WATER POLLUTION
ABATMENT PLAN MODIFICATION
FOR
JOHNSON RANCH ELEMENTARY SCHOOL

PREPARED FOR:

COMAL ISD

DATE: MARCH 2023

PREPARED BY:

MTR
• Engineers
• Surveyors
• Planners

Moy Tarin Ramirez Engineers, LLC
12770 Cimarron Path, Ste 100 San Antonio, TX 78249 TBPE Firm #5297
Phone 210-698-5051 Fax 210-698-5085

CISD JOHNSON RANCH ELEMENTARY SCHOOL
WATER POLLUTION ABATEMENT PLAN MODIFICATION

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Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

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

Administrative Review

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

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

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

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

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

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

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

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

Technical Review

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

2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be

clearly marked, features identified in the geologic assessment should be flagged, roadways marked and the alignment of the Sewage Collection System and manholes should be staked at the time the application is submitted. If the site is not marked the application may be returned.

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

4. The program has 90 calendar days to complete the technical review of the application. If the application is technically adequate, such that it complies with the Edwards Aquifer rules, and is protective of the Edwards Aquifer during and after construction, an approval letter will be issued. Construction or other regulated activity may not begin until an approval is issued.

Mid-Review Modifications

It is important to have final site plans prior to beginning the permitting process with TCEQ to avoid delays.

Occasionally, circumstances arise where you may have significant design and/or site plan changes after your Edwards Aquifer application has been deemed administratively complete by TCEQ. This is considered a "Mid-Review Modification". Mid-Review Modifications may require redistribution of an application that includes the proposed modifications for public comment.

If you are proposing a Mid-Review Modification, two options are available:

- If the technical review has begun your application can be denied/withdrawn, your fees will be forfeited, and the plan will have to be resubmitted.
- TCEQ can continue the technical review of the application as it was submitted, and a modification application can be submitted at a later time.

If the application is denied/withdrawn, the resubmitted application will be subject to the administrative and technical review processes and will be treated as a new application. The application will be redistributed to the affected jurisdictions.

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

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

1. Regulated Entity Name: CISD JOHNSON RANCH ELEMENTARY SCHOOL						**2. Regulated Entity No.:** 105332530			
3. Customer Name: Comal ISD						**4. Customer No.:** 600249825			
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):**			16.06
9. Application Fee:	$6,500		**10. Permanent BMP(s):**			Jellyfish Filters, Engineered V.F.S., Grassy Swale			
11. SCS (Linear Ft.):	N/A		**12. AST/UST (No. Tanks):**			N/A			
13. County:	Comal County		**14. Watershed:**			Headwaters Cibolo Creek			

Application Distribution

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

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

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

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

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

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review. Sean Smith, P.E.
Print Name of Customer/Authorized Agent
Signature of Customer/Authorized Agent — Date: 3/23/23

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: Sean Smith, P.E.

Date: 03/23/2023

Signature of Customer/Agent:

Project Information

1. Regulated Entity Name: CISD JOHNSON RANCH ELEMENTARY SCHOOL
2. County: Comal County
3. Stream Basin: Headwaters Cibolo Creek
4. Groundwater Conservation District (If applicable): Edwards Aquifer Authority
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☐ Transition Zone

6. Plan Type:

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

7. Customer (Applicant):

   Contact Person: Alejandro Araujo
   Entity: Comal Independent School District
   Mailing Address: 1404 N Interstate 35 Frontage Rd
   City, State: New Braunfels, TX Zip: 78130
   Telephone: 830-221-2150 FAX: _____
   Email Address: alejandro.araujo@comalisd.org

8. Agent/Representative (If any):

   Contact Person: Sean Smith, P.E.
   Entity: Moy Tarin Ramirez Engineers, LLC
   Mailing Address: 12770 Cimarron Path, Suite 100
   City, State: San Antonio, TX Zip: 78249
   Telephone: 210-698-5051 FAX: _____
   Email Address: ssmith@mtrengineers.com

9. Project Location:

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

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

    30501 Johnson Way, Bulverde, TX 78163

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

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

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

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

    ☒ Survey staking will be completed by this date: 02/13/2023

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

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

15. Existing project site conditions are noted below:

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

Prohibited Activities

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

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

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

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

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

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

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

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

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

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

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

Administrative Information

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

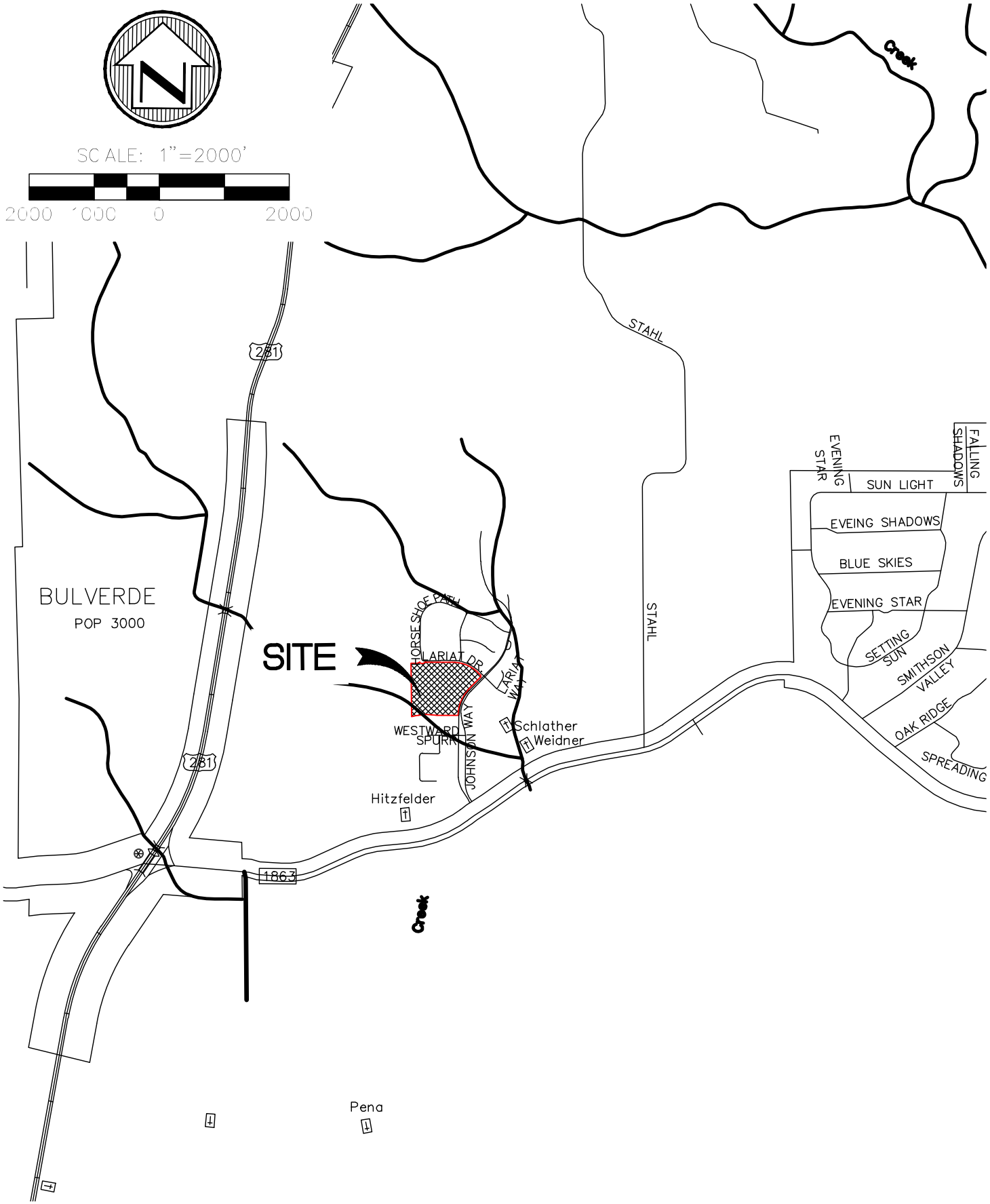
- ☒ For a Water Pollution Abatement Plan or Modification, the total acreage of the site where regulated activities will occur.
- ☐ For an Organized Sewage Collection System Plan or Modification, the total linear footage of all collection system lines.
- ☐ For a UST Facility Plan or Modification or an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

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

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

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

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



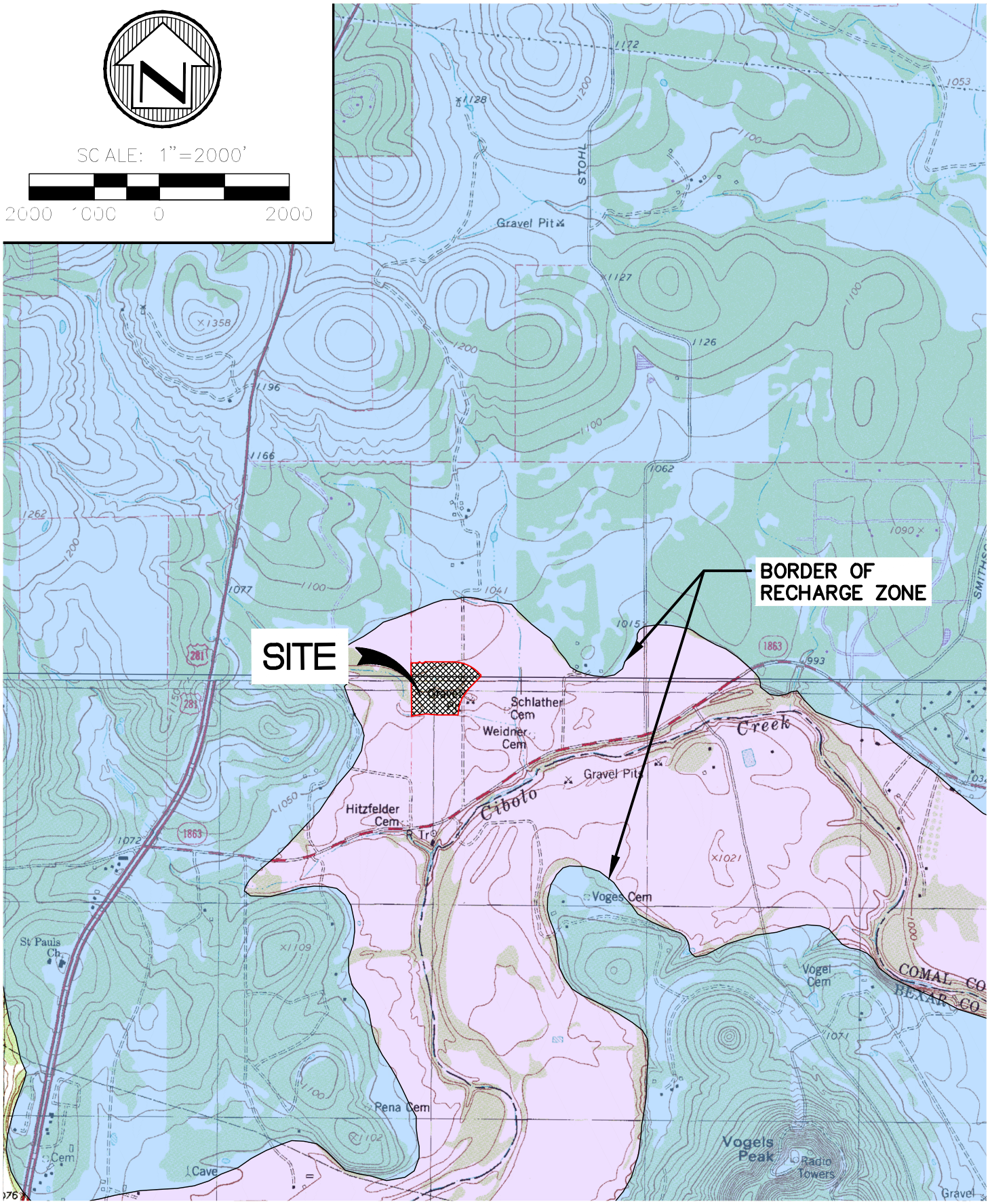
MTR
• Engineers
• Surveyors
• Planners
Moy Tarin Ramirez Engineers, LLC
TBPE F-5297 & TBPLS F-10131500
12770 CIMARRON PATH, SUITE 100 TEL: (210) 698-5051
SAN ANTONIO, TEXAS 78249 FAX: (210) 698-5085

CISD

JOHNSON RANCH ES

LOCATION MAP

PROJ. #: XXXXX **DATE: MARCH 2023** **EX 1**



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SAN ANTONIO, TEXAS 78249

TEL: (210) 698-5051
FAX: (210) 698-5085

LEGEND:

- EDWARDS AQUIFER CONTRIBUTING ZONE
- EDWARDS AQUIFER RECHARGE ZONE

CISD

JOHNSON RANCH ES

USGS MAP

PROJ. #: XXXXX DATE: MARCH 2023 EX 2

SUMMARY OF PREVIOUS & PROPOSED MODIFICATIONS

WPAP Modification Summary	***Pre-June 1, 1999***	***Original WPAP***	***Proposed Project Modification 1***
Acres	16.06	16.06	16.06
Type of Development	Undeveloped	Elementary School	Elementary School
Number of Residential Lots	N/A	N/A	N/A
Total Impervious Cover (acres)	N/A	5.26	5.82
Impervious Cover (%)	N/A	32.75%	36.24%
Permanent BMPs	N/A	Vegetative Filter Strips (VFS), Extended Detention Basin, Grassy Swale	Jellyfish Filter, VFS, Existing Grassy Swale, Existing Extended Detention Basin
Other	N/A	N/A	N/A
Approval Letter Date	N/A	November 12, 2007	TBD

Table from TCEQ-10259
Item 4

ATTACHMENT C

PROJECT DESCRIPTION

A Water Pollution Abatement Plan (WPAP) was first approved by the Texas Water Commission for the CISD Johnson Ranch Elementary School on November 12, 2007 for the construction of an elementary school building, as well as associated driveways, parking lots, playgrounds, and athletic fields. The proposed project will be providing new playground equipment, new rubberized surface, and artificial turf play areas, associated concrete flatwork, and a new concrete outdoor learning pad.

The existing impervious cover for this site was 5.26 acres (32.8%). This project will result in an increase in impervious cover of 24,575 square feet (0.56 acres) for a total of 5.82 acres of impervious cover (36.24%). A portion of the proposed impervious cover is self-treating synthetic turf. The self-treating synthetic turf accounts for 0.20 acres of proposed impervious cover, resulting in a total of 0.36 acres of new impervious cover that requires treatment.

The site is located at 30501 Johnson Way, Bulverde, TX 78163. The property is located in the Edwards Aquifer Recharge Zone.

Current development consists of an Elementary School. The overall acreage of the site is 16.06 acres.

The existing permanent best management practices (BMPs) (Grassy Swales, Extended Detention Basin, VFS) will remain in place and treat a portion of the proposed improvements. A small portion of the existing VFS will be removed for the installation of the new improvements. These VFS treated approximately 0.24 acres of impervious cover, which is accounted for in the treatment of the proposed improvements. A JellyFish Filter and new VFS will treat any excess TSS.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **Johnson Ranch Elementary School**
Date Prepared: **3/23/2021**

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

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

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

where:

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

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

County =	Comal	
Total project area included in plan * =	16.06	acres
Predevelopment impervious area within the limits of the plan * =	5.26	acres
Total post-development impervious area within the limits of the plan* =	5.82	acres
Total post-development impervious cover fraction * =	0.36	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	503	lbs.

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

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

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

Drainage Basin/Outfall Area No. = 1

Total drainage basin/outfall area =	16.06	acres
Predevelopment impervious area within drainage basin/outfall area =	5.26	acres
Post-development impervious area within drainage basin/outfall area =	5.82	acres
Post-development impervious fraction within drainage basin/outfall area =	0.36	
$L_{M\ THIS\ BASIN}$ =	503	lbs.

Contech Engineered Solutions Calculations for Texas Commission on Environmental Quality
TSS Removal Calculations

Project Name: **Johnson Ranch ES**
Date Prepared: **3/14/2023**

1. The Required Load Reduction for the total project:

Calculations from RG-348 Pages 3-27 to 3-30

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

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

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

County =	**Comal**	
Total project area included in plan * =	**0.74**	acres
Predevelopment impervious area within the limits of the plan * =	**0.25**	acres
Total post-development impervious area within the limits of the plan* =	**0.65**	acres
Total post-development impervious cover fraction * =	**0.88**	
P =	**33**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**359**	lbs.
Number of drainage basins / outfalls areas leaving the plan area =	**1**	

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

Drainage Basin/Outfall Area No. =	**1**	
Total drainage basin/outfall area =	**0.74**	acres
Predevelopment impervious area within drainage basin/outfall area =	**0.25**	acres
Post-development impervious area within drainage basin/outfall area =	**0.65**	acres
Post-development impervious fraction within drainage basin/outfall area =	**0.88**	
$L_{M\ THIS\ BASIN}$ =	**359**	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP =	**JF**	abbreviation
Removal efficiency =	**56**	percent

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7:
LR = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

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

A_C =	**0.74**	acres
A_I =	**0.65**	acres
A_P =	**0.09**	acres
L_R =	**419**	lbs.

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

Desired $L_{M\ THIS\ BASIN}$ =	**377**	lbs.
F =	**0.90**	

6. Calculate Treated Flow required by the BMP Type for this drainage basin / outfall area.

Offsite area draining to BMP =	**0.00**	acres
Offsite impervious cover draining to BMP =	**0.00**	acres

Calculations from RG-348 Pages Section 3.2.22

Rainfall Intensity =	**1.10**	inches per hour
Effective Area =	**0.59**	acres
Cartridge Length =	**54**	inches
Peak Treatment Flow Required =	**0.65**	cubic feet per second

7. Jellyfish

Designed as Required in RG-348 Section 3.2.22

Flow Through Jellyfish Size

Jellyfish Size for Flow-Based Configuration =	**JFPD0406-4-1**	
Jellyfish Treatment Flow Rate =	**0.80**	cfs

Geologic Assessment for the Johnson Ranch Elementary Tract, Comal County, Texas

MARCH 2023

PREPARED FOR

Moy Tarin Ramirez Engineers, LLC

PREPARED BY

SWCA Environmental Consultants

Texas Board of Professional Geoscientists, Firm Registration No. 50159

GEOLOGIC ASSESSMENT
FOR THE JOHNSON RANCH ELEMENTARY TRACT, COMAL COUNTY, TEXAS

Prepared for

Sean Smith, P.E.

Moy Tarin Ramirez Engineers, LLC

12770 Cimarron Path

San Antonio, Texas 78249

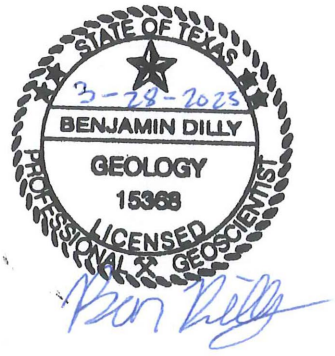
Prepared by

Ben Dilly, P.G. and Philip Pearce, P.G.

SWCA Environmental Consultants
Texas Board of Professional Geoscientists, Firm Registration No. 50159
4949 North Loop 1604 West, Suite 235
San Antonio, Texas, 78249
www.swca.com

SWCA Project No. 79522

March 2023



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Appendices

Figures

Tables

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1 INTRODUCTION

This narrative Geologic Assessment accompanies the Texas Commission on Environmental Quality (TCEQ) Geologic Assessment form TCEQ-0585 completed of two areas of proposed improvements within the Johnson Ranch Elementary 16-acre tract of land located within the Edwards Aquifer Recharge Zone on the east side of Highway 281 north of FM 1863 on Johnson Way near Bulverde, Texas. This Project Site consists two areas of proposed improvements within the limits of the school property.

2 METHODOLOGY

SWCA scientists studied information sources pertaining to all reputed caves from the Project Site to gather information related to documented caves in the vicinity prior to conducting field work. These information sources include:

- ESRI® ArcGIS® Online Basemap Map Services;
- U.S. Geological Survey (2013) 7.5-minute topographic digital raster graphics;
- Geologic maps (Barnes 1974); and
- Mapped fault lines (Collins 1997, 2005).

An SWCA geologist conducted a field survey for a Geologic Assessment on March 7, 2023. The pedestrian survey was completed by traversing parallel transects spaced approximately 30 to 50 feet apart as directed by the Texas Commission on Environmental Quality (TCEQ) (2004) in the *Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones* (Rev. 10-01-04). The Project Site is located on an existing elementary school property.

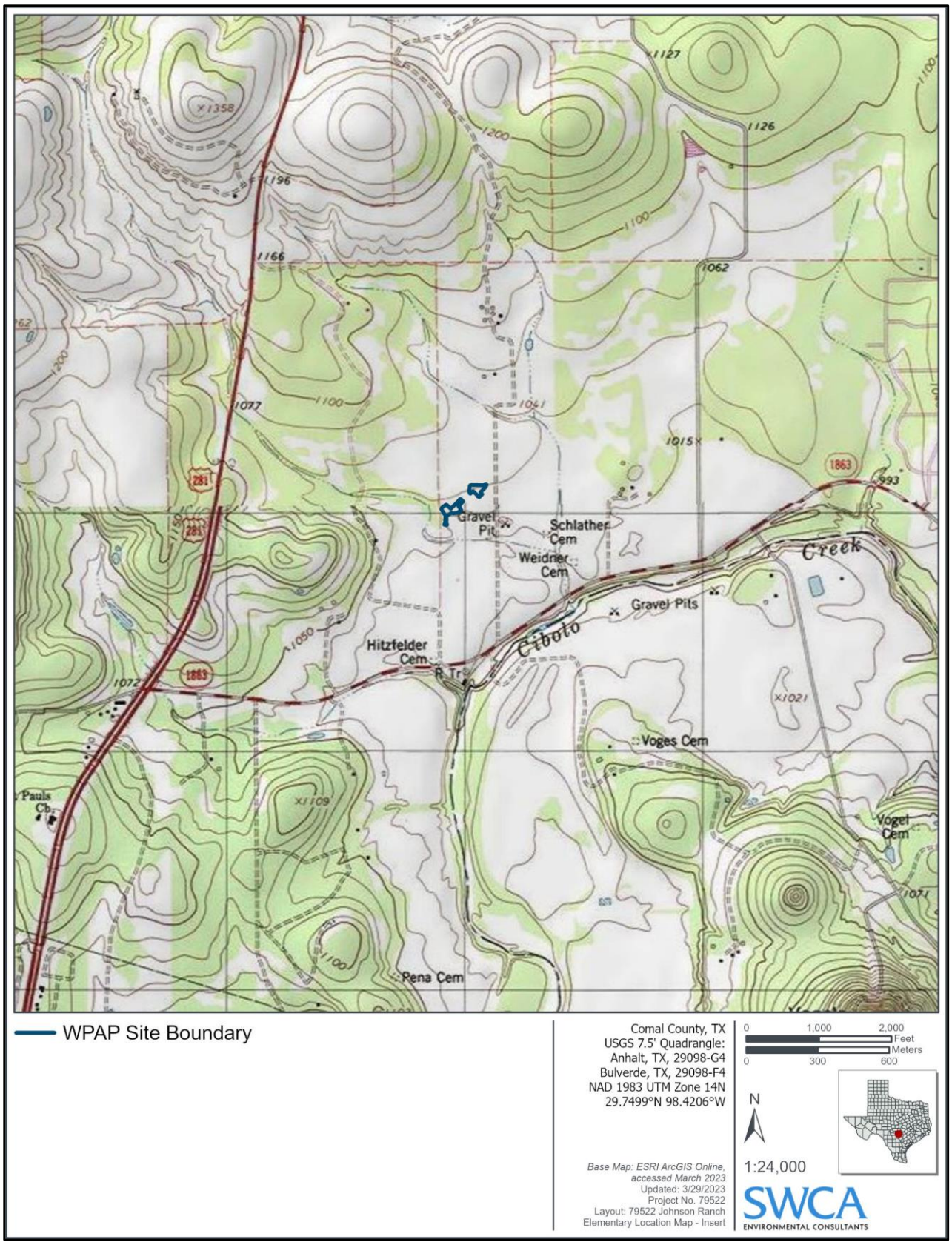


Figure 1. Project Site location map.

3 RESULTS

3.1 Project Site Overview

The Project Site lies within the Recharge Zone of the Edwards Aquifer (TCEQ 2023). Project Site topography ranges from approximately 1020 feet amsl near the southeast corner of the Project Site, to 1040 feet above mean sea level (amsl) at the northwest corner of the Project Site.

The Project Site consists of two areas of proposed improvements within an existing, elementary school property. The two areas proposed for improvements include areas that are paved and unpaved. North and east of the Project Site is a single-family residential neighborhood, and south of the site is a fire station and offices. West of the property is undeveloped land.

3.2 Geology

The Project Site is underlain by the Cretaceous-age Lower Glen Rose Formation (Kgrl) (Appendix A: Attachment D). Project Site geology has been mapped most recently at a useful scale by Clark (2016) and SWCA finds his interpretation of the geology to be generally accurate. The Stratigraphic Column is included as Attachment B within Appendix A.

The Glen Rose Formation is described as limestone, dolomite, and marl subdivided into two units by a Corbula bed. The formation has alternating resistant and recessive beds forming stairstep topography. The limestone is aphanitic to fine grained, hard to soft and marly, and light gray to yellowish gray. The dolomite is fine grained, porous, and yellowish brown. Marine megafossils include molluscan steinkerns, rudistids, oysters, and echinoids. The upper part is relatively thinner bedded, more dolomitic, and less fossiliferous than the lower part. The thickness about 220 feet. The lower part is more massive and about 160 feet thick and includes at top a Corbula bed with abundant steinkerns of *Corbula harveyi* in an interval up to 5 feet thick. The total thickness of Glen Rose Formation is approximately 380 feet.

The Project Site occurs along the Balcones Fault Zone (BFZ) within the Edwards Aquifer Recharge Zone (TCEQ 2023). Structural down-warping occurred with the Gulf of Mexico's ancestral formation during the middle Tertiary. The earth's crust was stretched in response and the BFZ formed along a zone of weakness, which currently marks the boundary between the Edwards Plateau and the Gulf Coastal Plain in central Texas. The BFZ is characterized by a series of northeast-trending, predominantly normal, nearly vertical, en echelon faults.

Recharge into the Edwards Aquifer primarily occurs in areas where the Edwards Group and Georgetown Formation are exposed at the surface. Most recharge is from direct infiltration via precipitation and streamflow loss. Recharge occurs predominantly along secondary porosity features such as faults, fractures, and karst features (caves, solution cavities, sinkholes, etc.). Karst features are commonly formed along joints, fractures, and within bedding plane surfaces in the Edwards Group and Georgetown Formation. Although neither the Georgetown no Edwards Group are exposed at or near the project site, portions of Cibolo Creek are included within the Edwards Aquifer Recharge Zone, because some evidence suggests water recharging the lower member of the Glen Rose Formation along Cibolo Creek indirectly recharges the Edwards Aquifer downstream where faults juxtapose the Glen Rose Formation and Edwards Group.

3.3 Soils

The Natural Resources Conservation Service (2023) identifies three soil units within the Project Site (Figure 3). Table 1 provides additional detail for the soil type.

Table 1. Project Site Soils Detail

Soil Name	Hydric	Hydrologic Soil Group*	Drainage Class	Frequency of Flooding/ Ponding
GrC: Gruene Clay, 1 to 5 percent slopes	No	D	Well drained	None
KrB; Krum clay, 1 to 3 percent slopes	No	C	Well drained	None
LeB; Lewisville silty clay, 1 to 3 percent slopes	No	B	Well drained	None

Data Source: Natural Resources Conservation Service 2022.

*

Group B – Soils have moderate infiltration rates when thoroughly wetted and exhibit moderate potential for runoff.

Group C – Soils have slow infiltration rates when thoroughly wetted and exhibit high potential for runoff.

Group D – Soils have very slow infiltration rates when thoroughly wetted and exhibit the highest potential for runoff.

Figure 3. Project Site soils map (Natural Resources Conservation Service 2022).

4 HYDROGEOLOGIC ASSESSMENT

The overall potential for fluid migration to the Edwards Aquifer for the Project Site appears relatively low compared to background infiltration rates, due to the presence of paved and landscaped surfaces and a lack of geologic features.

Middle Trinity Aquifer wells, completed in the Glen Rose Formation are located in proximity to the site. Table 2 shows water well number, depth to water and distance from the Project Site (TWDB 2023).

Table 2. Nearby water wells showing depth to water (TWDB 2023).

ID	Aquifer	Depth To Water (feet)	Year Measured	Distance From Project (miles)
68-13-904	Trinity	225	1978	1
68-21-215	Trinity	200-275	1980-1981	1

SWCA identified no manmade or geologic features (including faults) within the Project Site.

5 REFERENCES

Barnes, V.E. 1974. Geologic Atlas of Texas, San Antonio Sheet. University of Texas at Austin, Bureau of Economic Geology. Scale 1:250,000.

Clark, A.K., Golab, J.A., and Morris, R.R., 2016, **Geologic framework and hydrostratigraphy of the Edwards and Trinity aquifers within northern Bexar and Comal Counties, Texas**, U.S. Geological Survey, Scientific Investigations Map SIM-3366, 1:24,000.

Collins, E.W., 1992, **Geologic map of the Anhalt quadrangle, Texas**, University of Texas at Austin, Bureau of Economic Geology, Open-File Map OFM0095, 1:24,000.

Natural Resources Conservation Service (NRCS). 2023. United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database. Available at: http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. Accessed March 9, 2023.

Texas Commission on Environmental Quality. 2004. *Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones* (Rev. 10-01-04). Austin, Texas. 34 pp.

———. 2023. Edwards Aquifer Viewer v5.0. Available online at: https://www.tceq.texas.gov/gis/edwards-viewer.html. Accessed March 2023.

Texas Water Development Board (TWDB). 2023. Water Data Interactive— Viewer. Available online at: https://www2.twdb.texas.gov/apps/waterdatainteractive/groundwaterdataviewer. Accessed March 2023.

U.S. Geological Survey. 2022. Bulverde, Anhalt, Texas 7.5-minute quadrangle topographic maps.

APPENDIX A

Texas Commission on Environmental Quality (TCEQ) Forms

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: Ben Dilly, P.G.

Telephone: 210.877.2847

Fax: 210.877.2848

Date: 3/28/2023

Representing: SWCA Environmental Consultants (TBPG Firm Registration #50159) (Name of Company and TBPG or TBPE registration number)

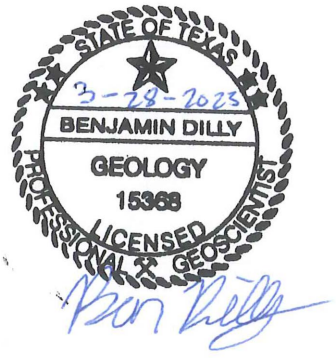
Signature of Geologist:

Ben Dilly

Regulated Entity Name: Johnson Ranch Elementary

Project Information

1. Date(s) Geologic Assessment was performed: March 7, 2023
2. Type of Project:
   - ☒ WPAP
   - ☒ SCS
   - ☐ AST
   - ☐ UST
3. Location of Project:
   - ☒ Recharge Zone
   - ☐ Transition Zone



☐ Contributing Zone within the Transition Zone

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

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

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)

Soil Name	Group*	Thickness(feet)
GrC: Gruene Clay, 1 to 5 percent slopes	D	2.6-3.6
KrB; Krum clay, 1 to 3 percent slopes	C	2.6-3.6
LeB; Lewisville silty clay, 1 to 3 percent slopes	B	2.6-3.6

** Soil Group Definitions (Abbreviated)*

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

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

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

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

   Applicant's Site Plan Scale: 1" = 50'
   Site Geologic Map Scale: 1" = 50'
   Site Soils Map Scale (if more than 1 soil type): 1" = 300'

9. Method of collecting positional data:

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

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

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

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

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

Administrative Information

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

ATTACHMENT A

Geologic Assessment Table

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: Johnson Ranch Elementary Tract

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	>40	<1.6	>1.6	
No geologic or manmade features observed in the field or from desktop analysis.																				

* DATUM: NAD83

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

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

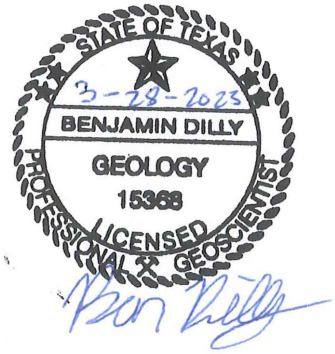
12 TOPOGRAPHY

Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

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

Ben Dilly

Date 3/28/2023



Sheet 1 of 1

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

ATTACHMENT B

Stratigraphic Column

Stratigraphic Column

Note: The shaded areas represent the lithology that outcrops on the property.[1]

Upper Cretaceous	Upper Confining Units			Navarro and Taylor Groups, undivided; 600 feet thick	
				Austin Group; 130-150 feet thick	
				Eagle Ford Group; 30-50 feet thick	
				Buda Limestone; 40-50 feet thick	
				Del Rio Clay; 40-50 feet thick	
Lower Cretaceous	I	Edwards Aquifer		Georgetown Formation	10-40 feet thick
	II		Edwards Group	Person Formation; 170-200 feet thick	Cyclic and Marine member, undivided
	III				Leached and Collapsed member, undivided
	IV				Regional Dense member
	V			Kainer Formation; 260-310 feet thick	Grainstone member
	VI				Kirschberg Evaporite member
	VII				Dolomitic member
	VIII				Basal Nodular member
	Lower Confining Units			Glen Rose Formation; 350-500 feet thick	

[1] Blome, C.D., Faith, J.R., Pdraza, D.E, Ozuna, G.B, Cole, J.C., Clark, A.K., Small, T.A., and Morris, R.R. 2005. Geologic map of the Edwards aquifer recharge zone, south-central-Texas. U.S. Geological Survey SIM-2873. Scale 1:200,000.

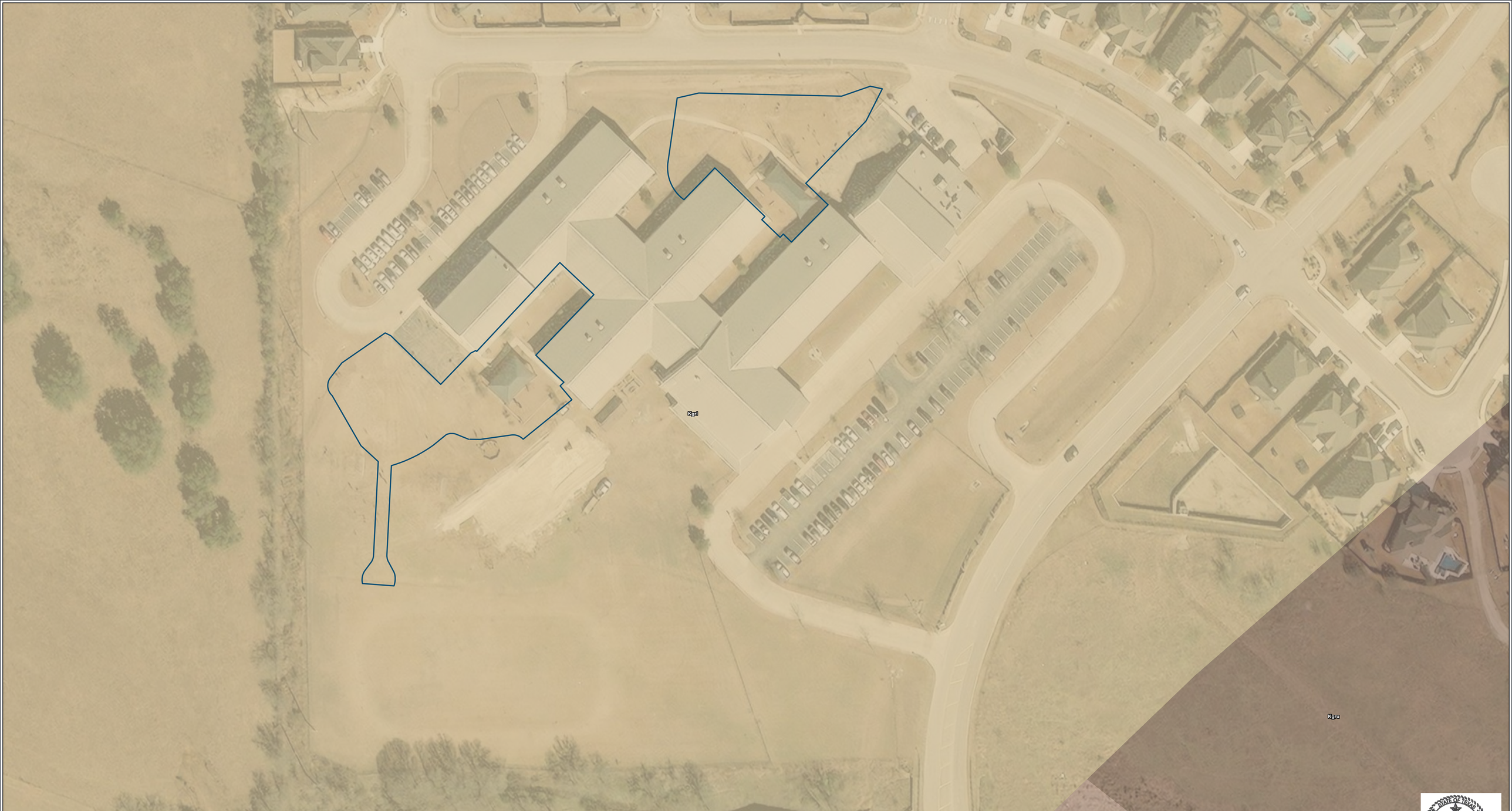
ATTACHMENT C

Narrative Description of Geology

Please refer to section 3.2 of this report for geologic narrative description.

ATTACHMENT D

Site Geologic Map and Soils Map



JOHNSON RANCH
ELEMENTARY SCHOOL
GEOLOGIC ASSESSMENT

Geologic Map

WPAP Site Boundary

Geologic Unit

- Kgrl - Lower Glen Rose Formation
- Kgru - Upper Glen Rose Formation
- Qt - Fluviatile terrace deposits

Comal County, TX
USGS 7.5' Quadrangle:
Anhalt, TX, 29098-G4
Bulverde, TX, 29098-F4
NAD 1983 UTM Zone 14N
29.7499°N 98.4206°W

0 25 50 Feet
0 7.5 15 Meters

N

1:600

Base Map: ESRI ArcGIS Online, accessed March 2022
Updated: 3/29/2023
Project No. 73522
Layout: 73522 Johnson Ranch Elementary Geologic Map - 24x36

SWCA ENVIRONMENTAL CONSULTANTS

STATE OF TEXAS
BENJAMIN DILLY
GEOLOGY
1536
LICENSED
PROFESSIONAL GEOSCIENTIST

Please refer to section 3.3 of this report for the soils map.

ATTACHMENT E

Photographic Log

Photograph 1. Representative view of the Project Site.

Photograph 2. Representative view of the Project Site.

Photograph 3. Representative view of the Project Site.

Modification of a Previously Approved Plan

Texas Commission on Environmental Quality

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

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

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

Signature

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

Print Name of Customer/Agent: Sean Smith, P.E.

Date: 03/23/2023

Signature of Customer/Agent:

Project Information

1. Current Regulated Entity Name: CISD JOHNSON RANCH ELEMENTARY SCHOOL
   Original Regulated Entity Name: CISD JOHNSON RANCH ELEMENTARY SCHOOL
   Regulated Entity Number(s) (RN): 105332530
   Edwards Aquifer Protection Program ID Number(s): _____
   ☒ The applicant has not changed and the Customer Number (CN) is: 600249825
   ☐ The applicant or Regulated Entity has changed. A new Core Data Form has been provided.

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

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

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

WPAP Modification Summary	***Approved Project***	***Proposed Modification***
Acres	See Attached Summary	16.06
Type of Development	_____	Elementary School
Number of Residential Lots	_____	N/A
Impervious Cover (acres)	_____	5.82
Impervious Cover (%	_____	36.24
Permanent BMPs	_____	Jellyfish Filter, VFS
Other	_____	N/A

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

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

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

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

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

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

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

ATTACHMENT A

ORIGINAL AND MODIFICATION APPROVAL LETTERS

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

November 12, 2007

Mr. Marc Walker
Comal Independent School District
1421 North Business 35
New Braunfels, Texas 78130

Re: Edwards Aquifer, Comal County
NAME OF PROJECT: CISD Johnson Ranch Elementary School; Located on the northeast corner of U.S. 281 and FM 1863; Bulverde ETJ, Texas
TYPE OF PLAN: Request for Approval of a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer
Edwards Aquifer Protection Program ID No. 2703.00; Investigation No. 593665; Regulated Entity No. RN105332530

Dear Mr. Walker:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP application for the above-referenced project submitted to the San Antonio Regional Office by Loomis Austin, Inc. on behalf of Comal Independent School District on October 30, 2007. Final review of the WPAP was completed after additional material was received on October 22, 2007 and November 1, 2007. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

PROJECT DESCRIPTION

The proposed commercial (elementary school) project will have an area of approximately 16.06 acres. It will include the construction of a new school facility with one building and associated driveways, parking lots, playgrounds and athletic fields. The impervious cover will be 5.26 acres (32.8%). Project wastewater will be disposed of by conveyance to the proposed Comal County WCID #1 owned by Comal County.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, an extended detention basin, vegetative (engineered) filter strips and grassy swales, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005) will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 4,587 pounds of TSS generated from the 5.26 acres of impervious cover with 0.15 acres of existing impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project. The BMP Summary Table can be seen below.

BMP Summary Table

Drainage Area	Sub Drainage Area	Total Area (ac)	Impervious Cover (ac)	BMP Efficiency (%)	TSS Required Treatment (lb/yr)	TSS Designed Treatment (lb/yr)
Extended Detention Basin (DA 1)	Ext. Det. Basin (DA 1a)	4.01	0.35	75	314.16	314.16
	Grassy Swale 1 (DA 1b)	0.46	0.46	85	412.90	412.90
	Grassy Swale 2 (DA 1b)	0.16	0.16	85	143.62	143.62
	Vegetative Filter Strips (DA 1c)	2.72	2.72	90	2,441.47	2,441.47
	Sub Total	7.35	3.69	---	3,312.15	3,420.57[A]
Grassy Swale 3 (DA 2)	---	0.44	0.38	70	341.09	304.47
Vegetative Filter Strip (DA 3)	---	0.96	0.96	80	861.70	861.70
Uncaptured (DA 4)	---	0.23	0.23	---	206.45	0.00
Site Total	---	8.98[B]	5.26	---	4,586.74[C]	4,586.74

A: The amount includes 108.42 pounds of TSS for overtreatment of uncaptured areas.
B: The total site acreage is 16.06 acres. This amount does not include uncaptured pervious cover.
C: This amount includes the reduction of 134.64 pounds of TSS from the 0.15 acres of existing impervious cover.

The extended detention basin (DA 1) is designed to be utilized as a BMP in series with grassy swales and vegetative filter strips. The basin is designed for 3.69 acres of impervious cover from a watershed area of 7.35 acres and 3,420.57 pounds of TSS, which includes 108.42 pounds of TSS for overtreatment of uncaptured areas. The total capture volume for the basin is 29,281 cubic feet (20,668 cubic feet required). Grassy swale 1 will have a one (1) percent slope and a minimum length of 107 feet. Grassy swale 2 will have a two and a half (2.5) percent slope and a minimum length of 170 feet. The vegetative (engineered) filter strips will extend along the entire length of the contributing area with a minimum width of 15 feet and a minimum vegetated cover of 80 percent. The rooftop runoff will first fall to a two (2) feet wide concrete "splash pad" and then drain to the filter strip.

Grassy swale 3 (DA 2) is designed to treat 304.47 pounds of TSS from a watershed of 0.44 acres with 0.38 acres of impervious cover. The swale will have a two (2) percent slope and a minimum length of 151 feet.

The vegetative (engineered) filter strips (DA 3) will treat stormwater runoff from the remaining buildings, parking lots and basketball court. The filter strips are designed to treat 861.70 pounds of TSS from 0.96 acres of impervious cover. The filter strips will extend along the entire length of the contributing area with a minimum width of 15 feet and a minimum vegetated cover of 80 percent. Any filter strips treating rooftop runoff will have stormwater fall to a two (2) feet wide concrete "splash pad" prior to draining to the engineered filter strip.

GEOLOGY

The geologic assessment included in the application was conducted for the larger overall development and included the project site. According to the geologic assessment, one sensitive manmade feature (water well) was assessed for the larger overall site. No geologic or manmade features were discovered on the project site. The San Antonio Regional Office did not conduct a site assessment.

SPECIAL CONDITIONS

I. The holder of the approved Edwards Aquifer WPAP must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the application.

II. All permanent pollution abatement measures shall be operational prior to occupancy of the facility.

III. Intentional discharges of sediment laden storm water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.

IV. All sediment and/or media removed from the water quality basin during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.

V. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.

VI. For any future modifications, an up to date "BMP Summary Table" shall be included with the submittal and clearly reflect previous approvals and proposed modifications.

VII. Project wastewater will be sent to the proposed Comal County WCID #1. No wastewater is to be generated until this treatment plant is constructed and operational.

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.

Prior to Commencement of Construction:

2. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the San Antonio Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested form (Deed Recordation Affidavit, TCEQ-0625) that you may use to deed record the approved WPAP is enclosed.

3. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved WPAP and this notice of approval shall be maintained at the project location until all regulated activities are completed.

4. Modification to the activities described in the referenced WPAP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.

5. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person. The executive director will use the notification to determine if the approved plan is eligible for an extension.

6. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved WPAP, must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

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

During Construction:

8. During the course of regulated activities related to this project, the applicant or agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.

9. If any sensitive feature (caves, solution cavities, sink holes, etc.) is discovered during construction, all regulated activities near the feature must be suspended immediately. The applicant or his agent must immediately notify the San Antonio Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.

10. No wells exist on site. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.

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

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

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

After Completion of Construction:

14. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the San Antonio Regional Office within 30 days of site completion.

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

16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses

the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

17. An Edwards Aquifer protection plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Edwards Aquifer protection plan must be submitted to the San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

If you have any questions or require additional information, please contact Charly Fritz of the Edwards Aquifer Protection Program of the San Antonio Regional Office at (210) 403-4065.

Sincerely,

Glenn Shankle
Executive Director
Texas Commission on Environmental Quality

GS/CEF/eg

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

cc: Mr. Charles Kaough, P.E., Loomis Austin, Inc.
Ms. Velma Danielson, Edwards Aquifer Authority
Mr. Tom Hornseeth, Comal County
Ms. Sarah Stevick, City of Bulverde
TCEQ Central Records, Building F, MC 212

ATTACHMENT B

NARRATIVE OF PROPOSED MODIFICATION

A Water Pollution Abatement Plan (WPAP) was first approved by the Texas Commission on Environmental Quality on November 12, 2007. This modification will consist of the demolition and construction of playground equipment, the installation of rubberized surface, the construction of artificial turf, the construction of shade structures, and the construction of associated flatwork. The proposed impervious playground areas on the northern side of the elementary school will drain to the existing grassy swales and extended detention basin, which have capacity to treat the increase in TSS. The proposed impervious playground areas on the southern side of the elementary school will be treated via engineered vegetative filter strips and a new Contech JellyFish Filter. The proposed impervious cover for the site will be 5.82 acres. The impervious cover will be increased by 0.56 acres from the previous WPAP approval.

A portion of the proposed impervious cover is self-treating synthetic turf. The total area of self-treating synthetic turf is 0.20 acres. A small portion of existing VFS will be removed for the construction of the proposed improvements. The impervious cover associated with these VFS was approximately 0.24 acres. The removed VFS have been accounted for in the TSS removal calculations. Please see the BMP's for On-site Stormwater attachment in the permanent stormwater section of this modification for TSS removal calculations.

ATTACHMENT C

CURRENT SITE PLAN OF THE APPROVED PROJECT

IMPERVIOUS COVER SUMMARY		
IMPERVIOUS COVER	SQ. FT.	ACRES
STRUCTURES/ROOFTOPS	85,194	1.96
PARKING	116,397	2.67
OTHER PAVED SURFACES	22,390	0.63
TOTAL I.C.	223,982	5.26

WATER QUALITY BMP SUMMARY TABLE

Drainage Area	Sub Drainage Area	Total Area (ac)	Impervious Cover (ac)	BMP Efficiency (%)	TSS Required Treatment (lb/yr)	TSS Designed Treatment (lb/yr)
E.D. Basin (only)	---	4.01	0.35	75	314.16	348.50
Grassy Swale + ED	GS1	0.46	0.46	85	412.90	440.44
	GS2	0.16	0.16	85	125.96	155.28
Veg. F.S + ED	---	2.72	2.72	90	2,459.42	2,795.13
ED Basin Sub total	---	7.35	3.69	---	3,312.14	3,745.35
Swale only	GS3	0.44	0.38	70	341.09	304.47
Veg. FS only	---	0.96	0.96	80	861.70	861.70
Uncaptured	---	0.23	0.23	---	206.45	0.00
					+134.64 *	
Site total	---	8.98**	5.26	---	4,586.74	4,911.52

* TSS from 0.15 acres of existing impervious cover.
** The total site acreage is 16.06 acres. This amount does not include uncaptured previous cover.

REQUIRED LOAD REMOVAL BASED ON THE ENTIRE PROJECT:

COUNTY = COMAL
TOTAL PROJECT AREA INCLUDED IN PLAN = 16.06 Acres
PREDEVELOPMENT IMPERVIOUS AREA WITHIN THE LIMITS OF THE PLAN = 0.15 Acres
TOTAL POST-DEVELOPMENT IMPERVIOUS AREA WITHIN THE LIMITS OF THE PLAN = 5.26 Acres
TOTAL POST-DEVELOPMENT IMPERVIOUS COVER FRACTION = 0.33
P = 33 Inches

TOTAL Lм REQUIRED FOR THIS PLAN = 4587 lbs.

NOTES:

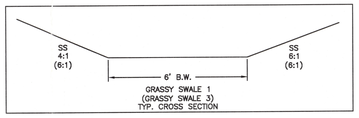
1. VEGETATIVE FILTER STRIPS AND GRASSY SWALES ARE TO BE BUILT ACCORDING TO THE CRITERIA SPECIFIED IN THE T.C.E.Q. EDWARDS AQUIFER TECHNICAL GUIDANCE MANUAL, JUNE 20, 2005.
2. ALL CURBS ARE RIBBON CURB OR STAND-UP CURBS WITH CURB CUTS AT LEAST 12" WIDE TO PREVENT CLOGGING.
3. VEGETATIVE FILTER STRIPS ARE A MINIMUM OF 15 FEET LONG AND MAX SLOPE OF 20%, MINIMUM VEGETATIVE COVER IS 80%.

Extended Detention Calculations		
Total Drainage Basin (Ac)	7.35	acres captured by pond
Impervious Area (Ai)	3.69	acres
Pervious Area (Ap)	3.66	acres
F_{total}	0.94	(Grassy Swale and Extended Detention in Series)
Load Removed (Lr)	3745	lbs.
Total Capture Volume (CY)	1021	Required (including 20% extra volume
Total Capture Volume (CY)	1085	Provided (including 20% extra volume
Water Quality Outlet - 3.5" Orifice		
Water Quality Volume Drain Down Time	48.0 Hours	

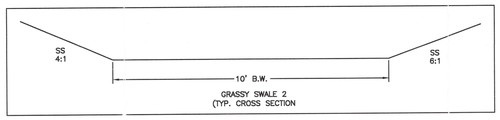
Stage/Storage/Discharge Relationships

	Area		Incremental Volume		Cumulative Volume		Discharge
Elevation	ft²	acres	Ac-ft	CY	Ac-ft	CY	cfs
1017.2	0	0.00	0.0	0.0	0.0	0.0	0.0
1018	14463	0.33	0.1	214.3	0.1	214.3	0.14
1019	16060	0.37	0.4	565.2	0.5	779.5	0.21
1019.5	**16879**	**0.39**	**0.2**	**305.0**	**0.7**	**1084.5**	**0.24**
1020	17730	0.41	0.2	320.5	0.9	1405.0	1.6
1021	19491	0.45	0.4	689.3	1.3	2094.2	9.4
1022	21324	0.49	0.5	755.8	1.8	2850.1	17.9
1023	23209	0.53	0.5	824.7	2.3	3674.7	23.7

GRASSY SWALE DESIGN



GRASSY SWALE 1 (GRASSY SWALE 3) TYP. CROSS SECTION

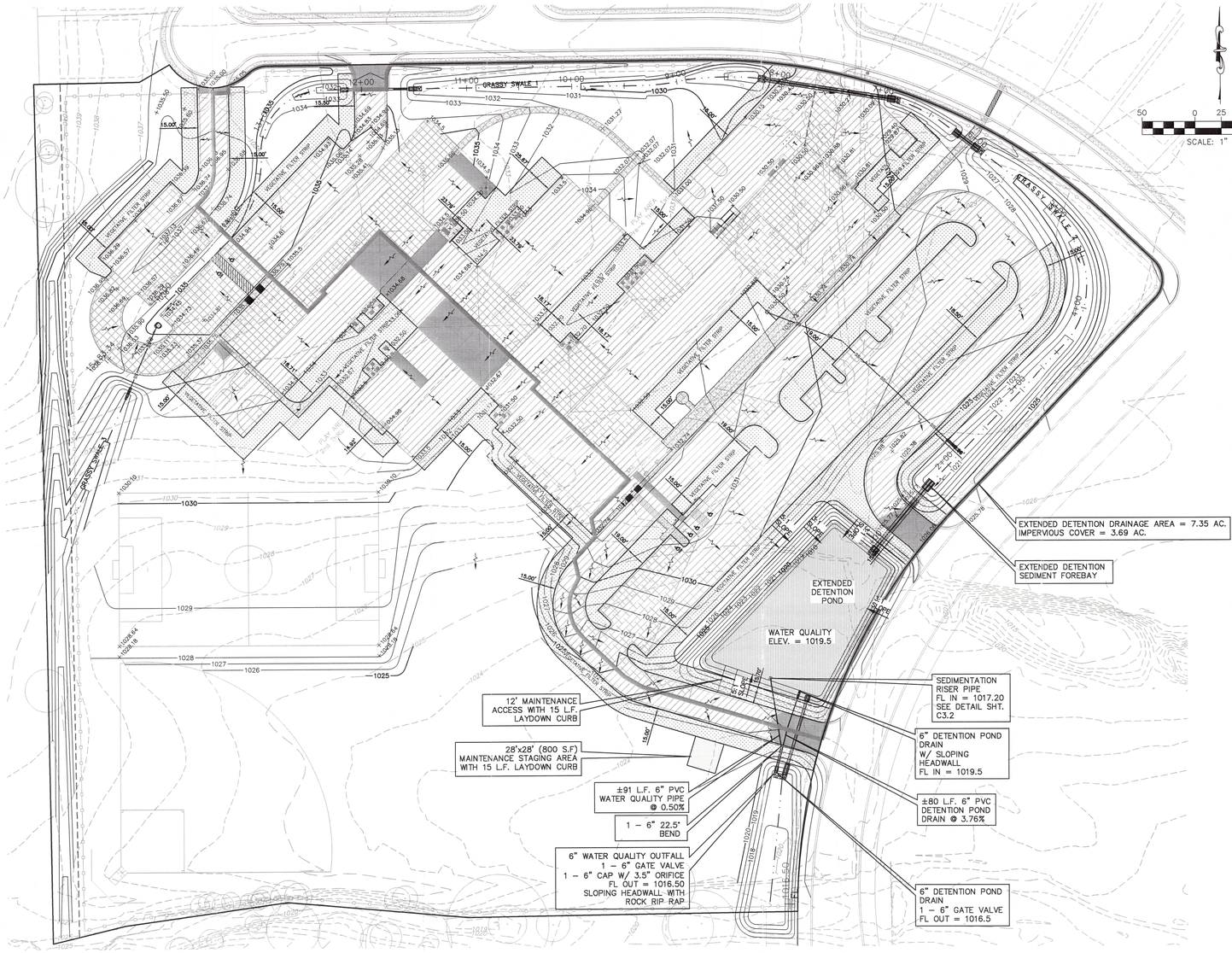


GRASSY SWALE 2 (TYP. CROSS SECTION

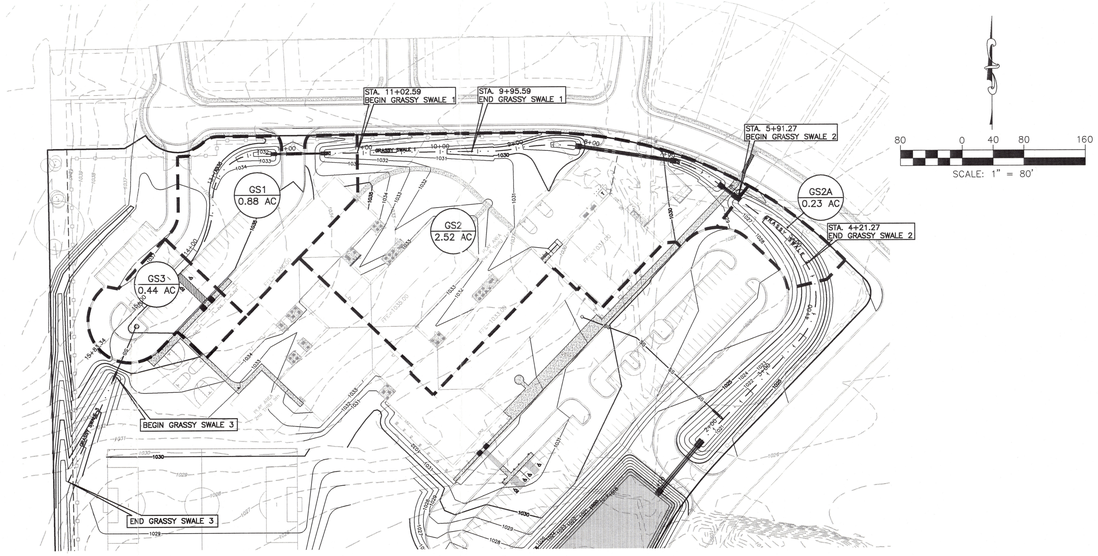
Comal County Elementary School
Water Quality Calculations Based on TCEQ Edwards Aquifer Technical Guidance Manual (June 2005)

Grassy Swale Data

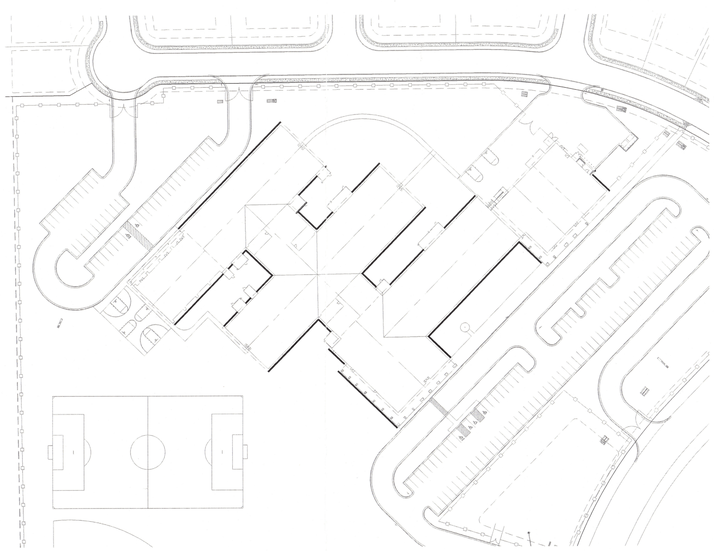
Swale	Slope %	Bottom Width ft	Side Slope- Right	Side Slope- Left	Mannings n	Flow Rate cfs	Velocity fps	Depth in	Length ft	Residence Time sec
1	1.0	6	4	10	0.20	0.53	0.36	0.33	107	300
2	2.5	10	4	6	0.20	2.17	0.47	0.33	170	300
3	2.0	6	5	5	0.20	0.33	0.50	0.33	151	301



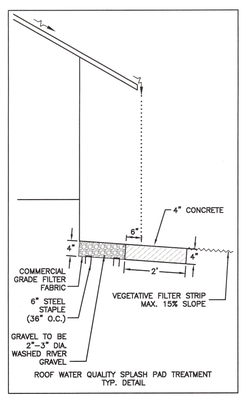
WATER QUALITY PLAN



GRASSY SWALE HYDRALICS



SPLASH PAD PLAN



ROOF WATER QUALITY SPLASH PAD TREATMENT TYP. DETAIL

Pfluger Associates Architects
1917 N. NEW BRAUNFELS AVE., SUITE 201
SAN ANTONIO, TEXAS 78208
PH: 210/227-2724 FAX: 210/227-2730

GENERAL NOTES · KEYED NOTES · LEGENDS

LEGEND

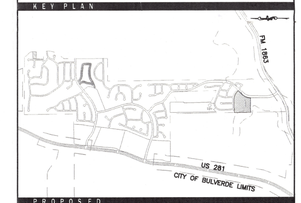
- BOUNDARY LINE
- PROPOSED R.O.W.
- LOT LINE
- CURB AND GUTTER
- RIBBON CURB
- DRAINAGE AREA BOUNDARY
- GRASSY SWALE CL
- SPLASH BLOCK
- 832 EXISTING 5ft CONTOUR
- 830 EXISTING 1ft CONTOUR
- 830 PROPOSED 5ft CONTOUR
- 830 PROPOSED 1ft CONTOUR
- HP HIGH POINT
- LP LOW POINT
- RUNOFF FLOW ARROW
- XX / XX.XX DRAINAGE AREA INDENTIFIER
- EXTENDED DETENTION DRAINAGE AREA
- TREE TO BE PRESERVED
- TREE TO BE REMOVED
- FENCE
- EXTENDED DETENTION POND MAINTENANCE STAGING AREA
- VEGETATIVE FILTER STRIP
- IMPERVIOUS COVER TREATED BY GRASSY SWALE
- IMPERVIOUS COVER TREATED BY EXTENDED DETENTION
- IMPERVIOUS COVER TREATED BY VEGETATIVE FILTER STRIP
- UNTREATED
- WATER QUALITY SURFACE

WATER QUALITY NOTES:
1. ENGINEERED VEGETATIVE FILTER STRIP SLOPES NOT TO EXCEED 20% AND LENGTH NO LESS THAN 15 FEET WITH A MIN. 80% VEGETATIVE COVER.
2. GRASSY SWALE TO BE CONSTRUCTED TO T.C.E.Q. DESIGN STANDARDS WITH A MIN. 80% VEGETATIVE COVER.

CIVIL ENGINEER

LOOMIS AUSTIN ENGINEERING, LAND SURVEYING & ENVIRONMENTAL CONSULTING
3103 Bee Cave Road • Suite 225 • Austin Texas 78746
Phone: (512) 327-1180 • Fax: (512) 327-4062 • www.loomisaustin.com

KEY PLAN



PROPOSED

Proposed New Johnson Ranch Elementary

OWNER

Comal Independent School District
1421 N. Business 35
New Braunfels, Texas 78130
Phone No. (830) 221-2184
Fax No.(830) 221-2009
Owner Web Page: www.comalisd.org

2007 NOV 1 PM 12:53

SEAL

CHARLES W. KROUGH 107565 LICENSED PROFESSIONAL ENGINEER

DATA

PROJECT NO. 06-12
DATE 03-28-07
REVISIONS

SHEET TITLE
WATER QUALITY PLAN

C9.1

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: Sean Smith, P.E.

Date: 03/23/2023

Signature of Customer/Agent:

Regulated Entity Name: CISD JOHNSON RANCH ELEMENTARY SCHOOL

Regulated Entity Information

1. The type of project is:

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

2. Total site acreage (size of property):16.06

3. Estimated projected population:+/- 950

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

Table 1 - Impervious Cover Table

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	85,194.3	÷ 43,560 =	1.96
Parking	116,396.8	÷ 43,560 =	2.67
Other paved surfaces	52,017.8	÷ 43,560 =	1.19
Total Impervious Cover	253,608.9	÷ 43,560 =	5.82

Total Impervious Cover 5.82 **÷ Total Acreage** 16.06 **X 100 =** 36.24**% Impervious Cover**

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

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

For Road Projects Only

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

7. Type of project:

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

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

   ☐ Concrete
   ☐ Asphaltic concrete pavement
   ☐ Other: _____

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

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

10. Length of pavement area: _____ feet.

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

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

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

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

Stormwater to be generated by the Proposed Project

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

Wastewater to be generated by the Proposed Project

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

100% Domestic	14,250Gallons/day
_____% Industrial	_____Gallons/day
_____% Commingled	_____Gallons/day

TOTAL gallons/day 14,250

15. Wastewater will be disposed of by:

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

- ☐ **Attachment C - Suitability Letter from Authorized Agent**. An on-site sewage facility will be used to treat and dispose of the wastewater from this site. The appropriate licensing authority's (authorized agent) written approval is attached. It states that the land is suitable for the use of private sewage facilities and will meet or exceed the requirements for on-site sewage facilities as specified under 30 TAC Chapter 285 relating to On-site Sewage Facilities.
- ☐ Each lot in this project/development is at least one (1) acre (43,560 square feet) in size. The system will be designed by a licensed professional engineer or registered sanitarian and installed by a licensed installer in compliance with 30 TAC Chapter 285.

☒ Sewage Collection System (Sewer Lines):

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

- ☐ The SCS was previously submitted on_____.
- ☐ The SCS was submitted with this application.
- ☐ The SCS will be submitted at a later date. The owner is aware that the SCS may not be installed prior to Executive Director approval.

☒ The sewage collection system will convey the wastewater to the Comal County WCID #1 (name) Treatment Plant. The treatment facility is:

☒ Existing.
☐ Proposed.

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

Site Plan Requirements

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

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

Site Plan Scale: 1" = 40'.

18. 100-year floodplain boundaries:

☒ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
☐ No part of the project site is located within the 100-year floodplain.
The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): _____

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

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

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

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

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

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

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

☒ All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.
☐ No sensitive geologic or manmade features were identified in the Geologic Assessment.
☐ **Attachment D - Exception to the Required Geologic Assessment**. A request and justification for an exception to a portion of the Geologic Assessment is attached.

22. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.

23. ☒ Areas of soil disturbance and areas which will not be disturbed.

24. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.

25. ☒ Locations where soil stabilization practices are expected to occur.

26. ☐ Surface waters (including wetlands).

    ☒ N/A

27. ☐ Locations where stormwater discharges to surface water or sensitive features are to occur.

    ☒ There will be no discharges to surface water or sensitive features.

28. ☒ Legal boundaries of the site are shown.

Administrative Information

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

30. ☒ Any modification of this WPAP will require Executive Director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

ATTACHMENT A
FACTORS AFFECTING WATER QUALITY

Landscaping, vehicular traffic, and various construction activities may affect the quality of stormwater originating on the proposed site. These factors may cause small amounts of oil, grease, suspended solids, fertilizers, and pesticides to enter into the stormwater runoff. However, temporary BMPs have been designed on the basis of the Technical Guidance Manual to treat the required amount of stormwater runoff as to not adversely affect water quality entering into any surface water or groundwater.

ATTACHMENT B
VOLUME AND CHARACTER OF STORMWATER

Volume

The rational method (Q=CIA) was used to calculate the 25 year storm event. The following areas and volumes were calculated:

On-Site Drainage Area A

Existing Conditions
Area = 14.33 acres
Impervious Cover = 5.07 acres
Runoff Coefficient = 0.68
Percent Impervious = 35.38%
Q_{25} = 71.17 cfs

Proposed Conditions
Area = 14.33 acres
Impervious Cover = 5.63 acres
Runoff Coefficient = 0.70
Percent Impervious = 39.29%
Q_{25} = 73.01 cfs

Character of Storm Water

Stormwater runoff generated from the site during construction will be typical of an elementary school educational facility with buildings, parking lots, and basin maintenance projects. The runoff should consist of small amounts of suspended solids created by sediments from disturbed soils, construction dust, sawdust and hydrocarbons from construction equipment. Temporary BMP's have been selected from the TCEQ Publication, "Complying with the Edwards Aquifer Rules: Technical Guidance for Best Management Practices," to treat the required volume and character of storm water runoff to remove the increased total suspended solids (TSS) due to the proposed maintenance activities. Permanent stabilization of areas where soil is disturbed by construction activities will be accomplished by solid sodding in those areas.

Stormwater runoff generated after construction is complete will also be typical of an elementary school educational facility. The runoff will contain sediments from rooftops, driveways, parking lots, sidewalks, landscape areas, and other miscellaneous impervious areas from the site. The runoff may contain small amounts of oil, grease, suspended solids, fertilizers, and pesticides. The post construction runoff will be treated through the existing grassy swales, VFS, and extended detention basin, as well as the proposed JellyFish filter and VFS.

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.

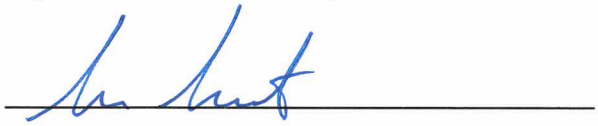
Signature

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: Sean Smith, P.E.

Date: 03/23/2023

Signature of Customer/Agent:



Regulated Entity Name: CISD JOHNSON RANCH ELEMENTARY SCHOOL

Project Information

Potential Sources of Contamination

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

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

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

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

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

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

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

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

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

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

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

Sequence of Construction

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

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

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

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

Temporary Best Management Practices (TBMPs)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

☒ N/A

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

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

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

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

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

Soil Stabilization Practices

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

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

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

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

Administrative Information

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

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

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

ATTACHMENT A
SPILL RESPONSE ACTIONS

1. Housekeeping

   A. Minimize materials: An effort will be made to store only enough materials required to do the job.

   B. Storage: All materials stored on site will be stored in a neat, orderly manner in their appropriate containers in a covered area. If storage in a covered area is not feasible, then the materials will be covered with polyethylene or polypropylene sheeting to protect them from the elements.

   C. Labeling: Products will be kept in their original containers with the original manufacturer's label affixed to each container.

   D. Mixing: Substances will not be mixed with one another unless this is recommended by the manufacturer.

   E. Disposal: Whenever possible, all of a product will be used prior to disposal of the container. Manufacturer's recommendations will be followed for proper use and disposal of materials on site.

   F. Inspections: The site superintendent will inspect the site daily to ensure proper use and disposal of materials on site.

   G. Spoil Materials: Any excavated earth that will not be used for fill material and all demolished pavement will be hauled off site immediately and will be disposed of properly, in accordance with all applicable state/local regulations.

2. Product Specific Practices

   A. Petroleum Products: All on site vehicles will be monitored for leaks and will receive regular preventive maintenance to reduce the chance of leakage. If petroleum products will be present at the site, then they will be stored in tightly sealed containers which are clearly labeled. Any asphalt substances used on site will be applied according to the manufacturer's recommendations.

   B. Concrete Trucks: Ready/Transit Mix Trucks will not be allowed to wash out or discharge surplus concrete or drum wash water except in the designated location on site as shown on the SWPPP site plan.

   C. Paints: All containers will be tightly sealed and stored when not required for use. Excess paint will not be poured into storm sewer system or drainage channels, but will be properly disposed of according to manufacturers' instructions or state/local regulations.

D. Fertilizers: Fertilizers will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked into the soil to limit exposure to storm water. The fertilizer will be stored in a covered area, and any partially used bags will be transferred to a sealable plastic bin to avoid spills.

3. Spill Control and Response Measures

A spill prevention and response team will be designated by the site superintendent. In addition, the following practices will be followed for spill cleanup:

A. Information: Manufacturers' recommended methods for spill cleanup will be clearly posted, and site personnel will be made aware of the procedures and location of the information and cleanup supplies.

B. Equipment: Materials and equipment necessary for spill cleanup will be present on the site at all times. Equipment and materials will include, but not be limited to brooms, shovels, rags, gloves, goggles, absorbent materials (sand, sawdust, etc.) and plastic or metal trash containers specifically designed for this purpose. The materials and equipment necessary for spill cleanup will be dependent upon the nature and quantity of the material stored on site.

C. Response: All spills will be cleaned up immediately upon discovery.

Cleanup

(1) Clean up leaks and spills immediately

(2) Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be disposed of as hazardous waste.

(3) Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in TCEQ Technical Guidance Manual RG-348 for specific information.

Minor Spills

(1) Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.

(2) Use absorbent materials on small spills rather than hosing down or burying the spill

(3) Absorbent materials should be promptly removed and disposed of properly.

(4) Follow the practice below for a minor spill:

(5) Contain the spread of the spill.

(6) Recover spilled materials.

(7) Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

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

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

Significant/Hazardous Spills

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

D. Vehicle and Equipment Maintenance
(1) If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the run-on of stormwater and the runoff of spills.

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

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

F. Safety: The spill area will be kept well ventilated, and personnel will wear appropriate protective clothing to prevent injury from contact with hazardous substances.

G. Reporting: Spills of toxic or hazardous material (if present on site) will be reported to the appropriate state or local government agency, regardless of the spill's size.

H. Record Keeping: The spill prevention plan will be modified to include measures to prevent this type of spill from recurring as well as improved methods for cleaning up any future spills. A description of each spill, what caused it, and the cleanup measures used will be kept with this plan.

ATTACHMENT B
POTENTIAL SOURCES OF CONTAMINATION

Potential Source	Oil, grease, fuel and hydraulic fluid contamination from construction equipment and vehicle dripping.
Preventive Measure	Vehicle maintenance, when possible, will be performed within a construction staging area specified by the General Contractor.
Potential Source	Miscellaneous trash and litter from construction workers and material wrappings.
Preventive Measure	Trash containers will be placed throughout the site to encourage proper trash disposal.
Potential Source	Construction debris.
Preventive Measure	Construction debris will be monitored daily by contractor. Debris will be collected weekly and placed in disposal bins. Situations requiring immediate attention will be addressed on a case by case basis.
Potential Source	Stormwater contamination from excess application of fertilizers, herbicides and pesticides.
Preventive Measure	Fertilizers, herbicides and pesticides will be applied only when necessary and in accordance with manufacturers directions.
Potential Source	Soil and mud from construction vehicle tires as they leave the site.
Preventive Measure	A stabilized construction exit shall be utilized as vehicles leave the site. Any soil, mud, etc. carried from the project onto public roads shall be cleaned up within 24 hours.
Potential Source	Sediment from soil, sand, gravel and excavated materials stockpiled on site.
Preventive Measure	Silt fence shall be installed on the downgradient side of all stockpiled materials. Reinforced rock berms shall be installed at all downstream discharge locations.

ATTACHMENT C
SEQUENCE OF MAJOR ACTIVITIES

Construction Sequencing

A. Installation of temporary BMPs as shown on the WPAP Site Plan. Silt fence will be placed along the down gradient boundary. (0.04 acres disturbed)

B. Demolition and grading. (1.29 acres disturbed)

C. Seeding and soil stabilization. (0.84 acres disturbed)

ATTACHMENT C
WPAP SITE PLAN

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

1. WRITTEN CONSTRUCTION NOTIFICATION MUST BE GIVEN TO THE APPROPRIATE TCEQ REGIONAL OFFICE NO LATER THAN 48 HOURS PRIOR TO COMMENCEMENT OF THE REGULATED ACTIVITY. INFORMATION MUST INCLUDE THE DATE ON WHICH THE REGULATED ACTIVITY WILL COMMENCE, THE NAME OF THE APPROVED PLAN FOR THE REGULATED ACTIVITY, AND THE NAME OF THE PRIME CONTRACTOR AND THE NAME AND TELEPHONE NUMBER OF THE CONTACT PERSON.

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

3. IF ANY SENSITIVE FEATURE IS DISCOVERED DURING CONSTRUCTION, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPROPRIATE TCEQ REGIONAL OFFICE MUST BE IMMEDIATELY NOTIFIED OF ANY SENSITIVE FEATURES ENCOUNTERED DURING CONSTRUCTION. THE REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MAY NOT PROCEED UNTIL THE TCEQ HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT THE SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM ANY POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY.

4. NO TEMPORARY ABOVEGROUND HYDROCARBON AND HAZARDOUS SUBSTANCE STORAGE TANK SYSTEM IS INSTALLED WITHIN 150 FEET OF A DOMESTIC, INDUSTRIAL, IRRIGATION, OR PUBLIC WATER SUPPLY WELL, OR OTHER SENSITIVE FEATURE.

5. PRIOR TO COMMENCEMENT OF CONSTRUCTION, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY SELECTED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS AND GOOD ENGINEERING PRACTICES. CONTROLS SPECIFIED IN THE TEMPORARY STORM WATER SECTION OF THE APPROVED EDWARDS AQUIFER PROTECTION PLAN ARE REQUIRED DURING CONSTRUCTION. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THE CONTROLS MUST REMAIN IN PLACE UNTIL DISTURBED AREAS ARE REVEGETATED AND THE AREAS HAVE BECOME PERMANENTLY STABILIZED.

6. IF SEDIMENT ESCAPES THE CONSTRUCTION SITE, OFF-SITE ACCUMULATIONS OF SEDIMENT MUST BE REMOVED AT A FREQUENCY SUFFICIENT TO MINIMIZE OFFSITE IMPACTS TO WATER QUALITY (E.G., FUGITIVE SEDIMENT IN STREET BEING WASHED INTO SURFACE STREAMS OR SENSITIVE FEATURES BY THE NEXT RAIN).

7. SEDIMENT MUST BE REMOVED FROM SEDIMENT TRAPS OR SEDIMENTATION PONDS NOT LATER THAN WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%. A PERMANENT STAKE MUST BE PROVIDED THAT CAN INDICATE WHEN THE SEDIMENT OCCUPIES 50% OF THE BASIN VOLUME.

8. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BECOMING A POLLUTANT SOURCE FOR STORMWATER DISCHARGES (E.G., SCREENING OUTFALLS, PICKED UP DAILY).

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

10. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARY OR PERMANENTLY CEASE IS PRECLUDED BY WEATHER CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE. WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 21 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF SITE. IN AREAS EXPERIENCING DROUGHTS WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED IS PRECLUDED BY SEASONAL ARID CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE.

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

12. THE HOLDER OF ANY APPROVED EDWARD AQUIFER PROTECTION PLAN MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:

   A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY WATER POLLUTION ABATEMENT STRUCTURE(S), INCLUDING BUT NOT LIMITED TO PONDS, DAMS, BERMS, SEWAGE TREATMENT PLANTS, AND DIVERSIONARY STRUCTURES;

   B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED OR A CHANGE WHICH WOULD SIGNIFICANTLY IMPACT THE ABILITY OF THE PLAN TO PREVENT POLLUTION OF THE EDWARDS AQUIFER;

   C. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE ORIGINAL WATER POLLUTION ABATEMENT PLAN.

AUSTIN REGIONAL OFFICE
2800 S. IH 35, SUITE 100
AUSTIN, TEXAS 78704-5712
PHONE (512) 339-2929
FAX (512) 339-3795

SAN ANTONIO REGIONAL OFFICE
14250 JUDSON ROAD
SAN ANTONIO, TEXAS 78233-4480
PHONE (210) 490-3096
FAX (210) 545-4329

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

GENERAL NOTES:

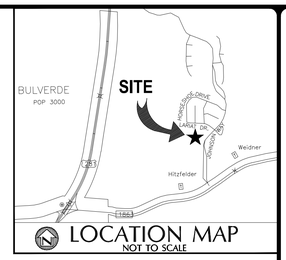
1. PROVIDE BAGGED GRAVEL INLET FILTERS AT ALL EXPOSED DRAINAGE STRUCTURES.
2. SOIL DISTURBANCES WILL OCCUR OVER PARTS OF SITE AS INDICATED ON PLAN.
3. LOCATIONS OF MAJOR STRUCTURAL AND NONSTRUCTURAL CONTROLS ARE LABELED.
4. THESE ARE THE TEMPORARY AND PERMANENT BEST MANAGEMENT PRACTICES.
5. SOIL STABILIZATION PRACTICES SHALL OCCUR OVER THE ENTIRE SITE WITH THE USE OF PAVEMENT, BUILDINGS, SIDEWALKS, GRASS SOD, GRASS SEEDING AND MULCH.
6. THERE ARE NO LOCATIONS WHERE STORM WATER DISCHARGES TO SURFACE WATER.
7. CONTRACTOR SHALL MODIFY PLAN AS NECESSARY TO PROVIDE FOR PROPER STORM WATER POLLUTION PREVENTION THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITIES. ALL MODIFICATIONS ARE TO BE NOTED ON CONTRACTOR'S COPY OF THE WPAP SITE PLAN DRAWING AND REPORT ON THE PROJECT SITE.
8. CONTRACTOR IS RESPONSIBLE FOR PROVIDING PROPER POLLUTION CONTROLS OF THE PROJECT SITE THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITIES.

SITE INFORMATION:

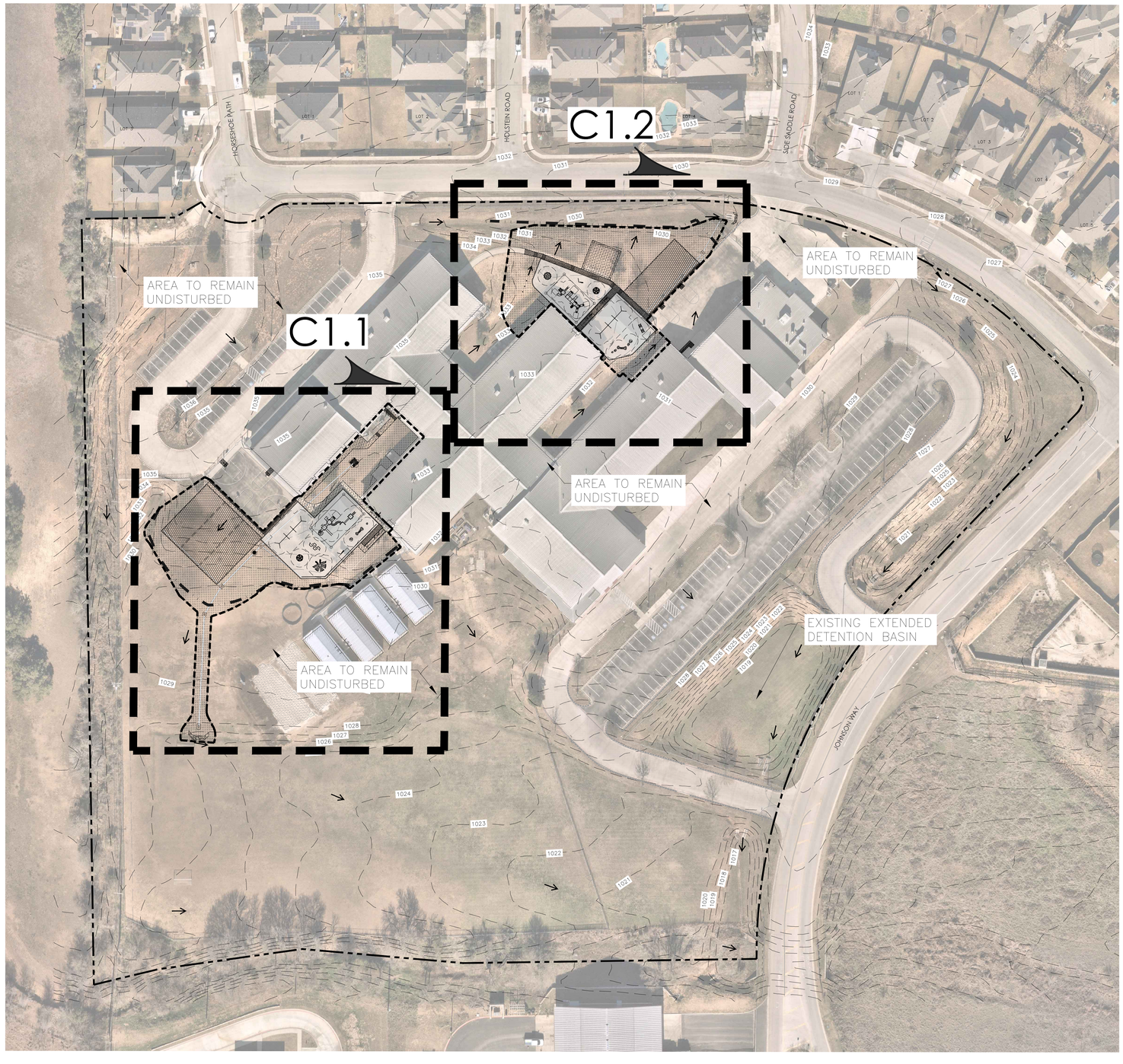
DATA ON INDICATED SUBSURFACE CONDITIONS ARE NOT INTENDED AS REPRESENTATIONS OR WARRANTIES OF ACCURACY OR CONTINUITY BETWEEN SOIL BORINGS. IT IS EXPRESSLY UNDERSTOOD THAT THE OWNER, ARCHITECT, AND/OR STRUCTURAL, CIVIL OR MECHANICAL, PLUMBING, OR ELECTRICAL ENGINEER WILL NOT BE RESPONSIBLE FOR INTERPRETATIONS OR CONCLUSIONS DRAWN THEREFROM BY CONTRACTOR. DATA ARE MADE AVAILABLE FOR CONVENIENCE OF CONTRACTOR ONLY AND AS SUCH, THE SOIL BORINGS ARE NOT CONSIDERED TO BE A PART OF THESE CONTRACT DOCUMENTS. THE CONTRACTOR MAY, AT HIS OPTION, OBTAIN A COPY OF THE GEOTECHNICAL REPORT.

PROPERTY DATA:

1) SIZE ~ 16.06 ACRES
2) LOTS ~ 1 LOT
3) OWNER ~ COMAL INDEPENDENT SCHOOL DISTRICT



LOCATION MAP
NOT TO SCALE



N

SCALE: 1"=50'
0 50 100

LEGEND

- PROPERTY LINE
- EXISTING CONTOUR
- SILT FENCE
- SAND/GRAVEL BAG
- ROCK BERM
- GRAVEL INLET FILTER
- RUBBERIZED PLAYGROUND SURFACE
- ARTIFICIAL TURF PLAY AREA
- NEW CONCRETE SIDEWALK/FLATWORK

NO.	DATE	REVISIONS DESCRIPTION	BY

PROJ. # | DSN. BY: | DWN. BY: | CHKD. BY: | DATE:

• Engineers
• Surveyors
• Planners
Moy Tarin Ramirez Engineers, LLC
TBPELS: ENGINEERING F-5297/SURVEYING F-10131500
12770 CIMARRON PATH, SUITE 100
SAN ANTONIO, TEXAS 78249
TEL: (210) 698-5085
FAX: (210) 698-5085

STATE OF TEXAS
SEAN S. SMITH
113308
REGISTERED PROFESSIONAL ENGINEER
3/14/23

PLAYGROUND UPGRADES - PACKAGE C - GROUP 3
JOHNSON RANCH ES

WATER POLLUTION ABATEMENT PLAN SITE PLAN

SHEET
C1.0

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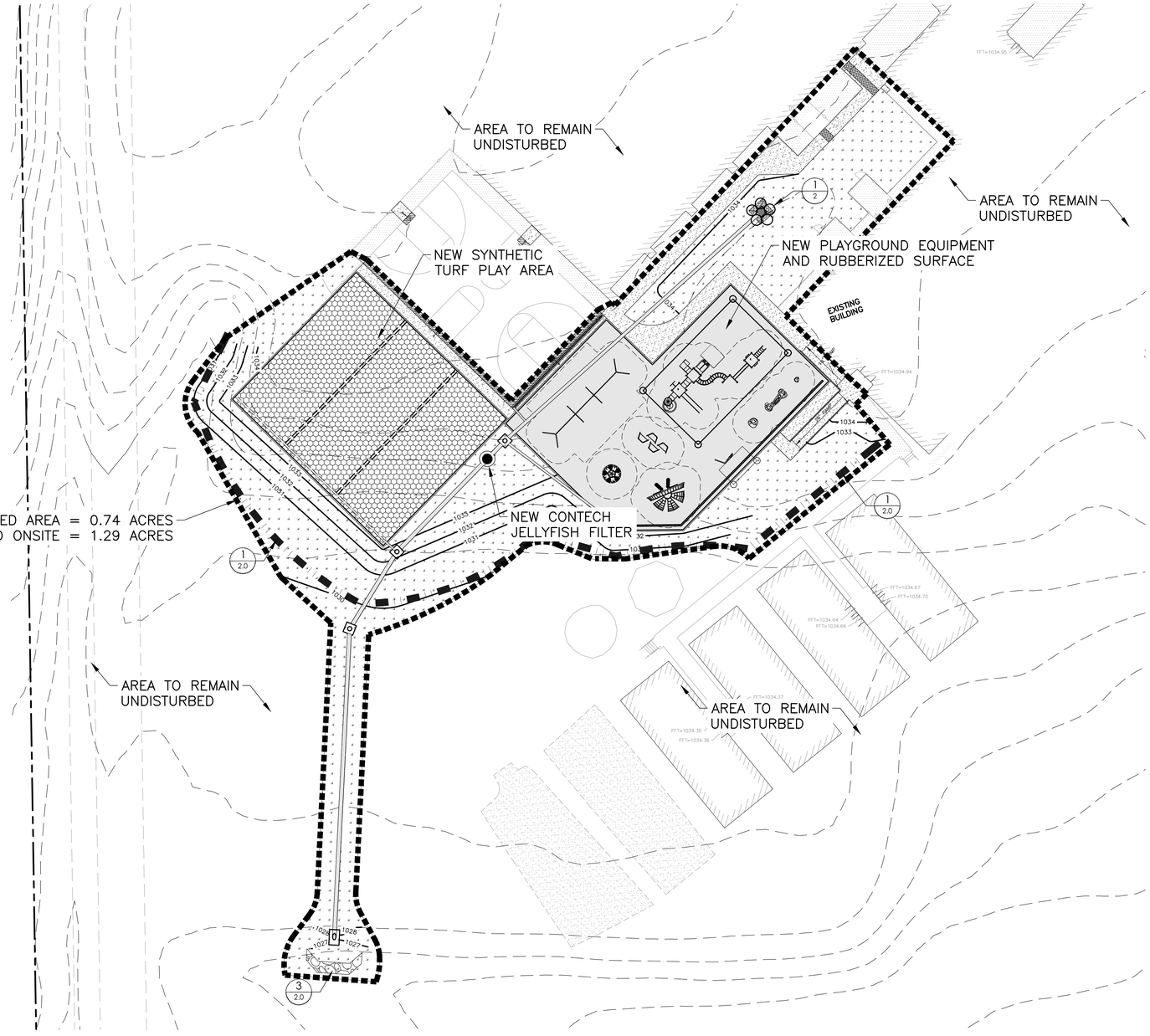
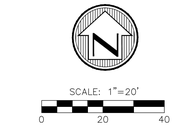




LEGEND

- PROPERTY LINE
- EXISTING CONTOUR
- SILT FENCE
- SAND/GRAVEL BAG
- ROCK BERM
- GRAVEL INLET FILTER
- RUBBERIZED PLAYGROUND SURFACE
- ARTIFICIAL TURF PLAY AREA
- NEW CONCRETE SIDEWALK/FLATWORK

REVISIONS

NO.	DATE	DESCRIPTION	PROJ. #	DSN. BY:	DWN. BY:	CHKD. BY:	DATE

• Engineers
• Surveyors
• Planners

MTR

Moy Tarin Ramirez Engineers, LLC

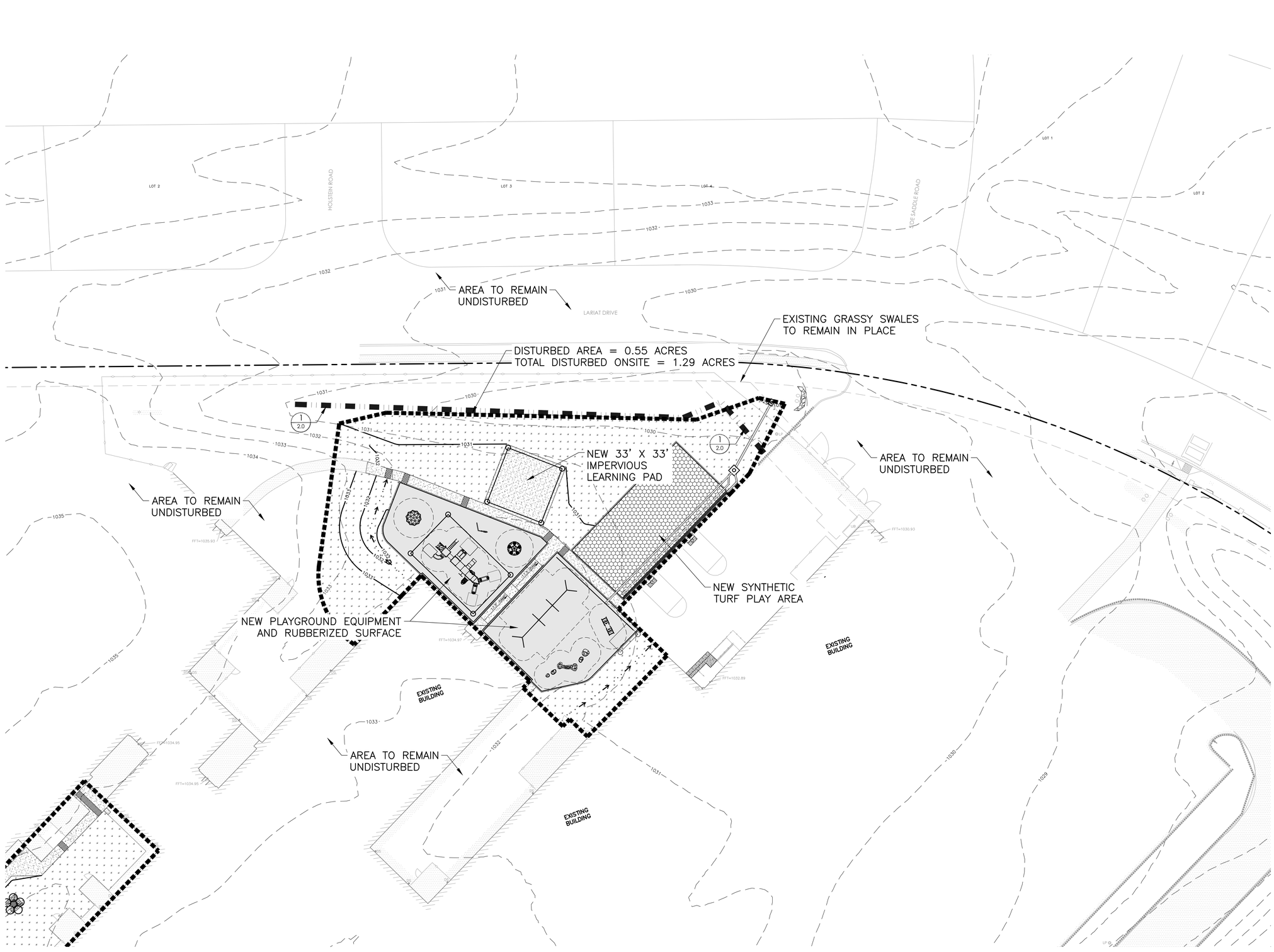
TBPELS: ENGINEERING F-5297/SURVEYING F-10131500
12770 CIMARRON PATH, SUITE 100
SAN ANTONIO, TEXAS 78249
TEL: (210) 698-5051
FAX: (210) 698-5085

STATE OF TEXAS
SEAN S. SMITH
113308
REGISTERED
PROFESSIONAL ENGINEER
3/14/23

PLAYGROUND UPGRADES - PACKAGE C - GROUP 3
JOHNSON RANCH ES

WATER POLLUTION ABATEMENT SITE PLAN

SHEET
C1.1



REVISIONS

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TBPELS: ENGINEERING F-5297/SURVEYING F-10131500
12770 CIMARRON PATH, SUITE 100
SAN ANTONIO, TEXAS 78249
TEL: (210) 698-5051
FAX: (210) 698-5085

STATE OF TEXAS
SEAN S. SMITH
113308
REGISTERED PROFESSIONAL ENGINEER
3/14/23

PLAYGROUND UPGRADES - PACKAGE C - GROUP 3
JOHNSON RANCH ES

WATER POLLUTION ABATEMENT SITE PLAN

SHEET
C1.2

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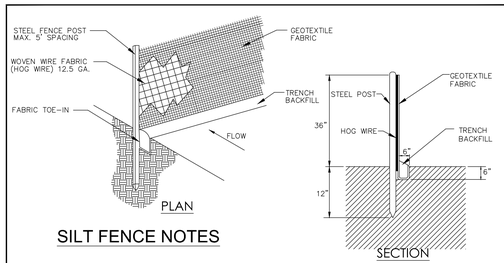
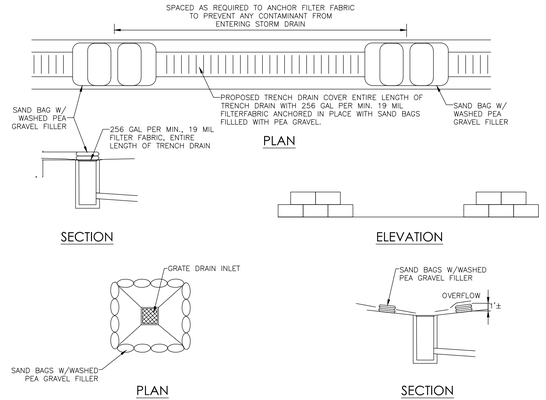


SILT FENCE NOTES

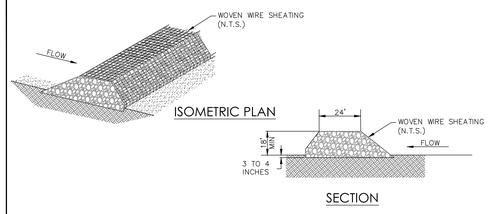
1. SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC WIDTH SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/SQ IN, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NO. 30.
2. FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR Y-BAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM NOMINAL WEIGHT 1.25 LB/SQ FT, AND BRINDELL HARDNESS EXCEEDING 140.
3. WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12.5 GAUGE MINIMUM.
4. STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 1 FOOT DEEP AND SPACED NOT MORE THAN 5 FEET ON CENTER.
5. 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 ¼ACRE/100 FEET OF FENCE.
6. 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.
7. 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.
8. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3-FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
9. SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
10. REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES, OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE OLD FENCE.
11. REPLACE ANY TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.
12. 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.

1 SCALE: NONE — ***SILT FENCE DETAIL***



1. THE GRAVEL BAG MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, POLYAMIDE OR COTTON BULAP WOVEN FABRIC, MINIMUM UNIT WEIGHT 4 OZ/YD 2, MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70 PERCENT.
2. THE BAG LENGTH SHOULD BE 24 INCHES, WIDTH SHOULD BE 18 INCHES AND THICKNESS SHOULD BE 6 INCHES.
3. THE GRAVEL BAGS SHOULD BE FILLED WITH 3/4" GRAVEL.
4. WHEN A GRAVEL BAG IS FILED WITH GRAVEL, THE OPEN END OF THE GRAVEL BAG SHOULD BE STAPLED OR TIED WITH NYLON OR POLY CORD.
5. THE GRAVEL BAGS SHOULD BE PLACED AS SHOWN ON THE DETAIL. THE GRAVEL BAGS SHALL BE STACKED TO FORM A CONTINUOUS BARRIER AROUND THE INLETS. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.
6. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
7. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.
8. 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.
9. STRUCTURE SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

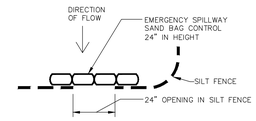
2 SCALE: NONE — ***BAGGED GRAVEL INLET FILTER***



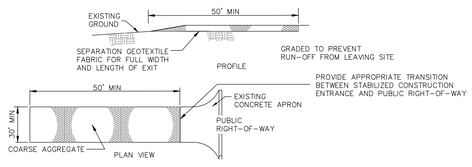
ROCK BERM NOTES

1. THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT RINGS.
2. CLEAN, OPEN GRADED 3 TO 5-INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5-TO 8-INCH DIAMETER ROCKS MAY BE USED.
3. LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE.
4. BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.
5. PLACE THE ROCK ALONG THE SHEATHING TO A HEIGHT NOT LESS THAN 18".
6. WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON.
7. BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.
8. THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.
9. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE. THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.
10. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT OF IN AN APPROVED MANNER AND REPAIR ANY LOOSE WIRE SHEATHING.
11. THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
12. THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

3 SCALE: NONE — ***ROCK BERM***



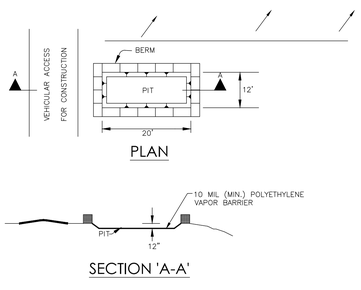
4 SCALE: NONE — ***PLAN - SAND BAG CONTROL DETAIL***



TEMPORARY CONSTRUCTION ENTRANCE/EXIT NOTES

1. THE AGGREGATE SHOULD CONSIST OF 4 TO 8 INCH WASHED STONE OVER A STABLE FOUNDATION.
2. THE AGGREGATE SHOULD BE PLACED WITH A MINIMUM THICKNESS OF 8 INCHES.
3. THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OZ/SQ YD, A MULLEN BURST RATING OF 140 LB/SQ IN, AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SIEVE.
4. AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.
5. THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.
6. THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.
7. PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.
8. PLACE STONE TO DIMENSIONS AND GRADE SHOWN. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.
9. 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.
10. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ON TO PUBLIC RIGHTS-OF-WAY SHOULD BE REMOVED IMMEDIATELY BY CONTRACTOR.
11. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
12. 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.
13. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE.

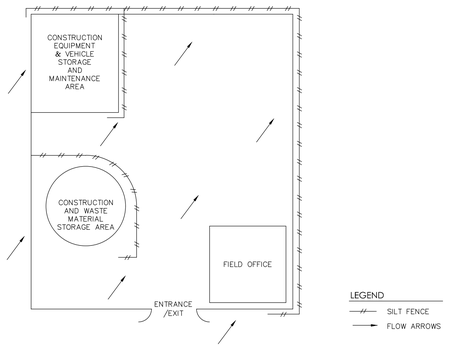
5 SCALE: NONE — ***STABILIZED CONSTRUCTION ENTRANCE/EXIT***



CONCRETE TRUCK WASHOUT PIT NOTES:

1. DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE.
2. WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.
3. WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF.

6 SCALE: NONE — ***CONCRETE TRUCK WASHOUT PIT***



7 SCALE: NONE — ***CONSTRUCTION STAGING AREA***

NO.	DATE	REVISIONS DESCRIPTION	PROJ. #	DSN. BY:	DWN. BY:	CHKD. BY:	DATE

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Moy Tarin Ramirez Engineers, LLC
TBPELS: ENGINEERING F-5297/SURVEYING F-10131500
12770 CIMARRON PATH, SUITE 100
SAN ANTONIO, TEXAS 78249
TEL: (210) 698-5051
FAX: (210) 698-5085

STATE OF TEXAS
SEAN S. SMITH
113308
REGISTERED
PROFESSIONAL ENGINEER
3/14/23

PLAYGROUND UPGRADES - PACKAGE C - GROUP 3
JOHNSON RANCH ES

WATER POLLUTION ABATEMENT PLAN DETAILS

SHEET
C2.0

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ATTACHMENT D
TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

Description of Temporary Best Management Practices:

Vegetation will be used as a temporary stabilization technique for all areas disturbed by construction, not covered in pavement, buildings, or other structures.

Sequence of installation during construction process for each phase of construction:

Vegetation as a temporary control will only be utilized in the event a disturbed area has been left denuded for more than 14 days.

Up gradient storm water flowing across the site:

There is minimum upgradient flow entering the construction area. All upgradient flow will be treated along with the stormwater generated onsite.

Onsite storm water flowing across and off the site:

The storm water originating onsite and flowing off the site will be treated through temporary BMPs. Silt fences will be installed at all locations where non-concentrated storm water exits the site.

Prevention of pollutants from entering surface streams, sensitive features and the aquifer:

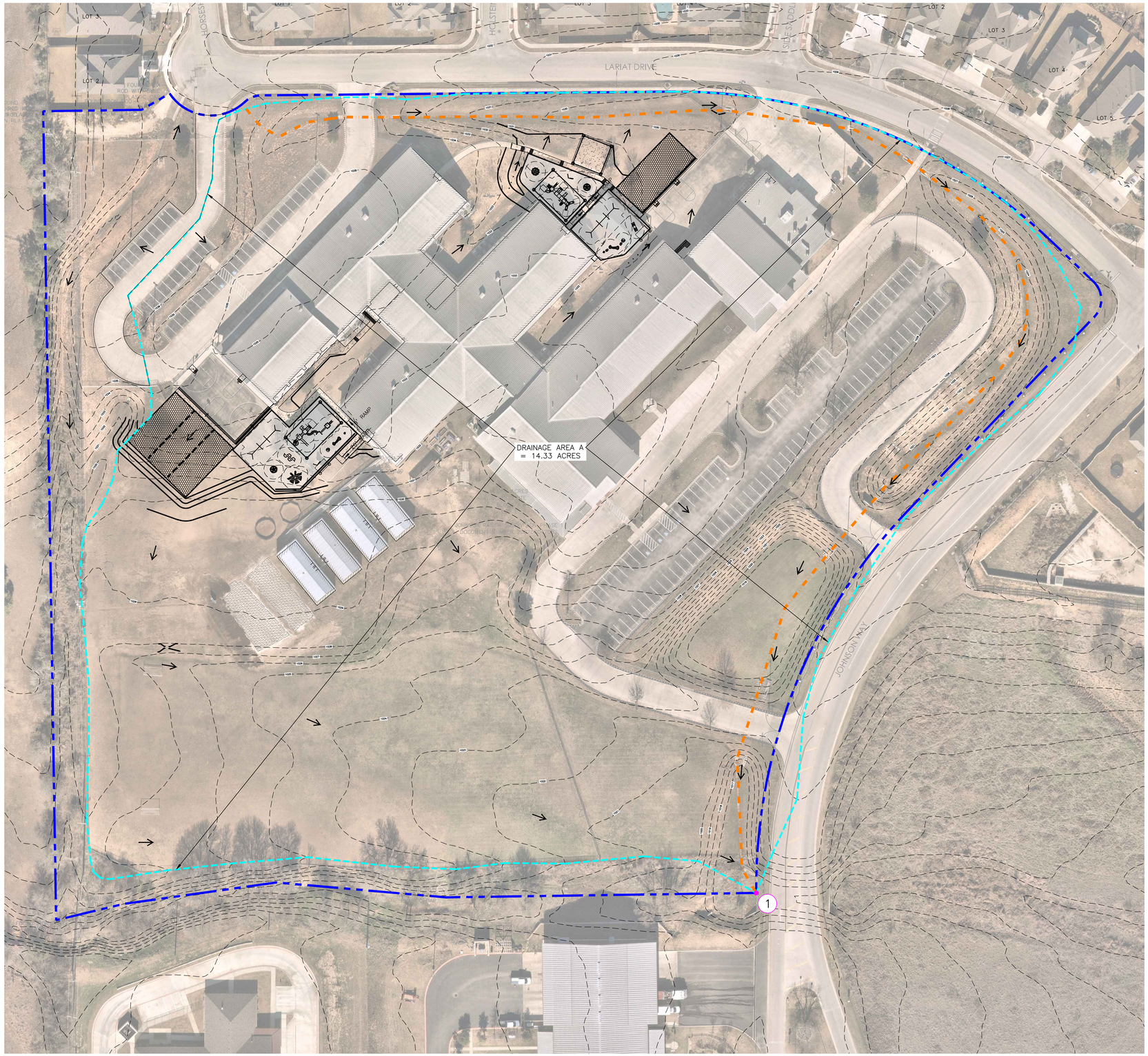
The storm water originating onsite and flowing off the site will be treated using temporary BMPs prior to it entering surface streams, sensitive features and the aquifer. Silt fences will be installed at all locations where non-concentrated storm water may leave the site. These silt fences should filter the storm water prior to it leaving the site.

Maintaining flow to naturally-occurring sensitive features:

The storm water originating onsite and flowing off the site will continue to flow into the down gradient receiving waters. Any sensitive features downstream will continue to receive flow originating on the site. Prior to the flow leaving the site, it will be treated through temporary BMPs. These temporary BMPs should remove sediment, pollutants and debris if installed and maintained properly.

ATTACHMENT F
STRUCTURAL PRACTICES

Vegetation will be used as a temporary stabilization technique for all areas disturbed by construction, not covered by pavement, buildings, or other structures. Temporary stabilization shall consist of temporary seeding of disturbed areas that are denuded beyond 14 days without construction restart within 21 days. As a temporary control, the vegetation will be used to stabilize barren areas that are inactive for long periods of time.



SCALE: 1"=50'

50 25 0 50

LEGEND

- SITE BOUNDARY
- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION
- 1390 EXISTING CONTOURS
- 1 CALCULATION POINT
- FLOW ARROWS

EXISTING DRAINAGE CALCULATIONS

EXISTING CONDITIONS Q CALCULATION										
PT. NO.	AREA OF ACCUMULATION	TOTAL ACRES	C-VALUE	Tc (min)	I5 (in/hr)	I25 (in/hr)	I100 (in/hr)	Q5 (cfs)	Q25 (cfs)	Q100 (cfs)
1	A	14.33	0.68	15.50	5.23	7.31	9.27	50.91	71.17	90.20

PROPOSED DRAINAGE CALCULATIONS

PROPOSED/ULTIMATE CONDITIONS Q CALCULATION										
PT. NO.	AREA OF ACCUMULATION	TOTAL ACRES	C-VALUE	Tc (min)	I5 (in/hr)	I25 (in/hr)	I100 (in/hr)	Q5 (cfs)	Q25 (cfs)	Q100 (cfs)
1	A	14.33	0.70	15.50	5.23	7.31	9.27	52.23	73.01	92.53

REVISIONS

NO.	DATE	DESCRIPTION	BY:	DATE:

PROJ. # 21113 | DGN. BY: | DWN. BY: W.H. | CHKD. BY: S.S. | DATE: 3/25/22

MTR
• Engineers
• Surveyors
• Planners
Moy Tarin Ramirez Engineers, LLC
FIRM TBPE NO. F-9297
12770 CIMARRON PATH, SUITE 100
SAN ANTONIO, TEXAS 78249
TEL: (210) 698-4051
FAX: (210) 698-5685

STATE OF TEXAS
SEAN S. SMITH
113308
REGISTERED PROFESSIONAL ENGINEER
3/14/23

CISD JOHNSON RANCH ELEMENTARY SCHOOL

ATTACHMENT G: DRAINAGE AREA MAP

SHEET

ATTACHMENT I
INSPECTION AND MAINTENANCE FOR BMPS

Silt Fence

1. Inspect all fencing weekly, and after any rainfall.
2. Remove sediment when buildup reaches 6 inches, or install a second line of fencing parallel to the old fence.
3. Replace any torn fabric or install a second line of fencing parallel to the torn section.
4. Replace or repair any sections crushed or collapsed in the course of construction activity.

Bagged Gravel Inlet Filter

1. Inspections should be made weekly and after each rainfall. Repair or replacement should be made promptly as needed by 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.

Rock Berm

1. Inspections should be made weekly and after each rainfall by the responsible party.
2. Remove sediment and other debris when buildup reaches 6 inches and dispose of the accumulated silt in an approved manner.
3. Repair any loose wire sheathing.
4. The berm should be reshaped as needed during inspection.
5. The berm should be replaced when the structure ceases to function as intended due to silt accumulation among the rocks, washout, construction traffic damage, etc.
6. The rock berm should be left in place until all upstream areas are stabilized and accumulated silt removed.

CISD JOHNSON RANCH ELEMENTARY SCHOOL

Responsible Party Form

Pollution Prevention Measure		Inspected	Corrective Action	
			Description	Date Completed
Silt Fence	Inspections			
	Fencing			
	Sediment Removal			
	Torn Fabric			
	Crushed/Collapsed Fencing			
Bagged Gravel Inlet Filters	Inspections			
	Replaced/Reshaped			
	Silt Removed			
Rock Berm	Inspections			
	Remove sediment and Debris			
	Repair any loose wire sheathing			
	Reshaping			
	Replaced			

Inspector's Name

Inspector's Signature

Name of Owner/Operator

Date

Note: Inspector is to attach a brief statement of his qualifications to this report.

ATTACHMENT J
SCHEDULE OF INTERIM AND PERMANENT SOIL STABILIZATION PRACTICES

Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceases is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 21 days, temporary stabilization measures do not have to be initiated on that portion of the site. In areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

Temporary stabilization shall consist of temporary seeding of disturbed areas that are denuded beyond 14 days without construction restart within 21 days.

As pad sites (buildings, sidewalks and pavement) are completed, permanent landscaping and sod shall be planted and irrigated. Curb and gutter will direct runoff into the permanent water quality basin.

Temporary vegetation stabilization techniques shall be in accordance with the TCEQ Technical Guidance Manual RG-248 (*Complying with the Edwards Aquifer Rules – Technical Guidance on Best Management Practices*), Chapter 1 Temporary Best Management Practices, Section 1.3.8 Temporary Vegetation, as follows:

Temporary Vegetation
Vegetation is used as a temporary or permanent stabilization technique for areas disturbed by construction, but not covered by pavement, buildings, or other structures. As a temporary control, vegetation can be used to stabilize stockpiles and barren areas that are inactive for long periods of time.

Vegetative techniques can and should apply to every construction project with few exceptions. Vegetation effectively reduces erosion in swales, stockpiles, berms, mild to medium slopes, and along roadways.

Other techniques may be required to assist in the establishment of vegetation. These other techniques include erosion control matting, mulches, surface roughening, swales and dikes to direct runoff around newly seeded areas, and proper grading to limit runoff velocities during construction. (NCTCOG, 1993b)

Materials:
The type of temporary vegetation used on a site is a function of the season and the availability of water for irrigation. For areas that are not irrigated, the year can be divided into two temporary planting seasons and one season for planting of permanent warm weather groundcovers. These periods are shown in Figure 1-19 for Bexar, Comal, Kinney, Medina, and Uvalde Counties. Appropriate temporary vegetation for these areas is shown in Table 1-4.

Other vegetation may perform as well as the recommended varieties, especially where irrigation is available. County agricultural extension agents are a good source for suggestions for other types of temporary vegetation. All seed should be high quality, U.S. Dept. of Agriculture certified seed.

Installation:
(1) Interim or final grading must be completed prior to seeding, minimizing all steep slopes. In addition, all necessary erosion structures such as dikes, swales, and diversions, should also be installed.

(2) Seedbed should be well pulverized, loose, and uniform.

(3) Fertilizer should be applied at the rate of 40 pounds of nitrogen and 40 pounds of phosphorus per acre, which is equivalent to about 1.0 pounds of nitrogen and phosphorus per 1000 square feet. Compost can be used instead of fertilizer and applied at the same time as the seed.

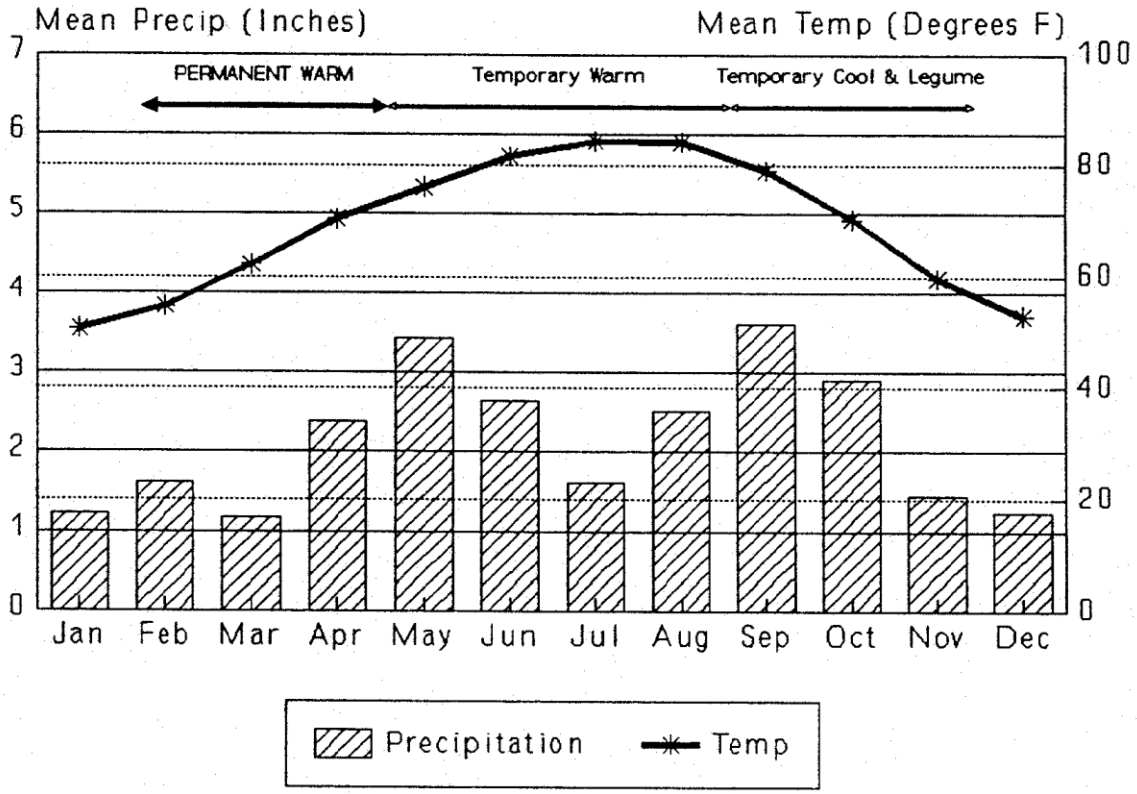


Figure 1-19 Planting Dates for Bexar, Comal, Kinney, Medina, and Uvalde Counties (Northcutt, 1993)

Table 1-4 Temporary Seeding for Bexar, Comal, Kinney, Medina, and Uvalde Counties (Northcutt, 1993)

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

(4) Seeding rates should be as shown in Table 1-4 or as recommended by the county agricultural extension agent.

(5) The seed should be applied uniformly with a cyclone seeder, drill, cultipacker seeder or hydroseeder (slurry includes seed, fertilizer and binder).

(6) Slopes that are steeper than 3:1 should be covered with appropriate soil stabilization matting as described in the following section to prevent loss of soil and seed.

Irrigation:
Temporary irrigation should be provided according to the schedule described below, or to
replace moisture loss to evapotranspiration (ET), whichever is greater. Significant rainfall (on-site rainfall of ½" or greater) may allow watering to be postponed until the next scheduled irrigation.

Time Period	**Irrigation Amount and Frequency**
Within 2 hours of installation	Irrigate entire root depth, or to germinate seed
During the next 10 business days	Irrigate entire root depth every Monday, Wednesday, and Friday
During the next 30 business days or until Substantial Completion	Irrigate entire root depth a minimum of once per week, or as necessary to ensure vigorous growth
During the next 4 months or until Final Acceptance of the Project	Irrigate entire root depth once every two weeks, or as necessary to ensure vigorous growth

If cool weather induces plant dormancy, water only as necessary to maintain plant health.
Irrigate in a manner that will not erode the topsoil but will sufficiently soak the entire depth of roots.

Inspection and Maintenance Guidelines:
(1) Temporary vegetation should be inspected weekly and after each rain event to locate and repair any erosion.

(2) Erosion from storms or other damage should be repaired as soon as practical by regrading the area and applying new seed.

(3) If the vegetated cover is less than 80%, the area should be reseeded.

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.

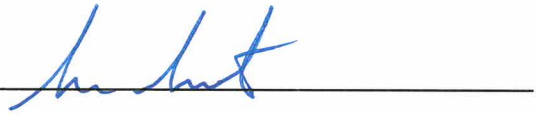
Signature

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: Sean Smith, P.E.

Date: 03/23/2023

Signature of Customer/Agent



Regulated Entity Name: CISD JOHNSON RANCH ELEMENTARY SCHOOL

Permanent Best Management Practices (BMPs)

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

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

   ☐ N/A

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

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

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

☐ N/A

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

   ☐ N/A

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

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

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

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

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

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

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

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

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

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

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

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

☒ N/A

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

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

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

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

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

☐ N/A

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

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

    ☐ N/A

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

    ☒ N/A

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

    ☐ N/A

Responsibility for Maintenance of Permanent BMP(s)

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

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

    ☐ N/A

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

    ☐ N/A

ATTACHMENT B
BMP'S FOR UPGRADIENT STORM WATER

There is no upgradient storm water from adjacent properties. Therefore, no storm water runoff enters the site which will require treatment by permanent BMPs. During construction, there will not be any permanent BMPs required.

ATTACHMENT C
BMPs FOR ON-SITE STORMWATER

There will be an increase of 24,575 SF (0.56 acres) in impervious cover due to the proposed project. Additionally, VFS treating 0.24 acres of existing impervious cover will be removed to make room for the new improvements. However, 0.20 acres of the proposed impervious cover is self-treating synthetic turf. Taking this into account, this modification is required to provide treatment for a total of 0.56 acres of impervious cover.

The increase in impervious cover on the north side of the school will be treated with the existing grassy swales and extended detention basin on-site. The proposed impervious cover increase on the north side of the school is 0.24 acres. The impervious cover treated by removed VFS on the north side of the school is 0.11 acres. 0.07 acres of impervious cover on north side is self-treating synthetic turf. This results in a total of 0.28 acres of impervious cover requiring treatment on the north side of the school. This total acreage is associated with a TSS removal requirement of 251 lbs. According to the approved original WPAP, the existing extended detention basin has the capacity to treat an additional 314 lbs of TSS. Therefore, no new permanent BMPs are proposed on the northern side of the school and the proposed impervious cover will be treated with the existing BMPs.

The improvements on the south side of the school result in an increase of 0.32 acres of impervious cover. The impervious cover treated by removed VFS is 0.13 acres. A total of 0.13 acres of impervious cover on the south side of the school is self-treating synthetic turf. The total impervious cover requiring treatment on the south side of the school is 0.32 acres of impervious cover. This acreage is associated with a TSS removal requirement of 287 lbs. A new JellyFish filter will be installed to treat the increase in impervious cover on the south side of the school. See the following table for a breakdown of impervious cover treatment on-site.

Permanent BMP	Contributing Area	Required TSS Removal	TSS Removal Provided
JellyFish Filter	0.32 acres	359 lbs	377 lbs
Existing Grassy Swales/Extended Detention Pond	0.28 acres	251 lbs	251 lbs
Total	0.60 acres	610 lbs	628 lbs

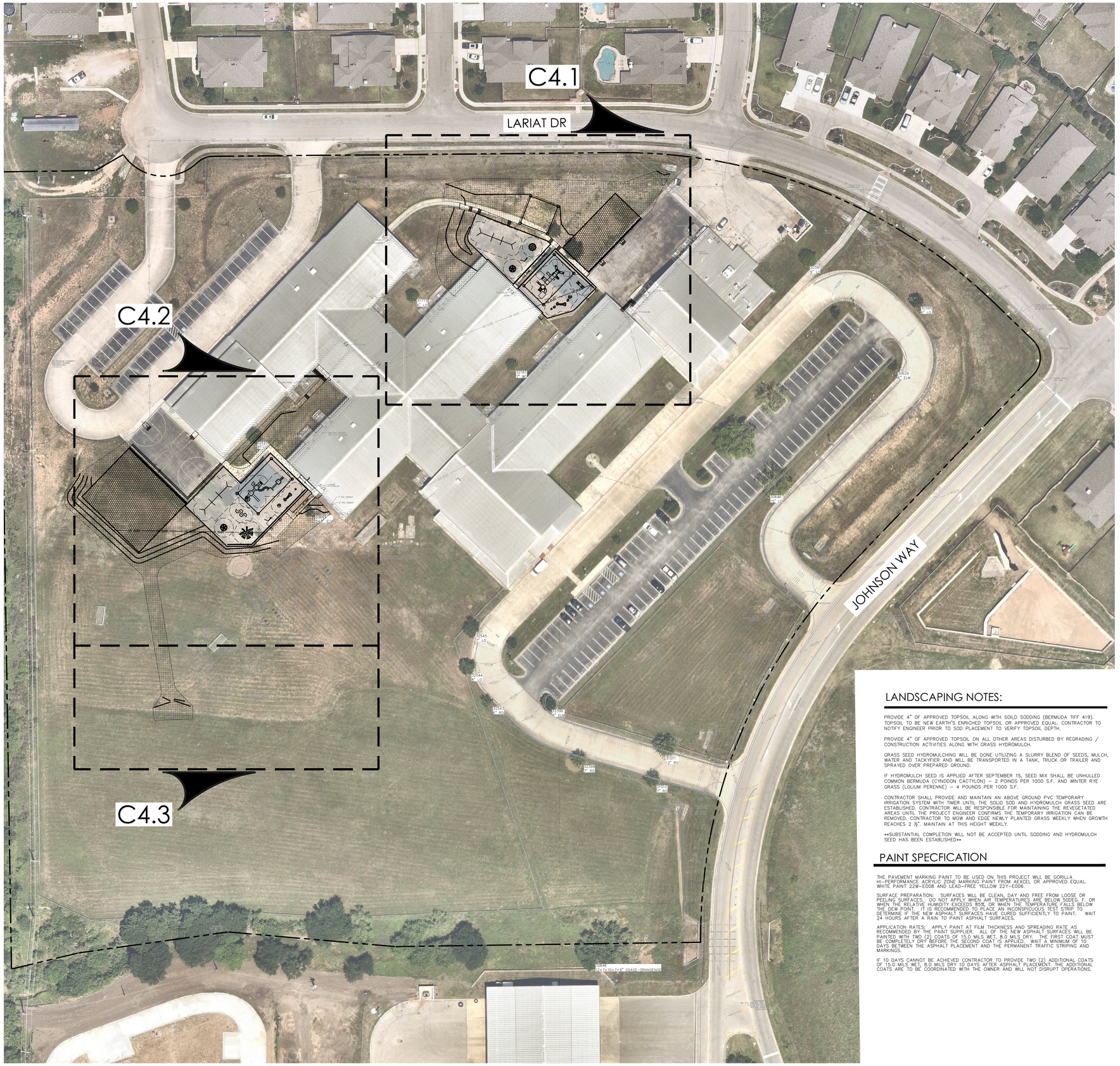
ATTACHMENT D

FACTORS AFFECTING SURFACE WATER QUALITY

The proposed ultimate land use for the proposed projects is an Elementary School.

Factors impacting surface water quality include: fertilizers, pesticides from landscaping, sediment from soil disturbances, leaf litter from tree removal, small amounts of oil grease from vehicular traffic, and suspended solids from the proposed impervious cover areas. These factors may cause suspended solids to enter into the storm water runoff and subsequently affect the surface water. However, temporary and permanent BMP's consisting of silt fences, rock berms, bagged gravel inlet filters, and a stabilized construction entrance/exit have been designed on the basis of the Technical Guidance Manual to treat the required amount of storm water runoff as to not adversely affect water quality entering into any surface water or groundwater.

ATTACHMENT F
CONSTRUCTION PLANS



LEGEND

+ 802.97	EXISTING SPOT ELEVATION
(802.00)+	PROPOSED ELEVATION NOTE: PROPOSED ELEVATIONS ARE TO TOP OF SURFACE OF FINISH GRADE WHICH INCLUDED TOP OF CONCRETE, TOP OF WOOD FIBER, TOP OF GROUND COVER OR TOP SOIL.
1004	NEW CONTOUR
1004	EXISTING CONTOUR
	EQUIPMENT FALL ZONE AREA (TYP.)
	HYDROMULCH GRASS SEED AREA
	ENGINEERED WOOD FIBER
	ARTIFICIAL TURF

SCALE: 1"=40'
40 20 0 40

GENERAL NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO BEGINNING WORK.
2. ALL WASTE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND IT SHALL BE HIS SOLE RESPONSIBILITY TO DISPOSE OF THIS MATERIAL OFF THE LIMITS OF THE SITE TO A STATE LICENSED LANDFILL. CONTRACTOR WILL BE REQUIRED TO PROVIDE DOCUMENTATION WHERE DISPOSED MATERIAL IS TAKEN TO. THE OWNER WILL NOT BE HELD LIABLE FOR WASTE MATERIAL.
3. CONTRACTOR IS REQUIRED TO SET AND VERIFY ALL PROJECT ELEVATIONS PRIOR TO THE START OF CONSTRUCTION. "MATCH EXISTING" SHALL BE UNDERSTOOD TO SIGNIFY THE SAME MATERIALS AS WELL AS VERTICAL AND HORIZONTAL ALIGNMENT.
4. GENERAL CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSION & GRADE CONDITIONS (BOTH NEW AND EXISTING). HE SHALL REPORT ANY DISCREPANCIES TO THE PROJECT ENGINEER BEFORE PROCEEDING WITH ANY PHASE OF THE WORK AS HE WILL BE RESPONSIBLE FOR ALL WORK AS INTENDED BY THE DRAWINGS AND SPECIFICATIONS.
5. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY.
6. BARRICADES AND WARNING SIGNS SHALL CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND GENERALLY BE LOCATED TO AFFORD MAXIMUM PROTECTION TO THE PUBLIC AS WELL AS CONSTRUCTION PERSONNEL AND EQUIPMENT AND TO ASSURE AN EXPEDITIOUS TRAFFIC FLOW AT ALL TIMES DURING CONSTRUCTION.
7. ANY EXISTING OFF-SITE IMPROVEMENTS AND/OR UTILITIES REMOVED, DAMAGED OR UNDERCUT BY CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER AND APPROVED BY THE PROJECT ARCHITECT AT THE CONTRACTOR'S EXPENSE.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION, ANY DAMAGES DONE TO EXISTING FENCES, CURBS, CONCRETE DRIVEWAYS, SIDEWALK STRUCTURES AND PAVEMENT, THAT ARE NOT INDICATED TO BE REMOVED. AN INVENTORY OF EXISTING CONDITIONS SHALL BE CONDUCTED WITH THE CONTRACTOR AND OWNER PRIOR TO DEMOLITION.
9. CONTRACTOR SHALL MAINTAIN CONTINUAL ALL UTILITY SERVICES (GAS, TELE, CATV, ELEC., WATER, SEWER, STORM SEWER, ETC.) TO EXISTING FACILITIES AND BUILDINGS. WHERE CONSTRUCTION IS IN THE PROXIMITY OF A UTILITY, THE CONTRACTOR WILL TAKE PRECAUTION TO PROTECT AND/OR SUPPORT THE UTILITY.
11. CONTRACTOR SHALL VERIFY ALL UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.
12. NOTIFY OWNER 72 HOURS IN ADVANCE OF UTILITY SHUTDOWN.
13. ADJUST ALL EXISTING VALVES & UTILITIES TO REMAIN TO FINISH GRADE. REFERENCE GRADING & UTILITY PLAN.
14. CONTRACTOR SHALL COORDINATE ALL DEMOLITION CONSTRUCTION ACTIVITIES WITH OTHER DISCIPLINES AS REQUIRED.
15. CONTRACTOR SHALL COORDINATE UTILITY DEMOLITION WITH UTILITY PLANS.
16. CONTRACTOR IS RESPONSIBLE FOR CLEARING THE ALIGNMENT FOR ALL NEW FENCING. CLEARING TO INCLUDE ALL VEGETATION, TREE LIMBS, AND SHRUBS WITHIN 5' OF NEW FENCE ALIGNMENT ON EACH SIDE.
17. CONTRACTOR IS TO REMOVE AND DISPOSE OF ALL SILT FROM THE DRAINAGE SYSTEM AND FLUSH THE DRAINAGE SYSTEM UPON SUBSTANTIAL COMPLETION OF THE PROJECT.
18. CONTRACTOR TO RESTRIPE ALL FIRE LANE STRIPING TO MATCH EXISTING WHERE PAVEMENT HAS BEEN REMOVED AND REPLACED.

LANDSCAPING NOTES:

PROVIDE 4" OF APPROVED TOPSOIL ALONG WITH SOILD SODDING (BERMUDA TIFF 419). TOPSOIL TO BE NEW EARTH'S ENRICHED TOPSOIL OR APPROVED EQUAL. CONTRACTOR TO NOTIFY ENGINEER PRIOR TO SOD PLACEMENT TO VERIFY TOPSOIL DEPTH.

PROVIDE 4" OF APPROVED TOPSOIL ON ALL OTHER AREAS DISTURBED BY REGRADING / CONSTRUCTION ACTIVITIES ALONG WITH GRASS HYDROMULCH.

GRASS SEED HYDROMULCHING WILL BE DONE UTILIZING A SLURRY BLEND OF SEEDS, MULCH, WATER AND TACKYFIER AND WILL BE TRANSPORTED IN A TANK, TRUCK OR TRAILER AND SPRAYED OVER PREPARED GROUND.

IF HYDROMULCH SEED IS APPLIED AFTER SEPTEMBER 15, SEED MIX SHALL BE UNHULLED COMMON BERMUDA (CYNODON CACTYLON) – 2 POINDS PER 1000 S.F. AND WINTER RYE GRASS (LOLIUM PERENNE) – 4 POUNDS PER 1000 S.F.

CONTRACTOR SHALL PROVIDE AND MAINTAIN AN ABOVE GROUND PVC TEMPORARY IRRIGATION SYSTEM WITH TIMER UNTIL THE SOLID SOD AND HYDROMULCH GRASS SEED ARE ESTABLISHED. CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING THE REVEGETATED AREAS UNTIL THE PROJECT ENGINEER CONFIRMS THE TEMPORARY IRRIGATION CAN BE REMOVED. CONTRACTOR TO MOW AND EDGE NEWLY PLANTED GRASS WEEKLY WHEN GROWTH REACHES 2 ½". MAINTAIN AT THIS HEIGHT WEEKLY.

SUBSTANTIAL COMPLETION WILL NOT BE ACCEPTED UNTIL SODDING AND HYDROMULCH SEED HAS BEEN ESTABLISHED

PAINT SPECFICATION

THE PAVEMENT MARKING PAINT TO BE USED ON THIS PROJECT WILL BE GORILLA HI-PERFORMANCE ACRYLIC ZONE MARKING PAINT FROM AEXCEL OR APPROVED EQUAL. WHITE PAINT 22W-E008 AND LEAD-FREE YELLOW 22Y-E006.

SURFACE PREPARATION: SURFACES WILL BE CLEAN, DAY AND FREE FROM LOOSE OR PEELING SURFACES. DO NOT APPLY WHEN AIR TEMPERATURES ARE BELOW 50DEG. F, OR WHEN THE RELATIVE HUMIDITY EXCEEDS 85%, OR WHEN THE TEMPERATURE FALLS BELOW THE DEW POINT. IT IS RECOMMENDED TO PLACE AN INCONSPICUOUS TEST STRIP TO DETERMINE IF THE NEW ASPHALT SURFACES HAVE CURED SUFFICIENTLY TO PAINT. WAIT 24 HOURS AFTER A RAIN TO PAINT ASPHALT SURFACES.

APPLICATION RATES: APPLY PAINT AT FILM THICKNESS AND SPREADING RATE AS RECOMMENDED BY THE PAINT SUPPLIER. ALL OF THE NEW ASPHALT SURFACES WILL BE PAINTED WITH TWO (2) COATS OF 15.0 MILS WET, 8.0 MILS DRY. THE FIRST COAT MUST BE COMPLETELY DRY BEFORE THE SECOND COAT IS APPLIED. WAIT A MINIMUM OF 10 DAYS BETWEEN THE ASPHALT PLACEMENT AND THE PERMANENT TRAFFIC STRIPING AND MARKINGS.

IF 10 DAYS CANNOT BE ACHIEVED CONTRACTOR TO PROVIDE TWO (2) ADDITIONAL COATS OF 15.0 MILS WET, 8.0 MILS DRY 10 DAYS AFTER ASPHALT PLACEMENT. THE ADDITIONAL COATS ARE TO BE COORDINATED WITH THE OWNER AND WILL NOT DISRUPT OPERATIONS.

DRAINAGE AND STORM SEWER NOTES:

1. CLEAR COVER FOR REINFORCEMENT STEEL IS 2" UNLESS OTHERWISE NOTED.
2. MATERIAL SPECIFICATIONS:

   CONCRETE/CONCRETE RIPRAP: CLASS A 3000 PSI IN 28 DAYS UNLESS OTHERWISE NOTED ON PLANS.

   REINFORCING STEEL: CONFORM TO A.S.T.M. A-615, GRADE 60 (2" CLEAR COVER UNLESS OTHERWISE NOTED ON PLANS)

   PIPE RAILING: CONFORM TO A.S.T.M. A-53, GRADE B, OR A-501
3. STORM SEWER PIPE MATERIAL SPECIFICATIONS: PIPE MATERIAL SHALL BE AS NOTED ON DRAINAGE PLANS. WHEN SPECIFIED:
   A) REINFORCED CONCRETE PIPE (RCP) CLASS IV UNLESS OTHERWISE SPECIFIED ON PLAN.
   B) PRECAST BOX CULVERT OLDCASTLE PRECAST TYPE I OR EQUAL APPROVED BY ENGINEER.
   C) POLYVINYL CHLORIDE (PVC) PIPE SHALL BE SDR 26 (115 psi)
   D) ALUMINIZED STEEL (AS)
      1. CORRUGATIONS: 2⅔"x½"x7-1/2" HELICAL CORRUGATIONS PER ASSHTO M-36, TYPE IR (ASTM A-760)
      2. MATERIAL: ALUMINIZED TYPE 2 STEEL PER AASHTO M-274 (ASTM A-819)
      3. JOINT: HUGGER BAND WITH TECHNO ANGLES. CONTRACTOR TO PROVIDE 5-C BANDS WITH BAR BOLT AND STRAP CONNECTION AND 12" WIDE NEOPRENE GASKET FOR ALL STORM PIPE UNDER PAVEMENT AREAS.
      4. THICKNESS: 0.064" (16 GAUGE)
4. ALL STORM SEWER INLET GRATES SHALL BE GALVANIZED.
5. CONCRETE COLLARS SHALL BE PROVIDED ON ALL STORM DRAIN TO JUNCTION BOX/GRATE INLET CONNECTIONS. REFERENCE DETAILS.
6. GROUT INVERTS OF ALL JUNCTION BOXES AND GRATE INLETS TO DRAIN.
7. ALL JUNCTION BOXES SHALL HAVE MANHOLES FOR ACCESS WITH BOLTED MANHOLE LIDS.
8. ALL DRAINAGE STRUCTURES, LIDS AND GRATES SHALL BE RATED FOR H20 LOADING.
9. ALL PIPE TRENCHES SHALL CONTAIN FILTER FABRIC BETWEEN THE INITIAL AND SECONDARY BACKFILL. REFERENCE DETAILS AND SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS.
10. ALL CONCRETE STORM DRAIN STRUCTURES TO HAVE A 32" CLEAR OPENING FOR ACCESS. CONTRACTOR TO PROVIDE CORRESPONDING LID AND FRAME TO PROVIDE 32" CLEAR OPENING.

REVISIONS								
NO.	DATE	DESCRIPTION	PROJ. #	DSN. BY:	DWN. BY:	CHKD. BY:	DATE

• Engineers
• Surveyors
• Planners
Moy Tarin Ramirez Engineers, LLC
TBPELS: ENGINEERING F-5297/SURVEYING F-10131500
12770 CIMARRON PATH, SUITE 100
SAN ANTONIO, TEXAS 78249
TEL: (210) 698-5051
FAX: (210) 698-5085

STATE OF TEXAS
SEAN S. SMITH
113308
REGISTERED PROFESSIONAL ENGINEER
5/26/23

PLAYGROUND UPGRADES - PACKAGE C - GROUP 3
JOHNSON RANCH ES
OVERALL SITE GRADING AND DRAINAGE PLAN

SHEET
C4.0

K:\Comal ISD\2022 Playground Upgrades - Package C\Drawings\Johnson Ranch ES\000_C4.0_OVERALL.dwg 2023/05/26 3:37pm gsanchez

BENCHMARK CP5 SET MAG NAIL W/SHINER IN CURB STAMPED "MTR ENGINEERING" ELEV.=1032.21

PEDESTRIAN CROSSING SIGN

10' PUBLIC UTILITY EASEMENT DOCUMENT NUMBER: 20070047082 O.P.R.C.C.T.

LEGEND

+ 802.97	EXISTING SPOT ELEVATION
XXX.XX+	PROPOSED ELEVATION
TC	TOP OF CURB ELEVATION
NG	NATURAL GROUND ELEVATION
INV	INVERT ELEVATION
TOG	TOP OF GRATE ELEVATION
1004	NEW CONTOUR
1004	EXISTING CONTOUR
	CHAINLINK FENCE
	EQUIPMENT FALL ZONE AREA (TYP.)
	SOLID SOD AREA
	POURED-IN-PLACE RUBBER
	SYNTHETIC TURF
	NEW CONCRETE FLATWORK
	NEW CONCRETE RIPRAP
	NEW ASPHALT PATCH

SCALE: 1"=10'

10 5 0 10

SITE GRADING/DRAINAGE KEYNOTES:

1. NEW CONCRETE SIDEWALK/FLATWORK. REFERENCE SECTION DETAIL NO. 6, SHEET C5.0.
2. NEW CONCRETE SIDEWALK/FLATWORK TO MATCH EXISTING. PROVIDE EXPANSION JOINT AT JUNCTURE PER DETAIL NO. 6, SHEET C5.0.
3. EXISTING CONCRETE SIDEWALK/FLATWORK/STRUCTURAL CONCRETE TO REMAIN IN PLACE.
4. NEW SIDEWALK/FLATWORK TO MATCH STRUCTURAL CONCRETE/RIGID PAVEMENT. PROVIDE DOWELS AND EXPANSION JOINT AT JUNCTURE PER DETAIL NO. 6, SHEET C5.0.
5. NEW SYNTHETIC TURF PLAYGROUND SECTION. REFERENCE DETAIL NO. 1, SHEET C5.1.
6. NEW POURED-IN-PLACE RUBBER PLAYGROUND SECTION. REFERENCE DETAIL NO. 3, SHEET C5.1.
7. NEW PLAYGROUND EQUIPMENT PROVIDED BY OWNER. CONTRACTOR TO INSTALL PLAYGROUND EQUIPMENT PER MANUFACTURING REQUIREMENTS.
8. NEW SHADE STRUCTURE. REFERENCE SPECIFICATIONS. REFERENCE DIMENSIONAL CONTROL PLANS FOR DIMENSIONS.
9. NEW DUAL FOUNDATION CANTILEVER SHADE STRUCTURE. REFERENCE SPECIFICATIONS.
10. CONTRACTOR TO PROVIDE 2" WIDE PAVEMENT STRIPING. REFERENCE SPECIFICATIONS.
11. CONTRACTOR TO PROVIDE CATCH BASIN AT TRENCH DRAIN. REFERENCE INVERT ELEVATIONS FOR DEPTH.
12. CONTRACTOR TO GRADE AREA TO DRAIN.
13. NEW SOLID SOD. REFERENCE LANDSCAPING NOTES.
14. NEW CONCRETE DRAINAGE SWALE. REFERENCE DETAIL NO. 13, SHEET C5.0.
15. NEW CONTECH JELLYFISH FILTER SYSTEM. REFERENCE DETAILS, SHEET C5.3.
16. CONTRACTOR TO PROVIDE NEW SIDEWALK DRAIN. REFERENCE DETAIL NO. 5, SHEET C5.2.
17. EXISTING RIVER ROCK TO REMAIN. CONTRACTOR TO ADJUST TO FINISHED GRADE.
18. NEW ASPHALT PAVEMENT TO MATCH EXISTING ASPHALT PAVEMENT. REFERENCE DETAIL NO. 5, SHEET C5.0.
19. EXISTING ASPHALT TO REMAIN IN PLACE.
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44. NEW J-DRAIN MVP-12 12" FLAT DRAIN (NO FILTER SOCK) OR APPROVED EQUAL.

NO.	DATE	DESCRIPTION	PROJ. #	DSN. BY:	DWN. BY:	CHKD. BY:	DATE
1	3/14/2023	ADDENDUM #2					

MTR
• Engineers
• Surveyors
• Planners
Moy Tarin Ramirez Engineers, LLC
TBPELS: ENGINEERING F-5297/SURVEYING F-10131500
12770 CIMARRON PATH, SUITE 100
SAN ANTONIO, TEXAS 78249
TEL: (210) 698-5051
FAX: (210) 698-5085

STATE OF TEXAS
SEAN S. SMITH
113308
REGISTERED PROFESSIONAL ENGINEER
3/14/23

PLAYGROUND UPGRADES - PACKAGE C - GROUP 3

JOHNSON RANCH ES

SITE GRADING AND DRAINAGE PLAN

SHEET
C4.1R1

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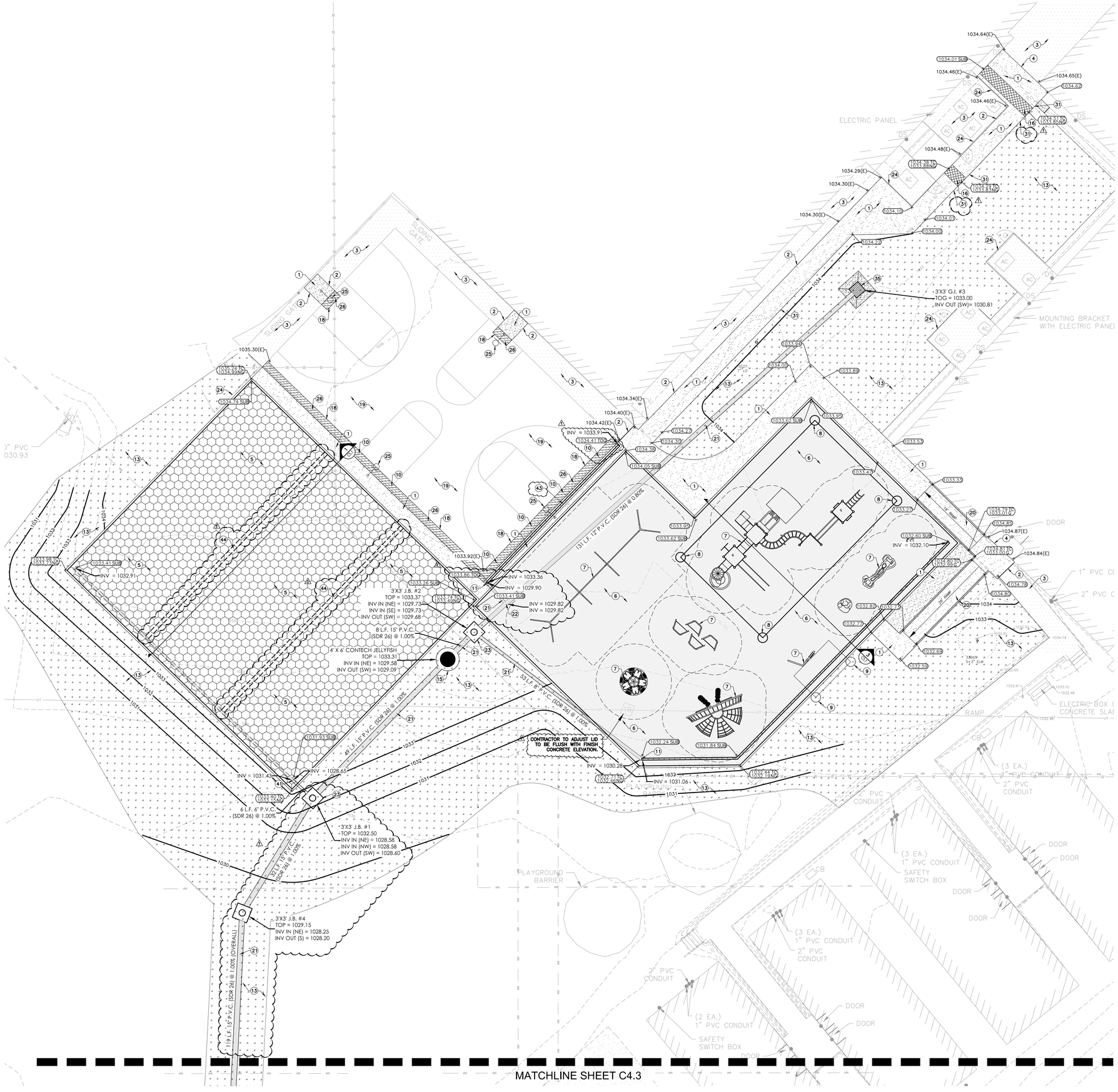

MATCHLINE SHEET C4.3

LEGEND

+ 802.97	EXISTING SPOT ELEVATION
XXX.XX+	PROPOSED ELEVATION
TC	TOP OF CURB ELEVATION
NG	NATURAL GROUND ELEVATION
INV	INVERT ELEVATION
TOG	TOP OF GRATE ELEVATION
1004	NEW CONTOUR
1004	EXISTING CONTOUR
	CHAINLINK FENCE
	EQUIPMENT FALL ZONE AREA (TYP.)
	SOLID SOD AREA
	POURED-IN-PLACE RUBBER
	SYNTHETIC TURF
	NEW CONCRETE FLATWORK
	NEW CONCRETE RIPRAP
	NEW ASPHALT PATCH

SCALE: 1"=10'

10 5 0 10

SITE GRADING/DRAINAGE KEYNOTES:

1. NEW CONCRETE SIDEWALK/FLATWORK. REFERENCE SECTION DETAIL NO. 6, SHEET C5.0.
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12770 CIMARRON PATH, SUITE 100
SAN ANTONIO, TEXAS 78249
TEL: (210) 698-5051
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STATE OF TEXAS
SEAN S. SMITH
113308
REGISTERED PROFESSIONAL ENGINEER
3/14/23

PLAYGROUND UPGRADES - PACKAGE C - GROUP 3

JOHNSON RANCH ES

SITE GRADING AND DRAINAGE PLAN

SHEET
C4.2R1

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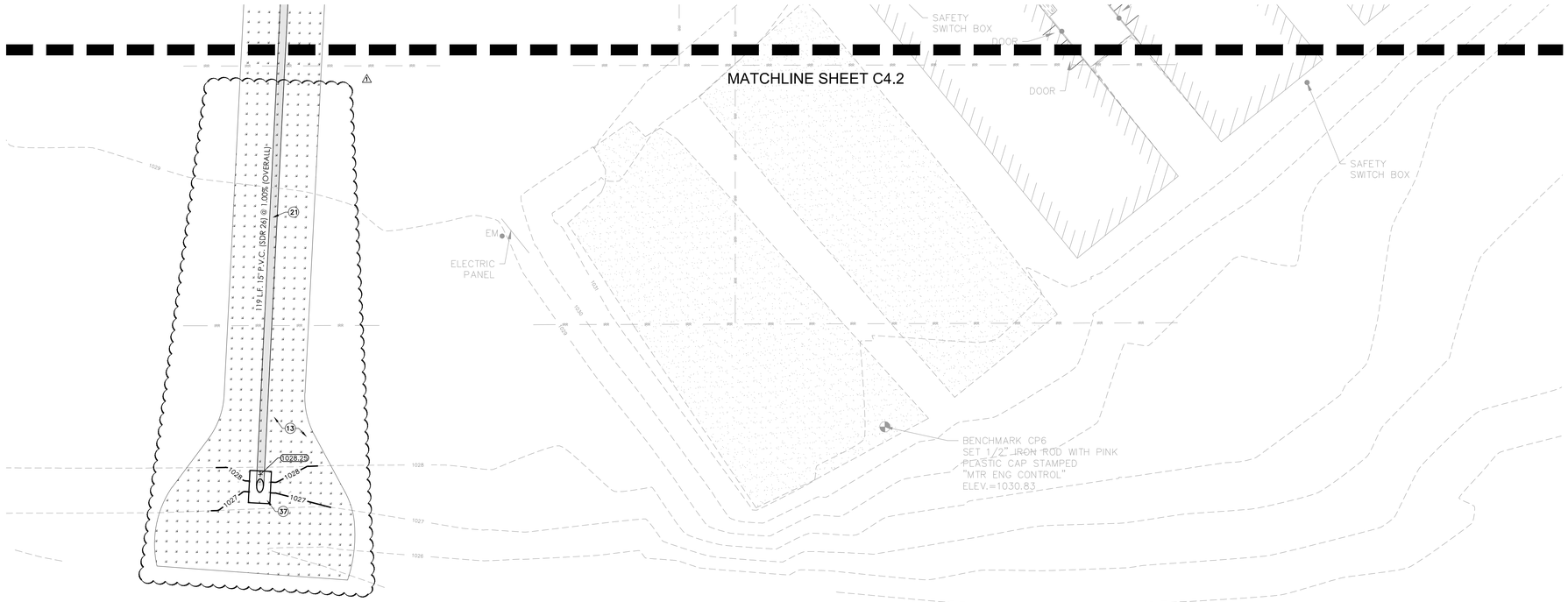

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STATE OF TEXAS
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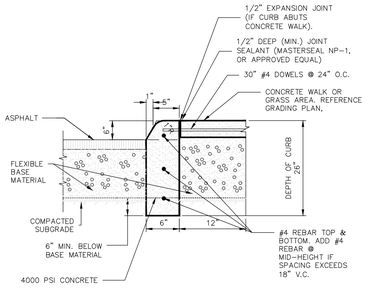
113308
REGISTERED PROFESSIONAL ENGINEER
3/14/23

PLAYGROUND UPGRADES - PACKAGE C - GROUP 3

JOHNSON RANCH ES

SITE GRADING AND DRAINAGE PLAN

SHEET
C4.3R1

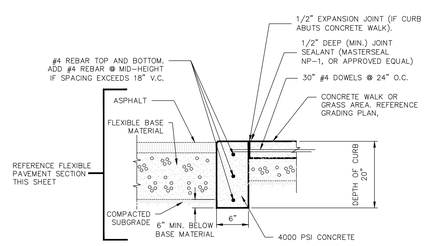


NOTES:

1. PROVIDE CONTROL JOINTS @ 15' O.C. & EXPANSION JOINTS @ 60' O.C.
2. SEAL ALL JOINTS WITH JOINT SEALANT (MASTERSEAL NP-1, OR APPROVED EQUAL).

1 TYPICAL 6" CONCRETE CURB DETAIL

SCALE: NONE



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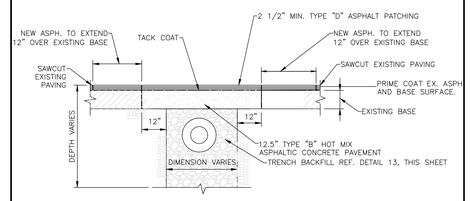
2 HEADER (FLUSH) CURB DETAIL

SCALE: NONE

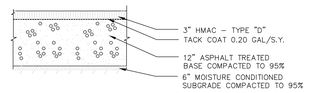


NOTES:

1. TYPE "B" HOT MIX ASPHALTIC CONCRETE PAVEMENT PER CITY OF SAN ANTONIO ITEM NUMBER 205.

3 UTILITY TRENCH PATCH DETAIL

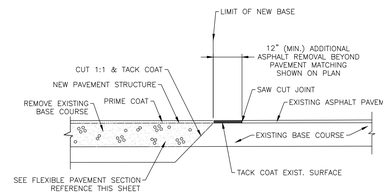
SCALE: NONE



ASPHALT PATCH SECTION

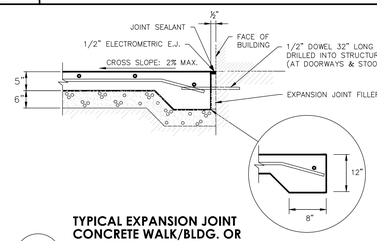
4 FLEXIBLE PAVEMENT DETAIL

SCALE: NONE



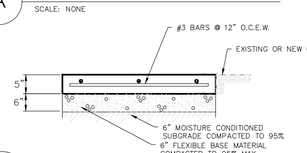
5 ASPHALT PAVEMENT JUNCTURE DETAIL

SCALE: NONE



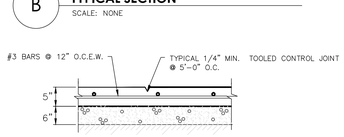
A TYPICAL EXPANSION JOINT CONCRETE WALK/BLDG. OR CONC. PAVEMENT INTERFACE

SCALE: NONE



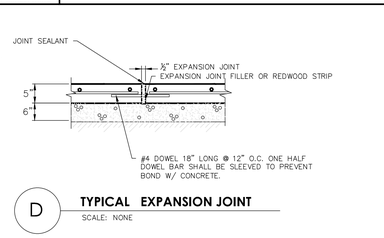
B TYPICAL SECTION

SCALE: NONE



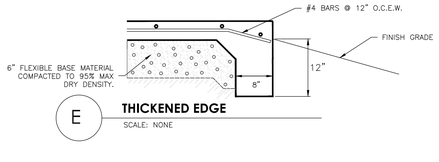
C TYPICAL CONTROL JOINT

SCALE: NONE



D TYPICAL EXPANSION JOINT

SCALE: NONE



E THICKENED EDGE

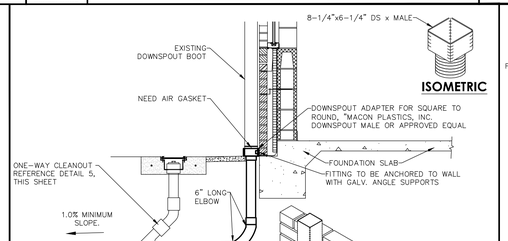
SCALE: NONE

GENERAL NOTES FOR CONCRETE SIDEWALKS:

1. ALL SIDEWALKS SHALL BE A MINIMUM 3000 PSI CONCRETE WITH NO. 3 BARS AT 12" INCHES ON CENTER..
2. SLOPE SIDEWALKS AWAY FROM BLDG. AS INDICATED ON DRAWINGS OR AT 2% MAX.
3. PROVIDE SIDEWALK WITH A HORIZONTAL (CROSS) BRUSH FINISH ON ALL SURFACES.
4. GROOVE CONTRACTION JOINTS SHALL BE SPACED 5 FT. ON CENTERS, WITH 1/2" ELECTROMETRIC EXPANSION JOINTS AT EVERY 30 FT.
5. PROVIDE A 1/2" ELECTROMETRIC EXPANSION JOINT ALONG NEW BUILDING BETWEEN ALL NEW SIDEWALK. SEAL WITH NP1 JOINT SEALANT.
6. ALL BASE MATERIAL UNDER SIDEWALKS TO BE MOISTURE CONDITIONED AND COMPACTED.
7. MAINTAIN 2" OF CLEAR COVER BETWEEN REINFORCING STEEL AND EDGE OF CONCRETE
8. ALL DOWEL BARS SHALL BE SMOOTH AND ALL REINFORCING BARS SHALL BE DEFORMED "REBAR" BOTH DOWELS AND REBAR SHALL BE AT A MINIMUM GRADE 60.
9. CONTRACTOR SHALL SUBMIT JOINTING PLAN TO ENGINEER FOR REVIEW PRIOR TO PLACEMENT OF CONCRETE.
10. CONCRETE FLATWORK 3,000 PSI. SLUMP = 4.0" ± 1.0".
11. WATER TO CEMENT RATIO (LBS/LBS) CANNOT EXCEED 0.50.

6 SIDEWALK/FLATWORK DETAILS

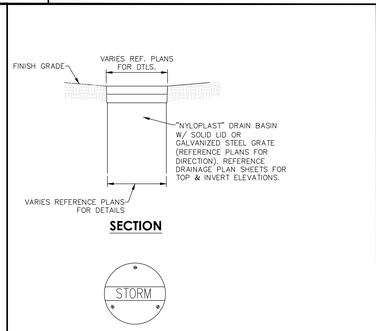
SCALE: NONE



ISOMETRIC

7 DOWNSPOUT CONNECTION

SCALE: NONE

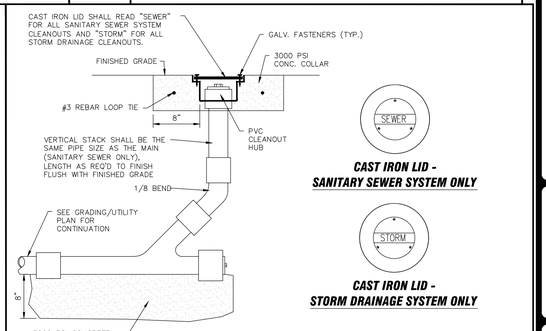


SECTION

PLAN

8 SOLID LID CATCH BASIN WITH CONCRETE COLLAR DETAIL

SCALE: NONE

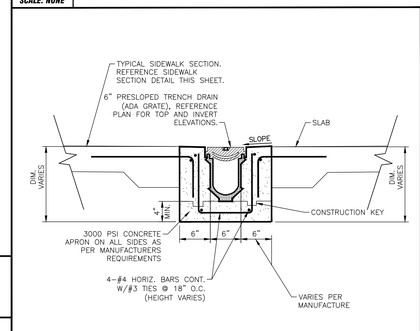


NOTES:

1. ALL PIPING AND FITTINGS TO BE PVC SDR 26.
2. CLEANOUTS LOCATED INSIDE THE PLAYGROUND TO BE PLACED IN CONCRETE PAD AT THE TOP OF GRAVEL ELEVATION BELOW ENGINEERED WOOD FIBER.

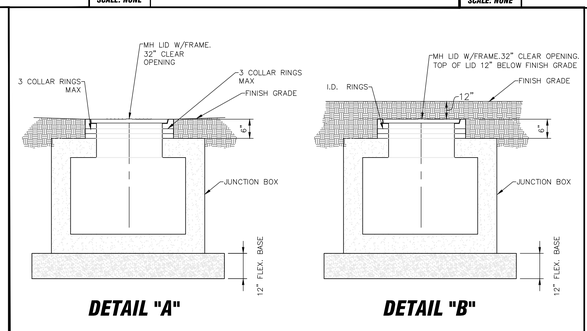
9 ONE-WAY CLEANOUT DETAIL

SCALE: NONE



11 TRENCH DETAIL

SCALE: NONE



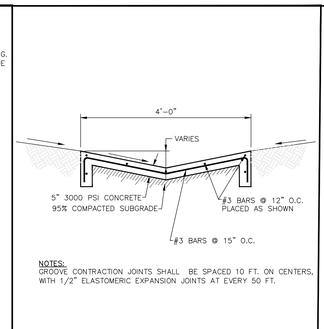
DETAIL "A"

DETAIL "B"

NOTE:
PROVIDE PIPE OPENINGS AS REQUIRED FOR PROPOSED STORM DRAINAGE CONSTRUCTION AND CONCRETE COLLAR AT PIPE CONNECTION PER DETAILS.

12 JUNCTION BOX SECTION DETAIL

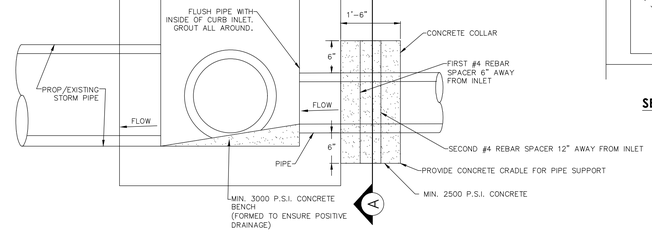
SCALE: NONE

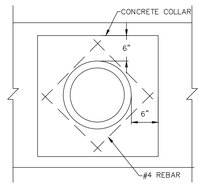


NOTES:
GROOVE CONTRACTION JOINTS SHALL BE SPACED 10 FT. ON CENTERS, WITH 1/2" ELASTOMERIC EXPANSION JOINTS AT EVERY 50 FT.

13 CONCRETE DRAINAGE "V" SWALE DETAIL

SCALE: NONE

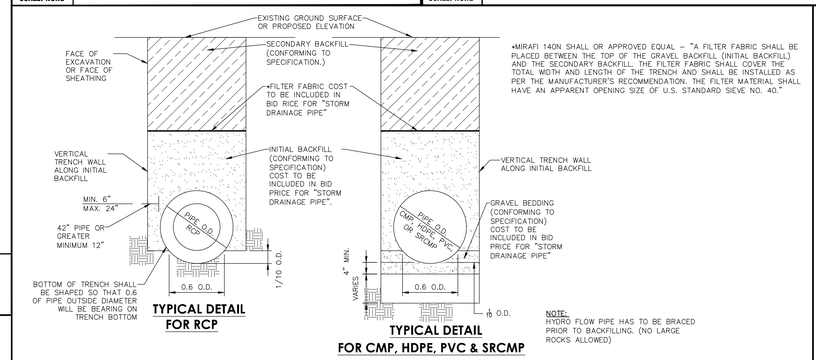




SECTION "A-"A"

10 JUNCTION BOX/GRATE INLET CONCRETE COLLAR DETAIL

SCALE: NONE

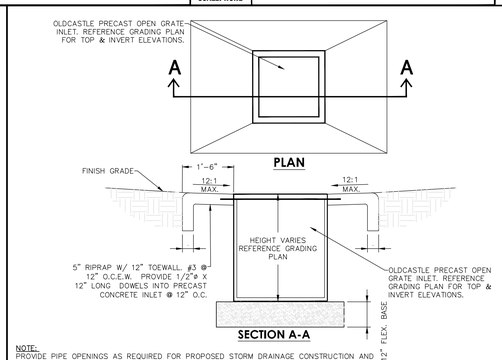


•MIRAFI 140N SHALL OR APPROVED EQUAL – "A FILTER FABRIC SHALL BE PLACED BETWEEN THE TOP OF THE GRAVEL BACKFILL (INITIAL BACKFILL) AND THE SECONDARY BACKFILL. THE FILTER FABRIC SHALL COVER THE TOTAL WIDTH AND LENGTH OF THE TRENCH AND SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATION. THE FILTER MATERIAL SHALL HAVE AN APPARENT OPENING SIZE OF U.S. STANDARD SIEVE NO. 40."

NOTE:
HYDRO FLOW PIPE HAS TO BE BRACED PRIOR TO BACKFILLING. (NO LARGE ROCKS ALLOWED)

14 PIPE BEDDING & BACKFILL DETAIL

SCALE: NONE



NOTE:
PROVIDE PIPE OPENINGS AS REQUIRED FOR PROPOSED STORM DRAINAGE CONSTRUCTION AND CONCRETE COLLAR AT PIPE CONNECTION PER DETAILS.

15 CONCRETE APRON DETAIL @ GRATE INLETS

SCALE: NONE

REVISIONS

NO.	DESCRIPTION	DATE	PROJ. #	DSN. BY:	DWN. BY:	CHKD. BY:	DATE

• Engineers
• Surveyors
• Planners
Moy Tarin Ramirez Engineers, LLC
TBPELS: ENGINEERING F-5297/SURVEYING F-10131500
12770 CIMARRON PATH, SUITE 100
SAN ANTONIO, TEXAS 78249
TEL: (210) 698-5051
FAX: (210) 698-5085

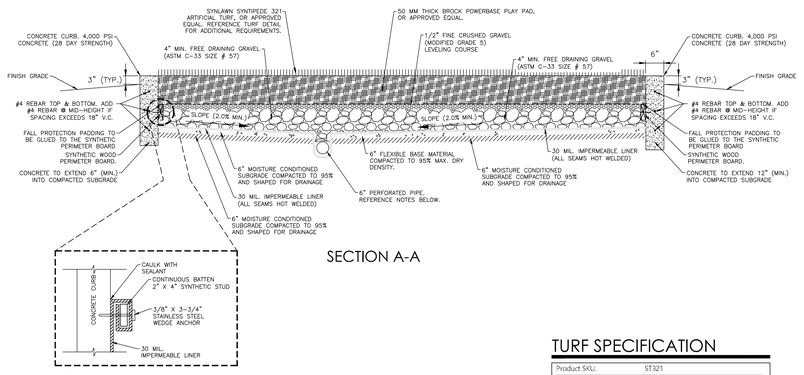
STATE OF TEXAS
SEAN S. SMITH
113308
REGISTERED PROFESSIONAL ENGINEER
5/2/23

PLAYGROUND UPGRADES - PACKAGE C - GROUP 3

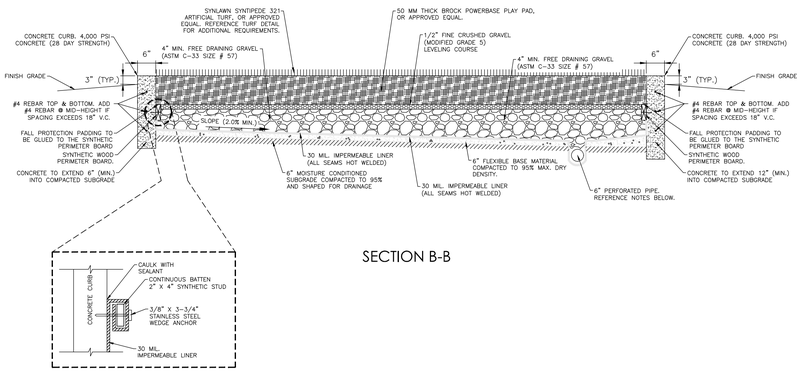
JOHNSON RANCH ES

SITE DETAILS

SHEET
C5.0



SECTION A-A



SECTION B-B

TURF SPECIFICATION

Product SKU:	ST321
Grass Zone Yarn/Color:	Polyethylene/Field/Apple
Grass Zone Denier:	10000/6
Thatch Zone Yarn/Color:	Polyethylene/Turf Green
Thatch Zone Denier:	5040/12
Grass Zone Yarn Shape:	Omega
Finished Pile Height:	1 5/8"
Finished Pile Weight:	80 oz.
Backing: Primary	2-part 13/8 6 oz. PP - Secondary|20oz EnviroLoc™
Tuft Gauge:	3/8"
Total Weight:	106 oz.
Tuft Bind:	>8 lbs.
Fall Rating:	10 feet
Permeability:	>45 inches per /SY
Features:	Deluster, UV Stabilizers, Enviroloc™, HeatBlock™, Ifaant-Based
Test Data:	ASTM E648, ASTM F1292, ASTM F1951, Pill Test, Critical Radiant Flux

PowerBase PLAY – Typical Properties

Product Number	PLB50	
Material Type	Expanded Polypropylene	
Product Format	Edge locking panel	
Product Thickness	1.97 in (50 mm)	
Part Size, nominal net coverage	16.89 sq ft (1.57 sq m)	
Panel Length	59.8 in (1.52 m)	
Panel Width	40.7 in (1.03 m)	
Panel Weight	4.0 lbs (1.8 kg)	
Tensile Strength [1]	0.41 MPa - 58 psi	ASTM D3574-08 Test E
Tensile Elongation [2]	15%	ASTM D3574-08 Test E
Compression Strength [3] @ 25% strain @ 50% strain	 0.18 MPa – 26 psi 0.27 MPa – 39 psi	ASTM 3575-08 Test D
Vertical Permeability [4]	> 250 in/hr	ASTM F1551
Water Absorption [5] After 24 hrs immersion	0.81%	ASTM C272
Dimensional Stability – Linear Thermal Expansion [6] per 1° C per 20° C	 0.08 mm/m 1.65 mm/m	ASTM D696
Flammability [7]	< 100 mm/min. PASS	FMVSS 302
Resistance to Chemicals [8]	1 / 2	JSP Method based on ASTM F925
Resistance to Acid and Alkaline Liquids [9] % tensile strength loss – 100 yr Model	 0% after 12 days	 EN 14030:2010 ISO 12960:1998
Resistance to Oxidation (Accelerated Aging) [10] % tensile strength loss – 100 yr Model	 6% after 56 days @ 110°C	 ISO 13438:2004
Microbiological Analysis bacteria resistance [11] fungi resistance [12]	 no growth no growth	 ASTM G22-76 ASTM G21-96
Environmental Standards Testing Cradle to Cradle [13] Heavy Metals / Mercury [14] VOC's [14] SVOC's [14] CCR Title 22 [14] COEHHA Proposition 65 [15]	 Certified Compliant to EPA human health standards, surface water quality, groundwater quality Compliant Compliant	 Cradle to Cradle Products Innovation Institute EPA 6010B, 7470A, 7471A EPA 8260B EPA 8270C

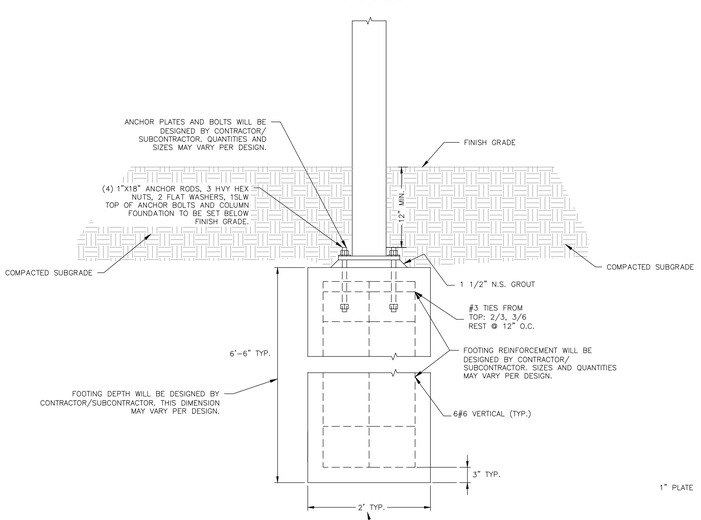
NOTE:

1. SYNTHETIC TURF AND FALL ZONE PROTECTION TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS BY FACTORY AUTHORIZED INSTALLER.
2. TURF AND FALL PROTECTION SYSTEM SHALL BE CAPABLE OF DRAINING AT A RATE OF 5 IN/HR MINIMUM.
3. IMPERMEABLE LINER SEAMS SHALL BE THERMALLY FUSED DUAL TRACK WELDED AND SHALL BE AIR CHANNEL TESTED ALONG IT'S ENTIRE LENGTH PER MANUFACTURER RECOMMENDATIONS. GLUING OF LINEAR SEAMS IS NOT AN ACCEPTABLE ALTERNATIVE.
4. 6" SDR26 PVC PERFORATED PIPE TO HAVE A 1.0% RUNNING SLOPE TO OUTFALL POINT. REFERENCE PLANS FOR INVERT ELEVATIONS. PROVIDE ALL NECESSARY BENDS TO MATCH ALIGNMENT ON PLANS. PERFORATIONS TO BE 1/4" MIN. DIAMETER AT 12" ON O.C. PERFORATION PATTERN TO BE 60° CIRCULAR WITH A MINIMUM OF 4 PERFORATIONS PER ROW.

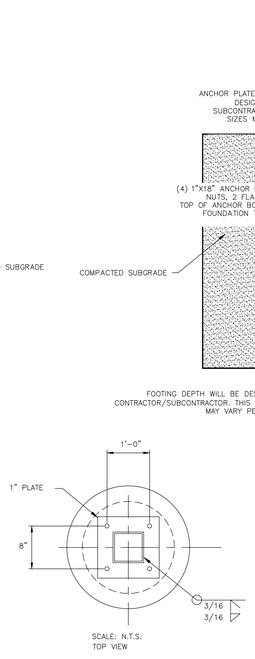
⚠

1 **SYNTHETIC PLAYGROUND TURF SECTION**

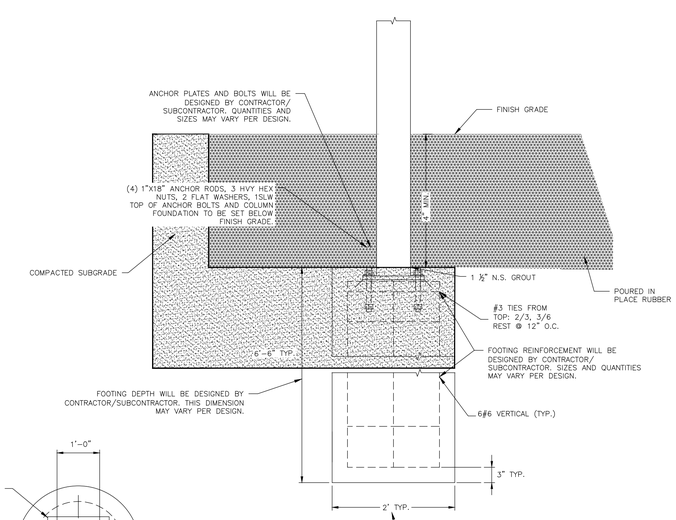
SCALE: NONE



SCALE: N.T.S.
ELEVATION



SCALE: N.T.S.
TOP VIEW

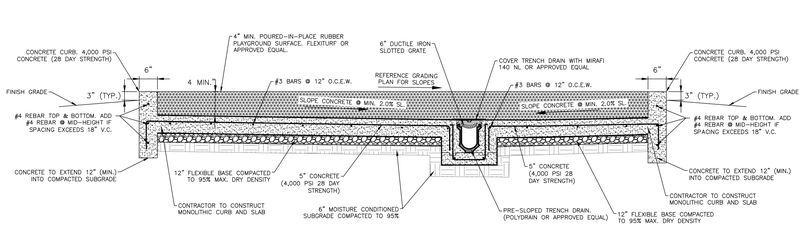


SCALE: N.T.S.
ELEVATION

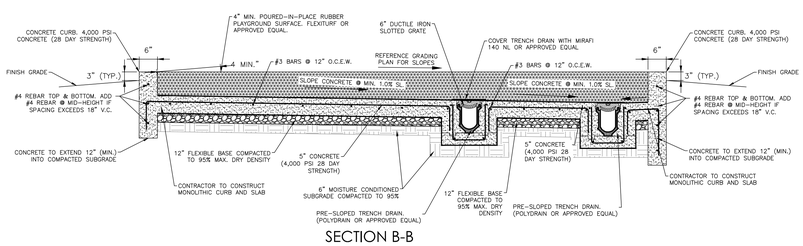
CONTRACTOR TO PROVIDE SIGNED AND SEALED FOOTING DRAWINGS FOR ALL SHADE STRUCTURES.

2 **EXAMPLE CONCRETE FOOTING DETAIL**

SCALE: NONE



SECTION A-A



SECTION B-B

GENERAL NOTES:

1. ALL SIDEWALKS SHALL BE A MINIMUM 4,000 PSI CONCRETE WITH NO. 3 BARS AT 12" INCHES ON CENTER.
2. SLOPE SIDEWALKS AWAY FROM BLDG. AS INDICATED ON DRAWINGS OR AT 2% MAX.
3. PROVIDE CONCRETE WITH A HORIZONTAL (CROSS) BRUSH FINISH ON ALL SURFACES.
4. PROVIDE A 1/4" CONTROL JOINTS 1/4 THE THICKNESS OF THE CONCRETE AT 10' O.C.E.W. CONTRACTOR TO FILL ALL CONTROL JOINTS WITH JOINT SEALANT (NP-1 OR APPROVED EQUAL). CONTINUE CONTROL JOINTS INTO THE ADJACENT CURBS.
5. ALL BASE MATERIAL UNDER SIDEWALKS TO BE MOISTURE CONDITIONED AND COMPACTED.
6. MAINTAIN 2" OF CLEAR COVER BETWEEN REINFORCING STEEL AND EDGE OF CONCRETE
7. ALL DOWEL BARS SHALL BE SMOOTH AND ALL REINFORCING BARS SHALL BE DEFORMED "REBAR" BOTH DOWELS AND REBAR SHALL BE AT A MINIMUM GRADE 60.
8. CONTRACTOR SHALL SUBMIT JOINTING PLAN TO ENGINEER FOR REVIEW PRIOR TO PLACEMENT OF CONCRETE.
9. CONCRETE FLATWORK 4,000 PSI. SLUMP = 4.0" ± 1.0".
10. WATER TO CEMENT RATIO (LBS/LBS) CANNOT EXCEED 0.50.

3 **POURED-IN-PLACE RUBBER SECTION**

SCALE: NONE

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	3/14/2023	ADDENDUM #2	

PROJ. # | DSN. BY: | DWN. BY: | CHKD. BY: | DATE

• Engineers
• Surveyors
• Planners
MTR
Moy Tarin Ramirez Engineers, LLC
TBPELS: ENGINEERING F-5297/SURVEYING F-10131500
12770 CIMARRON PATH, SUITE 100
SAN ANTONIO, TEXAS 78249
TEL: (210) 698-5051
FAX: (210) 698-5085

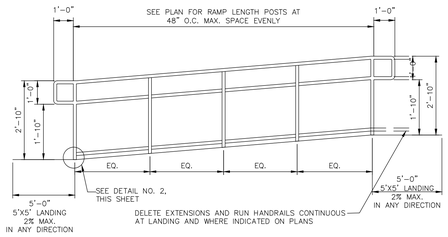
STATE OF TEXAS
SEAN S. SMITH
113308
REGISTERED PROFESSIONAL ENGINEER
3/14/23

PLAYGROUND UPGRADES - PACKAGE C GROUP 3

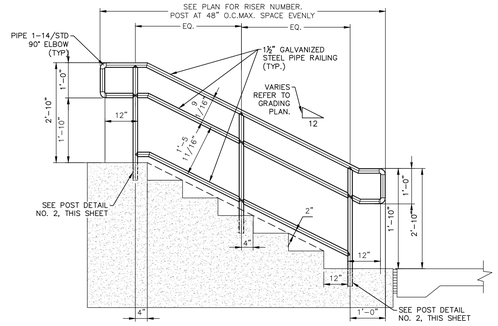
JOHNSON RANCH ES

SITE DETAILS

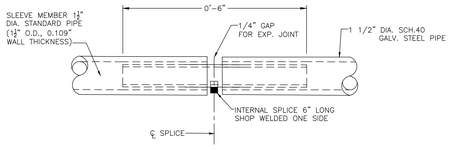
SHEET
C5.1R1



NOTE:
1. HANDRAIL CONSTRUCTION 1 1/2" GALV. STEEL PIPE – TYPICAL
2. ALL STEEL PIPE TO BE HOTDIPPED GALVANIZED AFTER FABRICATION.
3. NO ONSITE WELDING WILL BE ALLOWED.
4. CONTRACTOR TO PROVIDE A SLIP–JOINT AT ALL CONSTRUCTION JOINTS.



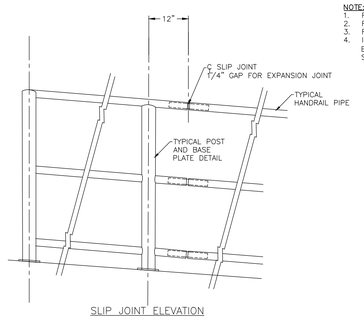
NOTE:
1. FOLLOW GENERAL NOTES FOR SIDEWALKS UNLESS OTHERWISE NOTED ON DETAIL.
2. REFERENCE GRADING PLAN FOR PROPOSED SPOT ELEVATIONS.
3. REFERENCE GRADING PLAN FOR NUMBER AND DEPTH OF RISERS.
4. IF 2 OR MORE RISERS, PROVIDE ADJACENT HANDRAILS. EXTEND HANDRAILS 1' BEYOND LIMITS OF RISERS AS SHOWN ON PLAN. SEE HANDRAIL DETAIL, THIS SHEET.



SLIP JOINT DETAIL
INTERNAL PIPE SPLICE

NOTE:

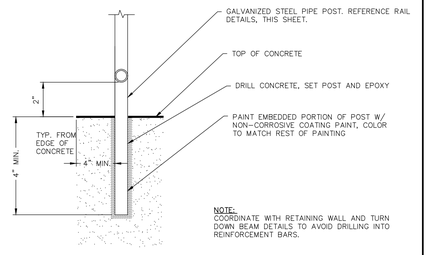
PROVIDE HANDRAIL/GUARDRAIL PIPE SLIP JOINTS @ 30' MAX. SPACING OR ACROSS CONCRETE EXPANSION JOINTS.



SLIP JOINT ELEVATION

1 TYPICAL RAIL AT RAMP AND CONCRETE STEPS WITH SLIP JOINT DETAIL

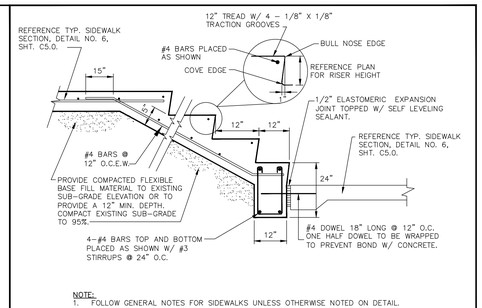
SCALE: NONE



NOTE:
COORDINATE WITH RETAINING WALL AND TURN DOWN BEAM DETAILS TO AVOID DRILLING INTO REINFORCEMENT BARS.

2 STEEL POST CORE DETAIL

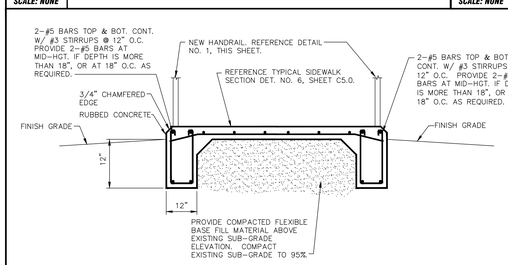
SCALE: NONE



NOTE:
1. FOLLOW GENERAL NOTES FOR SIDEWALKS UNLESS OTHERWISE NOTED ON DETAIL.
2. REFERENCE GRADING PLAN FOR PROPOSED SPOT ELEVATIONS.
3. REFERENCE GRADING PLAN FOR NUMBER AND DEPTH OF RISERS OR RAMP LENGTHS, IF APPLICABLE.
4. PROVIDE ADJACENT RAILING ON BOTH SIDES AT RISERS AND/OR RAMP AREAS. REFERENCE RAIL DETAILS AND GRADING PLAN FOR RAIL TYPE AND LOCATION.
5. ALL CONCRETE TO BE 3000 PSI.

3 CONCRETE RISERS - SECTION DETAIL

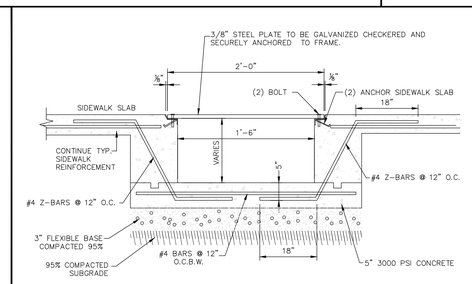
SCALE: NONE



NOTE:
1. FOLLOW GENERAL NOTES FOR SIDEWALKS UNLESS OTHERWISE NOTED ON DETAIL.
2. REFERENCE GRADING PLAN FOR PROPOSED SPOT ELEVATIONS.
3. REFERENCE GRADING PLAN FOR NUMBER AND DEPTH OF RISERS OR RAMP LENGTHS, IF APPLICABLE.
4. PROVIDE ADJACENT RAILING ON BOTH SIDES AT RISER AND/OR RAMP AREAS. REFERENCE RAIL DETAILS AND GRADING PLAN FOR RAIL TYPE AND LOCATION.
5. ALL CONCRETE TO BE 3000 PSI.

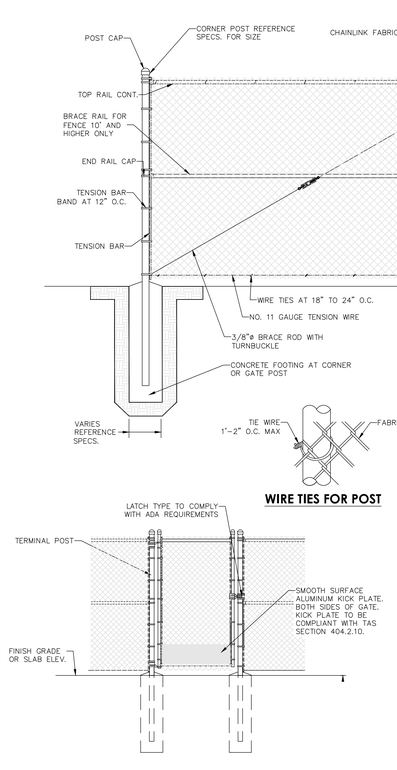
4 SECTION DETAIL

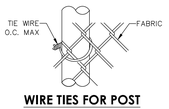
SCALE: NONE



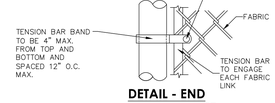
5 SINGLE SIDEWALK DRAIN DETAIL

SCALE: NONE





WIRE TIES FOR POST

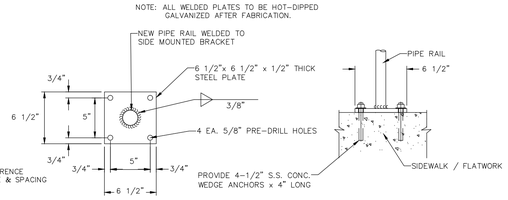


DETAIL - END OR GATE POST

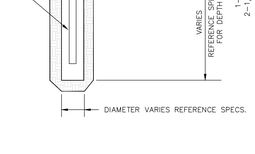
NOTES:
1. ALL FENCE MATERIALS & HARDWARE TO BE HOT DIP GALVANIZED UNLESS OTHERWISE NOTED ON FENCING PLAN. (ALUMINUM WIRE TIES ARE ACCEPTABLE)
2. ALL FENCE FABRIC SHALL BE INSTALLED WITH THE KNUCKLE SIDE UP.
3. ALL CHAIN–LINK FENCE FABRIC IS TO GALVANIZED.

NOTE: ALL GATES SHALL OPEN 180°.

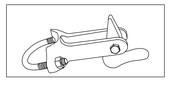
NOTE: ALL WELDED PLATES TO BE HOT–DIPPED GALVANIZED AFTER FABRICATION.

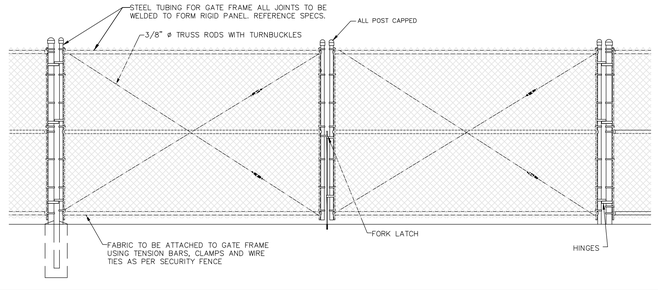


PIPE ANCHORAGE DETAILS



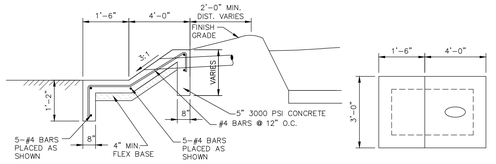
FENCE POST FOOTING SCHEDULE





6 CHAINLINK FENCE DETAILS

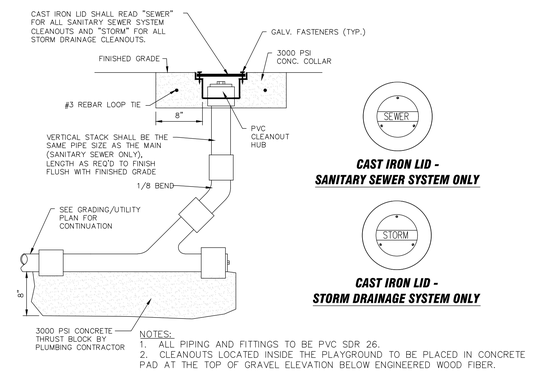
SCALE: NONE



SECTION PLAN

7 CONCRETE RIPRAP HEADWALL DETAIL

SCALE: NONE



NOTES:
1. ALL PIPING AND FITTINGS TO BE PVC SDR 26.
2. CLEANOUTS LOCATED INSIDE THE PLAYGROUND TO BE PLACED IN CONCRETE PAD AT THE TOP OF GRAVEL ELEVATION BELOW ENGINEERED WOOD FIBER.

CAST IRON LID - SANITARY SEWER SYSTEM ONLY

CAST IRON LID - STORM DRAINAGE SYSTEM ONLY

8 ONE-WAY CLEANOUT DETAIL

SCALE: NONE

REVISIONS

NO.	DESCRIPTION	DATE	PROJ. #	DSN. BY:	DWN. BY:	CHKD. BY:	DATE

MTR
• Engineers
• Surveyors
• Planners
Moy Tarin Ramirez Engineers, LLC
TBPELS: ENGINEERING F-5297/SURVEYING F-10131500
12770 CIMARRON PATH, SUITE 100
SAN ANTONIO, TEXAS 78249
TEL: (210) 698-5051
FAX: (210) 698-5085

STATE OF TEXAS
SEAN S. SMITH
113308
REGISTERED PROFESSIONAL ENGINEER
5/2/23

PLAYGROUND UPGRADES - PACKAGE C - GROUP 3
JOHNSON RANCH ES
SITE DETAILS

SHEET
C5.2

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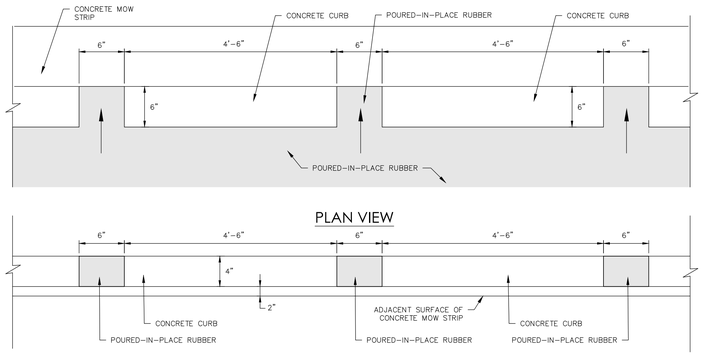
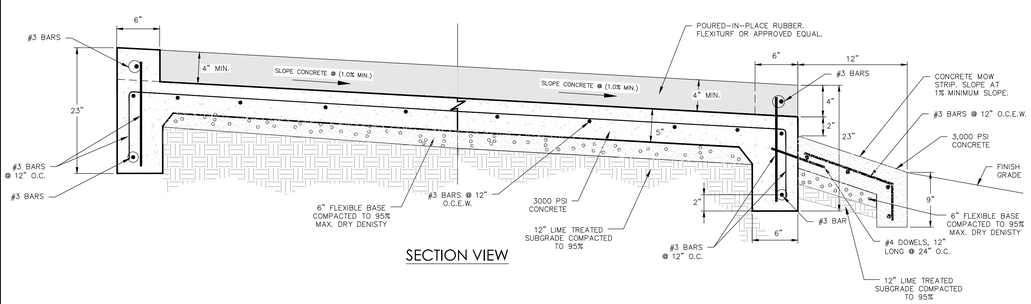


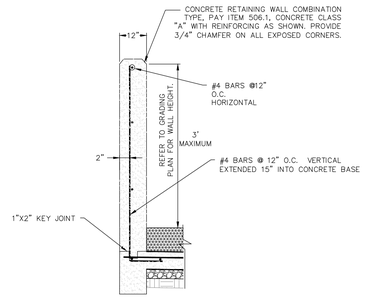
GENERAL NOTES FOR CONCRETE SIDEWALKS:

1. ALL SIDEWALKS SHALL BE A MINIMUM 4,000 PSI CONCRETE WITH NO. 3 BARS AT 12" INCHES ON CENTER.
2. SLOPE SIDEWALKS AWAY FROM BLDG. AS INDICATED ON DRAWINGS OR AT 2% MAX.
3. PROVIDE CONCRETE WITH A HORIZONTAL (CROSS) BRUSH FINISH ON ALL SURFACES.
4. PROVIDE A 1/4" CONTROL JOINTS 1/4 THE THICKNESS OF THE CONCRETE AT 10' O.C.E.W. CONTRACTOR TO FILL ALL CONTROL JOINTS WITH JOINT SEALANT (NP-1 OR APPROVED EQUAL). CONTINUE CONTROL JOINTS INTO THE ADJACENT CURBS.
5. ALL BASE MATERIAL UNDER SIDEWALKS TO BE MOISTURE CONDITIONED AND COMPACTED.
6. MAINTAIN 2" OF CLEAR COVER BETWEEN REINFORCING STEEL AND EDGE OF CONCRETE
7. ALL DOWEL BARS SHALL BE SMOOTH AND ALL REINFORCING BARS SHALL BE DEFORMED "REBAR" BOTH DOWELS AND REBAR SHALL BE AT A MINIMUM GRADE 60.
8. CONTRACTOR SHALL SUBMIT JOINTING PLAN TO ENGINEER FOR REVIEW PRIOR TO PLACEMENT OF CONCRETE.
9. CONCRETE FLATWORK 4,000 PSI. SLUMP = 4.0" ± 1.0".
10. WATER TO CEMENT RATIO (LBS/LBS) CANNOT EXCEED 0.50.



1 POURED-IN-PLACE RUBBER PLAYGROUND SECTION

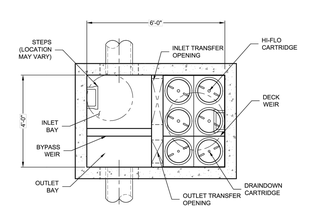
SCALE: NONE



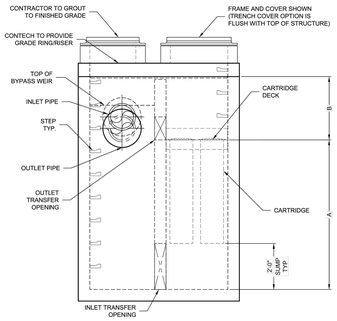
CONCRETE RETAINING WALL - COMBINATION TYPE

2 COMBINATION RETAINING WALL DETAIL

SCALE: NONE



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)



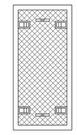
ELEVATION VIEW

JELLYFISH DESIGN NOTES

JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT, CURB INLET OR SHALLOW PIPE INLET OPTIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD.

CARTRIDGE SELECTION				
CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"	5'-4"	4'-3"	3'-3"
FLOW RATE HIGH-FLO / DRAINDOWN (CFS) (PER CART.)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
MAX. TREATMENT (CFS)	0.89	0.67	0.45	0.25
DECK TO INSIDE TOP (MIN) (B)	5'-0"	4'-0"	4'-0"	4'-0"

FRAME AND COVER
(DIAMETER VARIES)
N.T.S.



24" TRENCH COVER
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs)	*
PEAK FLOW RATE (cfs)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
# OF CARTRIDGES REQUIRED (HF / DD)	*
CARTRIDGE LENGTH	*

PIPE DATA:	I.E.	MATL	DIA	SLOPE %	HGL
INLET #1	*	*	*	*	*
INLET #2	*	*	*	*	*
OUTLET	*	*	*	*	*

SEE GENERAL NOTES 6-7 FOR INLET AND OUTLET HYDRAULIC AND SIZING REQUIREMENTS.

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES:
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.ContechES.com
3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION AND SITE SPECIFIC EARTH COVER REQUIREMENT. TYPICAL CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-857, ASTM C-978, AND AASHTO LOAD FACTOR DESIGN METHOD.
6. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
7. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS RECOMMENDED TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE (WHERE APPLICABLE) AT EQUAL OR GREATER SLOPE.
8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE.
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT).
D. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION.

Jellyfish® Filter

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING: U.S. PATENT NO. 9,267,726; 9,371,919; US 9,123,935; OTHER INTERNATIONAL PATENTS PENDING

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

JELLYFISH JFPD0406
STANDARD DETAIL
PEAK DIVERSION CONFIGURATION

C:\USERS\EVAN.WRIGHT\ONEDRIVE - THE CLANCY'S COMPANIES\DESIGN\TOPSITE\ADMIN\DETAILS\JFPD0406\JFPD0406_DETAIL.DWG 11/15/2022 3:51 PM

NO.	DATE	REVISIONS DESCRIPTION	PROJ. #	CON. BY:	DWN. BY:	CHKD. BY:	DATE
1	3/14/2023	ADDENDUM #2					

• Engineers • Surveyors • Planners
Moy Tarin Ramirez Engineers, LLC
TBPELS: ENGINEERING F-5297/SURVEYING F-10131500
12770 CIMARRON PATH, SUITE 100
SAN ANTONIO, TEXAS 78249
TEL: (210) 698-5085
FAX: (210) 698-5085

STATE OF TEXAS
SEAN S. SMITH
113308
REGISTERED PROFESSIONAL ENGINEER
3/14/23

PLAYGROUND UPGRADES - PACKAGE C - GROUP 3
JOHNSON RANCH ES
SITE DETAILS

SHEET
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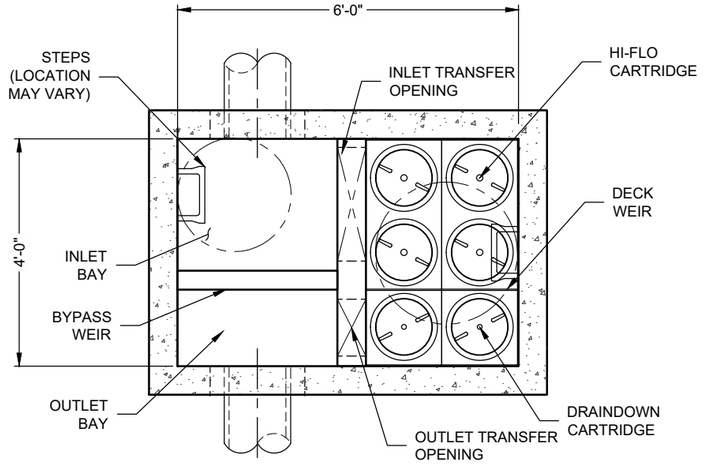
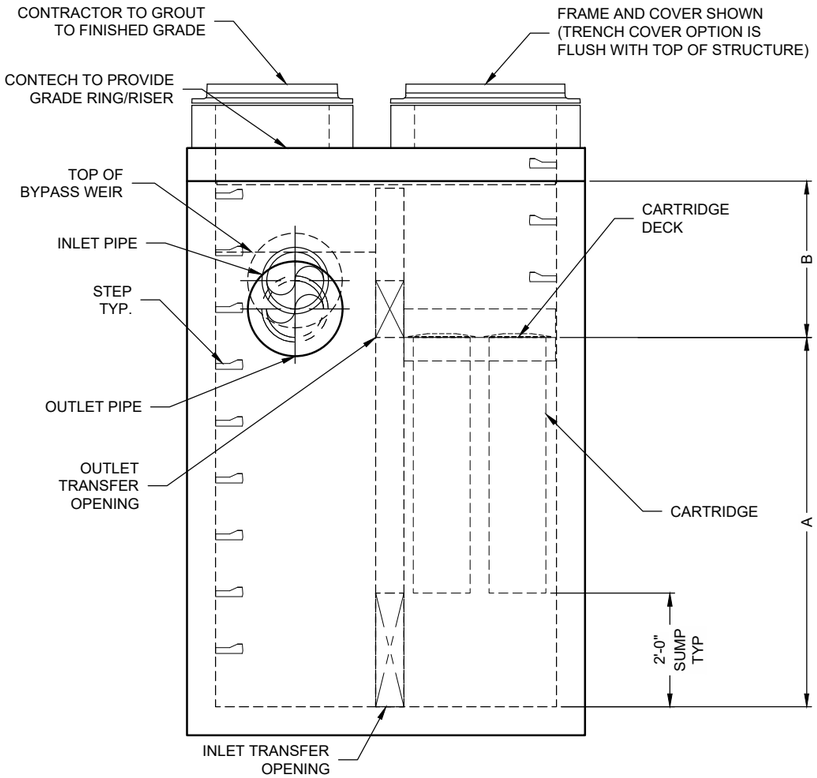


PLAN VIEW

(TOP SLAB NOT SHOWN FOR CLARITY)



ELEVATION VIEW

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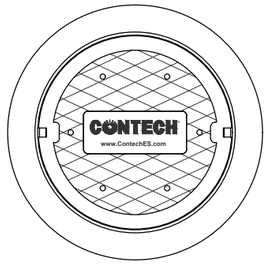
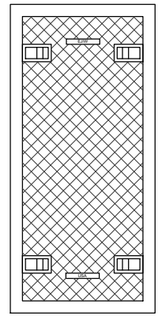


FRAME AND COVER

(DIAMETER VARIES)
N.T.S.



24" TRENCH COVER

N.T.S.

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STRUCTURE ID	*
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PEAK FLOW RATE (cfs)	*
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CARTRIDGE LENGTH	*

PIPE DATA:	I.E.	MAT'L	DIA	SLOPE %	HGL
INLET #1	*	*	*	*	*
INLET #2	*	*	*	*	*
OUTLET	*	*	*	*	*

SEE GENERAL NOTES 6-7 FOR INLET AND OUTLET HYDRAULIC AND SIZING REQUIREMENTS.

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

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Jellyfish Filter

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

JELLYFISH JFPD0406 STANDARD DETAIL PEAK DIVERSION CONFIGURATION

ATTACHMENT G

INSPECTION, MAINTENANCE, REPAIR AND RETROFIT PLAN

ENGINEERED VEGETATIVE FILTER STRIPS

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

· Pest Management. An Integrated Pest Management (IPM) Plan should be developed for vegetated areas. This plan should specify how problem insects and weeds will be controlled with minimal or no use of insecticides and herbicides.

· Seasonal Mowing and Lawn Care. If the filter strip is made up of turf grass, it should be mowed as needed to limit vegetation height to 18 inches, using a mulching mower (or removal of clippings). If native grasses are used, the filter may require less frequent mowing, but a minimum of twice annually. Grass clippings and brush debris should not be deposited on vegetated filter strip areas. Regular mowing should also include weed control practices; however, herbicide use should be kept to a minimum (Urbonas et al., 1992). Healthy grass can be maintained without using fertilizers because runoff usually contains sufficient nutrients. Irrigation of the site can help assure a dense and healthy vegetative cover.

· Inspection. Inspect filter strips at least twice annually for erosion or damage to vegetation; however, additional inspection after periods of heavy runoff is most desirable. The strip should be checked for uniformity of grass cover, debris and litter, and areas of sediment accumulation. More frequent inspections of the grass cover during the first few years after establishment will help to determine if any problems are developing, and to plan for long-term restorative maintenance needs. Bare spots and areas of erosion identified during semi-annual inspections must be replanted and restored to meet specifications. Construction of a level spreader device may be necessary to reestablish shallow overland flow.

· Debris and Litter Removal. Trash tends to accumulate in vegetated areas, particularly along highways. Any filter strip structures (i.e., level spreaders) should be kept free of obstructions to reduce floatables being flushed downstream, and for aesthetic reasons.

The need for this practice is determined through periodic inspection, but should be performed no less than 4 times per year.

· Sediment Removal. Sediment removal is not normally required in filter strips, since the vegetation normally grows through it and binds it to the soil. However, sediment may accumulate along the upstream boundary of the strip preventing uniform overland flow. Excess sediment should be removed by hand or with flat-bottomed shovels.

· Grass Reseeding and Mulching. A healthy dense grass should be maintained on the filter strip. If areas are eroded, they should be filled, compacted, and reseeded so that the final grade is level. Grass damaged during the sediment removal process should be promptly replaced using the same seed mix used during filter strip establishment. If possible, flow should be diverted from the damaged areas until the grass is firmly established. Bare spots and areas of erosion identified during semi-annual inspections must be replanted and restored to meet specifications. Corrective maintenance, such as weeding or replanting should be done more frequently in the first two to three years after installation to ensure stabilization. Dense vegetation may require irrigation immediately after planting, and during particularly dry periods, particularly as the vegetation is initially established.

JELLYFISH FILTERS

Jellyfish cartridges are passively backwashed automatically after each storm event, which removed accumulated sediment from the membranes and significantly extends the service life of the cartridges and the maintenance interval. If required, the cartridges can be easily manually backwashed without removing the cartridges. Additionally, the lightweight cartridges can be removed by hand and externally rinsed, and rinsed cartridges then re-installed. These simple maintenance options allow for cartridge regeneration, thereby minimizing cartridge replacement costs and life-cycle treatment costs while ensuring long-term treatment performance. Regular inspection and maintenance are proven, cost-effective ways to maximize water resource protection for all stormwater pollution control practices, and are required to ensure proper functioning of the Jellyfish Filter. Inspection of the Jellyfish Filter is performed from the surface, while proper maintenance required a combination of procedures conducted from the surface and worker entry in the structure.

· Inspection. Post-construction inspection is required prior to putting the Jellyfish Filter into service. Routine inspections are recommended quarterly during the first year of operation to accurately assess the sediment and floatable pollutant accumulation, and to ensure that the automatic backwash feature is functioning properly.

· Cleaning. The unit must be cleaned annually. This cleaning includes removal and appropriate disposal of all water, sediment, oil and grease, and debris that has accumulated within the unit. The Jellyfish Filter is inspected and maintained by professional vacuum cleaning service providers with experience in the maintenance of underground tanks, sewers and catch basins. Since some of the maintenance procedures require manned entry into the Jellyfish structure, only professional maintenance service providers trained in confined space entry procedures should enter the vessel. Service provider companies typically have personnel who are trained and certified in confined space entry procedures according to local, state, and federal standards.

· Filter Cartridge Testing. Filter cartridges should be tested for adequate flow rate, every 12 months and cleaned and re-commissioned, or replaced if necessary. A manual backflush must be performed on a single draindown cartridge using a Jellyfish Cartridge Backflush pipe (described in the Jellyfish Filter Owner's manual). If the time required to drain 14 gallons of backflush water from the Backflush Pipe (from top of pipe to the top of the open flapper valve) exceeds 15 seconds, it is recommended to perform a manual backflush on each of the cartridges. After the manual backflush, the draindown test should be repeated on a single cartridge to determine if the cartridge can drain 14 gallons of water in 15 seconds. If the cartridge still does not achieve the design flow rate, it must be replaced. The unit should be cleaned out immediately after an oil, fuel or chemical spill.

· Filter Cartridge Cleaning. This cartridge cleaning procedure is performed by removing the cartridge from the cartridge deck and externally rinsing the filtration tentacles using a low-pressure water sprayer, as described in the Jellyfish Filter Owner's Manual. If this procedure is performed within the structure, the cartridge or individual filtration tentacles should be rinsed while safely suspended over the maintenance access wall opening in the cartridge deck, such that rinsate flows into the lower chamber of the Jellyfish Filter. If the rinsing procedure is performed outside the structure, the cartridge or individual filtration tentacles should be rinsed in a suitable basin such as a plastic barrel or tub, and rinsate subsequently poured into the maintenance access wall opening in the cartridge deck. Sediment is subsequently removed from the lower chamber by standard vacuum service.

RECORD KEEPING

Maintenance and inspection records should be kept on file by the Owner of the permanent BMPs for a period of at least three (3) years. Repair and retrofit records should be kept on file by the Owner of the permanent BMPs for a period of at least five (5) years.

Sean Smith, P.E.
Print Name

Signature of Applicant/Owner/Agent

3/23/2023
Date

ATTACHMENT I

MEASURES FOR MINIMIZING SURFACE STREAM CONTAMINATION

Both permanent and temporary BMP's, as shown on the WPAP Site Plan, shall be used to minimize contamination to surface streams, both during and after construction. During construction, temporary BMPs will consist of silt fence, bagged gravel inlet filters, and rock berms. After construction, the permanent BMPs for the overall site will consist of the existing grassy swales, VFS, and extended detention basin as well as the proposed JellyFish Filter system and proposed VFS.

The proposed BMPs and other storm drainage systems are designed to avoid or minimize surface stream contamination and changes in the way in which water enters a stream. The proposed JellyFish filter will remove contaminations from the proposed on-site runoff.

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

I Alex Araujo,
Print Name

Executive Director Construction & Planning,
Title - Owner/President/Other

of Comal Independent School District,
Corporation/Partnership/Entity Name

have authorized Moy Tarin Ramirez Engineers, LLC
Print Name of Agent/Engineer

of Moy Tarin Ramirez Engineers, LLC
Print Name of Firm

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

I also understand that:

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

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

3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.

4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.

5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

SIGNATURE PAGE:

Applicant's Signature

3/31/22
Date

THE STATE OF Texas §

County of Comal §

BEFORE ME, the undersigned authority, on this day personally appeared Alex Araujo 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 31st day of March, 2022.

ASHLEY MARIE NAJVAR
Notary Public, State of Texas
My Commission Expires
August 20, 2025
NOTARY ID 13328207-1

NOTARY PUBLIC

Ashley Najvar
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 08/20/2025

Application Fee Form

Texas Commission on Environmental Quality

Name of Proposed Regulated Entity: CISD JOHNSON RANCH ELEMENTARY SCHOOL
Regulated Entity Location: 30501 Johnson Way, Bulverde, TX 78163
Name of Customer: Comal ISD
Contact Person: Alejandro Araujo Phone: 830-221-2150
Customer Reference Number (if issued):CN 600249825
Regulated Entity Reference Number (if issued):RN 105332530

Austin Regional Office (3373)

☐ Hays ☐ Travis ☐ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☒ Comal ☐ Kinney

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

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

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

Site Location (Check All That Apply):

☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	*Size*	*Fee Due*
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	16.06 Acres	$ 6,500.00
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: _____ Date: 03/23/2023

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

Organized Sewage Collection Systems and Modifications

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

Underground and Aboveground Storage Tank System Facility Plans and Modifications

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

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*
Extension of Time Request	$150

TCEQ Use Only

TCEQ Core Data Form

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

SECTION I: General Information

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

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

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

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 600249825		RN 105332530

SECTION II: Customer Information

4. General Customer Information | **5. Effective Date for Customer Information Updates** (mm/dd/yyyy)

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

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

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

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

11. Type of Customer: ☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

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

13. Independently Owned and Operated?
☐ **Yes** ☐ **No**

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

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

15. Mailing Address:

City		State		ZIP		ZIP + 4	

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

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

SECTION III: Regulated Entity Information

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

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

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

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

CISD JOHNSON RANCH ELEMENTARY SCHOOL

23. Street Address of the Regulated Entity: *(No PO Boxes)*	30501 Johnson Way							
	City	Bulverde	**State**	TX	**ZIP**	78136	**ZIP + 4**	
24. County	Comal							

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	Northeast corner of US281 and FM1863. Entrance at FM1863 approximately 0.5 miles east from the intersection with US 281.

26. Nearest City	**State**	**Nearest ZIP Code**
Bulverde	TX	78163

27. Latitude (N) In Decimal:	29.74992	**28. Longitude (W) In Decimal:**	98.42048

Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	44	59.71	98	25	13.74

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
8211		611110	

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

Elementary School

34. Mailing Address:	**30501 Johnson Way**							
	City	**Bulverde**	**State**	**TX**	**ZIP**	**78163**	**ZIP + 4**	

35. E-Mail Address:	**alejandro.araujo@comalisd.org**

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(830) 221-2150		**( ) -**

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☒ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Sean Smith, P.E.	**41. Title:**	Vice President

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(210) 698-5051		(210) 698-5085	ssmith@mtrengineers.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:	Moy Tarin Ramirez Engineers, LLC	**Job Title:**	Vice President
Name *(In Print):*	Sean Smith, P.E.	**Phone:**	(210) 698- **5051**
Signature:		**Date:**	3/16/2023