# WATER POLLUTION ABATEMENT PLAN 

## BAR W - LOT 5

Prepared For: CITY OF LEANDER, WILLIAMSON COUNTY, TX

Prepared By:<br>CIVIL \& ENVIRONMENTAL CONSULTANTS, INC. AUSTIN, TEXAS

## CEC Project 323-627

MAY 2023

Civil \& Environmental Consultants, Inc.

## Texas Commission on Environmental Quality Edwards Aquifer Application Cover Page

Our Review of Your Application

The Edwards Aquifer Program staff conducts an administrative and technical review of all applications. The turnaround time for administrative review can be up to 30 days as outlined in 30 TAC 213.4(e). Generally administrative completeness is determined during the intake meeting or within a few days of receipt. The turnaround time for technical review of an administratively complete Edwards Aquifer application is $\mathbf{9 0}$ days as outlined in 30 TAC 213.4(e). Please know that the review and approval time is directly impacted by the quality and completeness of the initial application that is received. In order to conduct a timely review, it is imperative that the information provided in an Edwards Aquifer application include final plans, be accurate, complete, and in compliance with 30 TAC 213.

## Administrative Review

1. Edwards Aquifer applications must be deemed administratively complete before a technical review can begin. To be considered administratively complete, the application must contain completed forms and attachments, provide the requested information, and meet all the site plan requirements. The submitted application and plan sheets should be final plans. Please submit one full-size set of plan sheets with the original application, and half-size sets with the additional copies.
To ensure that all applicable documents are included in the application, the program has developed tools to guide you and web pages to provide all forms, checklists, and guidance. Please visit the below website for assistance: http:// www.tceq.texas.gov/field/ eapp.
2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.
3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.
4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.
An appointment should be made to resubmit the application. The application is re-examined to ensure all deficiencies are resolved. The application will only be deemed administratively complete when all administrative deficiencies are addressed.
5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be conducted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is found to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.
6. If the geologic assessment was completed before October 1, 2004 and the site contains "possibly sensitive" features, the assessment must be updated in accordance with the Instructions to Geologists (TCEQ-0585 Instructions).

## Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.
2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be
clearly marked, features identified in the geologic assessment should be flagged, roadways marked and the alignment of the Sewage Collection System and manholes should be staked at the time the application is submitted. If the site is not marked the application may be returned.
3. We evaluate the application for technical completeness and contact the applicant and agent via Notice of Deficiency (NOD) to request additional information and identify technical deficiencies. There are two deficiency response periods available to the applicant. There are 14 days to resolve deficiencies noted in the first NOD. If a second NOD is issued, there is an additional 14 days to resolve deficiencies. If the response to the second notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, the application must be withdrawn or will be denied. Please note that because the technical review is underway, whether the application is withdrawn or denied the application fee will be forfeited.
4. The program has 90 calendar days to complete the technical review of the application. If the application is technically adequate, such that it complies with the Edwards Aquifer rules, and is protective of the Edwards Aquifer during and after construction, an approval letter will be issued. Construction or other regulated activity may not begin until an approval is issued.

## Mid-Review Modifications

It is important to have final site plans prior to beginning the permitting process with TCEQ to avoid delays.
Occasionally, circumstances arise where you may have significant design and/ or site plan changes after your Edwards Aquifer application has been deemed administratively complete by TCEQ. This is considered a "MidReview Modification". Mid-Review Modifications may require redistribution of an application that includes the proposed modifications for public comment.
If you are proposing a Mid-Review Modification, two options are available:

- If the technical review has begun your application can be denied/ withdrawn, your fees will be forfeited, and the plan will have to be resubmitted.
- TCEQ can continue the technical review of the application as it was submitted, and a modification application can be submitted at a later time.
If the application is denied/ withdrawn, the resubmitted application will be subject to the administrative and technical review processes and will be treated as a new application. The application will be redistributed to the affected jurisdictions.
Please contact the regional office if you have questions. If your project is located in Williamson, Travis, or Hays County, contact TCEQ's Austin Regional Office at 512-339-2929. If your project is in Comal, Bexar, Medina, Uvalde, or Kinney County, contact TCEQ's San Antonio Regional Office at 210-490-3096
Please fill out all required fields below and submit with your application.

| 1. Regulated Entity Name: Bar W - Lot 5 |  |  |  |  | 2. Regulated Entity No.: |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 3. Customer Name: | RR 29 Retail LTD |  |  |  | 4. Customer No.: 605707702 |  |  |  |
| 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): |  |  | 1.04 acres |
| 9. Application Fee: | \$4,000 | 10. Permanent BMP(s): |  |  |  |  | Wet Pond |  |
| 11. SCS (Linear Ft.): | N/A | 12. AST/UST (No. Tanks): |  |  |  |  | N/A |  |
| 13. County: | Williamson | 14. Watershed: |  |  |  |  | North Fork San Gabriel 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.) | -- | -- | X |
| 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) J urisdiction | --Austin $--\quad$ Buda -- Dripping Springs -- Kyle $-\quad$ Mountain City $-\quad$ San Marcos $--\quad$ Wimberley $-\quad$ Woodcreek | -_Austin | __Austin -_Cedar Park _-_Florence -_Georgetown -_J errell X_Leander -_Liberty Hill -_Pflugerville __Round Rock |


| San Antonio Region |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| County: | Bexar | Comal | Kinney | Medina | Uvalde |
| Original (1 req.) | -- | -- | -- | -- | -- |
| Region (1 req.) | -- | -- | -- | -- | -- |
| County(ies) | -- | -- | -- | -- | -- |
| Groundwater Conservation District(s) | Edwards Aquifer -- $\begin{gathered}\text { Authority } \\ \text { _- Trinity-Glen Rose }\end{gathered}$ | -- Edwards Aquifer | __Kinney | _-_ EAA | -- EAA |
| City(ies) <br> Jurisdiction | -_Castle Hills -_Fair Oaks Ranch -_Helotes -_Hill Country Village -_Hollywood Park -_San Antonio (SAWS) -_Shavano Park | -_ Bulverde -_Fair Oaks Ranch -_Garden Ridge -_New Braunfels -_Schertz | NA | $\begin{aligned} & \quad \text { San } \\ & \text { Anntonio ETJ } \\ & \text { (SAWS) } \end{aligned}$ | NA |


| I certify that to the best of my knowledge, that the application is complete and accurate. This <br> application is hereby submitted to TCEQ for administrative review and technical review. <br> Michael Theone |  |
| :--- | :--- |
| Print Name of Customer/Authorized Agent | $5 / 22 / 2023$ |
| Signature of Customer/Authorized Agent | Date |


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

## General Information Form

## Texas Commission on Environmental Quality

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

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

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

## Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This General Information Form is hereby submitted for TCEQ review. The application was prepared by:
Print Name of Customer/Agent: Michael Theone
Date: 5/22/2023
Signature of Customer/Agent:


## Project Information

1. Regulated Entity Name: Bar W - Lot 5
2. County: Willaimson
3. Stream Basin: North Fork San Gabriel River
4. Groundwater Conservation District (If applicable): $\qquad$
5. Edwards Aquifer Zone:

X Recharge Zone
Transition Zone
6. Plan Type:
x WRAP
$\square$ CS
$\square$ Modification
$\square$ MST
$\square$ USS
$\square$ Exception Request
7. Customer (Applicant):

Contact Person: Milo Burdette
Entity: RR 29 Retail, LTD.
Mailing Address: 901 S MoPac expressway, Barton Oaks Plaza Two, Suite 550
City, State: Austin, TX
Telephone:(512) 632-2452
Zip: 78746
FAX: $\qquad$
Email Address: milo@barshop-oles.com
8. Agent/Representative (If any):

Contact Person: Michael Theone
Entity: Civil and Environmental Consultants, Inc.
Mailing Address: 1221 S MoPac Expressway, Suite 350
City, State: Austin, TX
Telephone: (512) 439-0400
Zip: 78746
FAX: (512) 329-0096
Email Address: mtheone@cecinc.com
9. Project Location:

X The project site is located inside the city limits of Leander
$\square$ The project site is located outside the city limits but inside the ETJ (extra-territorial jurisdiction) of $\qquad$ _.
$\square$ The project site is not located within any city's limits or ETJ.
10. $X$ 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.

19376 Ronald Regan Blvd, Leander, Texas 78641; Lot 5 of Bar-W Subdivision
11. $\triangle$ 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. X Attachment B-USGS / Edwards Recharge Zone Map. A copy of the official $7 \frac{1}{2}$ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is attached. The map(s) clearly show:
x Project site boundaries.
X USGS Quadrangle Name(s).
X Boundaries of the Recharge Zone (and Transition Zone, if applicable).
$X$ Drainage path from the project site to the boundary of the Recharge Zone.
13. $X$ 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.

X Survey staking will be completed by this date: 11/1/19
14. X 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:

| X | Area of the site |
| :---: | :---: |
| X | Offsite areas |
| X | Impervious cover |
| $\times$ | Permanent BMP(s) |
| X | Proposed site use |
| $\times$ | Site history |
| X | Previous development |
|  | Area(s) to be demolished |

15. Existing project site conditions are noted below:

| $\square$ | Existing commercial site |
| :--- | :--- |
| $\square$ | Existing industrial site |
| $\square$ | Existing residential site |
| $X$ | Existing paved and/or unpaved roads |
| $x$ | Undeveloped (Cleared) |
| $\square$ | Undeveloped (Undisturbed/Uncleared) |
| $\square$ | Other: |

## Prohibited Activities

16. 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).
(6) New municipal and industrial wastewater discharges into or adjacent to water in the state that would create additional pollutant loading.
17. X 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 $\S 330.41$ (b), (c), and (d) of this title.

## Administrative I nformation

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

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

## ATTACHMENT A - ROAD MAP



## ATTACHMENT B - USGS/EDWARDS RECHARGE ZONE MAP



Edwards Aquifer Viewer Custom Print


8/5/2019, 3:07:56 PM
Edwards Aquifer LabelEdwards Aquifer Boundary
Edwards Aquifer Boundary central lineTX Counties7.5 Minute Quad Grid

Sources: Esri, HERE, Garmin, Intermap, increment $P$ Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c)
OpenStreetMap contributors, and the GIS User Community, TCEQ

# Edwards Aquifer Viewer Custom Print 



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Edwards Aquifer LabelEdwards Aquifer Boundary
Edwards Aquifer Boundary central lineTX Counties7.5 Minute Quad Grid

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c)
OpenStreetMap contributors, and the GIS User Community, TCEQ

## ATTACHMENT C

## Project Description

On behalf of RR 26 Commercial LTD, CEC is submitting development plans for the Bar W Ranch - Lot 5 development located at 19376 Ronald Reagan Blvd. in the City of Leander city limits, Williamson County, Texas. The site is approximately 1.04 acres and currently undeveloped with a small section of sidewalk to be demolished and rebuilt with a guardrail.

The proposed development consists of 2907 SF of commercial space with associated parking, drive aisles, utilities and other items addressed in the site data table submitted with the SDP plan set that has been submitted concurrently with this submittal. The site will include $66 \%$ of impervious cover. The site lies within the Edwards Aquifer Recharge Zone and therefore a TCEQ Water Pollution Abatement Plan is being submitted.

According to FEMA Panel No. 48491C0275E, dated September 26, 2008, no portion of the site lies within the 100 year floodplain.

The wastewater service for this area is the City of Leander and flows from this site will be conveyed to a lift station located within the existing Bar W subdivision. Those flows will then go to an existing wastewater system manhole located at the southwest corner of the subdivision. The private wastewater collection system has been designed such that all flows within the pipe achieve a minimum velocity of 2.0 feet per second but will not exceed 10.0 feet per second. All vertical and horizontal bends in the gravity line occur at proposed manholes spaced no more than 500 feet apart.

## Geologic Assessment

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

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

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

## Signature

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

Print Name of Geologist: James Killian
Date: 20 May 2019

Telephone: 512-328-2430
Fax: 512-328-1804

Representing: Horizon Environmental Services, Inc. and TBPG Firm Registration No. 50488
(Name of Company and TBPG or TBPE registration number)
Signature of Geologist:


Regulated Entity Name: 13-acre RR 29 Shopping Center, Ronald Reagan Blvd. and SH 29 West, Leander, Williamson County, Texas

## Project Information

1. Date(s) Geologic Assessment was performed: 7 May 2019
2. Type of Project:

3. Location of Project:Recharge Zone
Transition Zone
Contributing Zone within the Transition Zone
4. $\triangle$ Attachment A - Geologic Assessment Table. Completed Geologic Assessment Table (Form TCEQ-0585-Table) is attached.
5. $\boxtimes$ 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) |
| :---: | :---: | :---: |
| Eckrant cobbly <br> clay, 1 to 8\% <br> slopes (EaD) | D | 0 to 1 |
| Fairlie clay, 1 <br> to 2\% slopes <br> (FaB) | D | 2 to 4 |
| Georgetown <br> clay loam, 0 to <br> 2\% slopes <br> (GeB) | D | 1 to 3 |


| Soil Name | Group* | Thickness(feet) |
| :---: | :---: | :---: |
| Georgetown <br> stony clay <br> loam, 1 to 3\% <br> slopes (GsB) | D | 1 to 3 |
|  |  |  |

* 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. $\boxtimes$ 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. $\triangle$ 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. $\boxtimes$

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 $1^{\prime \prime}: 400^{\prime}$

Applicant's Site Plan Scale: $\mathbf{1 " ~}^{\prime \prime}=\underline{\mathbf{3 0 0}^{\prime}}$
Site Geologic Map Scale: 1" = $\underline{300}{ }^{\prime}$
Site Soils Map Scale (if more than 1 soil type): 1" = $\underline{300}^{\prime}$
9. Method of collecting positional data:

Ø Global Positioning System (GPS) technology.
$\square$ Other method(s). Please describe method of data collection: $\qquad$
10. $\boxtimes$ The project site and boundaries are clearly shown and labeled on the Site Geologic Map.
11. $\boxtimes$ Surface geologic units are shown and labeled on the Site Geologic Map.
12. $\qquad$ $\square$ 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.
$\boxtimes$ Geologic or manmade features were not discovered on the project site during the field investigation.
13. $\triangle$ 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.
$\square$ There are $\qquad$ (\#) 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.
$\square$ The wells are not in use and will be properly abandoned.
The wells are in use and comply with 16 TAC Chapter 76.
$\boxtimes$ There are no wells or test holes of any kind known to exist on the project site.

## Administrative Information

15. $\boxtimes$ 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.

## PREPARED FOR:

RR 29 RETAIL, LTD AUSTIN, TEXAS

## PREPARED BY:

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


MAY 2019

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D SITE GEOLOGIC MAP
E SUPPORTING INFORMATION
F ADDITIONAL SITE MAPS

## ATTACHMENT A

GEOLOGIC ASSESSMENT TABLE




I have read, I understood, and i have followed the Texas Commission on Environmental Quality's instructions to Geologists. The

$$
\text { My signature certifies that I am qualified as a geologist as defined by } 30 \text { TAC Chapter } 213 .
$$

$$
17
$$

$$
\begin{aligned}
& \text { onditions observed in the field. } \\
& \text { Date : } 20 \text { May } 2019
\end{aligned}
$$


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

## ATTACHMENT B

## STRATIGRAPHIC COLUMN



Note: Unit elevation and thickness given with respect to a ground surface elevation of 990 feet on the southwest boundary of the subject site.

| Horizon. | Date: | 05/07/2019 | Attachment B <br> Stratigraphic Column <br> RR 29 Shopping Center <br> Ronald Reagan and SH 29 West Leander, Williamson County, Texas |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Drawn: | TED |  |  |
|  | HJN NO: | 190092.001GA |  |  |
|  |  |  |  | , chatem |

Environmental Services, Inc.

## ATTACHMENT C

 DESCRIPTION OF SITE GEOLOGYGeologic information for the subject site obtained via literature review is provided in Attachment E, Supporting Information.

A geologic assessment of the approximately 13 -acre subject site was conducted pursuant to Texas rules for regulated activities on the Edwards Aquifer Recharge Zone (EARZ) (30 TAC 213). The subject site consists primarily of undeveloped rangeland and woodlands located at Ronald Reagan Boulevard and State Highway (SH) 29 West, Leander, Williamson County, Texas (Attachment F, Figure 1). Assessment findings were used to develop recommendations for site construction measures intended to be protective of water resources at the subject site and adjacent areas.

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

A review of existing literature shows the subject site is predominantly underlain by undifferentiated Edwards Limestone formation (Ked) (UT-BEG, 1995), with an estimated maximum thickness of about 40 feet. In general, the rock strata beneath the site dip to the southeast at about 10 to 30 feet per mile.

No natural geologic features or man-made features were identified at the subject site.

## ATTACHMENT D

## SITE GEOLOGIC MAP



Environmental Services, Inc.

## ATTACHMENT E

## SUPPORTING INFORMATION

Environmental Services, Inc.

### 1.0 INTRODUCTION AND METHODOLOGY

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

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

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

### 2.0 ENVIRONMENTAL SETTING

### 2.1 LOCATION AND GENERAL DESCRIPTION

The subject site consists of approximately 13 acres of rangeland and woodlands located immediately southeast of the intersection of Ronald Reagan Boulevard and State Highway (SH) 29 West in Leander, Williamson County, Texas (Appendix F, Figure 1).

### 2.2 LAND USE

The subject site is currently vacant and has previously been used for raising beef cattle. No habitable structures were observed on the site. Surrounding lands have seen recent rapid residential and commercial development. In the past, these areas were used for rural residences, farming, and raising livestock.

### 2.3 TOPOGRAPHY AND SURFACE WATER

The subject site is situated on gently sloping terrain within the San Gabriel River watershed. Drainage on the site occurs primarily by overland sheet flow in multiple directions based on location near an unnamed tributary located near the center of the site (Appendix F,

Figures 2 and 3). The unnamed tributary flows east and eventually into the Middle Fork of the San Gabriel River. Surface elevations on the subject site vary from a minimum of approximately 975 feet above mean sea level (amsl) along the eastern property boundary to a maximum of approximately 990 feet amsl near the southwestern property boundary (USGS, 1976).

### 2.4 EDWARDS AQUIFER ZONE

The subject site is found within the Edwards Aquifer Recharge Zone (TCEQ, 2019) (Attachment F, Figure 2).

### 2.5 SURFACE SOILS

Five soil units are mapped within the subject site (NRCS, 2019) (Appendix F, Figure 4). Generally, the soil series are similar in their physical, chemical, and engineering properties, with the principal exception being rock fragment content and thickness. The soil units are described in further detail below.

Eckrant cobbly clay, 1 to $8 \%$ slopes (EaD). This soil has a surface layer about 13 inches thick. The upper part is dark grayish-brown, cobbly clay and the lower part is dark brown, cobbly clay. The underlying material is coarsely fractured, indurated limestone. This soil is calcareous and moderately alkaline. The surface has about $50 \%$ cover of limestone fragments that are mostly 4 to 8 inches across. This soil is well-drained, permeability is moderately slow, and runoff is rapid. The available water capacity is very low.

Fairlie clay, 1 to $2 \%$ slopes (FaB): This gently sloping soil is found along broad flats and on the edges of drainageways on uplands. Typically, this soil has a dark gray clay upper layer about 21 inches thick. The layer below that, to 46 inches, is clay that is gray in the upper part and dark grayish-brown in the lower part. The underlying material is weakly cemented limestone interbedded with limy material. This soil is calcareous and moderately alkaline throughout. This soil is moderately well-drained. When dry, this soil cracks extensively, and water enters it rapidly. When this soil is wet and the cracks are closed, water enters the soil very slowly. Runoff is medium. The available water capacity is high. Erosion is a slight hazard.

Georgetown clay loam, 0 to $2 \%$ slopes (GeB): This nearly level to gently sloping soil is found on uplands. Most areas are irregular in shape and range from 10 to 50 acres. Typically, the surface layer is slightly acidic, brown clay loam about 7 inches thick. The subsoil extends to about 35 inches; it is neutral to slightly acidic reddish-brown clay in the upper part, and cobbly clay in the lower part. The underlying material is indurated limestone that has limy earth imbedded in the crevices. This soil is well-drained. Permeability is slow. Surface runoff is medium. The available water capacity is low.

Georgetown stony clay loam, 1 to $3 \%$ slopes (GsB): This gently sloping soil is mostly found on the higher parts of uplands. Typically, this soil has a slightly acidic, brown stony clay loam surface layer about 7 inches thick, and few to common stones on or near the surface. The

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subsoil, which extends down to a depth of about 35 inches, is neutral reddish-brown clay in the upper part and slightly acidic reddish-brown cobbly clay in the lower part. The underlying material is indurated, fractured limestone that has clay loam in crevices and fractures. This soil is welldrained. Permeability is slow, and surface runoff is medium. The available water capacity is low. Reaction is neutral to slightly acidic. The erosion hazard ranges to slight.

### 2.6 WATER WELLS

A review of TCEQ and Texas Water Development Board (TWDB) records revealed no water wells on the subject site or within 0.5 miles of the subject site (TCEQ, 2005; TWDB, 2019). Horizon did not observe wells on the subject site during field assessment.

The results of this assessment do not preclude the existence of undocumented/abandoned wells on the site. If a water well or casing is encountered during construction, work should be halted near the feature until the TCEQ is contacted.

### 2.7 GEOLOGY

## Literature Review

A review of existing literature shows the subject site is underlain by the undifferentiated Edwards Limestone Formation (Ked) (UT-BEG, 1995), with an estimated maximum thickness of approximately 40 feet at higher elevations located along the southern border. In general, the rock strata beneath the site dip to the southeast at 10 to 30 feet per mile.

The subject site is located several miles west of the Balcones Fault Zone, and available geologic reports indicate the immediate area has not been affected by geologically inactive, normal faulting. A normal fault is an inclined fault in which the hanging wall appears to have slipped downward relative to the footwall. The nearest mapped fault is approximately 2.5 miles to the west of the site, and strikes N30 E (UT-BEG, 1995). The figure in Attachment B depicts the stratigraphic relationship and approximate thicknesses of the uppermost geologic unit found at the subject site.

## Field Assessment

A field survey of the subject site was conducted by a licensed Horizon geologist on 7 May 2019. No geologic or man-made features were identified on the site. Horizon observed no features on the subject site that meet the TCEQ definition of a potential recharge feature. A map detailing site geology is provided in Attachment D.

### 3.0 CONCLUSIONS AND RECOMMENDATIONS

No suitable geologic or man-made features were identified at the subject site. The site appears generally well-suited to development prospectus. It should be noted that soil and

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drainage erosion would increase with ground disturbance. Native grasses and the cobbly content of the soil aid to prevent erosion. Soil and sedimentation fencing should be placed in all appropriate areas prior to any site construction activities.

Because the project site is located over the Edwards Aquifer Recharge Zone, it is possible that subsurface voids underlie the site. The nature of the sub-grade is fault-influenced, which can result in variable-sized voids in materials that may otherwise not be noted as void- or cave-forming. If any subsurface voids are encountered during the proposed development, construction should halt immediately so that a geologist may assess potential for the void(s) to provide meaningful recharge to the Edwards Aquifer.

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### 4.0 REFERENCES

(COA) City of Austin. GIS Data Sets, Year 2003 2-foot contours of the City of Austin and ETJ only, [ftp://ftp.ci.austin.tx.us/GIS-Data/Regional/coa_gis.html](ftp://ftp.ci.austin.tx.us/GIS-Data/Regional/coa_gis.html). Updated by City of Austin 2012.
(NRCS) Natural Resources Conservation Service (formerly the Soil Conservation Service) US Department of Agriculture, Engineering Division. Web Soil Survey, [http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx](http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx). Accessed 16 May 2019.
(OSM) OpenStreetMap contributors. Open Street Map, <http://www.openstreetmap .org>. Available under the Open Database License (www.opendatacommons.org/ licenses/odbl). Accessed 15 May 2019.
(TCEQ) Texas Commission on Environmental Quality. Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones. Revised October 2004.
$\qquad$ . RG-348, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices. Revised July 2005.
$\qquad$ . Edwards Aquifer Protection Program. Edwards Aquifer Viewer, [https://www.tceq.texas.gov/gis/edwards-viewer.html](https://www.tceq.texas.gov/gis/edwards-viewer.html). Accessed 15 May 2019.
(TWDB) Texas Water Development Board. Water Information Integration and Dissemination System. TWDB Groundwater Database, <http://www2.twdb.texas.gov/apps/ waterdatainteractive/groundwaterdataviewer>. Accessed 15 May 2019.
(USDA) US Department of Agriculture. National Agriculture Imagery Program, Farm Service Agency, Aerial Photography Field Office. Williamson County, Texas. 2016.
(USGS) US Geological Survey. 7.5-minute series topographic maps, Leander NE, Texas, quadrangle. 1976.
(UT-BEG) University of Texas Bureau of Economic Geology, C.V. Proctor, Jr., T.E. Brown, J.H. McGowen, N.B. Waechter, and V.E. Barnes. Geologic Atlas of Texas, Austin Sheet, Francis Luther Whitney Memorial Edition. 1974; reprinted 1995.

## ATTACHMENT F

 ADDITIONAL SITE MAPS




## 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: Michael Theone
Date: 5/22/2023
Signature of Customer/Agent:


Regulated Entity Name: RR 29 Retail, LTD

## Regulated Entity Information

1. The type of project is:Residential: Number of Lots: $\qquad$
Residential: Number of Living Unit Equivalents: $\qquad$
X
Commercial
Industrial
Other: $\qquad$
2. Total site acreage (size of property): 1.04 acres
3. Estimated projected population: 10
4. The amount and type of impervious cover expected after construction are shown below:

Table 1 - Impervious Cover Table

| Impervious Cover <br> of Proposed Project | Sq. Ft. | Sq. Ft./Acre | Acres |
| :---: | :---: | :---: | :---: |
| Structures/Rooftops | 2,907 | $\div 43,560=$ | 0.07 |
| Parking | 4,332 | $\div 43,560=$ | 0.10 |
| Other paved <br> surfaces | 19,272 | $\div 43,560=$ | 0.44 |
| Total Impervious <br> Cover | 29,866 | $\div 43,560=$ | 0.61 |

Total Impervious Cover $\underline{0.61} \div$ Total Acreage $\underline{1.04} \times 100=\underline{58.6} \%$ Impervious Cover
5. $X$ 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. x Only inert materials as defined by 30 TAC $\S 330.2$ 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:
$\square$ TXDOT road project.
County road or roads built to county specifications.
$\square$ City thoroughfare or roads to be dedicated to a municipality.
$\square$ Street or road providing access to private driveways.
8. Type of pavement or road surface to be used:
$\square$ Concrete
Asphaltic concrete pavement
Other: $\qquad$
9. Length of Right of Way (R.O.W.): $\qquad$ feet.

Width of R.O.W.: $\qquad$ feet.
L×W = $\qquad$ $\mathrm{Ft}^{2} \div 43,560 \mathrm{Ft}^{2} /$ Acre $=$ $\qquad$ acres.
10. Length of pavement area: $\qquad$ feet.

Width of pavement area: $\qquad$ feet.
L×W = $\qquad$ $\mathrm{Ft}^{2} \div 43,560 \mathrm{Ft}^{2} /$ Acre $=$ $\qquad$ acres.
Pavement area $\qquad$ acres $\div$ R.O.W. area $\qquad$ acres $\times 100=$ $\qquad$ \% impervious cover.
11. $\square$ 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. $\square$ 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:
$\qquad$ \% Domestic $\qquad$ Gallons/day

## \% Industrial

100 \% Commingled
TOTAL gallons/day 1089
15. Wastewater will be disposed of by:
$\square$ 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.
$\square$ 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):
X Private service laterals from the wastewater generating facilities will be connected to an existing SCS.
$\square$ Private service laterals from the wastewater generating facilities will be connected to a proposed SCS.

X The SCS was previously submitted on $1 / 17 / 2020$ 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.

X The sewage collection system will convey the wastewater to the Liberty Hill Wastewater 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 17-28 must be included on the Site Plan.

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

Site Plan Scale: $1^{\prime \prime}=\underline{20}$ '.
18. 100-year floodplain boundaries:
$\square$ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
X No part of the project site is located within the 100-year floodplain.
The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA FIRM Map No. 48491C0275E, September 26, 2008
19. x 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.

X 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.):
$\square$ There are $\qquad$ (\#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)
$\square$ 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.
X 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:
$\square$ All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.
X No sensitive geologic or manmade features were identified in the Geologic Assessment.
X 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. $X$ 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.Surface waters (including wetlands).
X N/A
27. $\square$ Locations where stormwater discharges to surface water or sensitive features are to occur.
$X$ There will be no discharges to surface water or sensitive features.
28. $x$ Legal boundaries of the site are shown.

## Administrative I nformation

29. $x$ 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.
30. 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.

## ATTACHMENT A

Factors Affecting Surface Water Quality

## Possible factors that could affect ground water quality during construction:

Activities include sediment laden storm water and pollutants from construction materials and equipment including concrete, petroleum, oil, diesel, detergents, lubricants, fertilizers, lead based paint, solvents, cleaners, concrete wash water, concrete curing compound, pip joint lubrication and sanitary waste from onsite portable units.

## Possible factors that could affect ground water quality post construction:

Activities include pollutants from oil, petroleum, and diesel spills, landscape fertilizers, concrete wash water, solvents and cleaners.

## ATTACHMENT B

## Volume and Character of Stormwater

All proposed flows from offsite drainage area basins match existing drainage patterns. The entire site is included in a regional drainage area that will be conveyed to a regional wet pond designed to treat up to $85 \%$ impervious cover from the 1.04 acre site. For all flows exiting the site, the peak proposed flows will be less than the pre-developed flows. Please reference the drainage area maps included on the construction documents included with this submittal and the documents submitted under a separate cover for additional calculations.

Breakdown of drainage areas by lots to the existing facilities:

| Impervious Cover Lot Accounting Table for Bar W Subdivision Stormwater Treatement Facilities |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Subdivision Lots | Drainage Area Acreage | Existing Land Use | Exisitng Impervious Cover (SF) | \% | Proposed Land Use | Proposed Impervious Cover (SF) | \% |
| 1 | 19.52 | Commercial | 574,105 | 68\% | Commercial | 574,105 | 68\% |
| 2 | 1.21 | Undeveloped | 1,486 | 3\% | Undeveloped | 1,486 | 3\% |
| 3 | 1.25 | Undeveloped | - | 0\% | Undeveloped | - | 0\% |
| 4 | 1.08 | Undeveloped | - | 0\% | Undeveloped | - | 0\% |
| 5* | 1.05 | Undeveloped | - | 0\% | Commercial | 26,511 | 58\% |
| 6 | 2.05 | Undeveloped | 548 | 1\% | Undeveloped | 548 | 1\% |
| 7 | 1.56 | Undeveloped | 3,500 | 5\% | Undeveloped | 3,500 | 5\% |
| 8 | 1.35 | Undeveloped | 511 | 1\% | Undeveloped | 511 | 1\% |
| 9 | 4.29 | WQ and Drainage | 1,960 | 1\% | WQ and Drainage | 1,960 | 1\% |
| 10 | 10.21 | Commercial | 249,669 | 56\% | Commercial | 249,669 | 56\% |
| 11 | 6.19 | Commercial | 230,069 | 85\% | Commercial | 230,069 | 85\% |
| Total | 49.74 | Total | 1,061,847 | 49\% |  | 1,088,358 | 50\% |
|  |  | Total Allowed | 1,841,675 | 85\% |  | 1,841,675 | 85\% |

mpervious cover from lots 1, 9, 10, \& 11 are to be covered under the Bar W Subdivision Water Pollution Abatement Plan and Organized Sewage Collection System Plan (WPAP-MOD ID No. 11002037 and SCS-MOD ID No. 11002038, RN No. 110866175) This total is 40.203 acres.

* Impervious cover from Lot 5 is covrered under $\qquad$ (WPAP ID No. $\qquad$ RN No. $\qquad$ )

| Impervious Cover Pond Accounting Table for Bar W Subdivision Stormwater Treatment Facilitites |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Subdivision Lots | Existing Impervious Cover |  |  | Proposed Impervious Cover |  |  |
|  | Treated by Pond A (AC) | Treated By Pond B (AC) | Total (AC) | Treated By Pond A (AC) | Treated By Pond B (AC) | Total (AC) |
| 1 | 13.18 | 0.00 | 13.18 | 13.18 | 0.00 | 13.18 |
| 2 | 0.03 | 0.00 | 0.03 | 0.03 | 0.00 | 0.03 |
| 3 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5* | 0.00 | 0.00 | 0.00 | 0.61 | 0.00 | 0.61 |
| 6 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 |
| 7 | 0.00 | 0.08 | 0.08 | 0.00 | 0.08 | 0.08 |
| 8 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 |
| 9 | 0.04 | 0.00 | 0.04 | 0.04 | 0.00 | 0.04 |
| 10 | 5.73 | 0.00 | 5.73 | 5.73 | 0.00 | 5.73 |
| 11 | 5.28 | 0.00 | 5.28 | 5.28 | 0.00 | 5.28 |
| Total Overall | 24.24 | 0.09 | 24.33 | 24.85 | 0.09 | 24.94 |

## ATTACHMENT C

Sustainability Letter from Authorized Agent

An on-site sewage facility is not proposed for this development and a Suitability Letter from an Authorized Agent will not be necessary.

## ATTACHMENT D

Exception to the Required Geologic Assessment Site Plan
A Geological Assessment has been submitted with this application. No exception to the Geological Assessment is being requested for this project.

## 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: Michael Theone
Date: 5/22/2023
Signature of Customer/Agent:
Notheone

Regulated Entity Name: Bar W - Lot 5

## 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:
$\square$ The following fuels and/or hazardous substances will be stored on the site: $\qquad$
These fuels and/or hazardous substances will be stored in:
$\square$ 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.

X Fuels and hazardous substances will not be stored on the site.
2. $\triangle$ 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. $\square$ 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. 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. $X$ 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 attached.
x For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.
X 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. $X$ 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: North Fork San Gabriel River

## Temporary Best Management Practices (TBMPs)

Erosion control examples: tree protection, interceptor swales, level spreaders, outlet stabilization, blankets or matting, mulch, and sod. Sediment control examples: stabilized construction exit, silt fence, filter dikes, rock berms, buffer strips, sediment traps, and sediment basins. Please refer to the Technical Guidance Manual for guidelines and specifications. All structural BMPs must be shown on the site plan.
7. x 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:
x 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.
X 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.
X A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.
X 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. $X$ 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.
x 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.
x There will be no temporary sealing of naturally-occurring sensitive features on the site.
9. $X$ 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. x 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.
$\square$ 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.
$\square$ 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.
x 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. $\square$ 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.

X N/A
12. $X$ 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. $X$ 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.
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 I nformation

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.

## ATTACHMENT A

Spill Response Actions

In the event of a hydrocarbon or hazardous substance spill, the owner or operator of the vessel or facility from which the spill originated, herein referred to as "the responsible person", shall immediately abate and contain the spill or discharge and cooperate fully with the executive director and local law enforcement. Reasonable response actions include but are not limited to:

1. Arrival of the responsible person or response personnel hired by the responsible person at the site of the discharge or spill;
2. Initiating efforts to stop the discharge or spill;
3. Minimizing the impact to the public health and environment;
4. Neutralizing the effects of the incident;
5. Removing the discharged or spilled substance;
6. Managing the wastes;
7. Notify the regional agency office during normal business hours or the agency 24 -hour spill reporting number (1-800-832-8224) as soon as possible and within 24 hours after the discovery of the spill or discharge.

The information provided upon the initial notification to the agency shall include but is not limited to:

1. The name, address and telephone number of the responsible person and/or the person reporting the spill;
2. The date, time and location of the spill or discharge;
3. A specific description or identification of the oil, petroleum product, hazardous substances or other discharged substance;
4. An estimate of the quality discharged or spilled;
5. The duration of the incident;
6. The name of the surface water or a description of the waters affected or threatened by the discharge or spill;
7. The source of the discharge or spill;
8. A description of the extent of actual or potential water pollution or harmful impacts to the environment and an identification of any environmentally sensitive areas or natural resources at risk;
9. A description of any actions that have been taken, are being taken, and will be taken to contain and response to the discharge or spill;
10. Any known anticipated health risks;
11. The identity of any governmental representatives, including local authorities or third parties, responding to the discharge or spill.

The responsible person shall submit a letter describing details of the discharge or spill and supporting and adequacy of the response action, to the appropriate TCEQ regional manager within 30 working days of the discovery of the discharge or spill.

If the discharge or spill creates an imminent health threat, the responsible person shall immediately notify an cooperate with local emergency authorities (fire department, fire marshal, law
enforcement authority, health authority or Local Emergency Planning Committee (LEPC) as appropriate). The responsible person will cooperate with local emergency authority in providing support to implement appropriate notification and response actions.

As soon as possible, but no later than two weeks after discovery of the spill or discharge, the responsible person shall reasonably attempt to notify the owner or occupant of the property that the responsible person reasonably believes is adversely affected.

## Reportable Quantities:

1. The Final Reportable Quantity (RQ) for crude oil other than that defined as petroleum product or used oil shall be:
a. For spills or discharges onto land - 210 gallons (five barrels); or
b. For spills or discharges directly into water in the state - quantity sufficient to create a sheen
2. The RQ for petroleum product and used oil shall be:
a. Except as noted in subparagraph (B) of this paragraph, for spills or discharges onto land - 25 gallons;
b. For spills or discharges to land from PST exempted facilities - 210 gallons ( five barrels); or
c. For spills or discharges directly into water in the state - quantity sufficient to create a sheen.
3. Industrial solid waste or other substances. The RQ for spills or discharges into water in the state shall be 100 pounds.

## ATTACHMENT B

Potential Sources of Contamination
Potential pollutants from construction activities include sediment laden storm water and pollutants from construction materials and equipment including concrete, petroleum, oil, diesel, detergents, lubricants, fertilizers, lead-based paint, solvents, cleaners, concrete wash water, concrete curing compound, pipe joint lubrication and sanitary waste from onsite portable units.

## ATTACHMENT C <br> Sequence of Major Activities

The installation of erosion and sedimentation controls shall occur prior to any excavation or materials or major disturbances on the site.

The sequence of major construction activities shall be as follows:

1. Install stabilized construction entrances where required.
2. Install tree protection.
3. Install temporary erosion controls.
4. Demolish existing structures and impervious cover as described in the construction plans.
5. Clear and strip the topsoil. Stockpile the topsoil for later use.
6. Site grading.
7. Rough cut roads.
8. Install proposed utilities.
9. Construct building slabs and foundations.
10. Paving improvements and building construction.
11. After the completion of construction and prior to the removal of temporary erosion controls, the Project Engineer must inspect the job and write a concurrence letter to the city. Final inspection is scheduled upon receipt of the letter.
12. Revegetation.
13. Maintain vegetative watering to establish permanent grasses.
14. Remove and dispose of temporary erosion controls when respiration has been accepted.

## ATTACHMENT D

Temporary Best Management Practices and Measures
The following are the Temporary Best Management Practices and Measures proposed to minimize adverse environmental impact throughout construction.

## Temporary Construction Entrance/Exit

The purpose of a temporary gravel construction entrance is to provide a stable entrance/exit condition from the construction site and keep mud and sediment off public roads. A stabilized construction entrance is a stabilized pad of crushed stone located at any point traffic will be entering or leaving the construction site from a public right-of-way, sidewalk or parking area. Access to the construction site should be limited to as few points as possible and vegetation around the perimeter should be protected where access is not necessary. A rock stabilized construction entrance is proposed at the single ingress/egress location on site.

## Materials:

1. The aggregate should consist of 4 to 8 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 $6 \mathrm{oz} / \mathrm{yd}^{2}$, a mullen burst rating of $140 \mathrm{lb} / \mathrm{in}^{2}$, and an equivalent opening size greater than a number 50 sieve.
4. If a washing facility id required, a level area with a minimum of 4 -inch diameter washed stone or commercial roack 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 the 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 $3: 1$ side slope, 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 drainage.

## Silt Fence

The purpose of silt fence is to intercept and detain water-borne sediment from unprotected areas of a limited extent. Silt fence is used during the period of construction near perimeter or a disturbed area to intercept sediment while allowing water to percolate through and shall be installed immediately following the installation of a stabilized construction entrance. The fence should remain in place until the disturbed area is permanently stabilized. Silt fence should not be used where there is a concentration of water in a channel or drainage way. If concentrated flow occurs after installation, corrective action must be taken such as placing a rick berm in the areas of concentrated flow.

Silt fencing within the site may be temporarily moved during the day to allow construction activity provided it is replaced and properly anchored to the ground at the end of the day. Silt fences on the perimeter of the site or around drainage ways should not be moved at any time.

## Materials:

1. Silt fence material should be polyethylene or polyamide woven or nonwoven fabric. The fabric width should be 36 inches, with a minimum unit weight of $4.5 \mathrm{oz} / \mathrm{yd}$, mullen burst strength exceeding $190 \mathrm{lb} / \mathrm{in}^{2}$, ultraviolet stability exceeding $70 \%$, and a minimum apparent opening size of US Sieve No. 30.
2. 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 $1.25 \mathrm{lb} / \mathrm{in}^{2}$, 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 ona 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 $1 / 4 \mathrm{acre} / 100 \mathrm{ft}$ 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 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.

## Inlet Protection

Storm sewers that are made operational prior to the stabilization of the associated drainage areas can convey large amounts of sediment to natural drainage ways. Inlet protection will be used on the existing area inlet that lies at the northeast corner of the lot, as well as an existing inlet that lies in the northwest corner of the lot along Ronald Reagan Blvd.

## Materials:

1. Filter fabric should be a nylon reinforced polypropylene fabric which meets the following minimum criteria: tensile strength, 90 lbs .; Puncture rating, 60 lbs .; Mullen Burst Rating, 280 psi; Apparent Opening Size, US Sieve No. 70.
2. Posts for fabric should be 2 " $\times 4$ " pressure treated wood stakes or galvanized steel, tubular in cross-section or they may be standard fence " T " posts.
3. Concrete blocks should be standard 8 "x 8 " x 16 " concrete masonry units.
4. Wire mesh should be standard hardware cloth or comparable wire mesh with opening size not to exceed $1 / 2$ inch.

## Guidelines for Installation:

## Bagged Gravel Inlet Filter

Sandbags filled with pea gravel can also be used to construct a sediment barrier around curb and drain inlets. The sandbags should be filled with washed pea gravel and stacked to form a continuous barrier about 1 foot high around the inlets. The bags should be tightly abutted against each other to prevent runoff from flowing between the bags. This measure should be installed as shown in Figure 1-38,39.


Figure 1-38 Diagram of Bagged Gravel Grate Inlet Protection (Pape-Dawson)


Figure 1-39 Diagram of Bagged Gravel Curb Inlet Protection (Pape-Dawson).

## Hydraulic Mulching

Hydraulic mulch is suitable for soil disturbed areas requiring temporary protection until permanent stabilization is established, and disturbed areas that will be re-disturbed following an extended period of inactivity. It is not appropriate for slopes of $3: 1$ or steeper or for use in channels. Disturbed areas in which each construction activity has ceased shall be stabilized within fourteen days unless activities are scheduled to resume and do so within 21 days.

## Materials:

1. Wood fiber mulch can be applied alone or as a component of hydraulic matrices. Wood fiber applied alone is typically applied at the rate of 2,000 to $4,000 \mathrm{lb} /$ acre. Wood fiber mulch is manufactured from wood or wood waste from lumber mills or from urban sources.

## Installation:

1. Prior to application, roughen embankment and fill areas by rolling with a crimping or punching type roller or by track walking. Track walking shall only be used where other methods are impractical.
2. To be effective, hydraulic matrices require 24 hours to dry before rainfall occurs.
3. Avoid mulch over spray onto roads, sidewalks, drainage channels, existing vegetation, etc.

## ATTACHMENT E

Request to Temporarily Seal a Feature
There will be no request to temporarily seal a feature for the purposes of this project.

## ATTACHMENT F

Structural Practices

Inlet protection for newly constructed and existing inlets are proposed and silt fence will line the downstream boundary of the limits of construction to remove construction sediment from runoff.

The contractor shall supply a concrete truck wash out area in an area as set forth by the construction plans.

A stabilized construction entrance will prevent sediment from vehicles from leaving the site.

## ATTACHMENT G

Drainage Area Map
Please see attached construction documents submitted under separate cover for the Drainage Area Map. The proposed wet pond will serve as a temporary sediment basin for the drainage area basin to the south of channel running through the site during construction.

## ATTACHMENT H

Temporary Sediment Pond(s) Plans and Calculations
The existing regional wet pond will serve as a temporary sediment pond. Reference Sheet 14 of the Site Development Plans submitted under a separate cover.

ATTACHMENT I<br>Inspection and Maintenance for BMPs

Each contractor will designate a qualified person or persons to perform the following inspections:

1. Disturbed areas and areas used for storage of materials that are exposed to precipitation will be inspected for evidence of, or the potential for, pollutants entering the drainage system.
2. Erosion and sediment control measures identified in the plan will be observed to ensure that they are operating correctly.
3. Where discharge locations or points are accessible, they will be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.
4. Locations where vehicles enter or exit the site will be inspected for evidence of off-site sediment tracking.

The inspection will ne conducted by the responsible person at least once every 14 calendar days and within 24 hours after a storm of 0.5 inches or greater.

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

## Temporary Construction Entrance/Exit

## 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 Fence

## 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.

## Inlet 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.

## Hydraulic Mulching

## Inspection and Maintenance Guidelines:

1. Mulched areas should be inspected weekly and after each rain event to locate and repair any damage.
2. Areas damaged by storms or normal construction activities should be regraded and hydraulic mulch reapplied as soon as practical.

## ATTACHMENT J

Schedule of Interim and Permanent Soil Stabilization Practices
The maximum length of time between clearing and final revegetation shall not exceed 18 months, unless extended by the jurisdictional review authority. The contractor shall hydro mulch or sod between all exposed cuts and fills upon completion of construction except where cuts are made in solid rock. Seeding shall be applied at the rate specified in the plans. Seeding shall be watered until uniform growth is stablished and the watering shall be applied in a manner that will not cause erosion of the topsoil. Watering shall be applied at least every 10 days during the first two months. Rainfall occurrences of $1 / 2$ inch or greater shall postpone the watering schedule for one week.

## 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: Michael Theone
Date: 5/22/2023
Signature of Customer/Agent

Regulated Entity Name: Bar W - Lot 5

## Permanent Best Management Practices (BPs)

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

1. X Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.
$\square$ NRA
2. $X$ 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.

X The TCEQ Technical Guidance Manual (TGM) was used to design permanent BPs and measures for this site.
$\square$ 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: $\qquad$

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N/A
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3. $X$ 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. 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 $\S 213.4(\mathrm{~g})$ (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.
$\square$ The site will be used for low density single-family residential development and has $20 \%$ or less impervious cover.
$\square$ The site will be used for low density single-family residential development but has more than $20 \%$ impervious cover.
$X$ The site will not be used for low density single-family residential development.
5. The executive director may waive the requirement for other permanent BMPs for multifamily residential developments, schools, or small business sites where $20 \%$ or less impervious cover is used at the site. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above $20 \%$ or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC $\S 213.4(\mathrm{~g})$ (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.
$X$ The site will be used for multi-family residential developments, schools, or small business sites but has more than $20 \%$ impervious cover.
$\square$ The site will not be used for multi-family residential developments, schools, or small business sites.
6. $X$ Attachment B - BMPs for Upgradient Stormwater.
$\square$ 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.
$\square$ No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.
X 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. X Attachment $\mathbf{C}$ - BMPs for On-site Stormwater.
x 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.
$\square$ 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. $X$ 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 attached. Each feature identified in the Geologic Assessment as sensitive has been addressed.

N/A
9. X 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.
x 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.
$X$ 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. $X$ 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:
$x$ Design calculations (TSS removal calculations)
TCEQ construction notes
All geologic features
All proposed structural BMP(s) plans and specifications
N/A
11. $X$ 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:
x Prepared and certified by the engineer designing the permanent BMPs and measures
X 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. X 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. 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 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.

## Responsibility for Maintenance of Permanent BMP(s)

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

14. x 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. $\triangle$ 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.
$\square$ N/A

## ATTACHMENT A

$20 \%$ or Less Impervious Cover Waiver
The proposed impervious cover is approximately $66 \%$, which exceeds the maximum impervious cover eligible for a waiver from the permanent Best Management Practices requirements.

## ATTACHMENT B

BMPs for Upgradient Stormwater
Upgradient stormwater flows are conveyed through a channel onsite, matching existing drainage patterns. These flows are not treated or detained. The drainage area maps are provided in the Site Development Plans as Sheets 12, 13.

## ATTACHMENT C

BMPs for On-Site Stormwater
There are no permanent BMPs proposed for on-site treatment, rather the stormwater will be conveyed through drains located on site to a regional wet pond designed to take up to $80 \%$ impervious cover drainage from the site.

## ATTACHMENT D

BMPs for Surface Streams
There are no surface streams located on the site. All surface flows will be conveyed to stormwater infrastructure.

## ATTACHMENT E

Request to Seal Features
The Geologic Assessment found no sensitive feature on site. There is no request to seal any features for this project.

## ATTACHMENT F

Request to Seal Features
Construction plans have been included and submitted with this WPAP under a separate cover.

Civil \& Environmental Consultants, Inc.

ATTACHMENT G<br>Inspection and Maintenance for Permanent BMPs

## Wet Basin

A clear requirement for wet basins is that a firm commitment be made to carry out both routine and non-routine maintenance tasks. The nature of the maintenance requirements are outlined below, along with design tips that can help to reduce the maintenance burden (modified from Young et al., 1996).

## Routine Maintenance.

- Mowing. The side-siopes, embankment, and emergency spillway of the basin should be mowed at least twice a year to prevent woody growth and control weeds.
- Inspections. Wet basins should be inspected at least twice a year (once during or immediately following wet weather) to evaluate facility operation. When possible, inspections should be conducted during wet weather to determine if the basin is functioning properly. There are many functions and characteristics of the BMPs that should be inspected. The embankment should be checked for subsidence, erosion, leakage, cracking, and tree growth. The condition of the emergency spillway should be checked. The inlet, barrel, and outlet should be inspected for clogging. The adequacy of upstream and downstream channel erosion protection measures should be checked. Stability of the side slopes should be checked. Modifications to the basin structure and contributing watershed should be evaluated. During semi-annual inspections, replace any dead or displaced vegetation. Replanting of various species of wetland vegetation may be required at first, until a viable mix of species is established. Cracks, voids and undermining should be patched/filled to prevent additional structural damage. Tree and root systems should be removed to prevent growth in cracks and joins that can cause structural damage. The inspections should be carried out with as-built pond plans in hand.
- Debris and Litter Removal. As part of periodic mowing operations and inspections, debris and litter should be removed from the surface of the basin. Particular attention should be paid to floatable debris around the riser, and the outlet should be checked for possible clogging.
- Erosion Control. The basin side slopes, emergency spillway, and embankment all may periodically suffer from slumping and erosion. Corrective measure such as regrading and revegetation may be necessary. Similarly, the riprap protecting the channel near the outlet may need to be repaired or replaced.
- Nuisance Control. Most public agencies surveyed indicate that control of insects, weeds, odors, and algae may be needed in some ponds. Nuisance control is probably the most frequent maintenance item demanded by local residents. If the ponds are properly sized and vegetated, these problems should be rare in wet ponds except under extremely dry weather conditions.

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Twice a year, the facility should be evaluated in terms of nuisance control (insects, weeds, odors, algae, etc.)

## Non-routine Maintenance.

- Structural Repair and Replacement. Eventually, the various inlet/outlet and riser works in the wet basin will deteriorate and must be replaced. Some public works experts have estimated that corrugated metal pipe (CMP) has a useful life of about 25 yr , while concrete barrels and risers may last from 50 to 75 yr . The actual life depends on the type of soil, pH of runoff, and other factors. Polyvinyl chloride (PVC) pipe is a corrosion resistant alternative to metal and concrete pipes. Local experience typically determines which materials are best suited to the site conditions. Leakage or seepage of water through the embankment can be avoided if the embankment has been constructed of impermeable material, have been compacted, and if antiseep collars are used around the barrel. Correction of any of these design flaws is difficult.
- Sediment Removal. Wet ponds will eventually accumulate enough sediment to significantly reduce storage capacity of the permanent pool. As might be expected, the accumulated sediment can reduce both the appearance and pollutant removal performance of the pond. Sediment accumulated in the sediment forebay area should be removed from the facility every two years to prevent accumulation in the permanent pool. Dredging of the permanent pool should occur at least every 20 years, or when accumulation of sediment impairs functioning of the outlet structure.
- Harvesting. If vegetation is present on the fringes or in the pond, it can be periodically harvested and the clippings removed to provide export of nutrients and to prevent the basin form filling with decaying organic matter.


## Proposed Development For: <br> RR 29 Retail, LTD

Inspection and Maintenance of the Wet Basin will be the responsibility of RR 29 Retail, LTD, in accordance with the aforementioned Wet Basin Inspection and Maintenance Plan.

## Owner Name: $R$ R 29 Retail, LH d , by BoO RR 29 GP, LLD <br> Owner Signature: <br> 

Date: $\qquad$

## ATTACHMENT H

Pilot-Scale Field Testing Plan
The TCEQ Technical Guidance Manual (TGM) was used to design the existing regional water quality facilities. Therefore, no Pilot-Scale Testing Plan was necessary.

## ATTACHMENT I

Measures for Minimizing Surface Stream Contamination
There are no surface streams located on the site. All surface flows will be conveyed to stormwater infrastructure.

| Agent Authorization Form <br> For Required Signature <br> Edwards Aquifer Protection Program <br> Relating to 30 TAC Chapter 213 <br> Effective June 1, 1999 |
| :---: |
| Milo Burdette |
| I Print Name |
| VP Development |
| Title - Owner/President/Other |
| RR 29 Retai1, LTD |
| have authorized |
| Corporation/Partnership/Entity Name |
| of Michael Theone, P.E. |,

## 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: $R$ R 29 Retail, La., by Bro RR 29 GP,LLC by Milo Burdette, Vice President

MiliBundett
Applicant's Signature
$\frac{5 / 11 / 2023}{\text { Date }}$
the state of Texas §
county of Travis §

BEFORE ME, the undersigned authority, on this day personally appeared Milo Burdette 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 $/ 1+6$ day of May $: 2023$.


I/s2 Byrd Typed or Printed Name of Notary

MY COMMISSION EXPIRES: $05-20-2023$

## Application Fee Form

## Texas Commission on Environmental Quality

Name of Proposed Regulated Entity: Bar W - Lot 5
Regulated Entity Location: 19376 Ronald Reagan Blvd, Leander, TX 78641
Name of Customer: Michael Theone
Contact Person: Michael Theone Phone: (512) 809-6049
Customer Reference Number (if issued):CN 605707702
Regulated Entity Reference Number (if issued):RN $\qquad$
Austin Regional Office (3373)

| $\square$ Hays | $\square$ Travis | $\boxed{\mathrm{x}}$ Williamson |
| :---: | :--- | :--- |
| San Antonio Regional Office (3362) |  |  |
| $\square$ Bexar | $\square$ Medina | $\square$ Uvalde |
| $\square$ Coma | $\square$ 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:

X Austin Regional Office
Mailed to: TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088

Austin, TX 78711-3088
$\square$ San Antonio Regional Office
$\square$ 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):
X Recharge Zone $\quad \square$ Contributing Zone $\square$ 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 <br> Plan: Multiple Single Family Residential and Parks |  |  |
| Water Pollution Abatement Plan, Contributing Zone <br> Plan: Non-residential | Acres | $\$$ |
| Sewage Collection System | 1.04 | Acres | | $\$ 4,000$ |
| :--- |
| Lift Stations without sewer lines |
| Underground or Aboveground Storage Tank Facility |
| Piping System(s)(only) |

Signature: $\qquad$ Date: $\underline{\text { 5/22/2023 }}$

## Application Fee Schedule

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)
Water Pollution Abatement Plans and Modifications
Contributing Zone Plans and Modifications

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

Organized Sewage Collection Systems and Modifications

| Project | Cost per Linear <br> Foot | Minimum Fee- <br> 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 <br> Piping System | Minimum Fee- <br> 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 Core Data Form

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

## SECTION I: General Information

| 1. Reason for Submission (If other is checked please describe in space provided.) |  |  |
| :---: | :---: | :---: |
| 区 New Permit, Registration or Authorization (Core Data Form should be submitted with the program application.) |  |  |
| $\square \quad$ Renewal (Core Data Form should be subm | newal form) | $\square$ Other |
| 2. Customer Reference Number (if issued) | Follow this link to search | 3. Regulated Entity Reference Number (if issued) |
| CN 605707702 | Central Registry** | RN |

## SECTION II: Customer Information



## SECTION III: Regulated Entity Information



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

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.

| $\square$ Dam Safety | $\square$ Districts | $\square$ Edwards Aquifer | $\square$ Industrial Hazardous Waste |  |
| :--- | :--- | :--- | :--- | :--- |
|  |  | Nos. 11002037, 11002038 |  |  |
| $\square$ Municipal Solid Waste | $\square$ New Source <br> Review Air | $\square$ OSSF | $\square$ Petroleum Storage Tank |  |
| $\square$ Sludge |  | $\square$ Storm Water | $\square$ Title V Air | $\square$ |
| $\square$ Voluntary Cleanup | $\square$ Wastewater | $\square$ Wastewater Agriculture | $\square$ Water Rights | $\square$ Tires |
|  |  |  | $\square$ Other: |  |

## SECTION IV: Preparer Information

| 40. Name: | Michael Theone, P.E. | 41. Title: | Project Manager |
| :--- | :--- | :--- | :--- | :--- |
| 42. Telephone Number | 43. Ext./Code | 44. Fax Number | 45. E-Mail Address |
| (512 ) 439-0400 |  | $(\mathrm{l}-$ | mtheone@cecinc.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: | Civil and Environmental Consultants, Inc. | Job Title: |  |  |
| :--- | :--- | :--- | :--- | :--- |
| Project Manager |  |  |  |  |
| Signature: | Michael Theone, P.E. | Print): |  | (50ne: |

## CONSTRUCTION PLANS



















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BAR W RANCH COMMERCIAL FINAL PLAT 49.737 ACRES OUT OF THE GREENLEAF FISK SURVEY, ABSTRACT NO. 5 WILLIAMSON COUNTY, TEXAS

| SHEET |  |
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| SHEET NO. | SHEX |
| 1 | SHEET NAME |
| 2 | COER RHET |
| 3 | FLAT INOL PRORATITN SHEET |

## 

01 CONGRESS AVENUE, SUTE 300






| LINE TABLE |  |  |
| :---: | :---: | :---: |
| LINE | bearing | distance |
| L1 | N79 $211^{\prime} 544^{\prime \prime}$ | 25.58 |
| L2 | N60'46'59'W | 16.99 |
| 13 | N01.02'05"w | 7.9 |
| L4 | S20.3109 ${ }^{\prime \prime}$ "E | 52.33 |
| 15 | N60.03'54' ${ }^{\prime \prime}$ | 75.34 |
| L6 | N16.19'53'W | 41.10 |
| L7 | No2'23'53'W | 42.10 |
| 18 | N04.51'35 ${ }^{\prime \prime}$ | 50.23 |
| L9 | N04:51'35 ${ }^{\prime \prime}$ | 27 |
| L10 | N04'49'35'w | 63.47 |
| L11 | N04*55'54'W | 27.03 |
| L12 | N87 '48 $^{\prime} 44^{\prime \prime} \mathrm{E}$ | 245.81 |
| L13 | N03:53'21"w | 51 |
| L14 | N26:24'27"E | 75.63 |
| L15 | 501/5419 ${ }^{\prime \prime} \mathrm{E}$ | 100.70 |
| L16 | N8404'29"E | 51.94 |
| L17 | N36.54*09\% | 25.8 |
| L18 |  | 85.89 |
| L19 | No2 $20^{\prime} 48^{\prime \prime} \mathrm{W}$ | 28.7 |


| INE TABLE |  |  |
| :---: | :---: | :---: |
| LINE | bearing | dis |
| L21 | 589:55'34"E | 56.56 |
| 122 | S02'20'48"E | 154 |
| L23 | S36.540909E | 44.53 |
| L24 | N8446 $6^{19} 19^{\prime \prime} \mathrm{E}$ | 128 |
| L25 | $541^{\prime 3} 3^{\prime} 03^{\prime \prime} \mathrm{E}$ | 94.54 |
| L26 | S79 $9^{\prime 3} 3^{\prime 2} 8^{\prime \prime}$ | 53.73 |
| L27 | N85 $444^{\prime} 15^{\prime \prime} \mathrm{E}$ | 101.3 |
| L28 | S02'11 $11^{\prime \prime} \mathrm{E}$ | 90.50 |
| L29 | N87 $7^{\prime 8} 4^{4} 4^{\prime \prime} \mathrm{E}$ | 22.50 |
| L30 |  | 21.76 |
| L31 | N49:33'33"E |  |
| L32 | No2'11116'W |  |
| 133 | N84 $4^{\prime 5} 1212^{\prime \prime} \mathrm{E}$ | 23.14 |
| L34 | N88'120'02"E | 20.43 |
| L35 | N88 $8^{12^{\prime}} \mathbf{0} 2^{\prime \prime}$ "E | 199.11 |
|  | N8748'2 | 208.0 |



| LaND USE TABLE |  |  |
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| commercal | 1 | 19.54 |
|  | 2 | ${ }_{1.13}$ |
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|  | 5 | 1.04 |
|  | 6 | ${ }^{2.05}$ |
|  | 7 |  |
|  | ${ }^{10}$ | 4, 95 |
|  | ${ }^{11}$ | ${ }_{6} 2.26$ |
| Total commercal |  | $4{ }^{2}$ |
|  |  | 44.92 |
|  |  |  |
|  | 9 | 4.82 |


| CURVE TABLE |  |  |  |  |  |
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| 10 | ARC LENGTH | RADUS | delita angle | Chord bearing | CHORD LENG |
| c1. | 19.07' | 1,250.00' | $0 \cdot 52^{\prime 2} 7^{\prime \prime}$ | S73 $3^{4} 4^{4} 43^{\prime \prime} \mathrm{W}$ | $19.07^{\prime}$ |
| c2 | 237.69' | 1,250.00 | 10.53 '42" | 567751'39"w | 237.34' |
| c3 | 583.29' | 2,500.00' | 13'22'05" | 569.08'39\%'w | 581.97 |
| ${ }^{4} 4$ | 40.44' | $151.00^{\prime}$ | $15^{2} 20^{\prime} 44^{\prime \prime}$ | 510.09'59"E | 40.32' |
| C5 | 97.48' | 40.53' | 1346 | '43'3 | 97.25' |
| c6 | 84.28 | 1.0 | $31.58{ }^{\prime} 49^{\prime \prime}$ |  | $83.19^{\circ}$ |
| ${ }^{6} 7$ | 31.55' | ${ }^{151.00^{\prime}}$ | ${ }^{11558}{ }^{\prime \prime} 12^{\prime \prime}$ | S69,324'39'E | 31.49 |
| C8 | 103.18' | 301.00' | $19^{\prime 3} 8^{\prime} 28^{\prime \prime}$ | 585 22'590'E | 102.68 ${ }^{8}$ |
| c9 | 154.10' | 255.50 | $34333^{\prime 2}$ | N19937'29"W | 151.77' |
| c10 | 17.97' | 150.50' | $6 \cdot 50^{\prime} 34^{\prime \prime}$ | N05446'05"w | 17.9 |
| C11 | 135.40' | 22.50' | $34.33^{\prime 2} 21^{\prime \prime}$ | 9.37 $7^{\prime 2} 9^{\prime \prime E}$ | 133.36' |
| C12 | 169.92' | $865.50^{\circ}$ | $11^{11} 4{ }^{\prime} 55^{\prime \prime}$ | S31.16'42"E | 169.65' |
| C13 | $7.87{ }^{\prime}$ | $24.50^{\circ}$ | $18^{123} 3^{\prime} 44^{\prime \prime}$ | No2'47'25"E | 7.83' |
| C14 | $32.41^{\prime}$ | $24.50^{\circ}$ | $75^{\prime 2} 8^{\prime \prime} 12^{\prime \prime}$ | N49:53'23"E | $30.10^{\prime}$ |
| C15 | 25.47' | 513.50' | ${ }^{2} \cdot 50^{\prime} 33^{\prime \prime}$ | N86.23'28 $8^{\prime \prime \mathrm{E}}$ | $25.47^{\prime}$ |
| C16 | 37.59' | 24.50' | $87{ }^{\prime} 54^{\prime 3} 37{ }^{\prime \prime}$ | N47750'39'W | 34.01' |
| C17 | 39.38 | $24.50^{\prime}$ | $92.05117^{\prime \prime}$ |  | 35.27' |
| C18 | 37.76' | $24.50^{\circ}$ | $88^{1617} 155^{\prime \prime}$ | S44802 ${ }^{\prime} 18^{\prime \prime} \mathrm{E}$ | 34.13 |









Figure 6.6 . 4 as Schematic of a skimmes from Pennsyyvania Erosion and Sediment Pollution Control Manual.
March. 2000. washout structure wit straw bales




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