 2.30 ACRES WITHIN PLAT LIMITS.
14. ACCORDING TO SECTION 58-30.1(4), CITY OF NEW BRAUNFELS CODE OF ORDINANCES, RESIDENTIAL STRUCTURES CONSTRUCTED WITHIN THE SPECIAL FLOOD HAZARD AREA ZONE "AE" AS DEFINED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY SHALL BE CONSTRUCTED AT A MINIMUM OF 2 FEET ABOVE THE BASE FLOOD ELEVATION TO THE BOTTOM OF FLOOR JOISTS OR THE TOP OF CONCRETE FINISHED FLOOR ELEVATION OF THE BOTTOM FLOOR.

NEW BRAUNFELS UTILITIES NOTES:

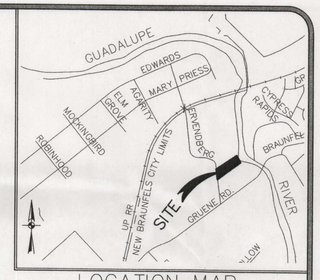
- MAINTENANCE OF DEDICATED UTILITY EASEMENTS IS THE RESPONSIBILITY OF THE PROPERTY OWNER. ANY USE OF AN EASEMENT, OR ANY PORTION OF IT, INCLUDING LANDSCAPING OR DRAINAGE FEATURES, IS SUBJECT TO AND SHALL NOT CONFLICT WITH THE TERMS AND CONDITIONS IN THE EASEMENT, MUST NOT ENDANGER OR INTERFERE WITH THE RIGHTS GRANTED BY THE EASEMENT TO NEW BRAUNFELS UTILITIES, ITS SUCCESSORS AND ASSIGNS, AND SHALL BE SUBJECT TO APPLICABLE PERMIT REQUIREMENTS OF THE CITY OF NEW BRAUNFELS OR ANY OTHER GOVERNING BODY. THE PROPERTY OWNER MUST OBTAIN, IN ADVANCE, WRITTEN AGREEMENT WITH THE UTILITIES TO UTILIZE THE EASEMENT, OR ANY PART OF IT.
- UTILITIES WILL POSSESS A 5' WIDE SERVICE EASEMENT TO THE DWELLING ALONG THE SERVICE LINE TO THE SERVICE ENTRANCE. THIS EASEMENT WILL VARY DEPENDING UPON LOCATION OF DWELLING AND SERVICE.
- UTILITIES SHALL HAVE ACCESS TO THE METER LOCATIONS FROM THE FRONT YARD AND METER LOCATIONS SHALL NOT BE LOCATED WITHIN A FENCED AREA.
- EACH LOT MUST HAVE ITS OWN WATER AND SEWER SERVICE AT THE OWNER'S/DEVELOPER'S EXPENSE.
- DO NOT COMBINE ANY NEW UTILITY EASEMENTS (U.E.) WITH DRAINAGE EASEMENTS (D.E.) OR MAKE CHANGES IN GRADE WITHIN THE UTILITY EASEMENTS (U.E.) WITH OUT WRITTEN APPROVAL FROM NEW BRAUNFELS UTILITIES.



LEGEND:

U.E. = UTILITY EASEMENT
R.O.W. = RIGHT-OF-WAY
O.P.R.C.C.T. = OFFICIAL PUBLIC RECORDS COMAL COUNTY, TEXAS

SCALE: 1"=60'



LOCATION MAP
N.T.S.

KNOW ALL MEN BY THESE PRESENTS:

I, THE UNDERSIGNED, THOR THORNHILL, A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, HEREBY CERTIFY THAT THIS PLAT IS TRUE AND CORRECTLY MADE UNDER MY SUPERVISION AND IN COMPLIANCE WITH CITY AND STATE SURVEY REGULATIONS AND LAWS AND MADE ON THE GROUND AND THAT THE CORNER MONUMENTS WERE PROPERLY PLACED UNDER MY SUPERVISION.

PRELIMINARY, THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE.

DOUGLAS B. COTTLE
REGISTERED PROFESSIONAL LAND SURVEYOR NO. 6149
410 N. SEGUIN NEW BRAUNFELS, TEXAS 78130

APPROVED THIS THE _____ DAY OF _____ 20__, BY THE PLANNING COMMISSION OF THE CITY OF NEW BRAUNFELS, TEXAS.

_____
CHAIRMAN

APPROVED FOR ACCEPTANCE

_____ _____
DATE PLANNING DIRECTOR

_____ _____
DATE CITY ENGINEER

_____ _____
DATE NEW BRAUNFELS UTILITIES

STATE OF TEXAS
COUNTY OF COMAL

I, THE UNDERSIGNED OWNER OF THE LAND SHOWN ON THIS PLAT, AND DESIGNATED HEREIN AS ADAM'S RIVER RESORT, A SUBDIVISION TO THE CITY OF NEW BRAUNFELS, COUNTY OF COMAL, TEXAS, AND WHOSE NAME IS SUBSCRIBED HERETO, DO HEREBY SUBDIVIDE SUCH PROPERTY AND DEDICATE TO THE USE OF THE PUBLIC ALL STREETS, ALLEYS, PARKS, DRAINS, EASEMENTS, AND PUBLIC PLACES THEREON SHOWN FOR THE PURPOSES AND CONSIDERATION THEREIN EXPRESSED.

_____ _____
OWNER: RIVER RETREAT 1228 LLC, DATE
C/O KASTLEMAN & ASSOCIATES, INC
BRYAN KASTLEMAN
2714 BEE CAVE ROAD #204
AUSTIN, TX 78748

STATE OF TEXAS
COUNTY OF COMAL

THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON THIS DAY OF _____, 20__,
BY _____

_____
NOTARY PUBLIC, STATE OF TEXAS
MY COMMISSION EXPIRES: _____

STATE OF TEXAS
COUNTY OF COMAL

I, _____ DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT WAS FILED FOR RECORD IN THE MAP AND PLAT RECORDS, DOC# _____ OF COMAL COUNTY ON THE _____ DAY OF _____, 20__, AT _____ ___ M.

WITNESS MY HAND AND OFFICIAL SEAL, THIS THE ___ DAY OF _____, 20__

_____
COUNTY CLERK, COMAL COUNTY, TEXAS

_____
DEPUTY

HMT
ENGINEERING & SURVEYING

410 N. SEGUIN AVE.
NEW BRAUNFELS,
TEXAS, 78130
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HMT
ENGINEERING & SURVEYING

STATE OF TEXAS
ARNOLDO MARTINEZ, JR.
91894
LICENSED
PROFESSIONAL ENGINEER
12-3-14

PLAT

CIVIL SITE CONSTRUCTION PLANS

ERVENDBERG CONDOS

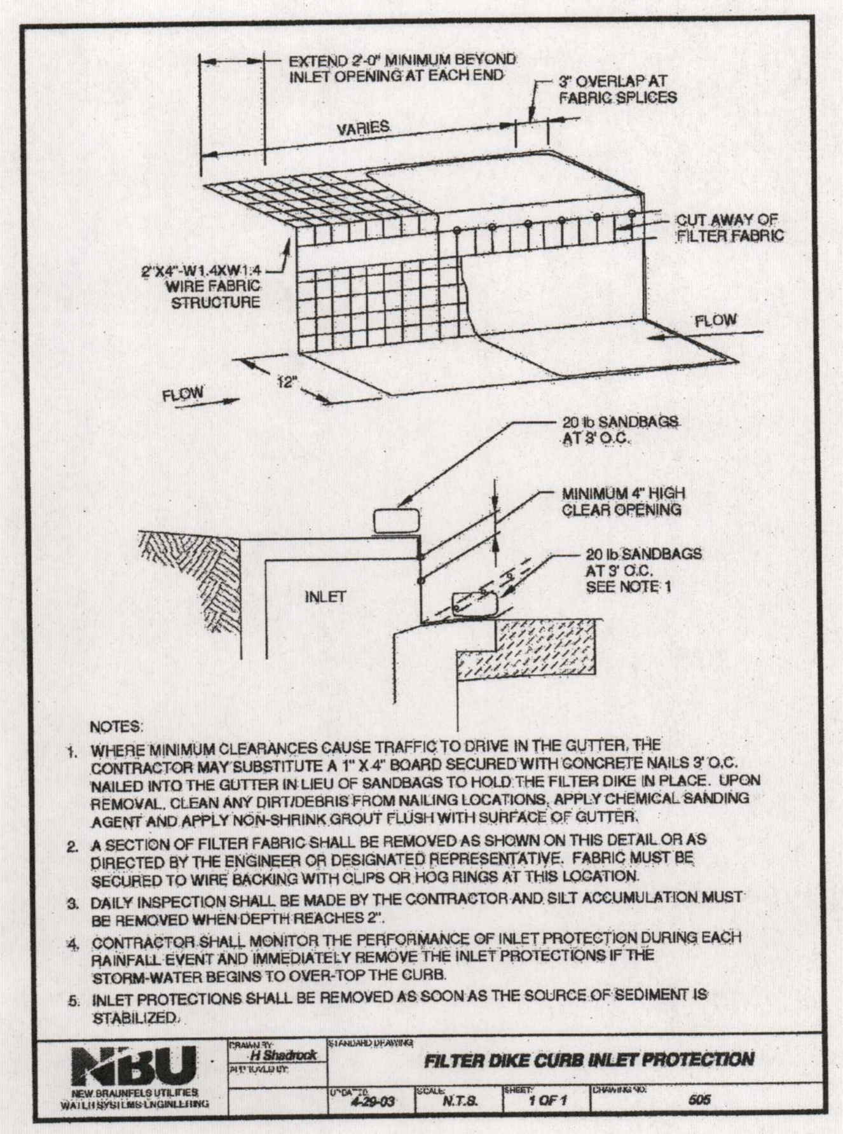
RIVER RETREAT 1228 L.L.C.
2714 BEE CAVE RD #204
AUSTIN, TEXAS 78748

DATE: NOVEMBER, 2014
DRAWN BY:
DESIGNED BY:
CHECKED BY:
REVIEWED BY:
PROJECT NO.: 072.003.103

SHEET 3 OF 11

Drawing Name: N:_Projects\072 - Kastleman & Associates, Inc\072.003 - Ervendberg Condos\072.003.101 - Construction Drawings\072.003.101_PLAT.dwg User: arnoldm Dec 11, 2014 - 1:17pm

Drawing Name: N:_Projects\072 - Kastleman & Associates, Inc\072.001 - Ervendberg Vacation Development\072.001.101 - Ervenberg Preliminary Phase\072.001.101 Plat.dwg User: bkoesel May 19, 2014 - 10:52am



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

1. Written construction notification must be given to the appropriate TCEQ regional office no later than 48 hours prior to commencement of the regulated activity. Information must include the date on which the regulated activity will commence, the name of the approved plan for the regulated activity, and the name of the prime contractor and the name and telephone number of the contact person.

2. All contractors conducting regulated activities associated with this project must be provided with complete copies of the approved Water Pollution Abatement Plan and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractors are required to keep on–site copies of the approved plan and approval letter.

3. If any sensitive feature is discovered during construction, all regulated activities near the sensitive feature must be suspended immediately. The appropriate TCEQ regional office must be immediately notified of any sensitive features encountered during construction. The regulated activities near the sensitive feature may not proceed until the TCEQ has reviewed and approved the methods proposed to protect the sensitive feature and the Edwards Aquifer from any potentially adverse impacts to water quality.

4. No temporary aboveground hydrocarbon and hazardous substance storage tank system is installed within 150 feet of a domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

5. Prior to commencement of construction, all temporary erosion and sedimentation (E&S) control measures must be properly selected, installed, and maintained in accordance with the manufacturers specifications and good engineering practices. Controls specified in the temporary storm water section of the approved Edwards Aquifer Protection Plan are required during construction. If inspections indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations. The controls must remain in place until disturbed areas are revegetated and the areas have become permanently stabilized.

6. 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).

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

8. 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).

9. All spoils (excavated material) generated from the project site must be stored on–site with proper E&S controls. For storage or disposal of spoils at another site on the Edwards Aquifer Recharge Zone, the owner of the site must receive approval of a water pollution abatement plan for the placement of fill material or mass grading prior to the placement of spoils at the other site.

10. 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. Where the initiation of stabilization measures by the 14th day after construction activity temporary or permanently cease is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 21 days, temporary stabilization measures do not have to be initiated on that portion of site. In areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

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

12 The holder of any approved Edward Aquifer protection plan must notify the appropriate regional office in writing and obtain approval from the executive director prior to initiating any of the following:

A. any physical or operational modification of any water pollution abatement structure(s), including but not limited to ponds, dams, berms, sewage treatment plants, and diversionary structures;

B. any change in the nature or character of the regulated activity from that which was originally approved or a change which would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;

C. any development of land previously identified as undeveloped in the original water pollution abatement plan.

Austin Regional Office
2800 S. IH 35, Suite 100
Austin, Texas 78704–5712
Phone (512) 339–2929
Fax (512) 339–3795

San Antonio Regional Office
14250 Judson Road
San Antonio, Texas 78233–4480
Phone (210) 490–3096
Fax (210) 545–4329

CONCRETE WASHOUT AREAS

THE PURPOSE OF CONCRETE WASHOUT AREAS IS TO PREVENT OR REDUCE THE DISCHARGE OF POLLUTANTS TO STORMWATER FROM CONCRETE WASTE BY CONDUCTING WASHOUT OFFSITE, PERFORMING ONSITE WASHOUT IN A DESIGNATED AREA, AND TRAINING EMPLOYEES AND SUBCONTRACTORS.

THE FOLLOWING STEPS WILL HELP REDUCE STORMWATER POLLUTION FROM CONCRETE WASTES:

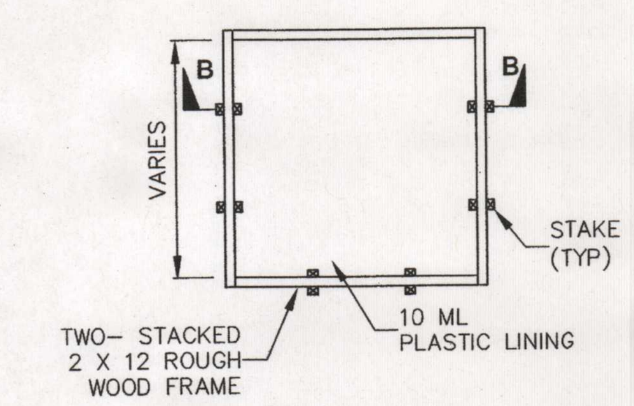
· INCORPORATE REQUIREMENTS FOR CONCRETE WASTE MANAGEMENT INTO MATERIAL SUPPLIER AND SUBCONTRACTOR AGREEMENTS.
· AVOID MIXING EXCESS AMOUNTS OF FRESH CONCRETE.
· PERFORM WASHOUT OF CONCRETE TRUCKS IN DESIGNATED AREAS ONLY.
· DO NOT WASH OUT CONCRETE TRUCKS INTO STORM DRAINS, OPEN DITCHES, STREETS, OR STREAMS.
· DO NOT ALLOW EXCESS CONCRETE TO BE DUMPED ONSITE, EXCEPT IN DESIGNATED AREAS.

FOR ONSITE WASHOUT:

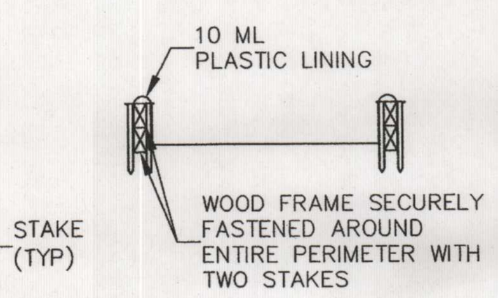
· LOCATE WASHOUT AREA AT LEAST 50 FEET FROM SENSITIVE FEATURES, STORM DRAINS, OPEN DITCHES, OR WATER BODIES. DO NOT ALLOW RUNOFF FROM THIS AREA BY CONSTRUCTING A
TEMPORARY PIT OR BERMED AREA LARGE ENOUGH FOR LIQUID AND SOLID WASTE.
· WASH OUT WASTES INTO THE TEMPORARY PIT WHERE THE CONCRETE CAN SET, BE BROKEN UP, AND THEN DISPOSED PROPERLY.

BELOW GRADE CONCRETE WASHOUT FACILITIES ARE TYPICAL. THESE CONSIST OF A LINED EXCAVATION SUFFICIENTLY LARGE TO HOLD EXPECTED VOLUME OF WASHOUT MATERIAL. ABOVE GRADE FACILITIES ARE USED IF EXCAVATION IS NOT PRACTICAL. TEMPORARY CONCRETE WASHOUT FACILITY (TYPE ABOVE GRADE) SHOULD BE CONSTRUCTED AS SHOWN ON THE DETAILS AT THE END OF THIS SECTION, WITH SUFFICIENT QUANTITY AND VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS. PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL IN POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.

WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE BACKFILLED AND REPAIRED.



PLAN
NOT TO SCALE
TYPE "ABOVE GRADE"



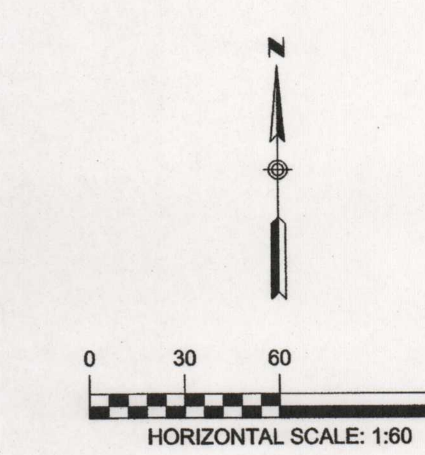
NOTES
1. ACTUAL LAYOUT DETERMINED IN FIELD.

SECTION B–B
NOT TO SCALE

LEGEND

—700—	EXISTING CONTOURS
[700]	PROPOSED CONTOURS
B.L.	BUILDING SETBACK LINE
U.E.	UTILITY EASEMENT
D.E.	DRAINAGE EASEMENT
→	DRAINAGE FLOW DIRECTION
— SF — SF —	SILT FENCE
— LOC — LOC —	LIMIT OF CONSTRUCTION
(hatched)	STABILIZED CONSTRUCTION ENTRANCE
(hatched)	FILTER DIKE

CONSTRUCTION SEQUENCING
1. AS SOON AS THE CURB INLETS ARE INSTALLED, CURB INLET PROTECTION SHALL BE INSTALLED BY THE CONTRACTOR.



HORIZONTAL SCALE: 1:60

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24– HOURS PRIOR TO COMMENCING CONSTRUCTION.

STABILIZED CONSTRUCTION ENTRANCE / EXIT

MATERIALS:

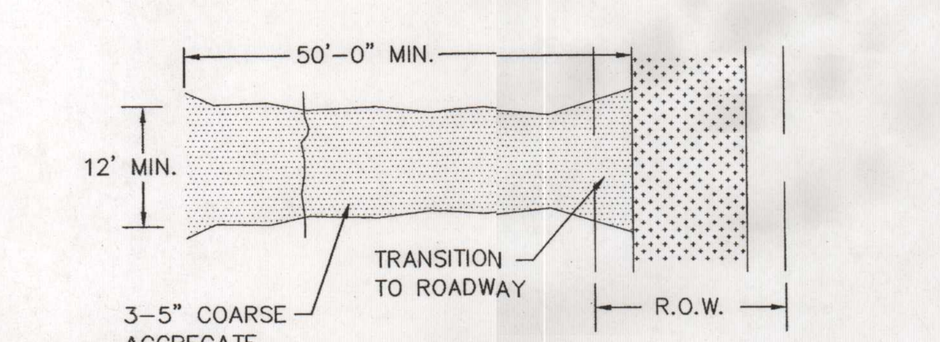
(1) THE AGGREGATE SHOULD CONSIST OF 3 TO 5 INCH WASHED STONE OVER A STABLE FOUNDATION AS SPECIFIED IN THE PLAN.
(2) THE AGGREGATE SHOULD BE PLACED WITH A MINIMUM THICKNESS OF 8 INCHES.
(3) THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OZ/YD2, A MULLEN BURST RATING OF 140 LB/IN2, AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SIEVE.
(4) IF A WASHING FACILITY IS REQUIRED, A LEVEL AREA WITH A MINIMUM OF 4 INCH DIAMETER WASHED STONE OR COMMERCIAL RACK SHOULD BE INCLUDED IN THE PLANS. DIVERT WASTEWATER TO A SEDIMENT TRAP OR BASIN.

INSTALLATION:

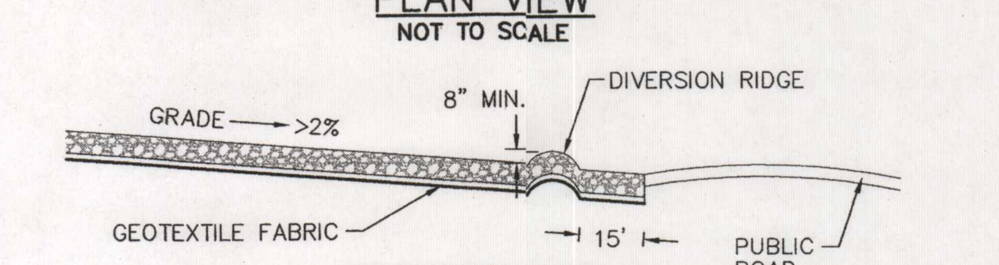
(1) AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.
(2) THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.
(3) THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.
(4) IF THE SLOPE TOWARD THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE, 6 TO 8 INCHES HIGH WITH 3:1 (H:V) SIDE SLOPES, ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.
(5) PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.
(6) PLACE STONE TO DIMENSIONS AND GRADE SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.
(7) DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN.
(8) INSTALL PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.

INSPECTION AND MAINTENANCE GUIDELINES:

(1) THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACKING OR LOWING 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.



PLAN VIEW
NOT TO SCALE



PROFILE VIEW
NOT TO SCALE

SILT FENCE

MATERIALS:

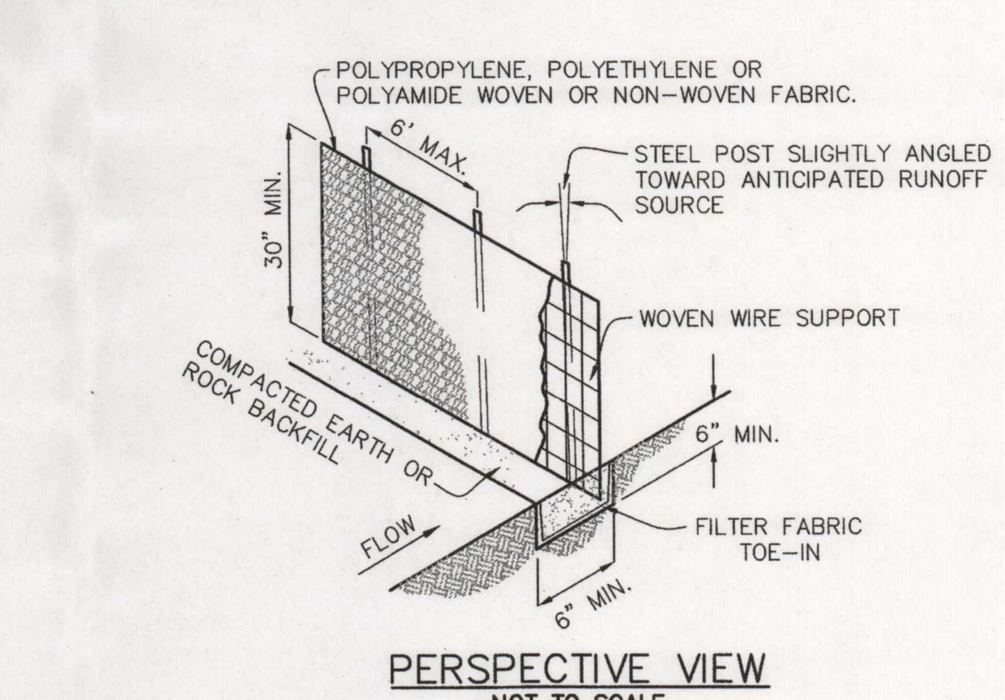
(1) SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC WIDTH SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/IN2, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NO. 30.
(2) FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR YBAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM NOMINAL WEIGHT 1.25 LB/FT2, AND BRINDELL HARDNESS EXCEEDING 140.
(3) WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM.

INSTALLATION:

(1) STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 1– FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET.
(2) LAY OUT FENCING DOWN–SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE/100 FEET OF FENCE.
(3) THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN–SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G., PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.
(4) THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
(5) SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3–FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
(6) SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

INSPECTION AND MAINTENANCE GUIDELINES:

(1) INSPECT ALL FENCING WEEKLY, AND AFTER ANY RAINFALL.
(2) REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES.
(3) REPLACE ANY TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.
(4) 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.



PERSPECTIVE VIEW
NOT TO SCALE

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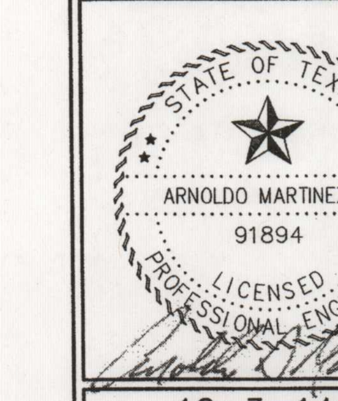


12–3–14

EROSION CONTROL PLAN

CIVIL SITE CONSTRUCTION PLANS

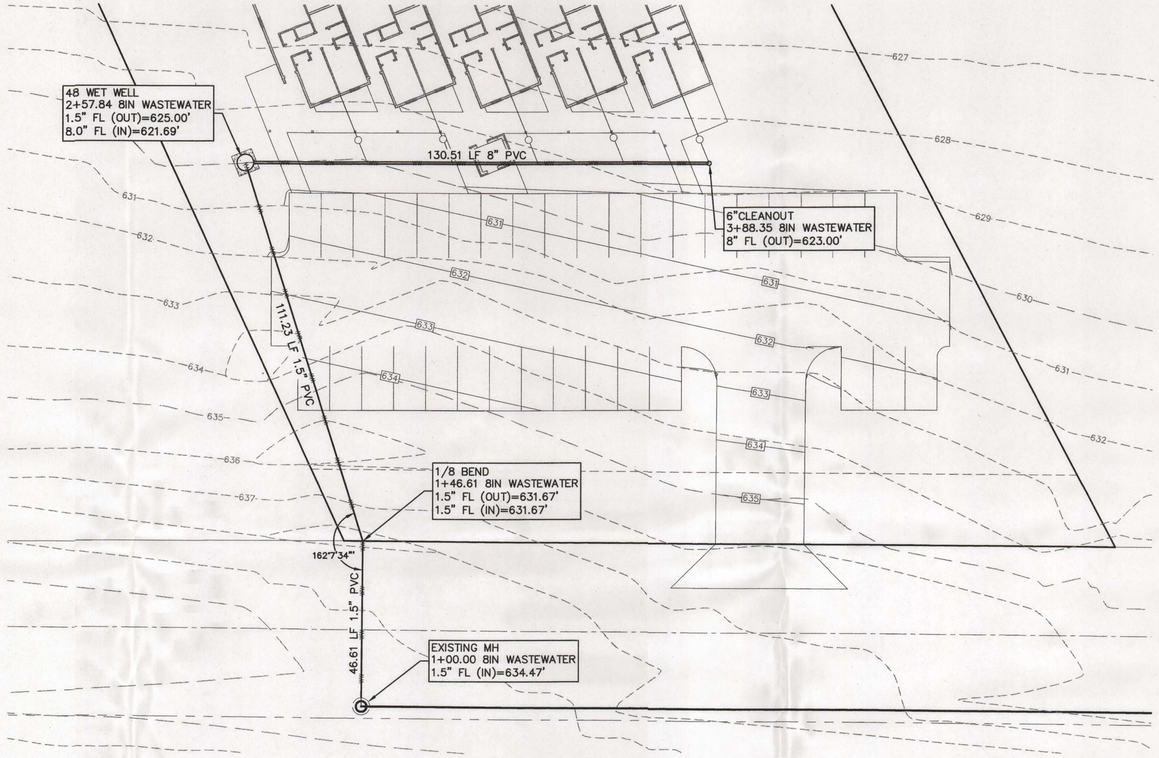
ERVENDBERG CONDOS

RIVER RETREAT 1228 L.L.C.
2714 BEE CAVE RD #204
AUSTIN, TEXAS 78748

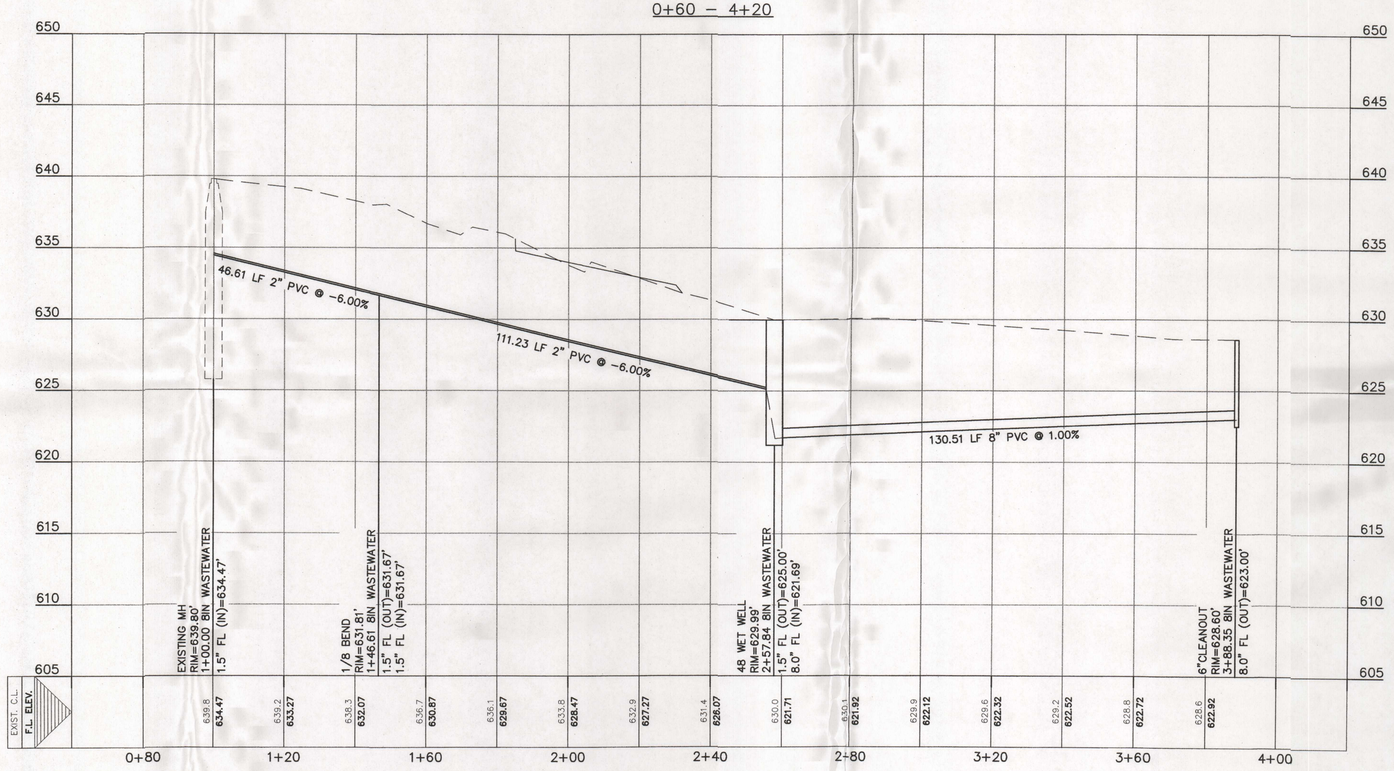
DATE: NOVEMBER, 2014
DRAWN BY: DRAWN BY
DESIGNED BY: DESIGNED BY
CHECKED BY: CHECKED BY
REVIEWED BY: REVIEWED BY
PROJECT NO.: 072.003.103

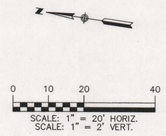
SHEET 4 OF 11

Drawing Name: N:_Projects\072 – Kastleman & Associates, Inc\072.003 – Ervendberg Condos\072.003.101 – Construction Drawings\072.003.101_EROS.dwg User: arnoldm Dec 11, 2014 – 1:25pm



8IN WASTEWATER
0+60 – 4+20





LEGEND

- EXISTING CONTOURS
- PROPOSED CONTOURS
- B.L. BUILDING SETBACK LINE
- U.E. UTILITY EASEMENT
- D.E. DRAINAGE EASEMENT
- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER SERVICE
- UTILITY CROSSING

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LICENSED PROFESSIONAL ENGINEER

12-3-14

OVERALL WASTE WATER PLAN AND PROFILE

CIVIL SITE CONSTRUCTION PLANS

ERVENDBERG CONDOS
WPAP SUBMITTAL

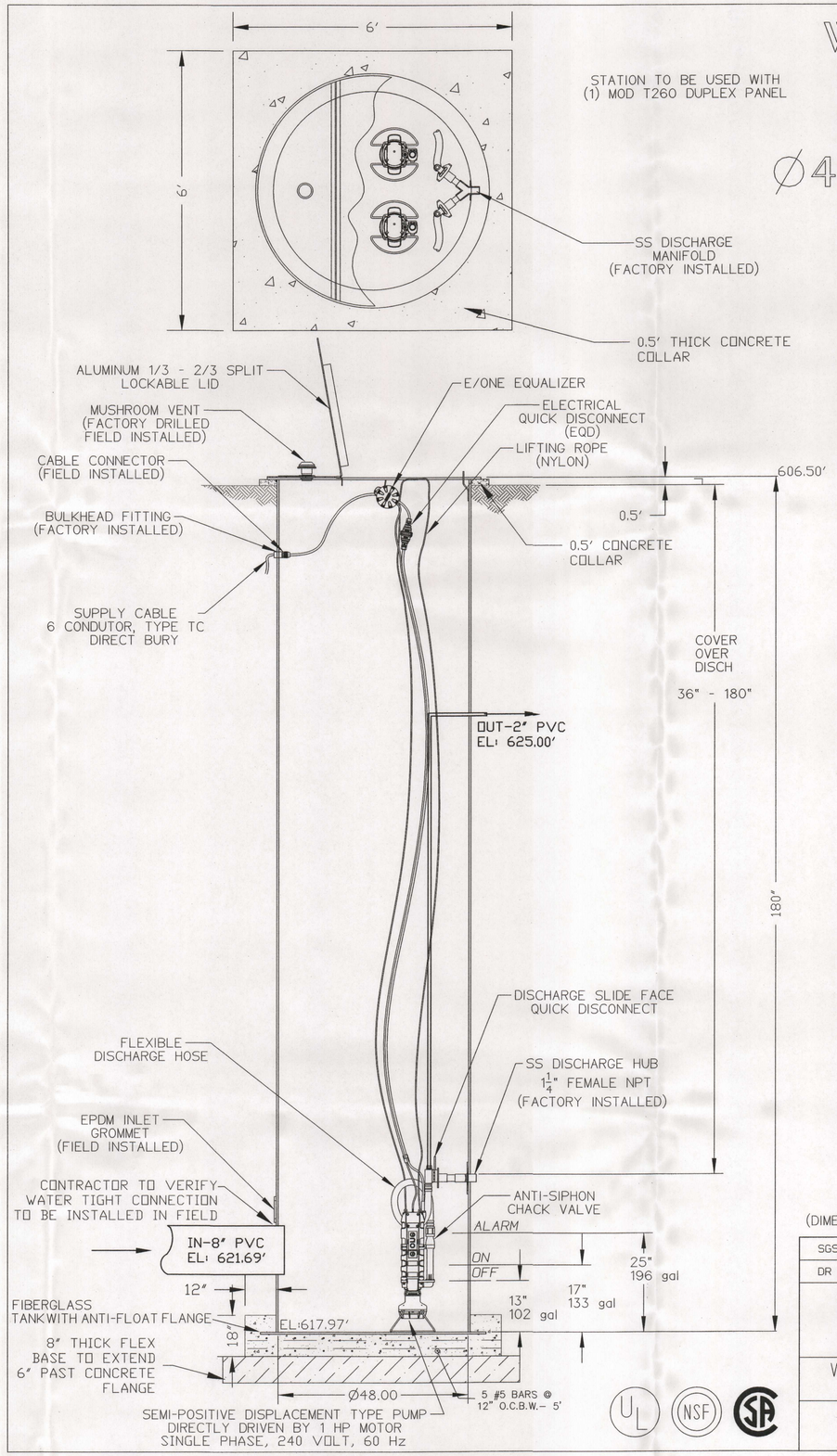
RIVER RETREAT 1228 L.L.C.
2714 BEE CAVE RD #204
AUSTIN, TEXAS 78748

DATE: NOVEMBER, 2014
DRAWN BY:
DESIGNED BY:
CHECKED BY:
REVIEWED BY:
PROJECT NO.: 072.003.103

SHEET 5 OF 11

W-SERIES DUPLEX STATION Ø48" X 180"

STATION TO BE USED WITH (1) MOD T260 DUPLEX PANEL



INLET CHOICES
~~4" DWV PIPE (4.50 OD)~~ ☐
~~4" DR35 PIPE (4.22 OD)~~ ☐
~~6" DWV PIPE (6.63 OD)~~ ☐
~~6" DR35 PIPE (6.28 OD)~~ ☐
~~8" DWV PIPE (8.63 OD)~~ ☐
8" DR35 PIPE (8.40 OD) ☐

(DIMENSIONS ARE FOR REFERENCE ONLY)

SGS		05/11/11		N.T.S.
DR BY	CHK'D	DATE	ISSUE	SCALE

e/one SEWER SYSTEMS

W-SERIES DUPLEX STATION Ø48" X 180"

ESD 11-0076

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LIFT STATION PLAN

CIVIL SITE CONSTRUCTION PLANS

ERVENDBERG CONDOS
WPAP SUBMITTAL

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AUSTIN, TEXAS 78748

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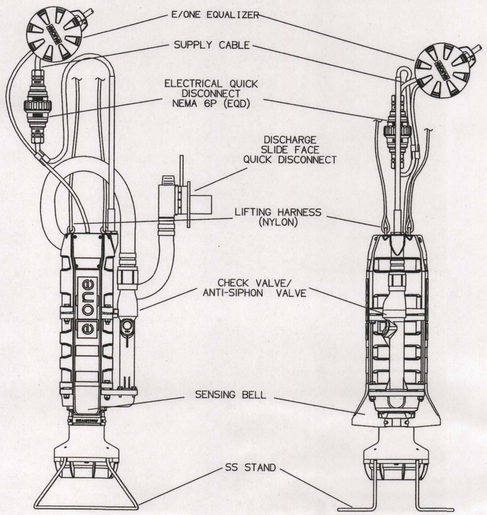
CHECKED BY: CHECKED BY
REVIEWED BY: REVIEWED BY
PROJECT NO.: 072.003.103

SHEET 6 OF 11



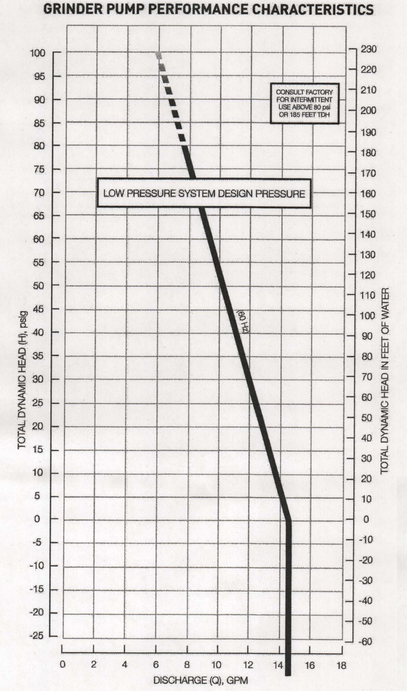
W SERIES GRINDER PUMP

SGS		06/14/12	2	
DR BY	CHK'D	DATE	ISSUE	SCALE

e/one SEWER SYSTEMS

W-SERIES FEATURES

ESD 08-0027



E/ONE EXTREME SERIES

E/One T260

Duplex Alternating Alarm Panel

LM000372

Description

The T260 Duplex Alternating Alarm panel is custom designed for use with Environment One duplex grinder pump stations.

Duplex grinder pump stations, a station with two grinder pumps, require the pumping load to be shared equally between the two pumps. Under normal conditions, one pump removes the accumulated sewage from the grinder pump basin. After 24 hours, the T260 Alternating Panel toggles the electrical supply power to the pump that was idle. If the sewage level reaches the alarm level, the two grinder pumps will operate simultaneously for 3 to 4 minutes. If, after that time, the sewage is not below the alarm level, the alarm circuit is engaged.

The T260 Alternating Panel is supplied with audible and visual high water level alarms. The panel is easily installed in accordance with relevant national and local codes.

The T260 Panel is listed by Underwriters Laboratories, CSA, CE and NSF to ensure high quality and safety.

Standard Features

UL-approved, corrosion-proof polyester enclosure
NEMA 4X-rated enclosure with hinged access panel
Lockable latch with keyed-alike padlock included
Circuit breakers
Terminal blocks & ground lugs
Dry contacts
Lead/lag, run and alarm indicator lights
Manual push-to-run

Optional Features

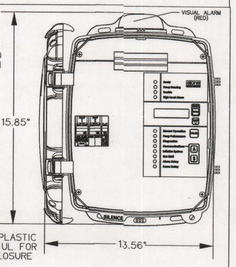
Hour meters (with larger enclosure)
E/One Remote Sentry ready (with power loss capability)
Dead front
Generator receptacle with auto transfer
GFCI receptacle
Auto dialer

** Consult factory for special applications

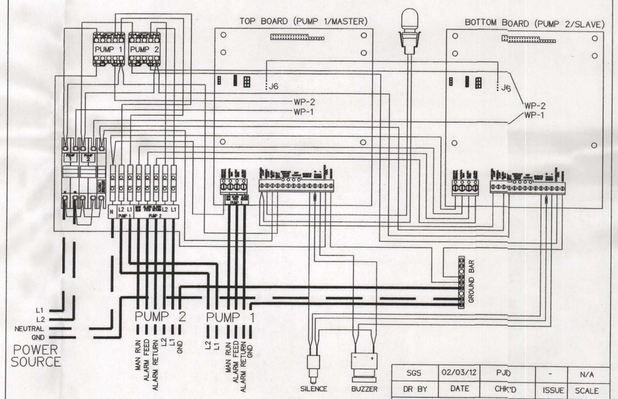
SENTRY PROTECT PLUS DUPLEX

EXTERNAL VISUAL & AUDIBLE ALARM
REMOTE SENTRY DRY CONTACTS FOR
OPTIONAL POWER LOSS HIGH LEVEL
ALARM (POWER LOSS ALARM FOR WIRELESS)
MANUAL ALARM SILENCE
MANUAL RUN
STATUS LED'S: NORMAL, PUMP RUNNING, HIGH LEVEL
TROUBLE INDICATIONS: RUN DRY, OVERPRESSURE, BROWNOUT, VOLTAGE, EXTENDED RUN TIME
DRY CONTACTS
CONFORMAL COATED CIRCUIT BOARD (BOTH SIDES)
PADLOCK
DEAD FRONT
PREDICTIVE ALARMS
REAL TIME PUMP PERFORMANCE
ADJUSTABLE ALARM DELAY
ADJUSTABLE RUN TIME DELAY
HOUR/CYCLE COUNTER
NEMA 4X ENCLOSURE ASSEMBLY

DIMENSION FROM BACK PANEL TO FRONT OF OPEN DOOR = 18.02"



ENCLOSURE:
CORROSION PROOF THERMOPLASTIC POLYESTER APPROVED BY UL FOR ELECTRICAL CONTROL ENCLOSURE



PIN	FUNCTION	2000S	EXTREME
1	MANUAL RUN	RED	BROWN
2	L1	BLACK	RED
3	L2	WHITE	BLACK
4	GND	GREEN	GRN/YEL
5	ALARM FEED	ORANGE	YELLOW
6	ALARM RETURN	BLUE	BLUE

LEGEND
FROM CORE
SUPPLY CABLE
FACTORY INSTALLED

CONTROL CABLE:
TYPE TC DIRECT BURIAL, SIX CONDUCTOR

SGS	02/03/12	PJD	-	N/A
DR BY	DATE	CHK'D	ISSUE	SCALE

e/one SEWER SYSTEMS

SENTRY PROTECT PLUS PANEL, DUPLEX 240V 60Hz DOUBLE POLE POWER

NA0344P03

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12-3-14

LIFT STATION DETAILS

CIVIL SITE CONSTRUCTION PLANS

ERVENDBERG CONDOS
WPAP SUBMITTAL

RIVER RETREAT 1228 L.L.C.
2714 BEE CAVE RD #204
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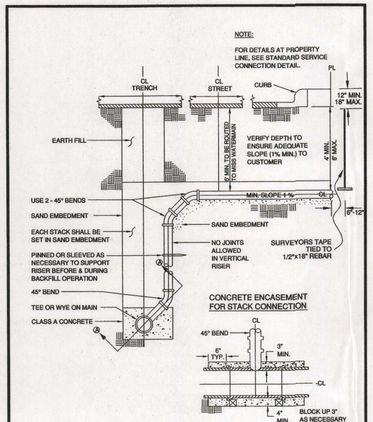
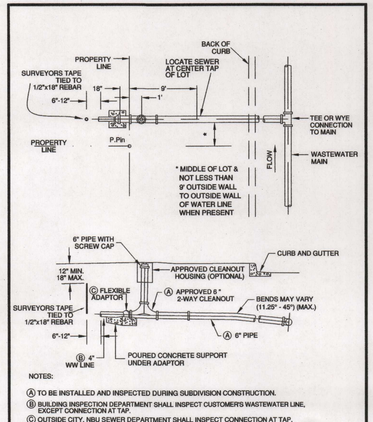
PROJECT NO.: 072.003.103

SHEET 7 OF 11



NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

DRAWN BY:	STANDARD DRAWING:	
JO Amaro		WASTEWATER DEEP SERVICE CONNECTION DETAIL
APPROVED BY:		
UPDATED: 4-15-03	SCALE: N.T.S.	SHEET: 1 OF 1
		DRAWING NO. 301



NOTES:

A TO BE INSTALLED AND INSPECTED DURING SUBDIVISION CONSTRUCTION.

B BUILDING INSPECTION DEPARTMENT SHALL INSPECT CUSTOMERS WASTEWATER LINE, EXCEPT CONNECTION AT TAP.

C OUTSIDE CITY, NBU SEWER DEPARTMENT SHALL INSPECT CONNECTION AT TAP.

NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

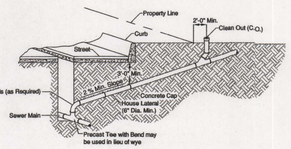
DRAWN BY:	STANDARD DRAWING:	
H Shadrock		SINGLE WASTEWATER SERVICE CONNECTION DETAIL
APPROVED BY:		
UPDATED: 4-28-03	SCALE: N.T.S.	SHEET: 1 OF 2
		DRAWING NO. 302

NOTES:

1. UTILITY CONTRACTOR, DURING SUBDIVISION CONSTRUCTION, INSTALLS WASTEWATER CONNECTION TO MAIN, 6" STUB WITH 6" SERVICE BRANCH WITH 2-WAY CLEANOUT AND RISER FOR CLEANOUTS (CAPPED) AND PLUGS FOR 2-WAY CLEANOUTS AT PROPERTY LINE END. ALL WASTEWATER PIPING SHALL HAVE ELASTOMERIC GASKET TYPE JOINTS AND SHALL SLOPE DOWNWARD TO MAIN 2%, 1/4 " PER FOOT, MINIMUM TO 45° MAXIMUM. DEPTH OF SERVICE STUB AT PROPERTY LINE WILL BE SHOWN ON PLANS BY ENGINEER OR DESIGNATED REPRESENTATIVE IF GREATER THAN 4', OTHERWISE, THE INSTALLED DEPTH WILL TYPICALLY BE 4' TO 6'. IF WASTEWATER SERVICE LINE TO MAIN REQUIRES DEFLECTION EXCEEDING 45°, REFER TO DETAIL DRAWING 301. ALL INSTALLATIONS SHALL BE MADE IN ACCORDANCE WITH INFORMATION SHOWN ON APPLICABLE STANDARD DRAWINGS AND WILL BE INSPECTED BY NEW BRAUNFELS UTILITIES (NBU) CONSTRUCTION INSPECTION PERSONNEL.
2. CUSTOMERS REMOVE PLUGS FROM 2-WAY CLEANOUT, AT PROPERTY LINE, INSTALL MINIMUM 18" LENGTH OF 6" PIPE, INSTALL 4" WASTEWATER LINES [EXTEND 4" PIPE 6" MINIMUM INTO 6" PIPE AND JOINT WITH FLEXIBLE ADAPTOR] AND CAST IN PLACE CONCRETE SUPPORT BLOCK UNDER THE FLEXIBLE ADAPTOR. BLOCK SHALL HAVE MINIMUM DIMENSIONS OF 6" THICK AND 18" WIDE AND EXTEND A MINIMUM OF 6" BEYOND EITHER END OF ADAPTOR. IF WASTEWATER WILL NOT SATISFACTORILY FLOW BY GRAVITY TO SEWER MAIN ADJACENT TO PROPERTY, PUMP EQUIPMENT MUST BE PROVIDED BY THE CUSTOMER AS PART OF CUSTOMERS WASTEWATER SYSTEM.
3. CUSTOMER IS RESPONSIBLE FOR PIPING SYSTEM UNTIL WASTEWATER IS CONNECTED. ANY MISSING OR DAMAGED PARTS SHALL BE REINSTALLED BY CUSTOMER WHO SHALL GUARANTEE, FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE, THAT CONNECTIONS TO NBU SYSTEMS ARE FREE FROM DEFECTS IN WORKMANSHIP OR MATERIALS. CUSTOMER ALSO HAS THE RESPONSIBILITY TO ASSURE THAT 2-WAY CLEANOUTS REMAIN CLEAR OF SIDEWALKS AND OTHER OBSTRUCTIONS.
4. NEW BRAUNFELS UTILITIES (NBU) ACTIVITY IS LIMITED TO INSPECTION OF CONNECTIONS TO NBU'S WASTEWATER SYSTEM. FOR MAINTENANCE PURPOSES, NBU'S RESPONSIBILITY ENDS AT THE CUSTOMER'S WASTEWATER CONNECTION TO THE 2-WAY CLEANOUT.
5. PIPING IN STREET RIGHT-OF-WAY AND IN EASEMENT AREA SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY NBU STANDARD SPECIFICATION; MATERIALS SHALL BE AS SPECIFIED; BACKFILL ABOVE THE GRANULAR BEDDING. SERVICE LINES IN THESE AREAS SHALL HAVE A MINIMUM COVER BELOW FINAL STREET GRADE OF 42"; ANY EXCEPTION MUST BE SPECIFICALLY APPROVED BY THE ENGINEER.

NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

DRAWN BY:	STANDARD DRAWING:	
H Shadrock		SINGLE WASTEWATER SERVICE CONNECTION DETAIL
APPROVED BY:		
UPDATED: 4-28-03	SCALE: N.T.S.	SHEET: 2 OF 2
		DRAWING NO. 302



GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN STRICT CONFORMANCE WITH APPLICABLE PROVISION OF "STANDARD SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION".
2. MANHOLE RINGS AND COVERS SHALL BE TRANS-TEX A77, OR EQUAL, WHEN WATER TIGHT MANHOLE RINGS AND COVERS ARE SPECIFIED, THEY SHALL BE TRANS-77, "0" RING OR APPROVED EQUAL.
3. A MATERIAL FOR SANITARY SEWER PIPE MUST BE THE SAME FROM MANHOLE TO MANHOLE CHANGES IN TYPE OF PIPE MAY BE MADE ONLY AT MANHOLES, OR SPECIAL STRUCTURES, EXCEPT AS APPROVED BY THE NBU PROJECT ENGINEER.
   B. ADAPTERS AND CONCRETE COLLARS SHALL BE USED AS DIRECTED BY THE ENGINEER AND AS APPROVED BY THE NBU PROJECT ENGINEER.
4. ALL SEWER PIPE WITH LESS THAN THREE FEET (3'-0") OF COVER SHALL BE CONC. ENCASED, AS PER ITEM NO. 407.
5. ALL FORCE MAINS SHALL BE PROVIDED WITH THRUST BLOCKS, WHERE CHANGES IN DIRECTION OCCUR, AT TEES, BENDS, CROSSES, CHANGES IN SIZE, STOPS (DEAD ENDS), VALVES AND /OR AS SHOWN BELOW, OR AS DIRECTED BY THE ENGINEER.
6. ALL CONCRETE USED FOR THRUST BLOCKING SHALL HAVE A MINIMUM CONCRETE STRENGTH OF 3500 PSI.
7. ALL MANDRELS MUST BE APPROVED BY NBU CONSTRUCTION INSPECTIONS AND STAMPED BEFORE USE.
8. REFER DRAWINGS TO THE "NEW BRAUNFELS WATER SYSTEMS STANDARD DRAWINGS FOR SANITARY SEWER CONSTRUCTION."

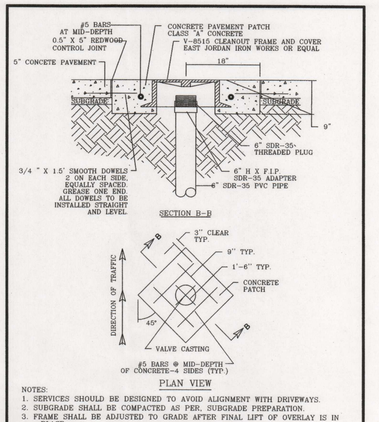
NOTES:

1. MATERIALS FOR SANITARY SEWER LATERAL SHALL CONFORM TO THE CITY OF NEW BRAUNFELS STANDARD SPECIFICATIONS FOR PRIVATE SEWAGE FACILITIES. ALL FLEXIBLE PIPE SHALL CONFORM TO A MINIMUM OF ASTM DESIGNATION D-3034 (SDR-35 OR BETTER) WITH COMPRESSION JOINT GASKETS OR SHALL BE SOLVENT JOINT.
2. A. IF THE PROPERTY IS ON THE EDWARDS RECHARGE ZONE, TCEQ REQUIRES THAT A REGISTERED PROFESSIONAL ENGINEER, REGISTERED SANITARIAN, OR APPROPRIATE CITY INSPECTOR INSPECT AND CERTIFY THE SERVICE LATERAL PRIOR TO COVERING IN ACCORDANCE WITH 31 TAC §§331.4 (B) (9). ALTER OF CERTIFICATION MUST BE SUBMITTED TO THE FOLLOWING ENTITIES:
   B. IF THE PROPERTY IS OUTSIDE NEW BRAUNFELS CITY LIMITS, A PERMIT IS REQUIRED FROM THE CITY OF NEW BRAUNFELS BUILDING AND ZONING PLUMBING SECTION (XXX-XXXX).
   C. IF THE PROPERTY IS OUTSIDE NEW BRAUNFELS CITY LIMITS AND OVER THE EDWARDS RECHARGE ZONE, A PERMIT IS REQUIRED FROM THE NEW BRAUNFELS WATER SYSTEM (830 629-8417).

HOUSE LATERAL DETAIL
NOT TO SCALE

NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

DRAWN BY:	STANDARD DRAWING:	
JO Amaro		HOUSE LATERAL DETAIL
APPROVED BY:		
UPDATED: 8-8-03	SCALE: N.T.S.	SHEET: 1 OF 1
		DRAWING NO. 303

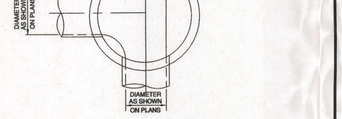


PLAN VIEW

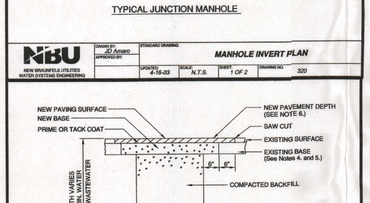
NOTES:
1. SERVICES SHOULD BE DESIGNED TO AVOID ALIGNMENT WITH DRIVEWAYS.
2. SUBGRADE SHALL BE COMPACTED AS PER, SUBGRADE PREPARATION.
3. FRAME SHALL BE ADJUSTED TO GRADE AFTER FINAL LIFT OF OVERLAY IS IN PLACE.
4. REINFORCING STEEL SHALL MEET, REINFORCING STEEL.

NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

DRAWN BY:	STANDARD DRAWING:	
JO Amaro		WASTEWATER CLEANOUT ADJUSTMENT TO GRADE IN DRIVEWAYS
APPROVED BY:		
UPDATED: 4-15-03	SCALE: N.T.S.	SHEET: 1 OF 1
		DRAWING NO. 306



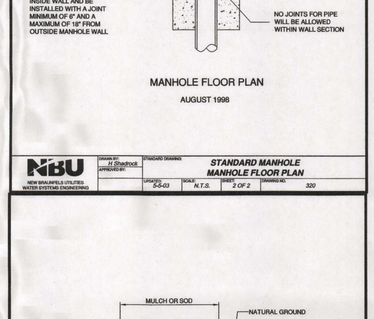
TYPICAL MANHOLE AT ANGLE IN SEWER



TYPICAL JUNCTION MANHOLE

NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

DRAWN BY:	STANDARD DRAWING:	
H Shadrock		MANHOLE INVERT PLAN
APPROVED BY:		
UPDATED: 4-16-03	SCALE: N.T.S.	SHEET: 1 OF 2
		DRAWING NO. 320

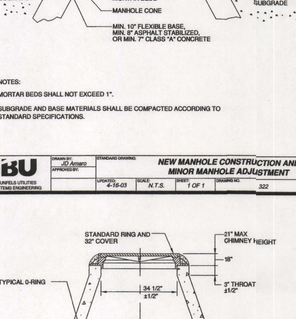


MANHOLE FLOOR PLAN

AUGUST 1998

NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

DRAWN BY:	STANDARD DRAWING:	
H Shadrock		STANDARD MANHOLE MANHOLE FLOOR PLAN
APPROVED BY:		
UPDATED: 5-5-03	SCALE: N.T.S.	SHEET: 2 OF 2
		DRAWING NO. 320

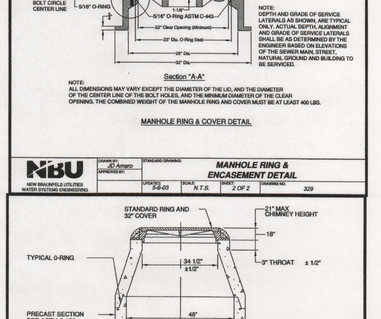


WASTEWATER MANHOLE

1. MANHOLE SECTIONS TEMPORARILY REMOVED FOR ROADWAY CONSTRUCTION MAY BE REUSED ONLY WITH THE WRITTEN APPROVAL OF THE INSPECTOR. O-RINGS SHALL NOT BE REUSED.
2. ANY COMBINATION OF REMOVING THE CONCRETE RINGS, AND / OR THE MANHOLE CONE, AND/OR THE STRAIGHT RISER SECTION OF THE MANHOLE SHALL BE ACCEPTABLE TO TEMPORARILY LOWER THE MANHOLE GRADE FOR ROADWAY RECONSTRUCTION.
3. WHILE THE MANHOLE IS TEMPORARILY LOWERED, A SHEET OF STEEL SUITABLE TO SUPPORT ALL IMPOGED LOADS SHALL BE USED TO COVER THE OPENING. THE STEEL PLATE SHALL BE SET IN MORTAR TO PREVENT LEAKAGE.
4. SUBGRADE AND BASE MATERIALS SHALL BE COMPACTED TO 95% AND 100% DENSITIES, RESPECTIVELY, COMPACTION SHALL BE BY MECHANICAL TAMPING TO THE DENSITIES SPECIFIED.
5. MANHOLE SHALL BE SET SO RING AND COVER MATCH STREET SLOPE.

NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

DRAWN BY:	STANDARD DRAWING:	
JO Amaro		MAJOR MANHOLE ADJUSTMENT
APPROVED BY:		
UPDATED: 4-16-03	SCALE: N.T.S.	SHEET: 1 OF 1
		DRAWING NO. 321



NOTES:

1. MORTAR BEDS SHALL NOT EXCEED 1".
2. SUBGRADE AND BASE MATERIALS SHALL BE COMPACTED ACCORDING TO STANDARD SPECIFICATIONS.

NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

DRAWN BY:	STANDARD DRAWING:	
JO Amaro		NEW MANHOLE CONSTRUCTION AND MINOR MANHOLE ADJUSTMENT
APPROVED BY:		
UPDATED: 4-16-03	SCALE: N.T.S.	SHEET: 1 OF 1
		DRAWING NO. 322

Section "A-A"

NOTE: ALL DIMENSIONS MAY VARY EXCEPT THE DIAMETER OF THE LID, AND THE DIAMETER OF THE CENTER LINE OF THE BOLT HOLES, AND THE MINIMUM DIAMETER OF THE CLEAR OPENING. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 400 LBS.

MANHOLE RING & COVER DETAIL

NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

DRAWN BY:	STANDARD DRAWING:	
JO Amaro		MANHOLE RING & ENCASEMENT DETAIL
APPROVED BY:		
UPDATED: 5-8-03	SCALE: N.T.S.	SHEET: 2 OF 2
		DRAWING NO. 329

NOTES:

1. THE EXISTING PAVING SURFACE SHALL BE SAW CUT IN A STRAIGHT LINE A MINIMUM OF 12" WIDER THAN THE UNDISTURBED SIDES OF THE TRENCH, SYMMETRICAL ABOUT THE CENTER LINE OF THE EXCAVATION.
2. ANY CONCRETE PAVING SHALL BE SAW CUT 6" WIDER THAN UNDISTURBED SIDES OF EXCAVATION.
3. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT RIDING SURFACE WITH COLD MIX OR TEMPORARY HOT MIX.
4. ROAD BASE AND SURFACE MATERIALS IN THE TRENCH CUT SHALL BE REPLACED IN KIND OF EQUAL THICKNESS, OR MINIMUM BASE THICKNESS OF 10 INCHES, WHICHEVER IS GREATER.
5. ALL DAMAGED AREAS OF PAVEMENT OUTSIDE THE TRENCH CUT SHALL BE REMOVED AND REPLACED WITH MINIMUM OF 6 INCHES OF BASE OR MATCH EXISTING, WHICHEVER IS GREATER.
6. SURFACE PAVEMENT SHALL BE OF THE KIND AND THICKNESS AS EXISTING, OR MINIMUM 2 INCHES, WHICHEVER IS GREATER.

NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

DRAWN BY:	STANDARD DRAWING:	
H Shadrock		TYPICAL TRENCH WITH PAVED SURFACE
APPROVED BY:		
UPDATED: 4-30-03	SCALE: N.T.S.	SHEET: 1 OF 1
		DRAWING NO.

NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

DRAWN BY:	STANDARD DRAWING:	
H Shadrock		TYPICAL TRENCH WITH UNFINISHED SURFACE
APPROVED BY:		
UPDATED: 4-30-03	SCALE: N.T.S.	SHEET: 1 OF 1
		DRAWING NO. 422

NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

DRAWN BY:	STANDARD DRAWING:	
JO Amaro		CONCRETE ENCASEMENT
APPROVED BY:		
UPDATED: 4-16-03	SCALE: N.T.S.	SHEET: 1 OF 1
		DRAWING NO. 310

NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

DRAWN BY:	STANDARD DRAWING:	
JO Amaro		PRECAST MANHOLE ON CAST IN PLACE FOUNDATION
APPROVED BY:		
UPDATED: 4-16-03	SCALE: N.T.S.	SHEET: 1 OF 1
		DRAWING NO. 327

SECTION A-A

TYPICAL PRECAST BASE

NOTE: THE MANHOLE BASE SHALL BE BEDDED ON 6" COARSE AGGREGATE. THE CONTRACTOR SHALL LEVEL AND PLUMB THE BASE PRIOR TO SETTING THE PRECAST MANHOLE RISER SECTIONS ON THE PRECAST CONCRETE BASE.

NBU — NEW BRAUNFELS UTILITIES, WATER SYSTEMS ENGINEERING

DRAWN BY:	STANDARD DRAWING:	
H Shadrock		WASTEWATER MANHOLE ON PRECAST BASE
APPROVED BY:		
UPDATED: 4-24-03	SCALE: N.T.S.	SHEET: 1 OF 1
		DRAWING NO. 328

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STATE OF TEXAS
ARNOLDO MARTINEZ,JR
91894
LICENSED PROFESSIONAL ENGINEER
12-3-14

WASTEWATER DETAILS (1)

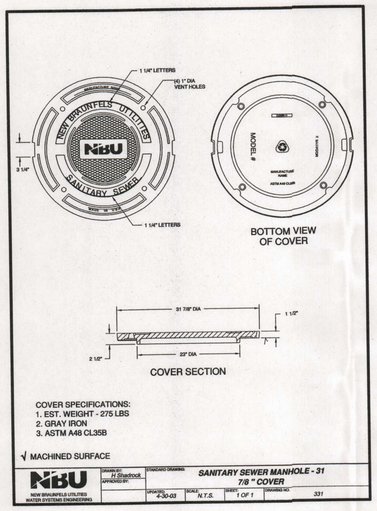
CIVIL SITE CONSTRUCTION PLANS

ERVENDBERG CONDOS
WPAP SUBMITTAL

RIVER RETREAT 1228 L.L.C.
2714 BEE CAVE RD #204
AUSTIN, TEXAS 78748

DATE: NOVEMBER, 2014
DRAWN BY:
DESIGNED BY:
CHECKED BY:
REVIEWED BY:
REVIEWED BY:
PROJECT NO: 072.003.103

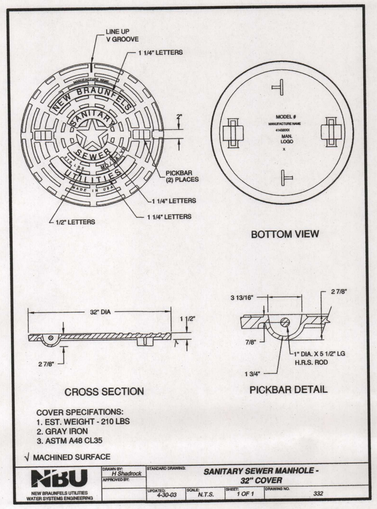
SHEET 8 OF 11



COVER SPECIFICATIONS:
1. EST. WEIGHT - 275 LBS
2. GRAY IRON
3. ASTM A48 CL35B

√ MACHINED SURFACE

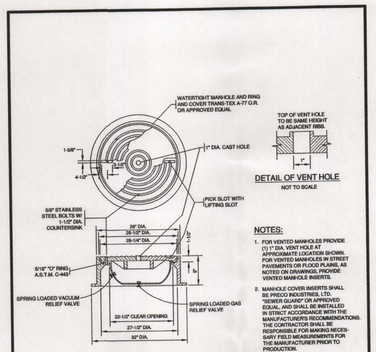
NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: H Shadrock	APPROVED BY:	STANDARD DRAWING:	SANITARY SEWER MANHOLE - 31 7/8 " COVER
	UPDATED: 4-30-03	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO.: 331



COVER SPECIFATIONS:
1. EST. WEIGHT - 210 LBS
2. GRAY IRON
3. ASTM A48 CL35

√ MACHINED SURFACE

NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: H Shadrock	APPROVED BY:	STANDARD DRAWING:	SANITARY SEWER MANHOLE - 32" COVER
	UPDATED: 4-30-03	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO.: 332

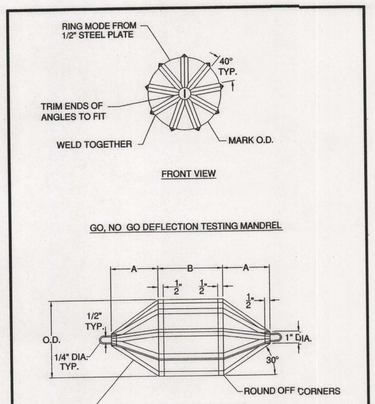


NOTES:

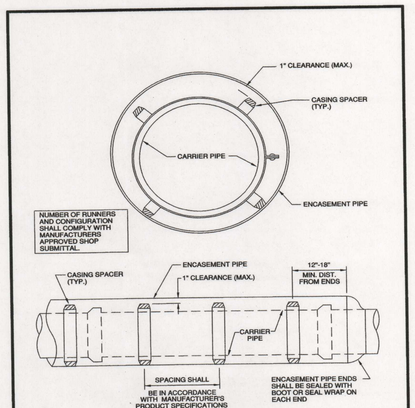
1. FOR VENTED MANHOLES PROVIDE (1) 1" DIA. VENT HOLE AT APPROXIMATE LOCATION SHOWN. FOR VENTED MANHOLES IN STREET PAVEMENTS OR FLOOD PLAINS, AS NOTED ON DRAWINGS, PROVIDE VENTED MANHOLE INSERTS.
2. MANHOLE COVER INSERTS SHALL BE PRECO INDUSTRIES, LTD. "SEWER GUARD" OR APPROVED EQUAL. INSTALL AND USE AS REQUIRED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING NECESSARY FIELD MEASUREMENTS FOR THE MANUFACTURER PRIOR TO PRODUCTION.

VENTED MANHOLE COVER

NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: H Shadrock	APPROVED BY:	STANDARD DRAWING:	VENTED MANHOLE COVER
	UPDATED: 5-8-03	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO.: 334



NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: JD Amaro	APPROVED BY:	STANDARD DRAWING:	GO, NO GO DEFLECTION TESTING MANDREL
	UPDATED: 5-8-03	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO.: 350



NBU NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING	DRAWN BY: JD Amaro	APPROVED BY:	STANDARD DRAWING:	CONCRETE ENCASEMENT
	UPDATED: 4-16-03	SCALE: N.T.S.	SHEET: 1 OF 1	DRAWING NO.: 352

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12-3-14

WASTEWATER DETAILS (2)

CIVIL SITE CONSTRUCTION PLANS

ERVENDBERG CONDOS
WPAP SUBMITTAL

RIVER RETREAT 1228 L.L.C.
2714 BEE CAVE RD #204
AUSTIN, TEXAS 78748

DATE: NOVEMBER, 2014
DRAWN BY:
DESIGNED BY:
CHECKED BY:
REVIEWED BY:
PROJECT NO.: 072.003.103

SHEET 9 OF 11

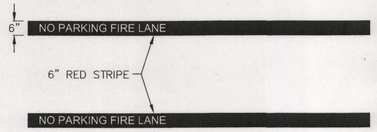
KEY NOTES

1. SPILL CURB
2. CATCH CURB
3. LIGHT DUTY PAVEMENT
4. HEAVY DUTY PAVEMENT
5. LANDSCAPE AREA
6. ACCESSIBLE PARKING SIGN
7. ROCK FACADE ON EXTERIOR OF POND WALL
8. CREEPING FIG ON INTERIOR OF POND WALL
9. ROCK RIP-RAP
10. OVERFLOW WEIR
- (#) PARKING COUNT

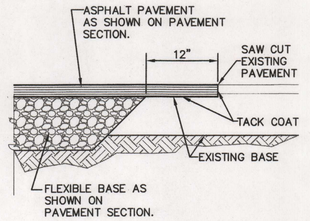
FIRE LANE NOTES:

STRIPING – THE TOP FACE OF ROAD CURBS SHALL BE PAINTED UTILIZING RED TRAFFIC PAINT.

A. IF NO CURBS ARE PRESENT, A SIX INCH (6") WIDE STRIPE PAINGED OF TRAFFIC RED PAINT SHALL BE PAINTED ON THE DRIVING SURFACE TO SHOW THE BOUNDARIES OF THE LANE.
B. THE WORDS "NO PARKING FIRE LANE" SHALL BE SPACED AT A MAXIMUM OF 12 FEET APART, ALONG THE LENGTH OF THE FIRE LANES.
SEE ILLUSTRATION BELOW.



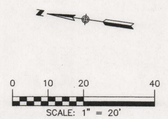
1 FIRE LANE DETAIL
N.T.S.



2 NEW PAVEMENT TO EXISTING
N.T.S.

LEGEND

U.E.	UTILITY EASEMENT
D.E.	DRAINAGE EASEMENT
	A.D.A. RAMPS
	A.D.A. PARKING

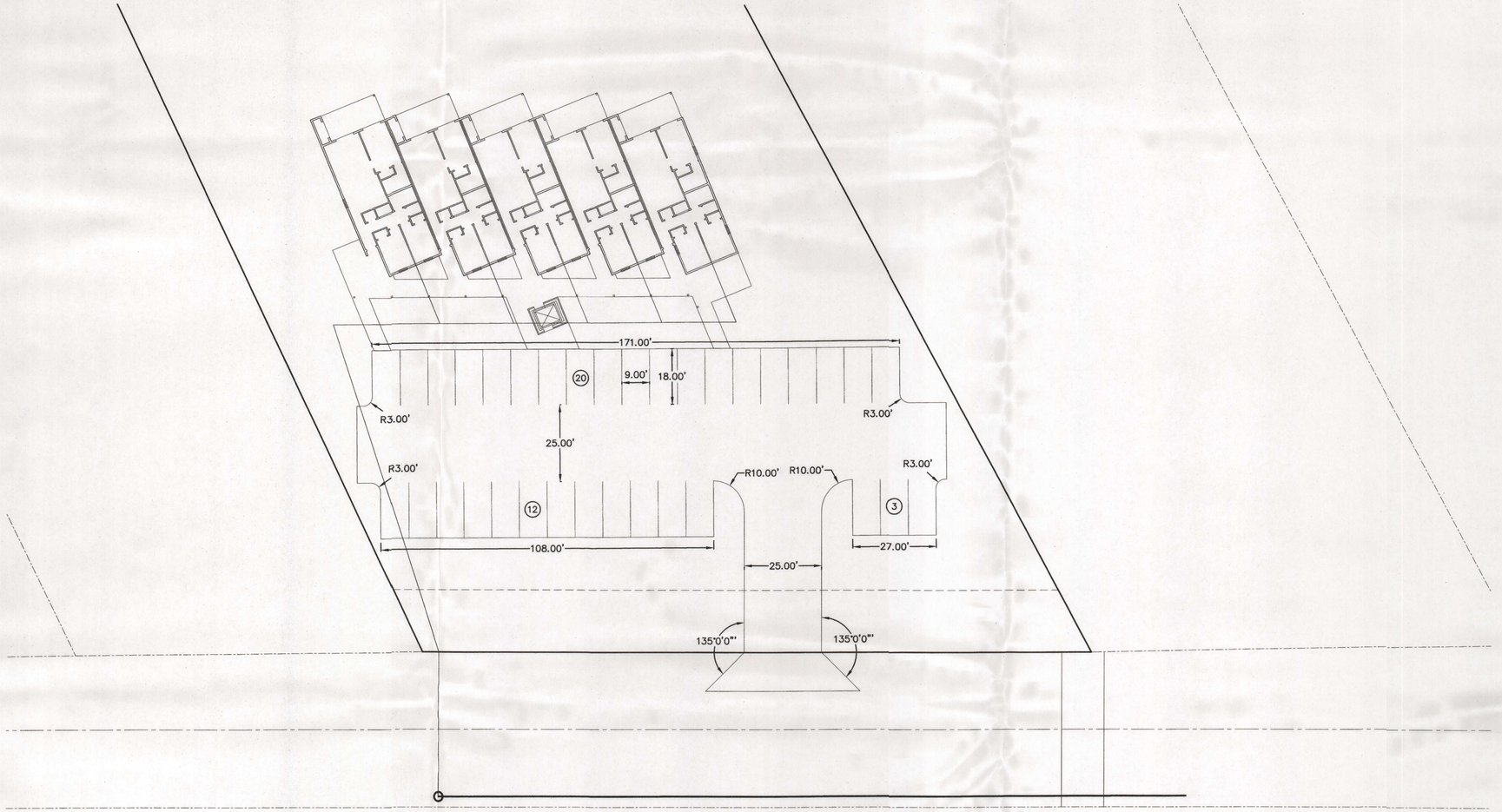


NOTES:

1. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE STATED.
2. ALL SIDEWALKS SHALL HAVE A CROSS SLOPE OF NO GREATER THAN 2.0%.

Table 1 - Ervendberg Condos Existing Conditions Hydrology Calculations

Point of Concentration	Area	Area	"C" Value	T_c	I_2	I_{10}	I_{25}	I_{100}	K_2	K_{10}	K_{25}	K_{100}	Q_2	Q_{10}	Q_{25}	Q_{100}
A1	Ex DA1	2.30	0.39	12	4.61	6.97	8.35	10.94	1.00	1.00	1.10	1.25	4.12	6.24	8.22	12.24



		Existing			
Watershed -	Ex DA1			2.3	Acres
Time of Concentration	A				
				hrs	min.
Sheet Flow	L (ft) =	75	Tt=	$.007(n*L)^{0.8}/P_2^{0.5}xS^{0.5}$	
	n=	0.1			
	S (%) =	4.67			
	P=	3.52	Tt=	0.06	3.8
Shallow Flow	L (ft) =	529	Tt=	(L*n)/(60*S^(0.5))	
	S (%) =	4.54	Tt=		
	n=	0.2			
			Tt=		8.28
Channel Flow	L (ft) =	0			
	Est. V (ft/sec)=	3.4	V (fps) =	3.40	
			Tt=	L/(60*V)	
			Tt=	0.00	0.0
TC =	12	min.		min	

I=	I=b/(TC+d)^e				
	2-year	10-year	25-year	100-year	
b	71.5	71.9	79.5	95.1	
d	13.09	8.69	8.01	7.17	
e	0.85	0.77	0.751	0.731	
I (in/hr)=	4.61	6.97	8.35	10.94	
K=	1.00	1.00	1.10	1.25	
"C" Value		0.39			
	2-year	10-year	25-year	100-year	
Q (cfs)=	4.12	6.24	8.22	12.24	

Weighted Runoff Coefficient	"C"	Area (SF)	Area (AC)
Total Area		100188.00	2.30
Average Pasture/Range	0.38	98135.90	2.25
Concrete/Roof	0.83	2052.10	0.05
		C=	0.3892

PAVEMENT NOTES:

1. ALL PAVEMENT CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE TO THE "SUBSURFACE EXPLORATION, LABORATORY TESTING PROGRAM AND FOUNDATION AND PAVEMENT ANALYSIS FOR THE PROPOSED D&D FARM & RANCH", BY ROCK ENGINEERING AND TESTING LABORATORY, INC. DATED OCTOBER 17, 2013.
2. ALL PAVEMENT SECTIONS SHOWN ON THE ABOVE TABLE SHALL SUPERCEDE ANY STANDARD DETAILS WITH RESPECT TO DEPTH OF MATERIALS ASSOCIATED WITH THIS PROJECT.
3. THE SUBGRADE SHOULD BE STABILIZED USING LIME TO A DEPTH OF 6 INCHES. LIME CONTENT OF 5.0 PERCENT OF THE DRY WEIGHT OF THE SOIL TO BE TREATED IS RECOMMENDED AS AN ALTERNATIVE TO GEOGRID.

FLEXIBLE PAVEMENTS		
PAVEMENT MATERIAL	HEAVY	LIGHT
TYPE "D" HMAC	2"	2"
CRUSHED LIMESTONE FLEXIBLE BASE, IN.	8"	6"
TENSAR GEOGRID	TX-5	TX-5
COMPACTED SUBGRADE	6"	6"

3 TYPICAL PAVEMENT SECTION

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24– HOURS PRIOR TO COMMENCING CONSTRUCTION.

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LICENSED PROFESSIONAL ENGINEER
12-3-14

SITE AND DIMENSION CONTROL PLAN

CIVIL SITE CONSTRUCTION PLANS

ERVENDBERG CONDOS

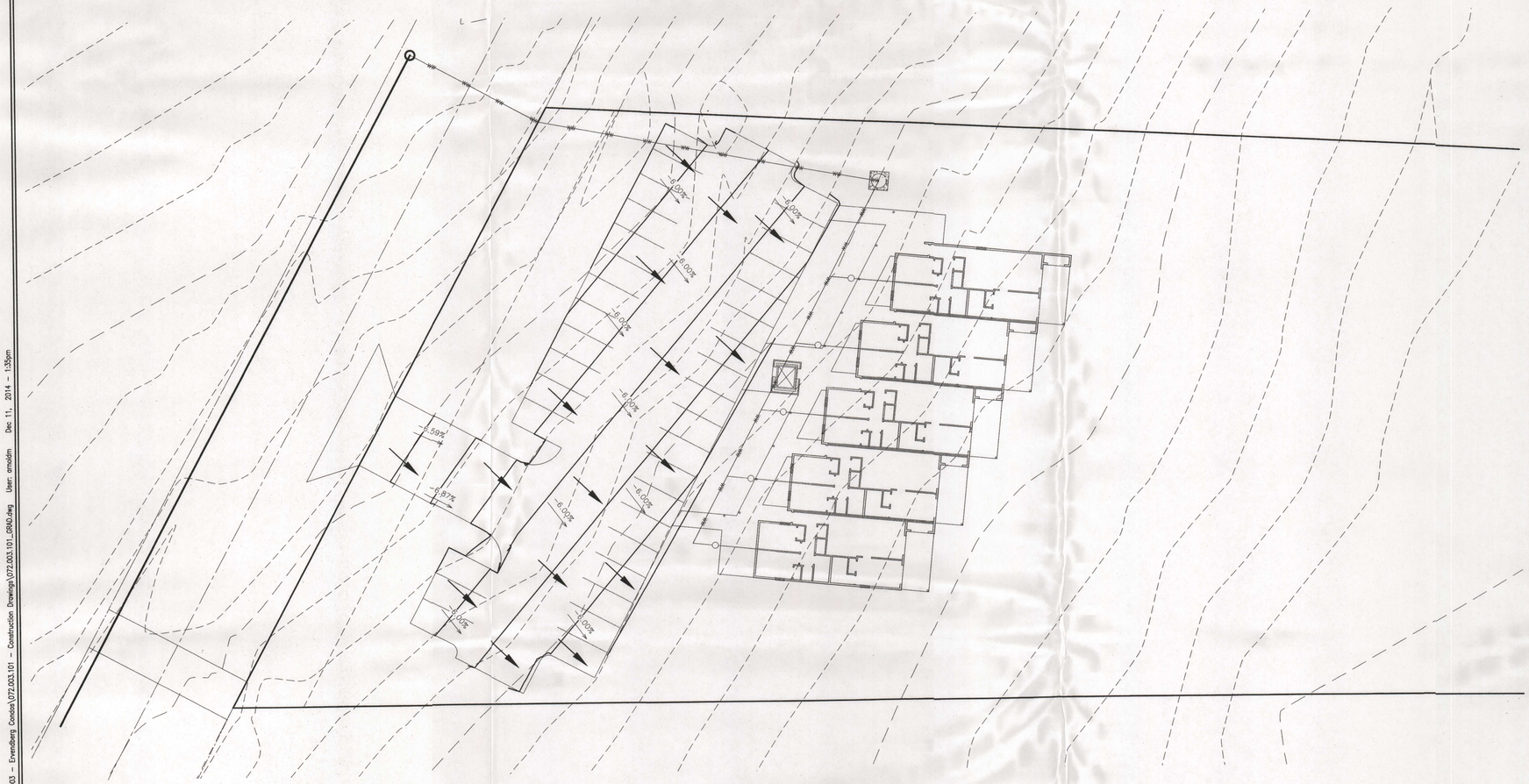
RIVER RETREAT 1228 L.L.C.
2714 BEE CAVE RD #204
AUSTIN, TEXAS 78748

DATE: NOVEMBER, 2014
DRAWN BY:
DESIGNED BY:
CHECKED BY:
REVIEWED BY:
PROJECT NO.: 072.003.103

SHEET 10 OF 11

Drawing Name: N:_Projects\072 - Kistlemon & Associates, Inc\072.003 - Ervendberg Condos\072.003.101 - Construction Drawings\072.003.101_SITE.dwg User: arnoldm Dec 11, 2014 - 1:34pm

Table 2 - Ervendberg Condos Proposed Conditions Hydrology Calculations															
Point of Concentration	Area	Area	"C" Value	T_c	I_2	I_{10}	I_{25}	I_{100}	K_2	K_{10}	K_{25}	K_{100}	Q_2	Q_{10}	Q_{25}	Q_{100}
A1	Pr-DA1	2.30	0.46	12	4.56	6.89	8.25	10.81	1.00	1.00	1.10	1.25	4.84	7.32	9.64	14.35



0 10 20 40
HORIZONTAL SCALE: 1:20
VERTICAL SCALE: 1:2

LEGEND

700	EXISTING CONTOURS
700	PROPOSED CONTOURS
B.L.	BUILDING SETBACK LINE
U.E.	UTILITY EASEMENT
D.E.	DRAINAGE EASEMENT
A	LOT GRADING SEE DETAILS SHEET 9
	DRAINAGE FLOW DIRECTION

NOTES:

1. DRAINAGE IMPROVEMENTS SUFFICIENT TO MITIGATE OFFSITE IMPACT OF CONSTRUCTION MUST BE COMPLETED AND IN PLACE PRIOR TO ADDING IMPERVIOUS COVER TO THE SITE.
2. ALL FINISHED FLOOR ELEVATIONS SHALL MEET THE FOLLOWING REQUIREMENTS:
   2.A. PER NOTE 10 ON PLAT SHEET **XX**.
   2.B. HUD DETAILS SHOWN ON SHEET **XX**.

EARTHWORK VOLUMES	
EXCAVATION & EMBANKMENT	VOLUME (CY)
CUT	0
FILL	0
NET	0 [CUT]

		Proposed				
Watershed -	Pr-DA1			2.3	Acres	
Time of Concentration	A1					
					hrs	min.
Sheet Flow	L (ft) =	75		Tt=	$.007(n*L)^{0.8}/P_2{}^{0.5}*S^{0.5}$	
	n=	0.1				
	S (%) =	4.67				
	P_2=	3.52		Tt=	0.06	3.8
Shallow Flow	L (ft) =	542		Tt=	(L*n)/(60*S^(0.5))	
	S (%) =	4.43		Tt=		
	n=	0.2				
				Tt=		8.58
Channel Flow	L (ft) =	0				
	Est. V (ft/sec)=	3.4		V (fps) =	3.40	
				Tt=	L/(60*V)	
				Tt=	0.00	0.0
TC =	12	min.			min	

I=	I=b/(TC+d)^e			
	2-year	10-year	25-year	100-year
b	71.5	71.9	79.5	95.1
d	13.09	8.69	8.01	7.17
e	0.85	0.77	0.751	0.731
I (in/hr)=	4.56	6.89	8.25	10.81
K=	1.00	1.00	1.10	1.25
"C" Value		0.46		
	2-year	10-year	25-year	100-year
Q (cfs)=	4.84	7.32	9.64	14.35

Weighted Runoff Coefficient		Area	
	"C"	(SF)	(AC)
Total Area		100188.00	2.30
Average Pasture/Range	0.38	81510.89	1.87
Asphaltic	0.81	11721.55	0.27
Concrete/Roof	0.83	6855.56	0.16
		C=	0.4615

REFER TO THE COVER SHEET FOR BENCHMARK INFORMATION.

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR WILL AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE INCURRED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, STRUCTURES OR FACILITIES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES 24– HOURS PRIOR TO COMMENCING CONSTRUCTION.

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HMT ENGINEERING & SURVEYING

STATE OF TEXAS
ARNOLDO MARTINEZ, JR
91894
REGISTERED PROFESSIONAL ENGINEER

12-3-14

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GRADING PLAN

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