Buddy Garcia, *Chairman*
Larry R. Soward, *Commissioner*
Bryan W. Shaw, Ph.D., *Commissioner*
Mark R. Vickery, P.G., *Executive Director*

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

June 4, 2009

Mr. Charles Hill
DH/JB Development Inc.
102A Cordillera Ridge
Boerne, TX 78006

Re: Edwards Aquifer, Comal County
NAME OF PROJECT: OSSF for Johnson Ranch Elementary; Located on the north side of FM 1863, 0.5 miles east on Hwy. 281 on Johnson Ranch Driveway; 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.: 2703.01; Investigation No. 744396; Regulated Entity No. RN105725014

Dear Mr. Hill:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP application included in an exception request for the above-referenced project submitted to the San Antonio Regional Office by Loomis Partners, Inc. on behalf of DH/JB Development Inc. on April 27, 2009. Final review of the WPAP was completed after additional material was received on May 27, 2009. As presented to the TCEQ, the Temporary 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 project will have an area of approximately 3.765 acres and approximately 1.40 acres of soil disturbance. It will include the installation of a temporary onsite sewage facility (OSSF) to handle less than 3,500 gallons per day of wastewater generated by the Johnson Ranch Elementary School. The OSSF will be in place for approximately 18 to 24 months and will allow sufficient time to construct a wastewater treatment plant which was the original disposal method for the elementary school. The impervious cover will be 0.0038 acres or 165.8 square feet. Other than the wastewater to be treated, no wastewater will be generated by this project.

## PERMANENT POLLUTION ABATEMENT MEASURES

An exemption from permanent BMPs was requested and based upon the amount of impervious cover created, the temporary nature of the project and the remaining vegetation to act as treatment method and remove pollutants. Based on the provided justification in the application, the exemption from permanent BMPs is granted.

## GEOLOGY

According to the geologic assessment included with the application, no geologic or manmade features exist within the 3.95 acre site. The San Antonio Regional Office did not conduct a site assessment.

## SPECIAL CONDITIONS

I. When determined, provide correspondence regarding the disposal/closure method for the OSSF system to the TCEQ San Antonio Regional Office. If the system is to be abandoned in place, the closure method shall conform to 30 TAC Chapter 285.

II. When received, provide a copy of the approved OSSF permit to the San Antonio Regional Office for inclusion into the file.

III. The purpose of this OSSF is for wastewater disposal from the elementary school. No single family residences are allowed to be connected to or discharge to this OSSF system.

IV. Based upon the justifications presented in the application and based on discussions with the project engineer, an exemption from permanent BMPs is granted.

V. Provide certification from a Texas Licensed Professional Engineer, after the OSSF installation is completed, stating the OSSF system was installed and is operating in accordance with this approved plan and the OSSF permit.

## STANDARD CONDITIONS

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

2. The holder of the approved Edwards Aquifer Protection Plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits and/or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, UIC) can be required depending on the specifics of the plan.

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

Prior to Commencement of Construction:

4. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the San Antonio Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the

county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested form (Deed Recordation Affidavit, TCEQ-0625) that you may use to deed record the approved WPAP is enclosed.

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

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

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

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

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

<u>During Construction:</u>

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

11. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 6, above.

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

13. 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.

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

15. Intentional discharges of sediment laden 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.

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

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

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

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

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

20. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

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

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

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,

Mark R. Vickery, P.G.
Executive Director
Texas Commission on Environmental Quality

MRV/CEF/eg

Enclosure: Deed Recordation Affidavit, Form TCEQ-0625

cc: Mr. Andy Hollon, P.E., Loomis Partners, Inc.
Mr. Tom Hornseth, P.E., Comal County
Ms. Sara Stevick, City of Bulverde
Ms. Velma Danielson, Edwards Aquifer Authority
TCEQ Central Records, Building F, MC212

Kathleen Hartnett White, *Chairman*
Larry R. Soward, *Commissioner*
H. S. Buddy Garcia, *Commissioner*
Glenn Shankle, *Executive Director*

RECEIVED
SEP 0 5 2007
COUNTY ENGINEER

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

August 31, 2007

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

Re: Edwards Aquifer, Comal County
PROJECT NAME: PROJECT NAME: CISD Johnson Ranch Elementary School, Located on the north–east corner of US Highway 281 and FM 1863
PLAN TYPE: PLAN TYPE: Application for Approval of a Water Pollution Abatement Plan (WPAP), 30 Texas Administration Code (TAC) Chapter 213; Edwards Aquifer Protection Program
San Antonio Region File Number: 2703.00

Dear Mr. Hornseth:

The enclosed WPAP application is being forwarded to you pursuant to the Edwards Aquifer Rules. The Texas Commission on Environmental Quality (TCEQ) is required by 30 TAC Chapter 213 to provide copies of all applications to affected incorporated cities and underground water conservation districts for their comments prior to TCEQ approval.

Please forward your comments to this office by September 30, 2007.

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

Sincerely

Lynn M. Bumguardner
Water Section Work Leader
San Antonio Regional Office

LMB/eg

Comal Co

# Water Pollution Abatement Plan

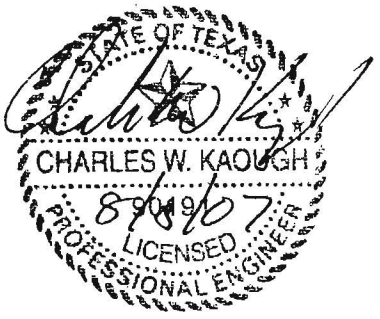
## Johnson Ranch Elementary School

*Prepared for:*

**Comal Independent School District**

**1421 North Business 35**

**New Braunfels, Texas 78130**




*Prepared by:*

LOOMIS AUSTIN

ENGINEERING, LAND SURVEYING &
ENVIRONMENTAL CONSULTING

**3103 Bee Cave Road, Suite 225**

**Austin, TX 78746**

**512/327-1180**

**FAX: 512/327-4062**

LAI Proj. No. 061212

**AUGUST 2007**

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

REGULATED ENTITY NAME: **CISD – Johnson Ranch Elementary School**
COUNTY: **Comal** STREAM BASIN: **Cibolo Creek**

EDWARDS AQUIFER: √ RECHARGE ZONE
__ TRANSITION ZONE

PLAN TYPE: √ WPAP __ AST __ EXCEPTION
__ SCS __ UST __ MODIFICATION

**CUSTOMER INFORMATION**

1. Customer (Applicant):

Contact Person: Marc Walker
Entity: Comal Independent School District
Mailing Address: 1421 North Business 35
City, State: New Braunfels, Texas Zip: 78130
Telephone: (830) 221-2039 FAX: N/A

Agent/Representative (If any):

Contact Person: Charles W. Kaough, P.E.
Entity: Loomis Austin, Inc.
Mailing Address: 3103 Bee Cave Road, Suite 225
City, State: Austin, Texas Zip: 78746
Telephone: (521) 327-1180 FAX: (512) 327-4062

2. __ This project is inside the city limits of _____.
√ This project is outside the city limits but inside the ETJ (extra-territorial jurisdiction) of Bulverde, Texas.
__ This project is not located within any city's limits or ETJ.

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

**The project is situated in the northeast corner of the intersection of U.S. 281 and FM 1863, in the southern Comal County. From TCEQ San Antonio Regional office, go north on Judson Road for 2.5 miles, take TX-1604-Loop west for 4.4 miles, take US 281 north for 9.6 miles, then take FM 1863 east for 0.5 miles. The site is located on the left side.**

4. √ **ATTACHMENT A - ROAD MAP**. A road map showing directions to and the location of the project site is attached at the end of this form.

5. √ **ATTACHMENT B - USGS / EDWARDS RECHARGE ZONE MAP**. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is attached behind this sheet. The map(s) should clearly show:

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

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

7. √ **ATTACHMENT C - PROJECT DESCRIPTION**. ~~Attached at the end of this form~~ **The following** is a detailed narrative description of the proposed project.

   **This project is a development consisting of approximate 16.06 acres, including an elementary school, driveways, and associated parking. The site is located in Comal County within the Bulverde ETJ.**

   **Total impervious cover for the project will be approximately 32.13% (approximately 5.16 acres). Potable water will be supplied by Comal County WCID #1. The typical population of the development is estimated to be 950 persons per day and is not permanent. Approximately 14,250 gallons per day (peak flow) of domestic wastewater is anticipated to be generated by the entire development after completion.**

   **The increase of impervious cover as a result of this development will require the use of best management practices (BMP's) to treat 80% of the increase in total suspended solids (TSS) for the site. A combination of vegetated filter strips (VFS) and grassy swales (GS) has been designed in accordance with the TCEQ Technical Guidance Manual (TGM) RG-348 (2005) to serve as permanent BMP.**

   **It is anticipated that there will be no storage of regulated quantities of hazardous materials within the proposed buildings.**

8. Existing project site conditions are noted below:
   ___ Existing commercial site
   ___ Existing industrial site
   ___ Existing residential site
   √ Existing paved and/or unpaved roads
   √ Undeveloped (Cleared)
   √ Undeveloped (Undisturbed/Uncleared)
   ___ Other:

## PROHIBITED ACTIVITIES

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

   (1) waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);
   (2) new feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;
   (3) land disposal of Class I wastes, as defined in 30 TAC §335.1;
   (4) the use of sewage holding tanks as parts of organized collection systems; and
   (5) new municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).

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

   (1) waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground Injection Control);
   (2) land disposal of Class I wastes, as defined in 30 TAC §335.1; and
   (3) new municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41 (b), (c), and (d) of this title.

## ADMINISTRATIVE INFORMATION

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

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

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

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

13. √ Submit one (1) original and three (3) copies of the completed application to the appropriate regional office for distribution by the TCEQ to the local municipality or county, groundwater conservation districts, and the TCEQ's Central Office.

14. √ 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.

___ No person shall commence any regulated activity until the Contributing Zone Plan for the activity has been filed with the executive director.

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

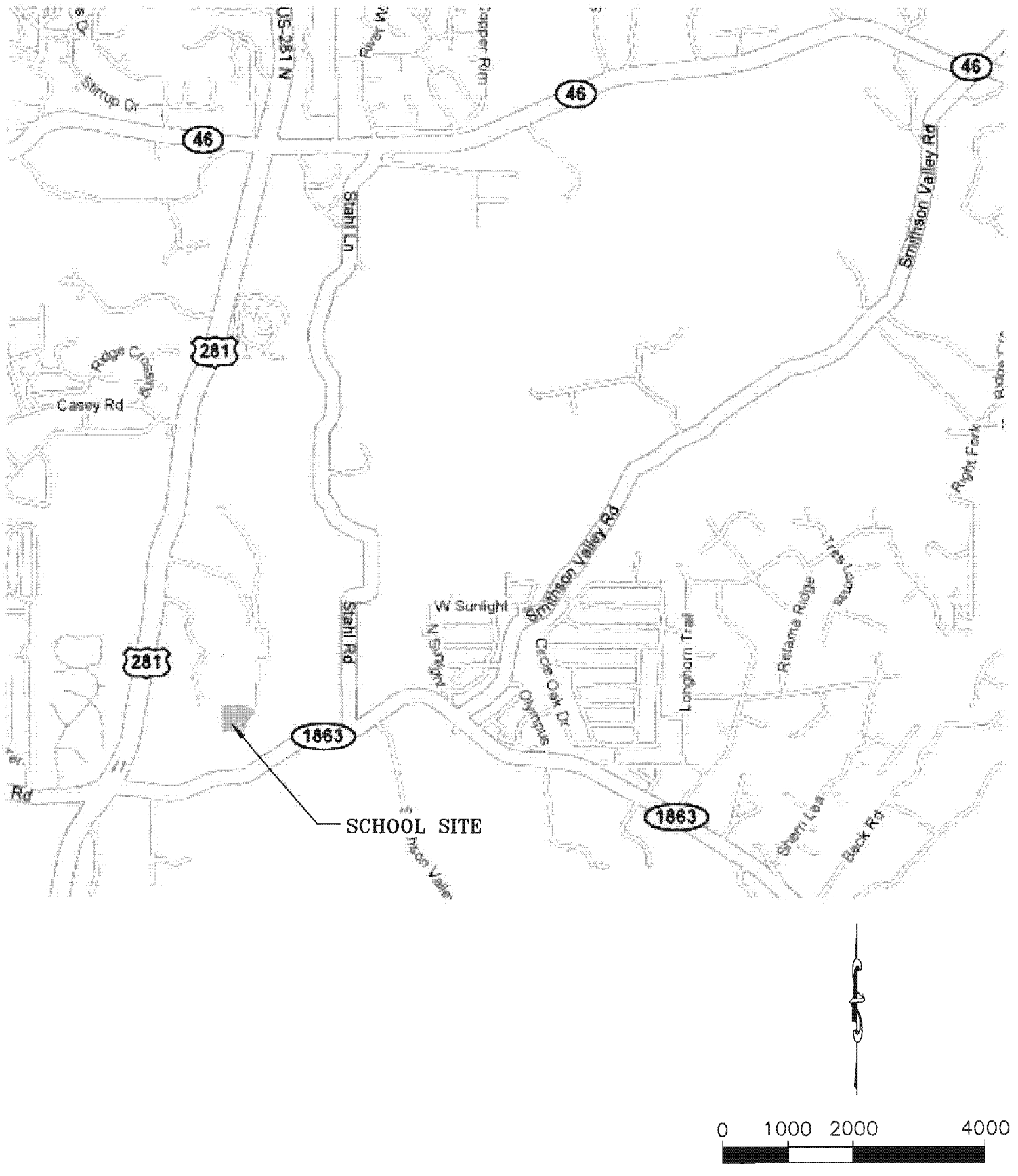
Print Name of Customer/Agent

Charles W Kyle — 8/3/07

Signature of Customer/Agent — Date

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

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



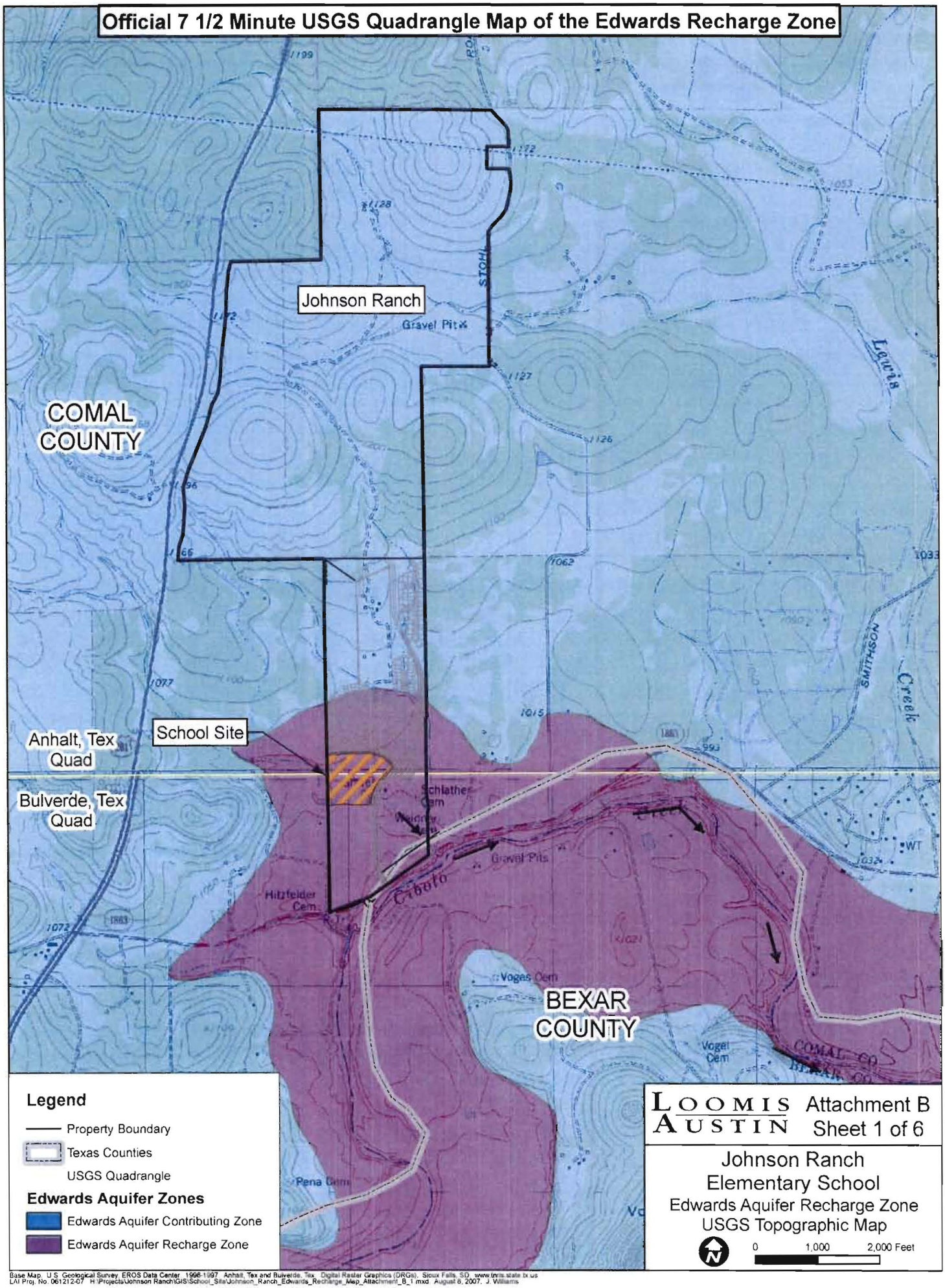

LOOMIS AUSTIN
ENGINEERING, LAND SURVEYING & ENVIRONMENTAL CONSULTING
3103 Bee Cave Road • Suite 225 • Austin Texas 78746
Phone: (512) 327-1180 • Fax: (512) 327-4062 • www.loomisaustin.com

**ATTACHMENT A**

# ROAD MAP

**COMAL I.S.D.**

# Official 7 1/2 Minute USGS Quadrangle Map of the Edwards Recharge Zone




**Legend**

- Property Boundary
- Texas Counties
- USGS Quadrangle

**Edwards Aquifer Zones**

- Edwards Aquifer Contributing Zone
- Edwards Aquifer Recharge Zone

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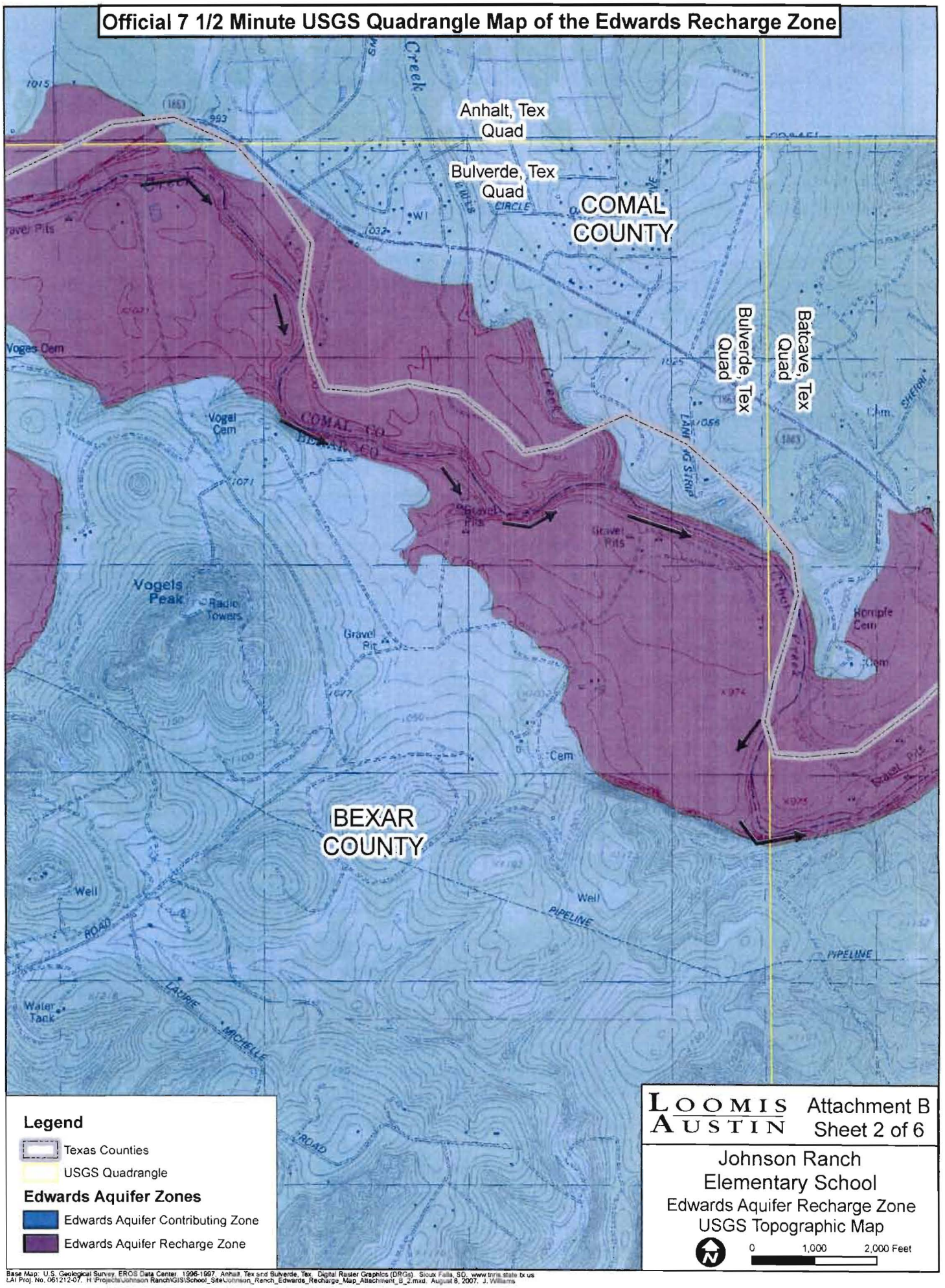
Attachment B
Sheet 1 of 6

Johnson Ranch
Elementary School
Edwards Aquifer Recharge Zone
USGS Topographic Map

0 1,000 2,000 Feet

Base Map: U.S. Geological Survey, EROS Data Center, 1996-1997. Anhalt, Tex and Bulverde, Tex. Digital Raster Graphics (DRGs). Sioux Falls, SD. www.tnris.state.tx.us
LAI Proj. No. 061212-07 H:\Projects\Johnson Ranch\GIS\School_Site\Johnson_Ranch_Edwards_Recharge_Map_Attachment_B_1.mxd August 8, 2007. J. Williams

# Official 7 1/2 Minute USGS Quadrangle Map of the Edwards Recharge Zone

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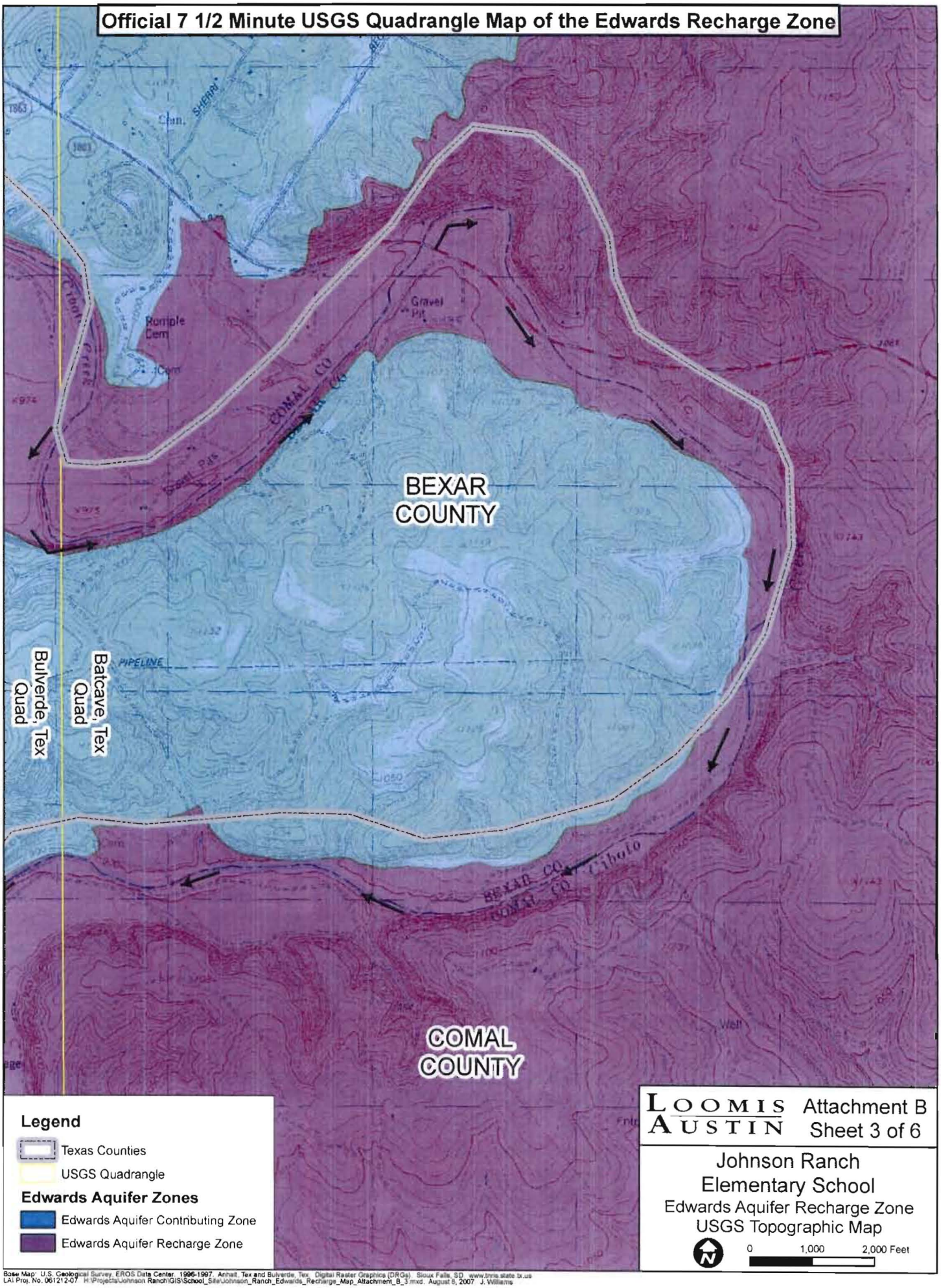
Attachment B
Sheet 2 of 6

Johnson Ranch
Elementary School
Edwards Aquifer Recharge Zone
USGS Topographic Map

0 1,000 2,000 Feet

Base Map: U.S. Geological Survey, EROS Data Center, 1996-1997. Anhalt, Tex and Bulverde, Tex. Digital Raster Graphics (DRGs). Sioux Falls, SD. www.tnris.state.tx.us
LAI Proj. No. 061212-07. H:\Projects\Johnson Ranch\GIS\School_Site\Johnson_Ranch_Edwards_Recharge_Map_Attachment_B_2.mxd. August 8, 2007. J. Williams

# Official 7 1/2 Minute USGS Quadrangle Map of the Edwards Recharge Zone

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Attachment B
Sheet 3 of 6

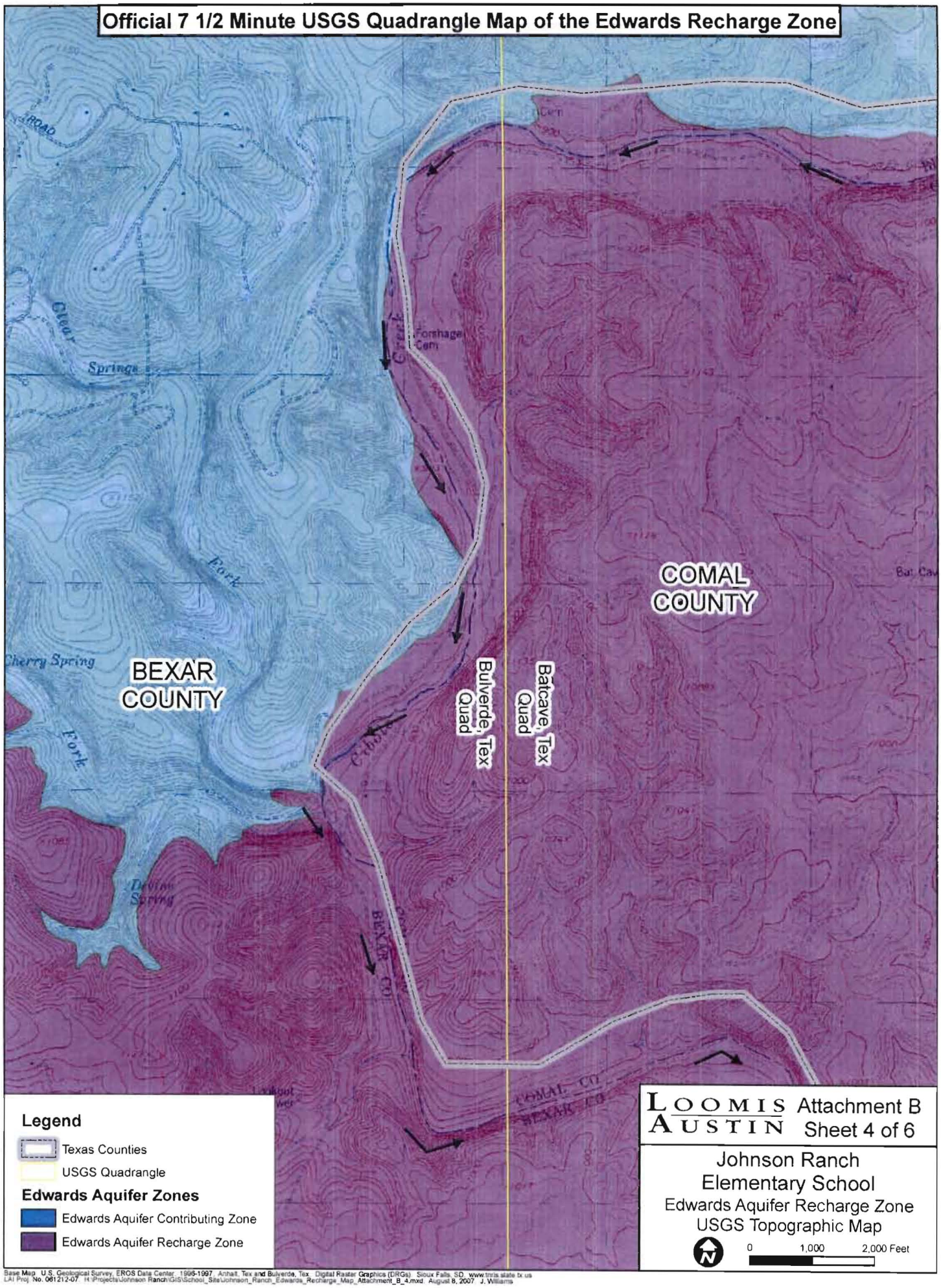
Johnson Ranch
Elementary School
Edwards Aquifer Recharge Zone
USGS Topographic Map

N

0 1,000 2,000 Feet

Base Map: U.S. Geological Survey, EROS Data Center, 1996-1997, Anhalt, Tex and Bulverde, Tex. Digital Raster Graphics (DRGs). Sioux Falls, SD. www.tnris.state.tx.us
LAI Proj. No. 061212-07 H:\Projects\Johnson Ranch\GIS\School_Site\Johnson_Ranch_Edwards_Recharge_Map_Attachment_B_3.mxd. August 8, 2007 J. Williams

# Official 7 1/2 Minute USGS Quadrangle Map of the Edwards Recharge Zone




**Legend**

- Texas Counties
- USGS Quadrangle

**Edwards Aquifer Zones**

- Edwards Aquifer Contributing Zone
- Edwards Aquifer Recharge Zone

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Attachment B
Sheet 4 of 6

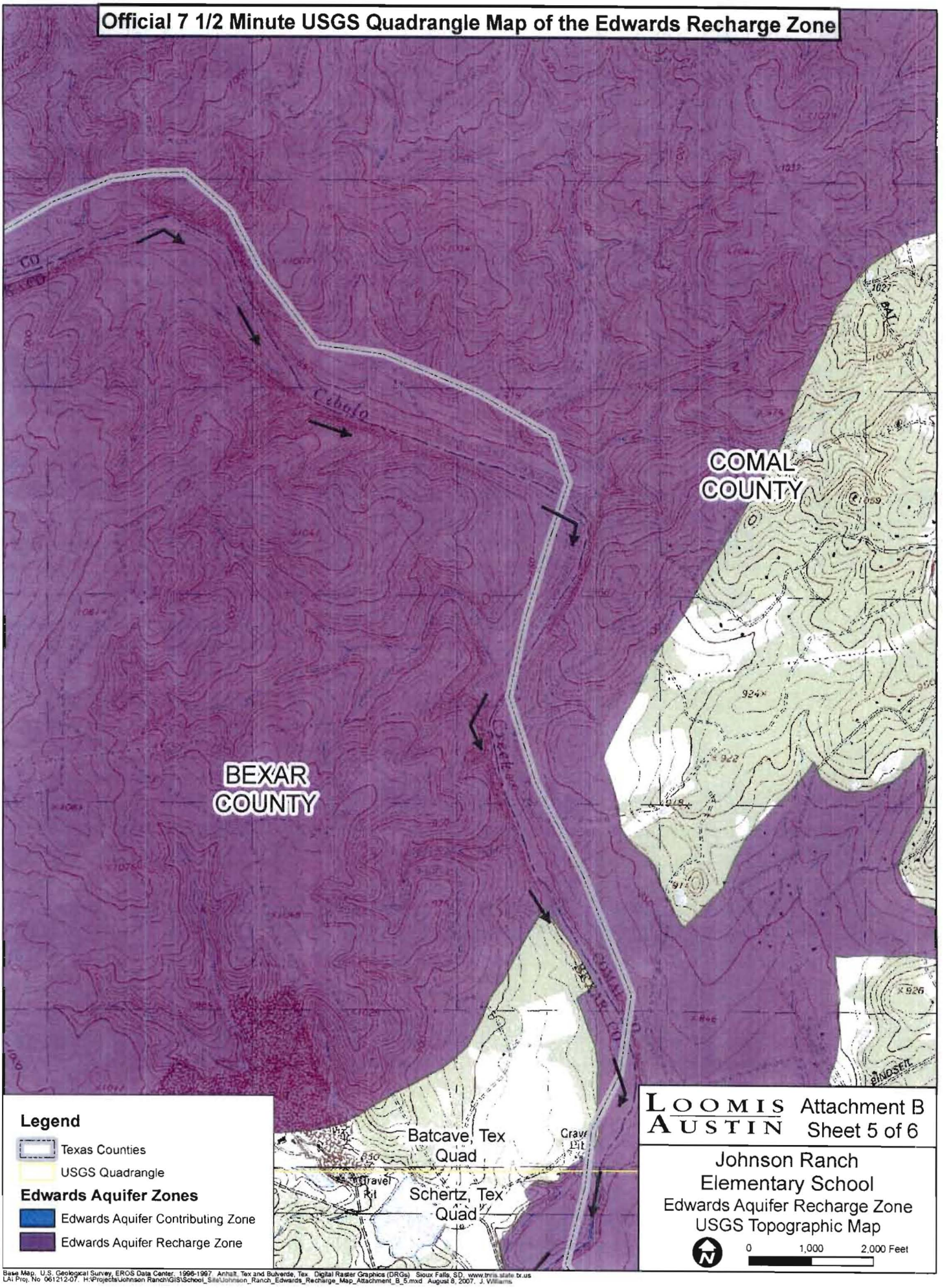
Johnson Ranch
Elementary School
Edwards Aquifer Recharge Zone
USGS Topographic Map

N

0 1,000 2,000 Feet

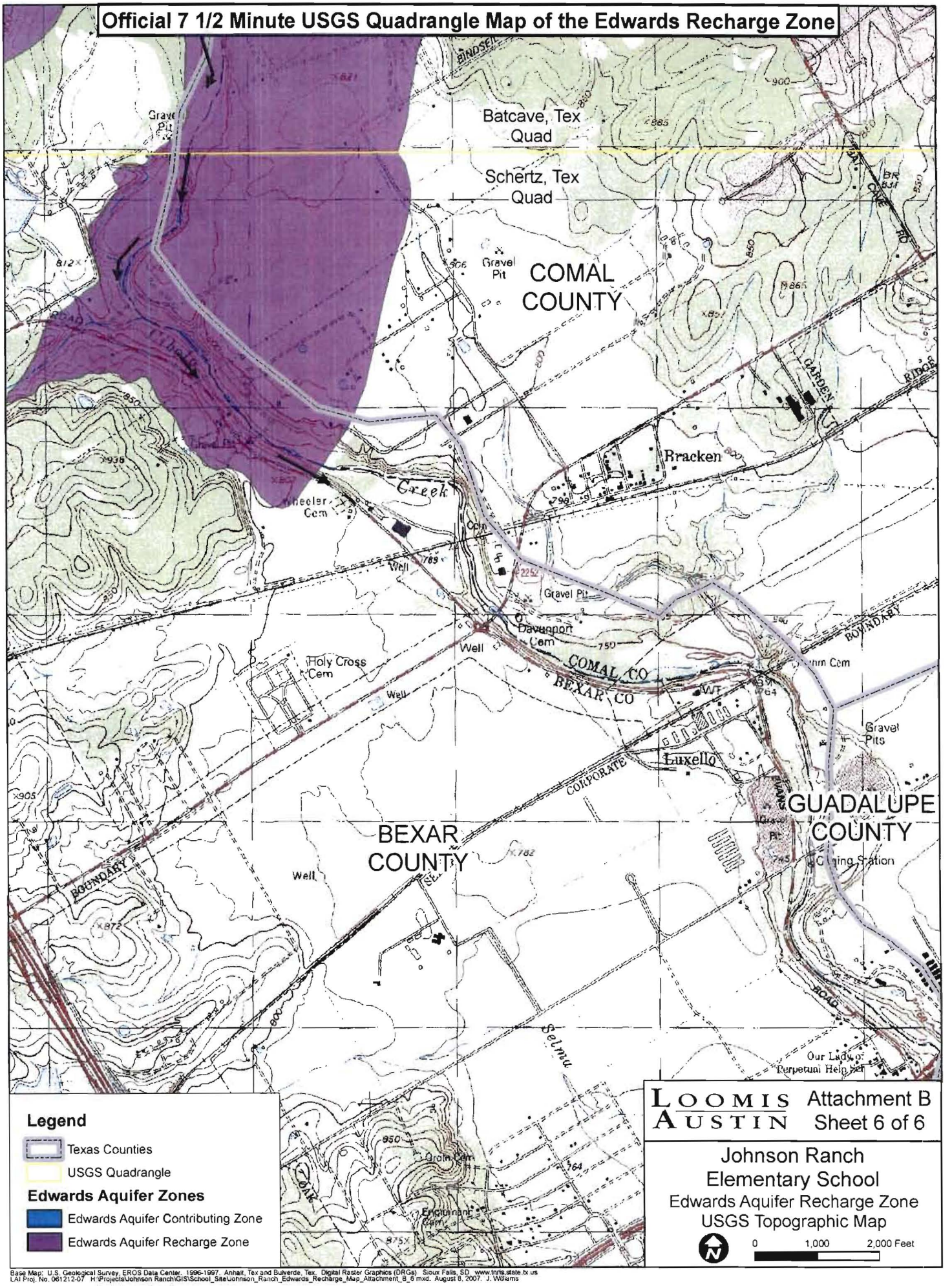
Base Map: U.S. Geological Survey, EROS Data Center, 1998-1997, Anhalt, Tex and Bulverde, Tex. Digital Raster Graphics (DRGs). Sioux Falls, SD. www.tnris.state.tx.us
LAI Proj. No. 061212-07. H:\Projects\Johnson Ranch\GIS\School_Site\Johnson_Ranch_Edwards_Recharge_Map_Attachment_B_4.mxd. August 8, 2007. J. Williams

# Official 7 1/2 Minute USGS Quadrangle Map of the Edwards Recharge Zone




Base Map: U.S. Geological Survey, EROS Data Center, 1996-1997. Anhalt, Tex and Bulverde, Tex. Digital Raster Graphics (DRGs). Sioux Falls, SD. www.tnris.state.tx.us
LAI Proj. No. 061212-07. H:\Projects\Johnson Ranch\GIS\School_Site\Johnson_Ranch_Edwards_Recharge_Map_Attachment_B_5.mxd August 8, 2007. J. Williams

# Official 7 1/2 Minute USGS Quadrangle Map of the Edwards Recharge Zone

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Attachment B
Sheet 6 of 6

Johnson Ranch
Elementary School
Edwards Aquifer Recharge Zone
USGS Topographic Map

0 1,000 2,000 Feet

Base Map: U.S. Geological Survey, EROS Data Center, 1996-1997. Anhalt, Tex and Bulverde, Tex. Digital Raster Graphics (DRGs). Sioux Falls, SD. www.tnris.state.tx.us
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San Antonio Office
6200 UTSA Boulevard, Suite 102
San Antonio, TX 78249
Tel 210.877.2847 Fax 210.877.2848
www.swca.com

Charles W. Kaough
Loomis-Austin
3103 Bee Cave Rd., Suite 225
Austin, TX 78746

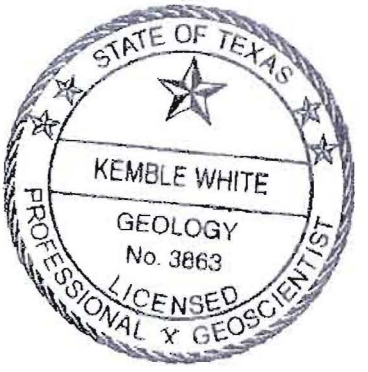
9 August 2007

As we have discussed I was the geologist who conducted the Texas Commission on Environmental Quality Geologic Assessment for the approximately 700-acre Johnson Ranch property located in Western Comal County north of Cibolo Creek and east of U.S. 281. Per your request, this letter verifies that I have reviewed the site plan for the 16-acre Johnson Ranch Elementary school site and have determined that no man-made or geologic features with the potential to rapidly transmit recharge to the Edwards Aquifer occur within the proposed project boundaries.

If you have any further questions or comments regarding this matter please do not hesitate to contact me by phone or by e-mail at kwhite@swca.com.

Sincerely,

Kemble White, Ph.D., P.G.



**Geologic Assessment**
For Regulated Activities
on The Edwards Aquifer Recharge/transition Zones
and Relating to 30 TAC §213.5(b)(3), Effective June 1, 1999

REGULATED ENTITY NAME: 700-Acre Johnson Ranch Property

TYPE OF PROJECT: _X_ WPAP __ AST __ SCS __ UST

LOCATION OF PROJECT: _X_ Recharge Zone _ Transition Zone __ Contributing Zone within the Transition Zone

PROJECT INFORMATION

1. _X_ Geologic or manmade features are described and evaluated using the attached **GEOLOGIC ASSESSMENT TABLE**.

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

| Soil Units, Infiltration Characteristics & Thickness | | |
|---|---|---|
| Soil Name | Group* | Thickness (feet) |
| Krum clay, 1 to 3 percent slopes (KrB) | D | >7 |
| Gruene Clay Series, 1 to 5 percent slopes (GrC) | C | >3 |
| Lewisville silty clay, 1 to 3 percent slopes (LeB) | B | >4 |
| Sunev silty clay loam, 0 to 1 percent slopes (SuA) | C | >4 |
| | | |

* Soil Group Definitions (Abbreviated)

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

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

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

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

3. _X_ A **STRATIGRAPHIC COLUMN** is attached at the end of this form that shows formations, members, and thicknesses. The outcropping unit should be at the top of the stratigraphic column.

4. _X_ A **NARRATIVE DESCRIPTION OF SITE SPECIFIC GEOLOGY** is attached at the end of this form. The description must include a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure, and karst characteristics of the site.

5. _X_ Appropriate **SITE GEOLOGIC MAP(S)** are attached:

The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1" : 400'

Applicant's Site Plan Scale 1" = 200'

Site Geologic Map Scale 1" = 200'
Site Soils Map Scale (if more than 1 soil type) 1" = 2,000'

6. Method of collecting positional data:
   X Global Positioning System (GPS) technology.
   __ Other method(s).

7. X The project site is shown and labeled on the Site Geologic Map.

8. X Surface geologic units are shown and labeled on the Site Geologic Map.

9. X Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.
   __ Geologic or manmade features were not discovered on the project site during the field investigation.

10. X The Recharge Zone boundary is shown and labeled, if appropriate.

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

   X There are 1 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
   __ The wells are not in use and have been properly abandoned.
   __ The wells are not in use and will be properly abandoned.
   X The wells are in use and comply with 16 TAC Chapter 76.
   __ There are no wells or test holes of any kind known to exist on the project site.

ADMINISTRATIVE INFORMATION

12. X One (1) original and three (3) copies of the completed assessment has been provided.

Date(s) Geologic Assessment was performed:

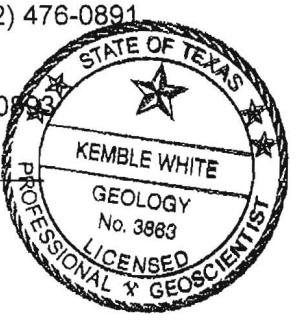
Date(s) 05 May 2005

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.

Kemble White TX RPG Lic# 3863
Print Name of Geologist

Telephone (512) 476-0891

Fax (512) 476-0893




Signature of Geologist

15 Sept 05
Date

Representing: SWCA Environmental Consultants

(Name of Company)

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

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

# NARRATIVE DESCRIPTION OF SITE SPECIFIC GEOLOGY FOR AN APPROXIMATELY 50-ACRE PORTION OF THE 700-ACRE JOHNSON RANCH PROPERTY, COMAL COUNTY, TEXAS

## INTRODUCTION

This narrative Geologic Assessment accompanies the Texas Commission on Environmental Quality (TCEQ) Geologic Assessment form #TNRCC-0585 completed for the approximately 700-acre Johnson Ranch Property ("the property"). The property borders the eastern side of highway 281 north of its intersection with FM 1863 in southern Comal County, Texas. An historic home located in the central portion of the property is excluded from the development area along with its water well. Most of the property occurs within the contributing zone to the Edwards Aquifer with approximately 50 acres occurring within the recharge zone adjacent to Cibolo Creek. Nearly all of the recharge zone portion of the property is covered by alluvium and, as a result, no geologic features were observed. One water well occurs in the northern portion of the property. Given the thickness of alluvial cover and the absence of recognizable geologic features, the potential for direct recharge of the Edwards Aquifer from the property is therefore very low.

## METHODOLOGY

An SWCA registered professional geologist (Lic. #3863), an SWCA geologist and an environmental technician conducted a field survey for a Geologic Assessment of the property on 05 May 2005. As directed by TCEQ in the Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones (Rev. 5-1-02), the pedestrian survey was completed by walking parallel transects spaced approximately 50 feet apart within portion of the property classified as recharge zone. Closer spacing was used where vegetation inhibited clear observation. All potential karst features, including depressions, holes, and animal burrows, were carefully examined for evidence of subsurface extent. The features were flagged in the field with pink survey tape and their positions were recorded using a Global Positioning System (GPS) receiver. Portions of the property located within the contributing zone were surveyed by driving ranch roads and by walking short transects away from ranch roads in order to verify the accuracy of previous geological mapping.

## RESULTS

### Site Description

The property is mapped on the USGS Anhalt, Texas 7.5-Minute quadrangle. The topography of the property is gentle to undulating, sloping generally from northwest to south with elevations ranging from approximately 1,015 to 1,280 feet.[1] North and central portions of the property are located entirely within the Edwards Aquifer contributing zone. An unnamed tributary of Lewis Creek runs along the northern portion of the property. Undulating topography on the property, drains generally to the east and south toward a tributary of Lewis Creek and south towards Cibolo Creek. The southern approximately 50 acres of the property just below a forked tributary of Cibolo Creek lie within the Edwards Aquifer recharge zone.

Vegetation on the property is a mixture of pasture and open woodland. Grassy openings are dominated by ryegrass (*Lolium sp.*), bermudagrass (*Cynodon dactylon*), King Ranch bluestem (*Andropopon*

[1] United States Geological Survey. Anhault, Texas 7.5-Minute quadrangle map.

*ischaemum L.*) and various forbs. Common woody species include live oak (*Quercus virginiana*), Texas persimmon (*Diospyros texana*), prickly pear cactus (*Opuntia lindheimeri*), and agarita (*Berberis trifoliata*). Ashe juniper (*Juniperus ashei*) is uncommon on the property compared to surrounding areas.

**Geology**

Rocks outcropping on the property are Quaternary and Cretaceous in age and consist of Alluvium, Terrace alluvium, Undivided slope wash, and the Upper Glen Rose Formation. The geology of the area has been mapped most recently at a useful scale by Collins[2], and SWCA concurs with the findings of that mapping effort. In general the thickness of alluvial cover on the portion of the property classified as recharge zone is sufficient that significant recharge is very unlikely to occur on the property. The great majority of rainfall occurring on the property is more likely cycled back into the atmosphere by evapotranspiration.

The property is located on the Balcones Fault Zone (BFZ). During the middle Tertiary, structural down warping occurred to the southeast associated with the formation of the ancestral Gulf of Mexico. The earth's crust was stretched in response, and the BFZ formed along an area of weakness that today marks the boundary between the Edwards Plateau and the Gulf Coastal Plain throughout central Texas. The zone consists of a series of northeast-trending, predominantly normal, nearly vertical, en echelon faults. As is typical of faults in the area, erosion, sedimentation, and vegetation have largely obscured the precise location of fault outcrops in the field. Fault locations provided on the site geologic map were determined by matching air photo lineations and data from previous maps with field observations of fault outcrops. The faults on the property were not considered by SWCA to be of any hydrologic significance because they are either buried by alluvium or occur outside of the recharge zone. They are therefore not included as geologic features in this report.

**Soils**

Soils on the property are mapped within nine different associations (See Site Soils Map)[3]: They include the Bolar clay loam, gently sloping (BrB); Bracket-Rock outcrop-Comfort complex undulating (BtD) and Real steep (BtG); Comfort-Rock outcrop complex, undulating (CrD); Gruene clay (GrC); Krum clay, 0 to 1 percent slopes (KrA) and 1 to 3 percent slopes (KrB); Lewisville silty clay (LeB); Purves clay (PuC); Real-Comfort-Doss complex, undulating (RcD); and Sunev silty clay loam (SuA). Soils overlying the Recharge Zone on the property were listed in a table on the Geologic Assessment cover page as number 2. Soils that comprise the majority of the property include the Real steep, Comfort-Rock outcrop complex, undulating, and Krum clay, 1 to 3 percent slopes, soils associations. Soils series occurring within the Recharge Zone are listed in the soils table. With respect to permeability, the soils with low water capacity generally have moderate to slow infiltration rates, causing run off to be predominant. Surface runoff ranges from slow to rapid for the largest soil association, BtG, mapped on the northern portion of the property.

**Geologic or Man-made Features**

No geologic features of significance were observed on the property. One water well was located in the northern part of the property in the contribution zone.

---

[2] Collins, E.W. 1993 Geologic Map of the Bulverde Quadrangle, Texas. Bureau of Economic Geology Open-File Report.
Collins, E.W. 2000. Geologic Map of the New Braunfels, Texas, 30x60 Quadrangle: Geologic Framework of an Urban-Growth Corridor along the EdwardsAquifer, South Central Texas.

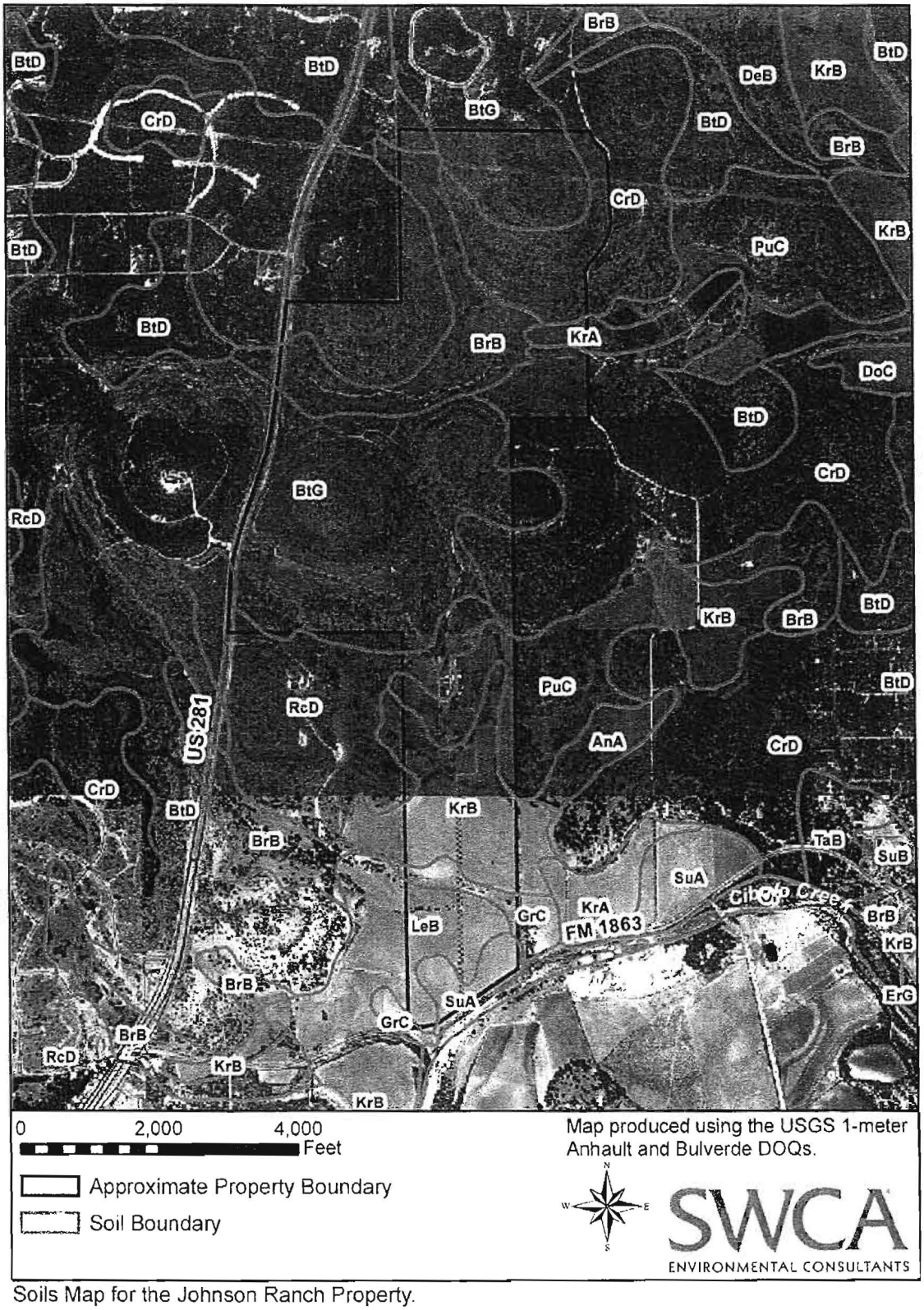
[3] United States Department of Agriculture, Soil Conservation Service, Soil Survey for Comal County, Texas

## 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 | | | Upper member of Glen Rose Limestone; 350-500 feet thick | |

[1] Modified From: Stein, W. G., and Ozuna, G. B. 1995. Geologic framework and hydrogeologic characteristics of the Edwards aquifer recharge zone, Bexar County, Texas. U.S. Geologic Survey, WRI 95-4030.




Soils Map for the Johnson Ranch Property.

## GEOLOGIC ASSESSMENT TABLE — PROJECT NAME: 700-Acre Johnson Ranch Property

| 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) | MOD 10 | 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 | |
| F-1 | 29.776 | 98.421 | MB | 30 | Kgru | 1 | 1 | 100 | | | | | | 30 | 60 | | 60 | X | | Hillside |

* DATUM WGS 84

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

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

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

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 Chepter 213.

Date 15 Sept '05

Sheet 1 of 1

STATE OF TEXAS
KEMBLE WHITE
GEOLOGY
No. 3863
LICENSED
PROFESSIONAL GEOSCIENTIST

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




0 200 400 600 Feet

1 inch equals 200 feet

## Legend

- Approximate Property Boundary
- 100-Year Floodplain
- Edwards Aquifer Recharge Zone Boundary
- Fault
- Inferred Fault
- Qal — Quaternary Alluvium
- Qt — Quaternary Terrace Deposits
- Qu — Undivided Alluvium
- Kgru — Upper member of Glen Rose Limestone

# Site Geologic Map
# Johnson Ranch Property

STATE OF TEXAS
KEMBLE WHITE
GEOLOGY
No. 3863
LICENSED
PROFESSIONAL GEOSCIENTIST

15 Sept '05

Map produced using the USGS 1-meter Anhault and Bulverde DOQs.
Geology and Faults from UTBEG, Collins, 2000.
SWCA Project No. 9583-099

SWCA
ENVIRONMENTAL CONSULTANTS




0 200 400 600 Feet

1 inch equals 200 feet

## Legend

- Approximate Property Boundary
- Waterwell
- Fault
- Inferred Fault
- Qal — Quaternary Alluvium
- Qt — Quaternary Terrace Deposits
- Qu — Undivided Alluvium
- Kgru — Upper member of Glen Rose Limestone

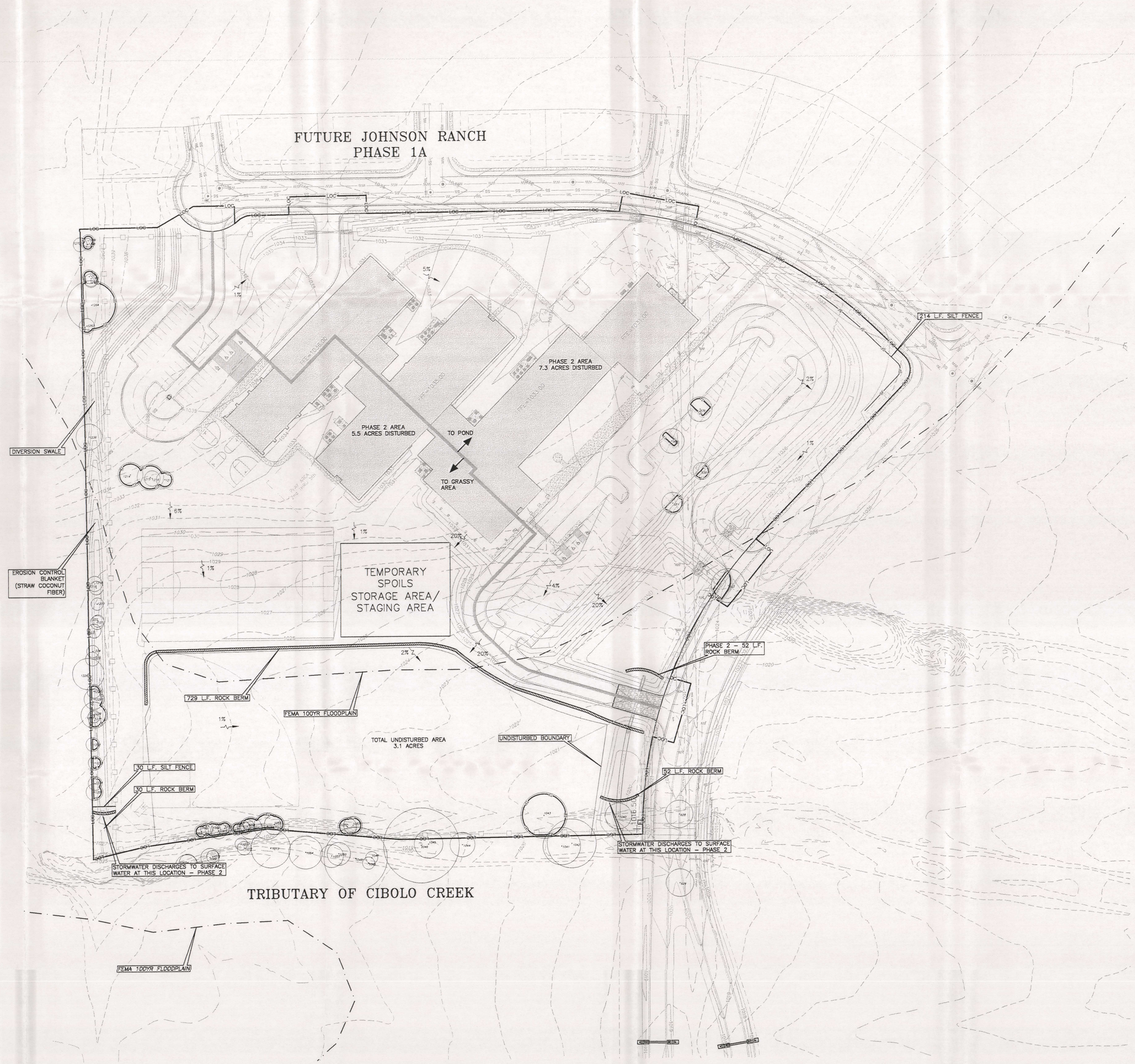
# Site Geologic Map for the North Half of the Johnson Ranch Property

STATE OF TEXAS
KEMBLE WHITE
GEOLOGY
No. 3863
LICENSED
PROFESSIONAL GEOSCIENTIST

15 Sept 05

Map produced using the USGS 1-meter Anhalt DOQ.
Geology and Faults from UTBEG, Collins, 2000.
SWCA Project No. 9583-099

SWCA
ENVIRONMENTAL CONSULTANTS




NOTES:
PHASE 1 - INITIAL CLEARING & GRUBBING, BEGIN ROUGH GRADING SITE
PHASE 2 - SITE ROUGH GRADING, COMPLETE - DRAINING SWALES AND POND GRADED

60 0 30 60 120
SCALE: 1" = 60'


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

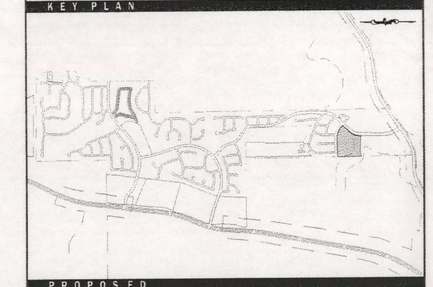

GENERAL NOTES - KEYED NOTES - LEGENDS

## LEGEND

- BOUNDARY LINE
- PROPOSED R.O.W.
- LOT LINE
- EASEMENT LINE
- BUILDING LINE
- CURB AND GUTTER
- WATER LINE
- WASTEWATER LINE
- STORMSEWER LINE
- GAS LINE
- FORCEMAIN
- SINGLE WATER SERVICE
- DOUBLE WATER SERVICE
- SINGLE WASTEWATER SERVICE
- DOUBLE WASTEWATER SERVICE
- WATER LINE FITTINGS
- GATE VALVE
- REDUCER
- AIR RELEASE VALVE
- FIRE HYDRANT
- CLEAN OUT
- RUNOFF FLOW ARROW
- 832 EXISTING 1 ft CONTOUR
- 830 EXISTING 5 ft CONTOUR
- 832 PROPOSED 1 ft CONTOUR
- 830 PROPOSED 5 ft CONTOUR
- TREE TO BE PRESERVED
- TREE TO BE REMOVED
- TREE PROTECTION FENCE
- SILT FENCE
- LIMITS OF CONSTRUCTION
- STABILIZED CONSTRUCTION ENTRANCE
- ROCK BERM
- FENCE


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

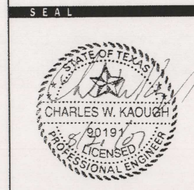
Proposed New
Johnson Ranch Elementary

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

SEAL

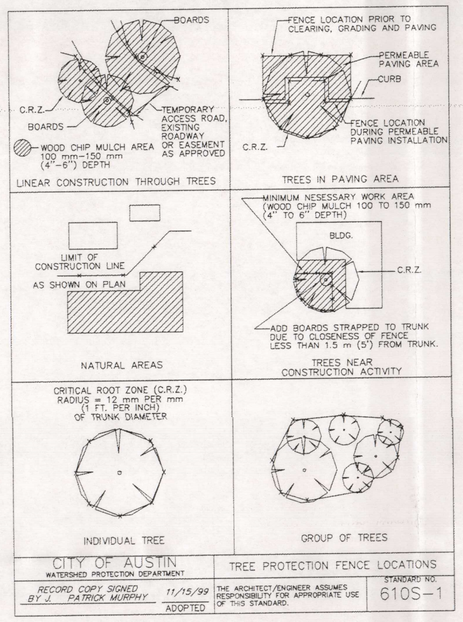



DATA

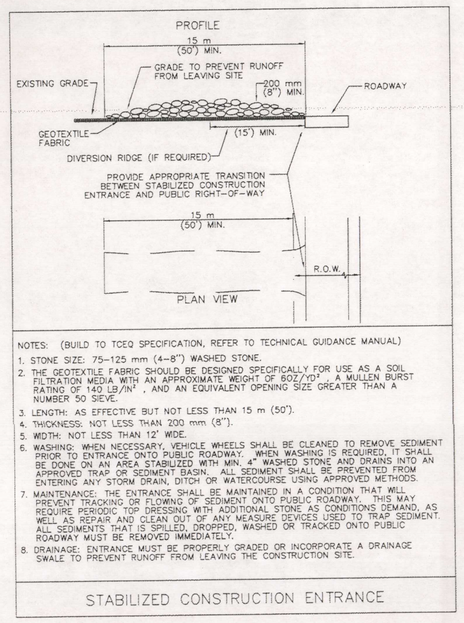
PROJECT NO. 06-12
DATE 03-28-07
REVISIONS

SHEET TITLE
EROSION/SEDIMENTATION CONTROL & TREE PROTECTION PLAN

C5.1



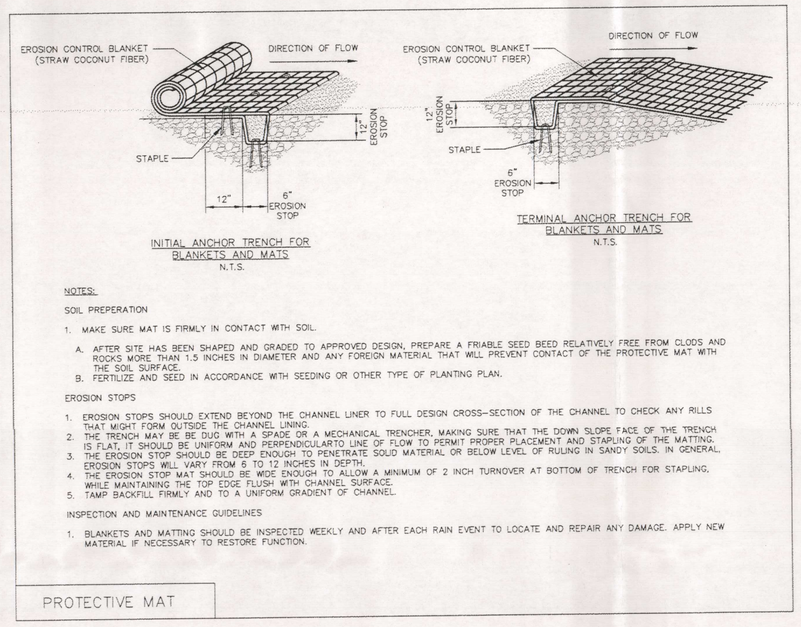

| CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT | TREE PROTECTION FENCE LOCATIONS | |
|---|---|---|
| RECORD COPY SIGNED BY: J. PATRICK MURPHY 11/15/99 ADOPTED | THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. | STANDARD NO. 610S-1 |




NOTES: (BUILD TO TCEQ SPECIFICATION, REFER TO TECHNICAL GUIDANCE MANUAL)

1. STONE SIZE: 75–125 mm (4–8") WASHED STONE.
2. THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 602 g/m² OR A MULLEN BURST RATING OF 1410 kPa/m² AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SIEVE.
3. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 15 m (50').
4. THICKNESS: NOT LESS THAN 200 mm (8").
5. WIDTH: NOT LESS THAN 12' WIDE.
6. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH MIN. 4" WASHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
7. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS MOPPING AND SCRAPING OF ADJACENT SURFACES USED TO TRAP SEDIMENT. ALL SEDIMENT THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
8. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

STABILIZED CONSTRUCTION ENTRANCE




NOTES:

SOIL PREPERATION

1. MAKE SURE MAT IS FIRMLY IN CONTACT WITH SOIL.
   A. AFTER SITE HAS BEEN SHAPED AND GRADED TO APPROVED DESIGN, PREPARE A FRIABLE SEED BEED RELATIVELY FREE FROM CLODS AND ROCKS MORE THAN 1.5 INCHES IN DIAMETER AND ANY FOREIGN MATERIAL THAT WILL PREVENT CONTACT OF THE PROTECTIVE MAT WITH THE SOIL SURFACE.
   B. FERTILIZE AND SEED IN ACCORDANCE WITH SEEDING OR OTHER TYPE OF PLANTING PLAN.

EROSION STOPS

1. EROSION STOPS SHOULD EXTEND BEYOND THE CHANNEL LINER TO FULL DESIGN CROSS-SECTION OF THE CHANNEL TO CHECK ANY RILLS THAT MIGHT FORM OUTSIDE THE CHANNEL LINING.
2. THE TRENCH MAY BE BE DUG WITH A SPADE OR A MECHANICAL TRENCHER, MAKING SURE THAT THE DOWN SLOPE FACE OF THE TRENCH IS FLAT. IT SHOULD BE UNIFORM AND PERPENDICULARTO LINE OF FLOW TO PERMIT PROPER PLACEMENT AND STAPLING OF THE MATTING.
3. THE EROSION STOP SHOULD BE DEEP ENOUGH TO PENETRATE SOLID MATERIAL OR BELOW LEVEL OF RULING IN SANDY SOILS. IN GENERAL, EROSION STOPS WILL VARY FROM 6 TO 12 INCHES IN DEPTH.
4. THE EROSION STOP MAT SHOULD BE WIDE ENOUGH TO ALLOW A MINIMUM OF 2 INCH TURNOVER AT BOTTOM OF TRENCH FOR STAPLING, WHILE MAINTAINING THE TOP EDGE FLUSH WITH CHANNEL SURFACE.
5. TAMP BACKFILL FIRMLY AND TO A UNIFORM GRADIENT OF CHANNEL.

INSPECTION AND MAINTENANCE GUIDELINES

1. BLANKETS AND MATTING SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAIN EVENT TO LOCATE AND REPAIR ANY DAMAGE. APPLY NEW MATERIAL IF NECESSARY TO RESTORE FUNCTION.

PROTECTIVE MAT



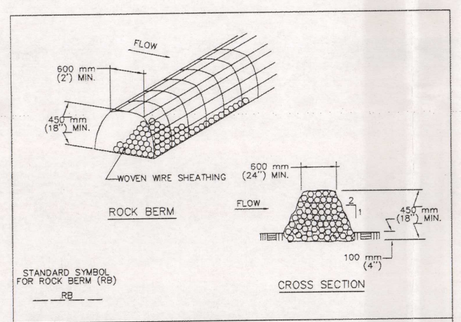

| CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT | TREE PROPTECTION FENCE TYPE A – CHAIN LINK | |
|---|---|---|
| RECORD COPY SIGNED BY: J. PATRICK MURPHY 11/15/99 ADOPTED | THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. | STANDARD NO. 610S-2 |




NOTES: (BUILD TO TCEQ SPECIFICATION, REFER TO TECHNICAL GUIDANCE MANUAL)

1. MAX. DRAINAGE AREA TO SILT FENCE=1/4 ACRE PER 100 L.F.
2. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 300 mm (1'), AT LEAST 4' LONG AND NO MORE THAN 6' APART.
3. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. SILT FENCE CAN NOT BE TRENCHED INTO THE SUBGRADE OF PAVEMENT. FABRIC FLAP SHALL BE WEIGHTED DOWN WITH WASHED GRAVEL ON UPHILL SIDE TO PREVENT FLOW UNDER FENCE.
4. THE TRENCH MUST BE A MINIMUM OF 150 mm (6 inches) DEEP AND 150 mm (6 inches) WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
5. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST.
6. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
7. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
8. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150 mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

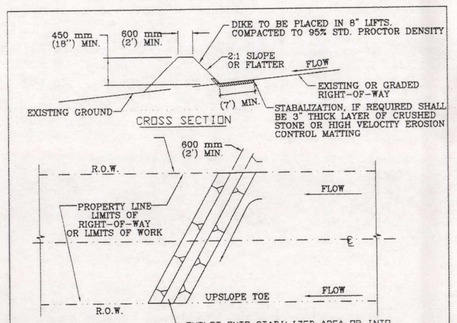
SILT FENCE




NOTES: (BUILD TO TCEQ SPECIFICATION, REFER TO TECHNICAL GUIDANCE MANUAL)

1. BUILD ALONG CONTOUR AT 0% SLOPE OR AS NEAR AS POSSIBLE AND ENDS TO BE TIED INTO EXISTING UPLOPE GRADE.
2. USE ONLY CLEAN, OPEN GRADED ROCK 100 to 200 mm (5 to 8") DIAMETER FOR STREAM FLOW CONDITIONS. USE CLEAN OPEN GRADED ROCK 75 to 125 mm (3 to 5") DIAMETER FOR OTHER CONDITIONS.
3. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 25 mm (1") OPENING AND MINIMUM WIRE DIAMETER OF 1.2 mm (20 GAUGE) ROCK BERMS IN FLOW APPLICATIONS SHALL BE ANCHORED FIRMLY INTO THE SUBSTRATE WITH A MINIMUM OF TWO #5 (5/8") METAL T-POSTS OR WITH 15M OR 20M (#5 OR #6) REBARS, WITH MAXIMUM SPACING APART OF 1.2 m (48") ON CENTER.
4. THE ROCK BERM SHALL BE INSPECTED WEEKLY OR AFTER EACH RAIN, AND THE STONE AND/OR FABRIC CORE-WOVEN SHEATHING SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
5. WHEN SILT REACHES A DEPTH EQUAL TO ONE-THIRD THE HEIGHT OF THE BERM OR 150 mm (6"), WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF ON AN APPROVED SITE AND IN A MANNER THAT WILL NOT CREATE A SILTATION PROBLEM.
6. DAILY INSPECTION SHALL BE MADE ON SEVERE-SERVICE ROCK BERMS; SILT SHALL BE REMOVED WHEN ACCUMULATION REACHES 150 mm (6").
7. WHEN THE SITE IS COMPLETELY STABILIZED THE BERM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

ROCK BERM




GENERAL NOTES : (BUILD TO TCEQ SPECIFICATION, REFER TO TECHNICAL GUIDANCE MANUAL)

1. ALL DIKES SHALL BE MACHINE COMPACTED.
2. ALL DIVERSION DIKES SHALL HAVE POSITIVE DRAINAGE TO AN OUTLET.
3. a. DIVERTED RUNOFF FROM A DISTURBED OR STABILIZED AREA SHALL HAVE BEEN CONVEYED TO A SEDIMENT TRAPPING, UNDISTURBED STABILIZED AREA OR INTO A LEVEL SPREADER OR GRADE STABILIZATION STRUCTURE.
   b. DIVERTED RUNOFF FROM A DISTURBED OR EXPOSED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE, *SUCH AS A ROCK BERM*, BRUSH BERM, STONE OUTLET STRUCTURE, SEDIMENT TRAP OR SEDIMENT BASIN OR TO AN AREA PROTECTED BY ANY OF THESE PRACTICES.
4. UNLESS OTHERWISE SPECIFIED, EROSION STABILIZATION SHALL BE OPEN GRADED ROCK 75–125 mm (3–5") IN DIAMETER PLACED IN A 75 mm (3") THICK LAYER AND EMBEDDED INTO THE SOIL.
5. INSPECTION SHALL BE CONDUCTED WEEKLY OR AFTER EACH RAINFALL EVENT.

DIVERSION DIKE

TCEQ–0592 (REV. 3/15/07)

## 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.

## STABILIZATION / REVEGETATION NOTES

1. THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR EXCAVATION).
2. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE TCEQ TECHNICAL GUIDANCE MANUAL AND THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN.
3. THE PLACEMENT OF TREE/NATURAL AREA PROTECTIVE FENCING SHALL BE IN ACCORDANCE WITH THE CITY OF AUSTIN STANDARD NOTES FOR TREE AND NATURAL AREA PROTECTION AND THE APPROVED GRADING/TREE AND NATURAL AREA PLAN.
4. A PRE–CONSTRUCTION CONFERENCE SHALL BE HELD ON–SITE WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT AND ENVIRONMENTAL INSPECTOR AFTER INSTALLATION OF THE EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTION MEASURES AND PRIOR TO BEGINNING ANY SITE PREPARATION WORK.
5. ANY MAJOR VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS WILL REQUIRE A REVISION AND MUST BE APPROVED BY THE REVIEWING ENGINEER OR ENVIRONMENTAL SPECIALIST. MINOR CHANGES TO BE MADE AS FIELD REVISIONS TO THE EROSION AND SEDIMENTATION CONTROL PLAN MAY BE REQUIRED BY THE ENVIRONMENTAL INSPECTOR DURING THE COURSE OF CONSTRUCTION TO CORRECT CONTROL INADEQUACIES.
6. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER SIGNIFICANT RAINFALL EVENTS TO INSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES.
7. PRIOR TO FINAL ACCEPTANCE, HAUL ROADS AND WATERWAY CROSSINGS CONSTRUCTED FOR TEMPORARY CONTRACTOR ACCESS MUST BE REMOVED, ACCUMULATED SEDIMENT REMOVED FROM THE WATERWAY AND THE AREA RESTORED TO THE ORIGINAL GRADE AND REVEGETATED. ALL LAND CLEARING DEBRIS SHALL BE DISPOSED OF IN APPROVED SPOIL DISPOSAL SITES.
8. ALL WORK MUST STOP IF A VOID IN THE ROCK SUBSTRATE IS DISCOVERED WHICH IS; ONE SQUARE FOOT IN TOTAL AREA; BLOWS AIR FROM WITHIN THE SUBSTRATE AND/OR CONSISTENTLY RECEIVES WATER DURING ANY RAIN EVENT. AT THIS TIME IT IS THE RESPONSIBILITY OF THE PROJECT MANAGER TO IMMEDIATELY CONTACT A TCEQ INSPECTOR FOR FURTHER INVESTIGATION. PERMANENT EROSION CONTROL: ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW.

A. A MINIMUM OF FOUR INCHES OF TOPSOIL SHALL BE PLACED IN ALL DRAINAGE CHANNELS (EXCEPT ROCK) AND BETWEEN THE CURB AND RIGHT–OF–WAY LINE.

B. RESEEDING SHALL IMMEDIATELY FOLLOW TOP SOILING WITH THE FOLLOWING MIXTURE OF GRASSES AT THE FOLLOWING RATES OF APPLICATION:

| | |
|---|---|
| BLUE GRAMA | 5.0 LBS/ACRE |
| TREATED "TOP GUN" BUFFALO GRASS | 10.0 LBS/ACRE |
| TEXAS BLUEBONNETS | 4.0 LBS/ACRE |
| PRAIRIE VERBENAS | 0.5 LBS/ACRE |
| GREENTHREAD | 1.0 LBS/ACRE |
| PLAINS COREOPSIS | 0.5 LBS/ACRE |
| TOTAL SEEDING RATE* | 21.0 LBS/ACRE |

* PERENNIAL RYE GRASS TO BE ADDED TO THE DESCRIBED MIX AT A RATE OF 10 LBS/ACRE WHEN SEEDING BETWEEN OCTOBER 1 AND MARCH 31.

C. FERTILIZER SHALL BE A PELLETED OR GRANULAR SLOW RELEASE WITH AN ANALYSIS OF 15–15–15 TO BE APPLIED ONCE AT PLANTING AND ONCE DURING THE PERIOD OF ESTABLISHMENT AT A RATE OF 1 POUND PER 1000 SF

D. FERTILIZER SHALL BE A WATER SOLUBLE FERTILIZER WITH AN ANALYSIS OF 15–15–15 AT A RATE OF 1.5 POUNDS PER 1000 SF.

E. MULCH TYPE USED SHALL BE HAY, STRAW OR MULCH APPLIED AT A RATE OF 45 POUNDS PER 1000 SF, WITH SOIL TACKIFIER AR A RATE OF 1.4 POUNDS PER 1000 SF

F. THE PLANTED AREA SHALL BE IRRIGATED OR SPRINKLED IN A MANNER THAT WILL NOT ERODE THE TOPSOIL, BUT WILL SUFFICIENTLY SOAK THE SOIL TO A DEPTH OF SIX INCHES. THE IRRIGATION SHALL OCCUR AT TEN–DAY INTERVALS DURING THE FIRST TWO MONTHS RAINFALL OCCURRENCES OF ½ INCH OR MORE SHALL POSTPONE THE WATERING SCHEDULE FOR ONE WEEK

G. RESTORATION SHALL BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 1½ INCHES HIGH WITH 95% COVERAGE, PROVIDED NO BARE SPOTS LARGER THAN 16 SQUARE FEET EXIST.

H. WHEN REQUIRED, NATIVE GRASS SEEDING SHALL COMPLY WITH REQUIREMENTS OF THE CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL.

9. ANNUAL GRASSES SUCH AS RYE GRASS WILL NOT BE ACCEPTED AS PERMANENT VEGETATION
10. ALL DISTURBED AREAS TO BE STABILIZED BY VEGETATION OR STRUCTURE.
11. DEVELOPER INFORMATION:

OWNER:
COMAL I.S.D.
1421 NORTH BUSINESS 35
NEW BRAUNFELS, TEXAS 78130
PHONE: 830–221–2000

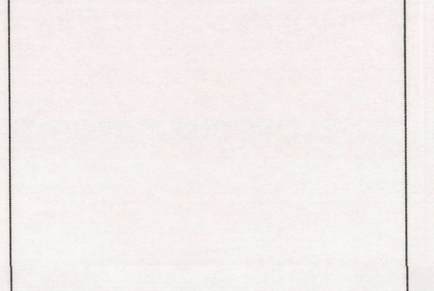
OWNER'S REPRESENTATIVE RESPONSIBLE FOR PLAN ALTERATIONS:
LOOMIS AUSTIN, INC.
3103 BEE CAVES ROAD #225
AUSTIN, TEXAS 78746
512–327–1180


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


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


SEAL




DATA

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

SHEET TITLE
EROSION/SEDIMENTATION CONTROL & TREE PROTECTION NOTES & DETAILS

C5.2

MATCH LINE

POTENTIAL FUTURE DEVELOPMENT

SITE BOUNDARY

JOHNSON RANCH PHASE 1A

FEMA 100YR FLOODPLAIN

COMAL ISD SCHOOL SITE

SITE BOUNDARY

TRIBUTARY OF CIBULO CREEK

REMOVE EXISTING PAVEMENT

APPROXIMATE BULVERDE CITY LIMITS

F.M. 1863

CIBULO CREEK

200 0 100 200 400

SCALE: 1" = 200'

LEGEND

BOUNDARY LINE

U.S.281

UNDISTURBED AREA

SHEET 3

SHEET 2

JOHNSON RANCH

SHEET 2

SHEET 1

DISTURBED AREA SCHOOL SITE

F.M.1863

INDEX MAP

| NO. | REVISION | BY | DATE |
|---|---|---|---|
| | | | |

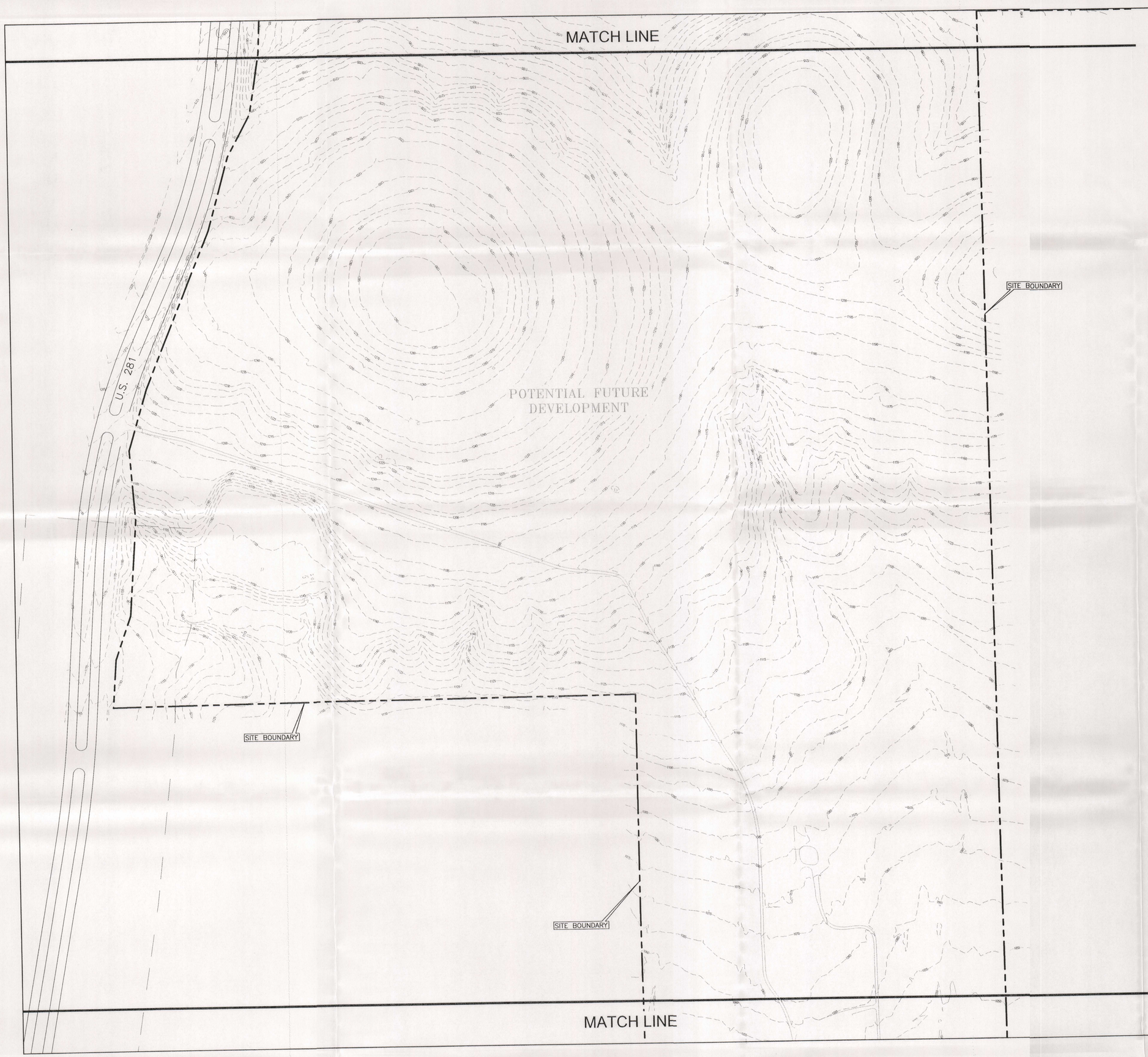
DESIGNED BY: A.S.H.
DRAWN BY: D.W.C.
CHECKED BY: A.S.H.
APPROVED BY: A.S.H.
DATE: October 2006

CHARLES W. KAOUGH 57887 LICENSED PROFESSIONAL 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

COMAL I.S.D.
JOHNSON RANCH ELEMENTARY
PROPOSED CONDITIONS SITE PLAN
1 OF 3

SHEET NO.
1

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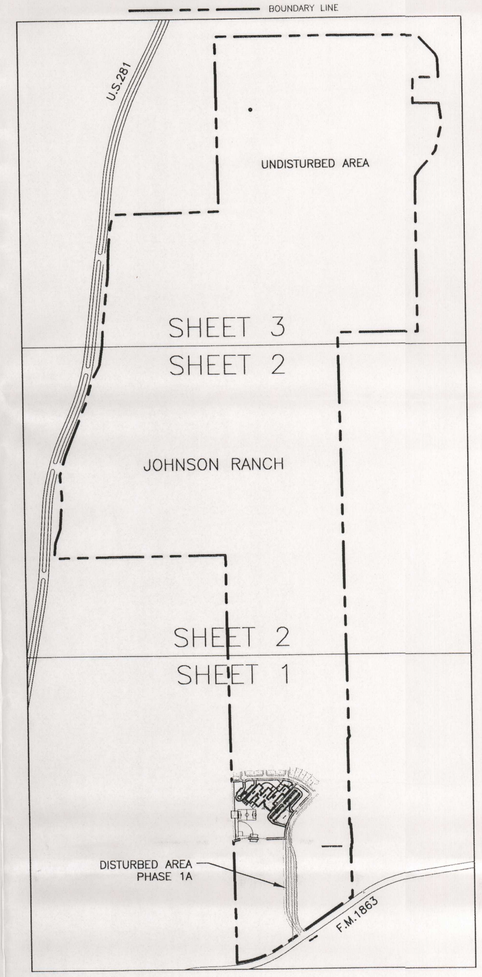
SCALE: 1" = 200'

LEGEND

BOUNDARY LINE

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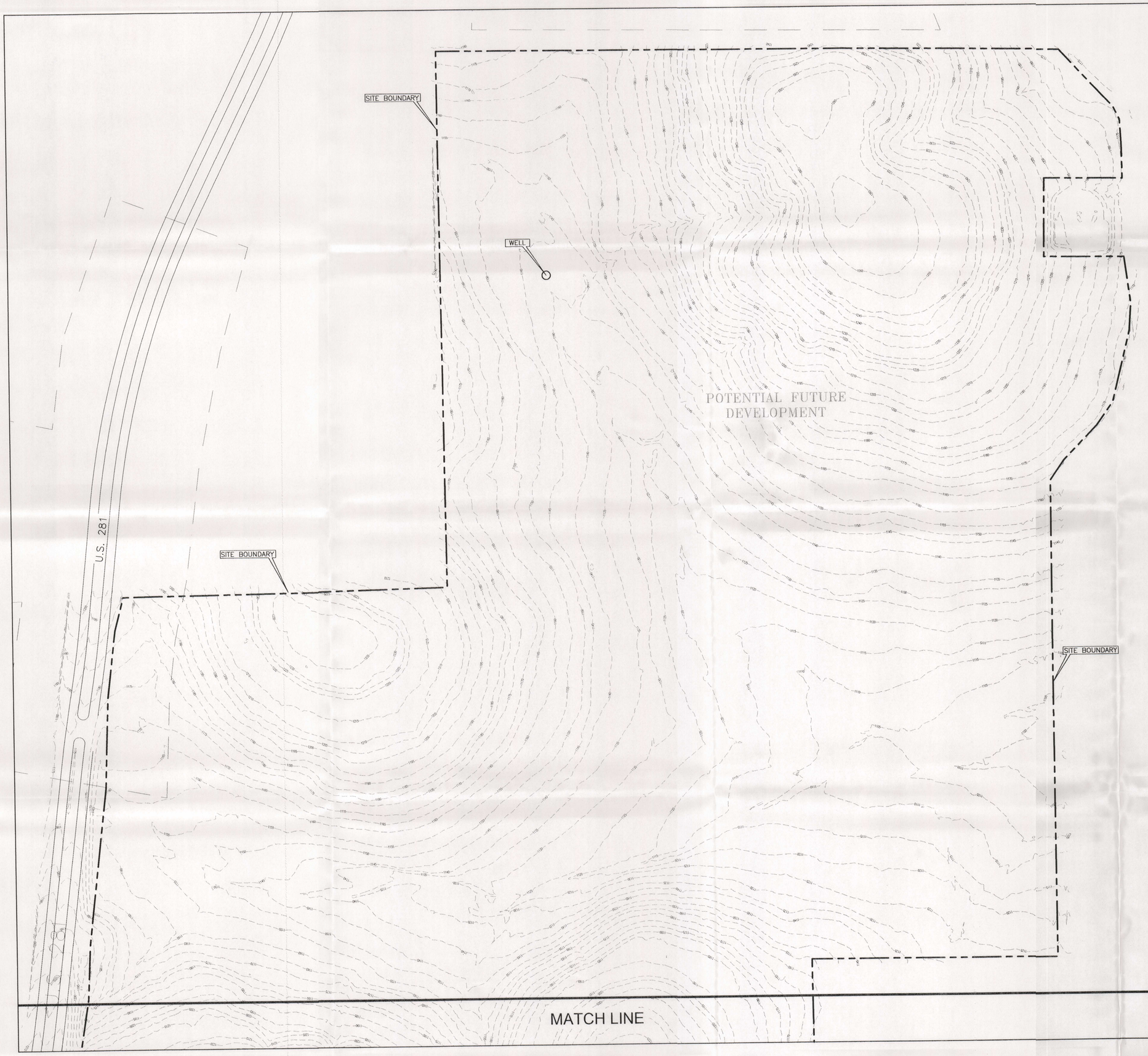
LICENSED PROFESSIONAL ENGINEER

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

COMAL I.S.D.
JOHNSON RANCH ELEMENTARY
PROPOSED CONDITIONS
SITE PLAN
2 OF 3

SHEET NO.
2
OF 3

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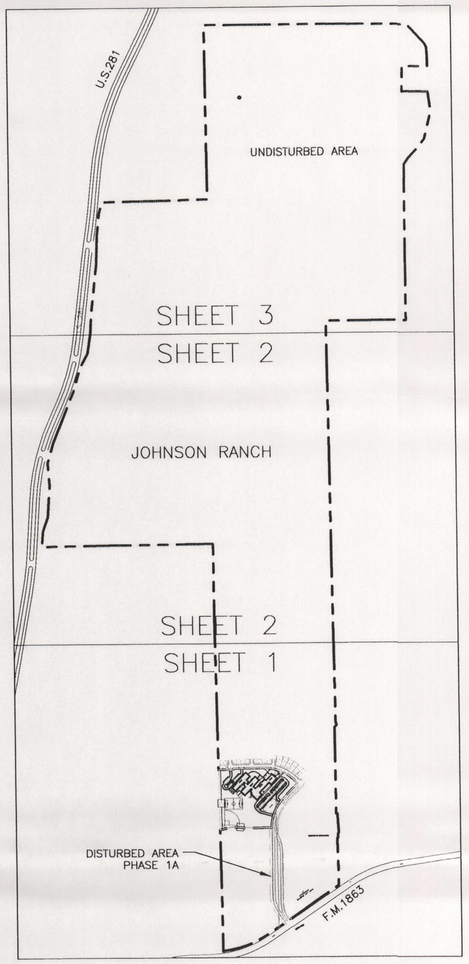
LEGEND

BOUNDARY LINE

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STATE OF TEXAS
CHARLES W. KAOUGH
LICENSED
PROFESSIONAL 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

COMAL I.S.D.
JOHNSON RANCH ELEMENTARY
PROPOSED CONDITIONS
SITE PLAN
3 OF 3

SHEET NO.
3
OF 3

**Water Pollution Abatement Plan Application**
for Regulated Activities
on the Edwards Aquifer Recharge Zone
and Relating to 30 TAC §213.5(b), Effective June 1, 1999

REGULATED ENTITY NAME: CISD – Johnson Ranch Elementary

**REGULATED ENTITY INFORMATION**

1. The type of project is:
   - ___ Residential: # of Lots:
   - ___ Residential: # of Living Unit Equivalents:
   - ___ Commercial
   - ___ Industrial
   - √ Other: School

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

3. Projected population: 950 persons (not permanent)

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

| Impervious Cover of Proposed Project | Sq. Ft. | Sq. Ft./Acre | Acres |
|---|---|---|---|
| Structures/Rooftops | 85,194.3 | ÷ 43,560 = | 1.96 |
| Parking | 116,396.8 | ÷ 43,560 = | 2.67 |
| Other paved surfaces | 22,390.3 | ÷ 43,560 = | 0.51 |
| Total Impervious Cover | 223,981.6 | ÷ 43,560 = | 5.14 |
| Total Impervious Cover ÷ Total Acreage x 100 = | | | 32.00 % |

5. √ **ATTACHMENT A - Factors Affecting Water Quality.** A description of any factors that could affect surface water and groundwater quality is provided ~~at the end of this form~~ **below.**

**Potential sources of pollution that may be expected to affect the quality of stormwater discharges from the construction site include:**

- **Soil erosion due to the clearing of the site for roads, buildings, and drainage structures.**
- **Oil, grease, fuel, and hydraulic fluid contamination from construction equipment and vehicle drippings.**
- **Hydrocarbons from asphalt paving operations.**
- **Miscellaneous trash and litter from construction workers and material wrappings.**

- **Construction debris.**
- **Concrete truck washout.**

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

**FOR ROAD PROJECTS ONLY – This is not a road project**
**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 description of the volume and character (quality) of the stormwater runoff which is expected to occur from the proposed project is provided ~~at the end of this form~~ **below**. The estimates of stormwater runoff quality and quantity should be based on area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

**Stormwater runoff will increase as a result of this development. For a 25 year storm event, the overall project will generate approximately 34.50 cfs. The runoff coefficient for the site changes from approximately 0.49 before development to approximately 0.80 after development. Values are based on the Rational Method using runoff coefficients as per the City of San Antonio Unified Development Code.**

## WASTEWATER TO BE GENERATED BY THE PROPOSED PROJECT

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

| | |
|---|---|
| __ % Domestic | _____ gallons/day |
| 100 % ~~Industrial~~ Other | 14,250 gallons/day |
| __ % Commingled | _____ gallons/day |
| TOTAL | 14,250 gallons/day |

15. Wastewater will be disposed of by:

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

**ATTACHMENT C - Suitability Letter from Authorized Agent.** An on-site sewage facility will be used to treat and dispose of the wastewater. The appropriate licensing authority's (authorized agent) written approval is provided at the end of this form. It states that the land is suitable for the use of an on-site sewage facility or identifies areas that are not suitable.

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

√ Sewage Collection System (Sewer Lines):

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

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

__ The SCS was previously submitted on _____.

__ The SCS was submitted with this application.

√ The SCS will be submitted at a later date. The owner is aware that the SCS may not be installed prior to executive director approval.

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

__ existing.

√ proposed.

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

## SITE PLAN REQUIREMENTS

**Items 17 through 27 must be included on the Site Plan.**

17. The Site Plan must have a minimum scale of 1" = 400'.
Site Plan Scale: 1" = 60 '.

18. 100-year floodplain boundaries

√ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.

__ No part of the project site is located within the 100-year floodplain.

The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): **FIRM Map for Comal County, TX – Panel 55 of 130 – 485463 055D – 7/17/95**

19. √ The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Show lots, recreation centers, buildings, roads, etc.
__ The layout of the development is shown with existing contours. Finished topographic contours will not differ from the existing topographic configuration and are not shown.

20. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):
__ 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 30 TAC §238.
√ 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 and possibly sensitive** geologic or manmade features identified in the Geologic Assessment are shown and labeled.
√ No **sensitive and possibly sensitive** geologic or manmade features were identified in the Geologic Assessment.
N/A **ATTACHMENT D - Exception to the Required Geologic Assessment.** An exception to the Geologic Assessment requirement is requested and explained in ATTACHMENT D provided at the end of this form. Geologic or manmade features were found and are shown and labeled.
N/A **ATTACHMENT D - Exception to the Required Geologic Assessment.** An exception to the Geologic Assessment requirement is requested and explained in ATTACHMENT D provided at the end of this form. No geologic or manmade features were found.

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).

27. √ Locations where stormwater discharges to surface water or sensitive features.
__ There will be no discharges to surface water or sensitive features.

**ADMINISTRATIVE INFORMATION**

28. √ One (1) original and three (3) copies of the completed application have been provided.

29. √ Any modification of this WPAP will require TCEQ executive director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

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

Print Name of Customer/Agent

Charles W Kyle

Signature of Customer/Agent

8/3/07

Date

**Temporary Stormwater Section**
for Regulated Activities
on the Edwards Aquifer Recharge Zone
and Relating to 30 TAC §213.5(b)(4)(A), (B), (D)(I) and (G); Effective June 1, 1999

REGULATED ENTITY NAME: **CISD – Johnson Ranch Elementary**

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

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

   __ Aboveground storage tanks with a cumulative storage capacity of less that 250 gallons will be stored on the site for less than one (1) year.
   __ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.
   __ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An **Aboveground Storage Tank Facility Plan** application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.
   √ Fuels and hazardous substances will not be stored on-site.

2. √ **ATTACHMENT A - Spill Response Actions**. A description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is provided at the end of this form.

3. √ 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.** Describe **below** ~~in an attachment at the end of this form~~ any other activities or processes which may be a potential source of contamination.
   __ The are no other potential sources of contamination.

**Other potential sources of contamination during construction include:**

**a) Potential Source:** **Asphalt products used on this project**
**Preventive Measure:** **After placement of asphalt, emulsion or coatings, the contractor will be responsible for immediate cleanup should an unexpected rain occur. For the duration of the asphalt curing time, the contractor will maintain standby personnel and equipment to contain any asphalt wash-off should an unexpected rain occur. The contractor will be instructed not to place asphalt products on the ground within 48 hours of a forecasted rain.**

b) **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 the construction staging area.**

c) **Potential Source:** **Miscellaneous trash and litter from construction workers and material wrapping**

**Preventive Measure:** **Trash containers will be place throughout the site to encourage proper trash disposal.**

d) **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.**

## 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 provided ~~at the end of this form~~ **below**. For each activity described, an estimate of the total area of the site to be disturbed by each activity is given.

**The sequence of major activities which disturb soil during construction on this site will be divided into 2 stages. The first is site preparation that will include clearing and grubbing of vegetation and removal of existing pavement where applicable. This will disturb approximately 6.0 acres. The second is construction that will include construction of buildings, construction of new pavement areas, landscaping and site cleanup. This will disturb approximately 6.0 acres**

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.** A description of the TBMPs and measures that will be used during and after construction are provided ~~at the end of this form~~ below. For each activity listed in the sequence of construction, include appropriate control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

√ TBMPs and measures will prevent pollution of surface water, groundwater, and stormwater. The construction-phase BMPs for erosion and sediment controls have been designed to retain sediment on site to the extent practicable. The following information has been provided ~~in the attachment at the end of this form~~ below.

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

**Upgradient water wil be intercepted through channels along the northwest side of the property and directed to a Cibolo Creek tributary. Silt fences and rock berms will be placed along the channel.**

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

**Site preparation: The initiation of all activity on the project, will disturb the largest amount of soil. Therefore, before any of this work can begin, the clearing and grading contractor will be responsible for the installation of all on-site control measures. Te methodology for pollution prevention of all on-site stormwater will include: (1) erection of silt-fences along the downgradient boundary of the construction activities for temporary erosion and sedimentation controls, (2) installation of rock berms with silt fencing downgradient from areas of concentrated stormwater flow for temporary erosion control, (3) installation of stabilized construction entrance/exit(s) to reduce the dispersion of sediment from the site, and (4) installation of construction staging areas.**

**Construction: Prior to the initiation of construction, all previously installed control measures will be repaired or reestablished for their designed or intended purpose. The construction contractor will be responsible for the installation of all remaining on-site control measures that includes installation of the concrete truck washout pit(s), as construction phasing warrants.**

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

**Temporary measures are intended to provide a method of slowing the flow of runoff from the construction site in order to allow sediment and suspended solids to settle out of the runoff. By containing the sediment and solids within the site, they will not enter surface streams and/or sensitive features.**

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

**BMP measures utilized in this plan are intended to allow stormwater to continue downstream after passing through the BMP's. This will allow stormwater runoff to**

**continue downgradient to streams or features that may exist downstream of the site.**

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

N/A **ATTACHMENT E - Request to Temporarily Seal a Feature.** A request to temporarily seal a feature is provided at the end of this form. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

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

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

**The following structural measures will be installed prior to the initiation of site preparation activities:**

- **Erection of silt fences along the downgradient boundary of construction activities and rock berms with silt fence for secondary protection.**
- **Installation of stabilized construction entrance/exit(s) and construction staging area(s).**
- **Installation of concrete truck washout pit(s), as required.**

10. √ **ATTACHMENT G - Drainage Area Map**. A drainage area map is provided at the end of this form **(Sheet # C3.2 )** to support the following requirements.

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

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

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

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

11. N/A **ATTACHMENT H - Temporary Sediment Pond(s) Plans and Calculations.** Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure has been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are provided as at the end of this form.

12. √ **ATTACHMENT I - Inspection and Maintenance for BMPs.** A plan for the inspection of temporary BMPs and measures and for their timely maintenance, repair, and, if necessary, retrofit is provided at the end of this form. A description of documentation procedures and recordkeeping practices is included in the plan.

13. √ All control measures must be properly selected, installed, and maintained in accordance with the manufacturers specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicates 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. N/A 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 at the end of this form~~ **below**.

**Interim on-site stabilization measures, which are continuous, will include minimizing soil disturbances by exposing only the smallest practical area of land required for the shortest period of time and maximizing use of natural vegetation. As soon as practical, all disturbed soil will be stabilized as per project specifications in accordance with pages 1-35 to 1-60 of the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005). Mulching, netting, erosion blankets, and seeding are acceptable.**

**Stabilization measures will be initiated as soon as practicable in portions of the site where construction activities have temporary or permanent ceased, and except as provided below, will be initiated no more than fourteen (14) days after the construction activity in that portion of the site has temporary or permanently ceased. Where the construction activity on a portion of the site is temporary ceased, and the earth disturbing activities will be resumed within twenty-one (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 14$^{th}$ day**

**after construction activity has temporary or permanently ceased is precluded by seasonably arid condition, stabilization measures must be initiated as soon as praticable.**

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.

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

Signature of Customer/Agent

8/3/07
Date

## Spill Prevention and Control

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

The following steps will help reduce the stormwater impacts of leaks and spills:

***Education***

(1) Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills. Employees should also be aware of when spill must be reported to the TCEQ. Information available in 30 TAC 327.4 and 40 CFR 302.4.

(2) Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.

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

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

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

***General Measures***

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

(2) Store hazardous materials and wastes in covered containers and protect from vandalism.

(3) Place a stockpile of spill cleanup materials where it will be readily accessible.

(4) Train employees in spill prevention and cleanup.

(5) Designate responsible individuals to oversee and enforce control measures.

(6) Spills should be covered and protected from stormwater runon during rainfall to the extent that is doesn't compromise clean up activities.

(7) Do not bury or wash spills with water.

(8) Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended puprpose in conformance with the provisions in applicable BMP's.

(9) Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with applicable regulations.

(10) Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.

(11) Place Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.

(12) Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

***Cleanup***

(1) Clean up leaks and spills immediately

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

(3) Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in this section for specific information.

***Minor Spills***

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

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

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

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

(5) Contain the spread of the spill

(6) Recover spilled materials

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

***Semi-Significant Spills***

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

Spills should be cleaned up immediately:

(1) Contain spread of the spill

(2) Notify the project foreman immediately

(3) If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.

(4) If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.

(5) If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

***Significant/Hazardous Spills***

(1) Notify the TCEQ by telephone as soon as possible and within 24 hours at 512-339-2929 (Austin) or 210-490-3096 (San Antonio) between 8 AM and 5 PM. After hours, contact the Environmental Release Hotline at 1-800-832-8224. It is the contractor's responsibility to have all emergency phone numbers at the construction site.

(2) For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.

(3) Notification should first be made by telephone and followed up with a written report.

(4) The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.

(5) Other agencies which may need to be consulted include, but are not limited to, the City Police Department, County Sheriff Office, Fire Departments, etc.

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

*Vehicle and Equipment Maintenance*

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

(2) Regularly inspect onsite vehicles and equipment for leaks and repair immediately.

(3) Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.

(4) Always use secondary containment, such as drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.

(5) Place drip pans or absorbent materials under paving equipment when not in use.

(6) Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.

(7) Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.

(8) Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over the waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.

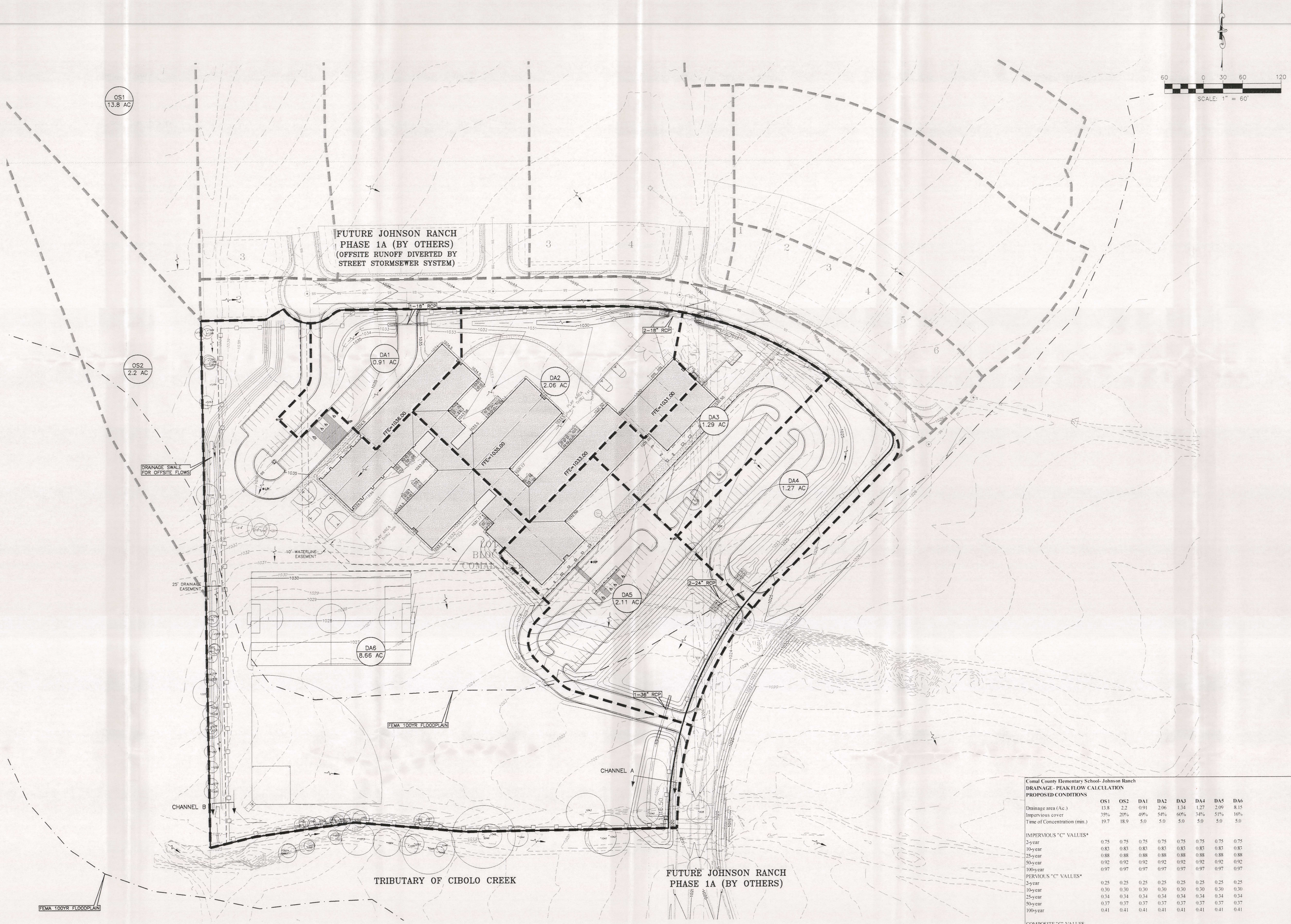
(9) Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all of the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

*Vehicle and Equipment Fueling*

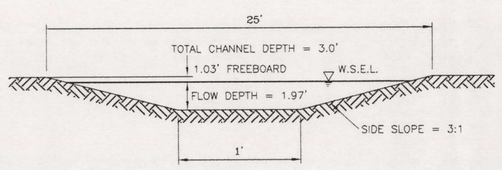
(1) If fueling must occur on site, use designated areas, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.

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

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

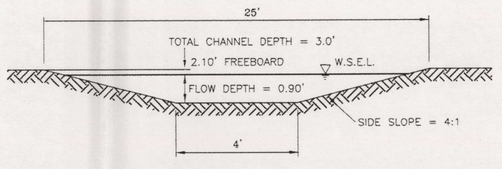



DRAINAGE CHANNEL DATA:
BOTTOM WIDTH = 1 ft
SIDE SLOPES = 3:1
MANNING'S n = 0.03
CHANNEL SLOPE = 0.01
DEPTH = 2.0 ft
DISCHARGE(100) = 89.0 cfs
VELOCITY = 5.90 fps
FLOW AREA = 13.56 sf
FROUDE NUMBER = 1.0




TYPICAL CROSS SECTION
CHANNEL B
B
N.T.S.

DRAINAGE CHANNEL DATA:
BOTTOM WIDTH = 4 ft
SIDE SLOPES = 4:1
MANNING'S n = 0.03
CHANNEL SLOPE = 0.01
DEPTH = 0.90 ft
DISCHARGE(100) = 28 cfs
VELOCITY = 3.47 fps
FLOW AREA = 7.20 sf
FROUDE NUMBER = 0.79




TYPICAL CROSS SECTION
CHANNEL A
A
N.T.S.

**Comal County Elementary School- Johnson Ranch**
**DRAINAGE - PEAK FLOW CALCULATION**
**PROPOSED CONDITIONS**

| | OS1 | OS2 | DA1 | DA2 | DA3 | DA4 | DA5 | DA6 |
|---|---|---|---|---|---|---|---|---|
| Drainage area (Ac.) | 13.8 | 2.2 | 0.91 | 2.06 | 1.34 | 1.27 | 2.99 | 8.15 |
| Impervious cover | 35% | 20% | 49% | 54% | 60% | 34% | 51% | 16% |
| Time of Concentration (min.) | 19.7 | 18.9 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| IMPERVIOUS "C" VALUES* | | | | | | | | |
| 2-year | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 |
| 10-year | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 |
| 25-year | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| 50-year | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| 100-year | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PERVIOUS "C" VALUES* | | | | | | | | |
| 2-year | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 10-year | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| 25-year | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 |
| 50-year | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 |
| 100-year | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 |
| *COMPOSITE "C" VALUES* | | | | | | | | |
| 2-year | 0.43 | 0.35 | 0.50 | 0.52 | 0.55 | 0.42 | 0.51 | 0.33 |
| 10-year | 0.49 | 0.41 | 0.56 | 0.59 | 0.62 | 0.48 | 0.57 | 0.38 |
| 25-year | 0.53 | 0.45 | 0.60 | 0.63 | 0.66 | 0.52 | 0.62 | 0.43 |
| 50-year | 0.56 | 0.48 | 0.64 | 0.67 | 0.70 | 0.56 | 0.65 | 0.46 |
| 100-year | 0.61 | 0.52 | 0.68 | 0.71 | 0.75 | 0.60 | 0.70 | 0.50 |
| RAINFALL INTENSITIES (in./hr.)** | | | | | | | | |
| 2-year | 3.94 | 4.03 | 7.10 | 7.10 | 7.10 | 7.10 | 7.10 | 7.10 |
| 10-year | 5.85 | 5.99 | 10.32 | 10.32 | 10.32 | 10.32 | 10.32 | 10.32 |
| 25-year | 6.72 | 6.88 | 11.78 | 11.78 | 11.78 | 11.78 | 11.78 | 11.78 |
| 50-year | 7.34 | 7.51 | 12.75 | 12.75 | 12.75 | 12.75 | 12.75 | 12.75 |
| 100-year | 8.38 | 8.57 | 14.68 | 14.68 | 14.68 | 14.68 | 14.68 | 14.68 |
| **PEAK RUNOFF RATES (cfs)** | | | | | | | | |
| **2-year** | **23.1** | **3.1** | **3.2** | **7.6** | **5.2** | **3.8** | **7.5** | **19.1** |
| **10-year** | **39.2** | **5.3** | **5.3** | **12.5** | **8.5** | **6.3** | **12.3** | **32.4** |
| **25-year** | **49.1** | **6.8** | **6.5** | **15.3** | **10.5** | **7.8** | **15.2** | **40.9** |
| **50-year** | **57.0** | **7.9** | **7.4** | **17.5** | **12.0** | **9.0** | **17.3** | **47.6** |
| **100-year** | **70.1** | **9.8** | **9.1** | **21.5** | **14.7** | **11.2** | **21.3** | **59.8** |

** The runoff coefficients (C) are taken from the City of Austin Drainage Criteria Manual
** The coefficients a,b and d for the Rainfall Intensity-Duration Frequency Curve
taken from TxDOT Hydraulic Design Manual- Comal County


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

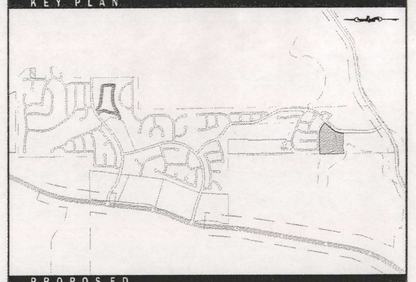

GENERAL NOTES - KEYED NOTES - LEGENDS

LEGEND

- BOUNDARY LINE
- PROPOSED R.O.W.
- LOT LINE
- EASEMENT LINE
- BUILDING LINE
- CURB AND GUTTER
- DRAINAGE AREA
- EXISTING 1 ft CONTOUR
- EXISTING 5 ft CONTOUR
- PROPOSED 1 ft CONTOUR
- PROPOSED 5 ft CONTOUR
- RUNOFF FLOW ARROW
- XX / XX.XX — DRAINAGE AREA INDENTIFIER
- STORM SEWER DISCHARGE HEADWALL
- PROPOSED SS INLET
- HP HIGH POINT
- LP LOW POINT
- TREE TO BE PRESERVED
- TREE TO BE REMOVED
- FENCE


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

SEAL

CHARLES W. KAOLIEH
97910
LICENSED
PROFESSIONAL ENGINEER

DATA

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

SHEET TITLE
PROPOSED CONDITIONS
DRAINAGE PLAN

C3.2

## Inspections

Designated and qualified person(s) shall inspect Pollution Control Measures every seven days and within 24 hours after a storm event greater than 0.5 inches of rainfall. An inspection report that summarizes the scope of the inspection, names and qualifications of personnel conducting the inspection, date of the inspection, major observations, and actions taken as a result of the inspection shall be recorded and maintained as part of the Storm Water TPDES data for a period of three years after the date of the inspection. A copy of the Inspection Report Form is provided in this Storm Water Pollution Prevention Plan.

As a minimum, the inspector shall observe: (1) significant disturbed areas for evidence of erosion. (2) storage areas for evidence of leakage from the exposed stored materials, (3) structural controls (rock berm outlets, silt fences, drainage swales, etc.) for evidence of failure or excess siltation (over 6 inches deep), (4) vehicle exit point for evidence of off-site sediment tracking, (5) vehicle storage areas for signs of leaking equipment or spills, and (6) concrete truck rinse-out pit for signs of potential failure. Deficiencies noted during the inspection will be corrected and documented within seven (7) calendar days following the inspection or before the next anticipated storm event if practicable.

| **Pollution Prevention Measure** | Inspected | Corrective Action | |
|---|---|---|---|
| | | Description | Date Completed |
| **General** | | | |
| Revegetation | | | |
| Erosion/sediment controls | | | |
| Vehicle exits | | | |
| Material areas | | | |
| Equipment Areas | | | |
| Concrete rinse | | | |
| Construction Debris | | | |
| Trash receptacles | | | |
| **Infrastructure** | | | |
| Roadway clearing | | | |
| Utility clearing | | | |
| Roadway grading | | | |
| Utility construction | | | |
| Drainage construction | | | |
| Roadway base | | | |
| Roadway surfaces | | | |
| Site cleanups | | | |
| **Building** | | | |
| Clearing for building | | | |
| Foundation grading | | | |
| Utility construction | | | |
| Foundation construction | | | |
| Building construction | | | |
| Site grading | | | |
| Site cleanup | | | |

***Indicate N/A where measure does not apply***

By my signature below, I certify that all terms are acceptable and the project site is in compliance with SWPPP.

Inspector's Name _____ Inspector's Signature _____

Name of Owner/Operator (Firm) _____ Date _____

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

## PROJECT MILESTONE DATES

Date when major site grading activities begin:

| Construction Activity | Date |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Dates when construction activities temporarily or permanently cease on all or a portion of the project:

| Construction Activity | Date |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |

Dates when stabilization measures are initiated:

| Stabilization Activity | Date |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |

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

REGULATED ENTITY NAME: CISD – Johnson Ranch Elementary

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

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

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

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

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

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.

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.

   — This site will be used for low density single-family residential development and has 20% or less impervious cover.

   — This site will be used for low density single-family residential development but has more than 20% impervious cover.

   √ This site will not be used for low density single-family residential development.

5. N/A 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.** This site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is found at the end of this form.

__ This site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.

__ This site will not be used for multi-family residential developments, schools, or small business sites.

6. **ATTACHMENT B - BMPs for Upgradient Stormwater.**

__ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is identified as **ATTACHMENT B** at the end of this form.

__ If no surface water, groundwater or stormwater originates upgradient from the site and flows across the site, an explanation is provided as **ATTACHMENT B** at the end of this form.

__√__ If permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, an explanation is provided ~~as **ATTACHMENT B** at the end of this form~~ **below**.

**All upgradient stormwater will be diverted from the site. On the north boundary the upgradient stormwater will be intercepted by the street and at the west boundary it will be captured in a swale and conveyed to the stream.**

7. **ATTACHMENT C - BMPs for On-site Stormwater.**

__√__ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is identified ~~as **ATTACHMENT C** at the end of this form~~ **below**.

**Grassy swales (70% removal efficiency) and vegetative filter strips (VFS- 85% removal efficiency) treating runoff from singular areas within the site have been designed in accordance with TCEQ's Technical Guidance Manual (TGM) RG-348 (2005), which indicates a minimum of 80% of the increased TSS load from the entire project must be removed prior to discharge from the site.**

**The TSS removal for each of the areas being treated with grassy swales or VFS were totaled together to achieve the 80% removal for the entire site. The table with the areas and TSS removal totals is included on the attached Water Quality Plan Sheet.**

__ If permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by

contaminated stormwater runoff, an explanation is provided as **ATTACHMENT C** at the end of this form.

8. N/A **ATTACHMENT D - BMPs for Surface Streams.** A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is provided at the end of this form. Each feature identified in the Geologic Assessment as "sensitive" or "possibly sensitive" has been addressed.

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" or "possibly sensitive" feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed for any naturally-occurring "sensitive" or "possibly sensitive" features on this site.

N/A **ATTACHMENT E - Request to Seal Features.** A request to seal a naturally-occurring "sensitive" or "possibly sensitive" feature, that includes a justification as to why no reasonable and practicable alternative exists, is found at the end of this form. A request and justification has been provided for each feature.

10. √ **ATTACHMENT F - Construction Plans.** Construction plans and design calculations for the proposed permanent BMPs and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information have been signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed permanent BMPs and measures are provided at the end of this form. Design Calculations, TCEQ Construction Notes, all man-made or naturally occurring geologic features, all proposed structural measures, and appropriate details must be shown on the construction plans.

11. √ **ATTACHMENT G - Inspection, Maintenance, Repair and Retrofit Plan.** A plan for the inspection, maintenance, repair, and, if necessary, retrofit of the permanent BMPs and measures is provided at the end of this form. The plan has been prepared and certified by the engineer designing the permanent BMPs and measures. The plan has been signed by the owner or responsible party. The plan includes procedures for documenting inspections, maintenance, repairs, and, if necessary, retrofits as well as a discussion of record keeping procedures.

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

— Pilot-scale field testing (including water quality monitoring) may be required for BMPs that are not contained in technical guidance recognized by or prepared by the executive director.

— **ATTACHMENT H - Pilot-Scale Field Testing Plan.** A plan for pilot-scale field testing is provided at the end of this form.

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 provided ~~at the end of this form~~ **below**. 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.

**All the flows are conveyed from the site to the tributaries of Cibolo Creek in grass swales with velocities less than 6 feet per second. (See Drainage Plan sheet for details)**

**Responsibility for maintenance of permanent BMPs 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.

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.

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

Signature of Customer/Agent

8/20/07
Date

GS1

## 14. Grassy Swales

Designed as Required in RG-348

Pages 3-51 to 3-54

Design parameters for the swale:

**Insert the design parameters for the drainage area and swale:**

| | | |
|---|---|---|
| Drainage Area to be Treated by the Swale = A = | 0.91 | acres |
| Impervious Cover in Drainage Area = | 0.44 | acres |
| Rainfall intensity = i = | 1.1 | in/hr |
| Swale Slope = | 0.01 | ft/ft |
| Side Slope (z) = | 7 | |
| Design Water Depth = y = | 0.33 | ft |
| Weighted Runoff Coefficient = C = | 0.53 | |

**The channel slope must be between 0.005 and 0.025**
**z = the side slope of the swale in the form of z(H):1(V)**

**The value for C in cell C209 is calculated from the values entered for the drainage area to the swale.**
**C = (Impervious Cover within Drainage Basin/Drainage Basin Area)*0.74 + (Pervious Cover within Drainage Basin/Drainage Basin Area)*0.33**

| | | |
|---|---|---|
| $A_{CS}$ = cross-sectional area of flow in Swale = | 1.49 | sf |
| $P_W$ = Wetted Perimeter = | 6.89 | feet |
| $R_H$ = hydraulic radius of flow cross-section = $A_{CS}/P_W$ = | 0.22 | feet |
| n = Manning's roughness coefficient = | 0.2 | |

## 14A. Using the Method Described in the RG-348

**Trapezoidal is the most common shape used for swale design. However, rectangular and triangluar shapes may be used.**
**The calculations included below assume that a trapezoidal shape is selected.**

**Use Manning's Equation to estimate the swale bottom width (b).**

Mannings Equation: $Q = \frac{1.49}{n} A_{CS} R_H^{2/3} S^{0.5}$

Johnson Ranch Elementary
Construction Plans – 1 of 5

**Manning's Equation cannot be used directly to solve for the bottom width of a trapezoidal swale.**
**For shallow flows (4 inches or less) the equation can be altered to:**

$$b = \frac{0.134 \times Q}{y^{1.67} S^{0.5}} - zy$$ = 2.22 feet

**Maximum bottom width = 10 feet**
**If b is greater than 10 feet, change design parameters and recalcula**
**If b is a negative value, set b = 2**

**The values for y, z, and S are taken from the information provided above.**

**To solve for "Q" in the altered Manning's Equation above.**
**Use the Rational Method Equation discussed in the TGM on Page 3-34, Equation 3.4:**

**Q = CiA =** 0.53 cfs

**To calculate the flow velocity in the swale:**

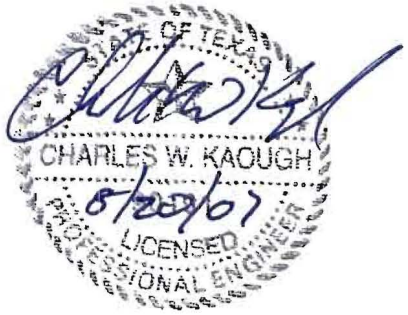
V (Velocity of Flow in the swale) = $Q/A_{CS}$ = 0.36 ft/sec

**If V is less than or equal to 1 ft/sec, the swale will function correctly.**
**If V is greater than 1 ft/sec, the swale will not function correctly and the design assumptions must be revised.**

**To calculate the resulting swale length:**

L = Minimum Swale Length = V (ft/sec) * 300 (sec) = 106.52 feet

If any of the resulting values do not meet the design requirement set forth in RG-348, the design parameters must be modified and the solver rerun.




Johnson Ranch Elementary
Construction Plans – 2 of 5

GS2

## 14. Grassy Swales

Designed as Required in RG-348

Pages 3-51 to 3-54

Design parameters for the swale:

**Insert the design parameters for the drainage area and swale:**

| | | | |
|---|---|---|---|
| Drainage Area to be Treated by the Swale = A = | 2.97 | acres | |
| Impervious Cover in Drainage Area = | 1.56 | acres | |
| Rainfall intensity = i = | 1.1 | in/hr | |
| Swale Slope = | 0.0175 | ft/ft | **The channel slope must be between 0.005 and 0.025** |
| Side Slope (z) = | 5 | | **z = the side slope of the swale in the form of z(H):1(V)** |
| Design Water Depth = y = | 0.33 | ft | |
| Weighted Runoff Coefficient = C = | 0.55 | | |

**The value for C in cell C209 is calculated from the values entered for the drainage area to the swale.**
**C = (Impervious Cover within Drainage Basin/Drainage Basin Area)*0.74 + (Pervious Cover within Drainage Basin/Drainage Basin Area)*0.33**

| | | |
|---|---|---|
| $A_{CS}$ = cross-sectional area of flow in Swale = | 3.80 | sf |
| $P_W$ = Wetted Perimeter = | 13.22 | feet |
| $R_H$ = hydraulic radius of flow cross-section = $A_{CS}/P_W$ = | 0.29 | feet |
| n = Manning's roughness coefficient = | 0.2 | |

## 14A. Using the Method Described in the RG-348

**Trapezoidal is the most common shape used for swale design. However, rectangular and triangluar shapes may be used.**
**The calculations included below assume that a trapezoidal shape is selected.**

**Use Manning's Equation to estimate the swale bottom width (b).**

Mannings Equation: $Q = \frac{1.49}{n} A_{CS} R_H^{2/3} S^{0.5}$

Johnson Ranch Elementary
Construction Plans – 3 of 5

**Manning's Equation cannot be used directly to solve for the bottom width of a trapezoidal swale.**
**For shallow flows (4 inches or less) the equation can be altered to:**

$$b = \frac{0.134 \times Q}{y^{1.67} S^{0.5}} - zy$$ = 9.86 feet

**Maximum bottom width = 10 feet**

**If b is greater than 10 feet, change design parameters and recalcula**
**If b is a negative value, set b = 2**

**The values for y, z, and S are taken from the information provided above.**

**To solve for "Q" in the altered Manning's Equation above.**
**Use the Rational Method Equation discussed in the TGM on Page 3-34, Equation 3.4:**

**Q = CiA =** 1.78 cfs

**To calculate the flow velocity in the swale:**

V (Velocity of Flow in the swale) = $Q/A_{cs}$ = 0.47 ft/sec

**If V is less than or equal to 1 ft/sec, the swale will function correctly.**
**If V is greater than 1 ft/sec, the swale will not function correctly and the design assumptions must be revised.**

**To calculate the resulting swale length:**

L = Minimum Swale Length = V (ft/sec) * 300 (sec) = 140.91 feet

If any of the resulting values do not meet the design requirement set forth in RG-348, the design parameters must be modified and the solver rerun.




Johnson Ranch Elementary
Construction Plans -- 4 of 5

| IMPERVIOUS COVER SUMMARY | | |
|---|---|---|
| IMPERVIOUS COVER | SQ. FT. | ACRES |
| STRUCTURES/ROOFTOPS | 85,194 | 1.96 |
| PARKING | 116,397 | 2.67 |
| OTHER PAVED SURFACES | 22,390 | 0.51 |
| TOTAL I.C. | 223,982 | 5.14 |

REQUIRED LOAD REMOVAL BASED ON THE ENTIRE PROJECT:

COUNTY = COMAL
TOTAL PROJECT AREA INCLUDED IN PLAN = 18.08 Acres
PREDEVELOPMENT IMPERVIOUS AREA WITHIN THE LIMITS OF THE PLAN = 0.15 Acres
TOTAL POST-DEVELOPMENT IMPERVIOUS AREA WITHIN THE LIMITS OF THE PLAN = 5.14 Acres
TOTAL POST-DEVELOPMENT IMPERVIOUS COVER FRACTION = 0.32
P = 33 Inches

TOTAL $L_M$ REQUIRED FOR THIS PLAN = 4479 lbs

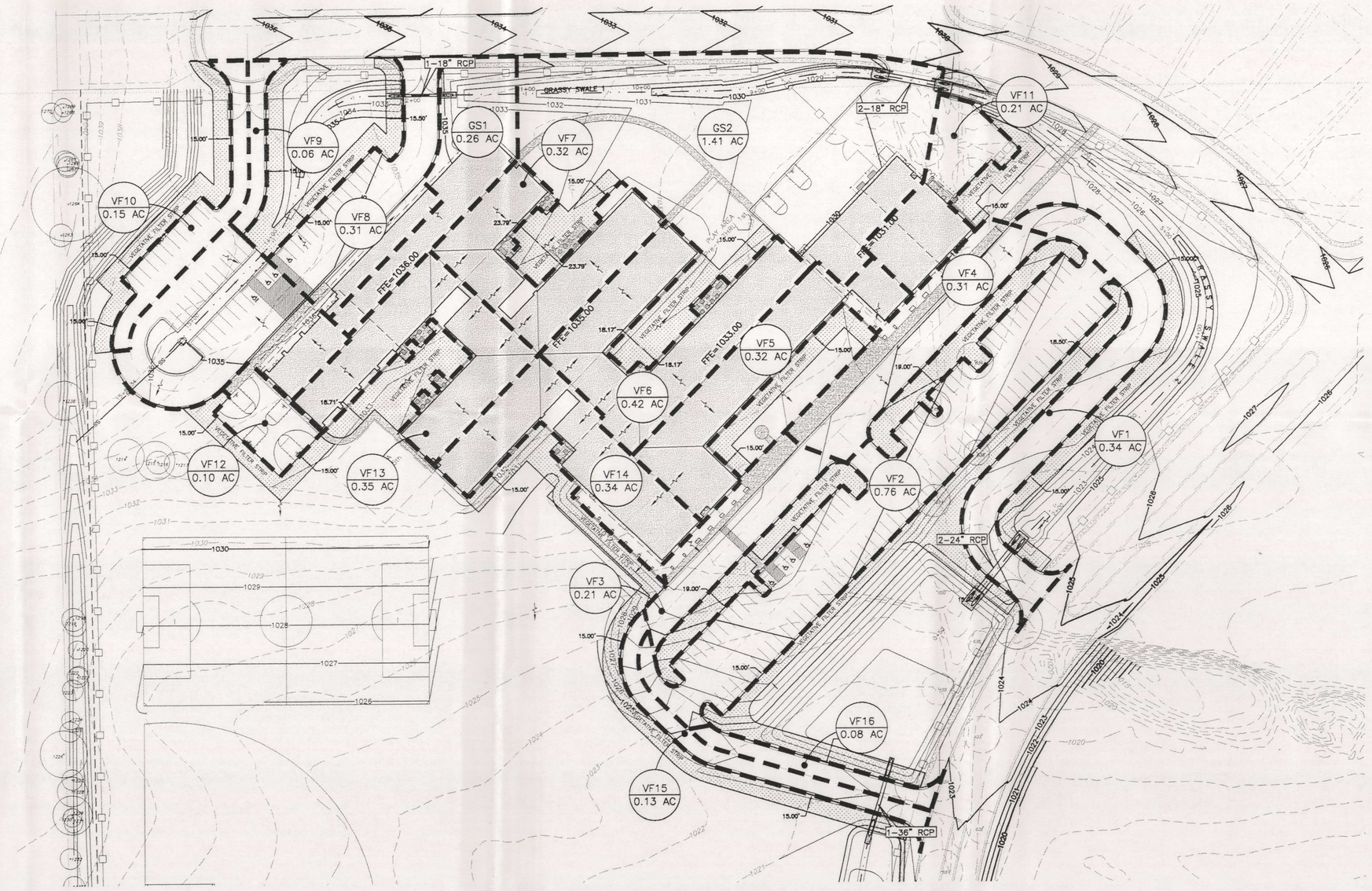
NOTES:

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%.

## WATER QUALITY SUMMARY

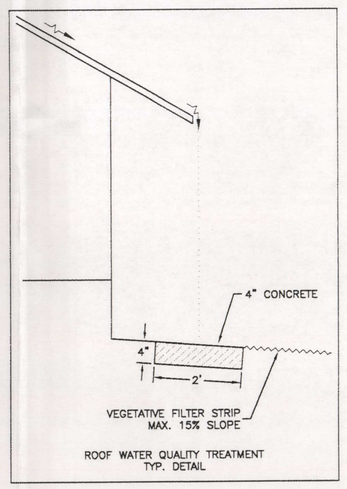
*1) Total Required Load Reduction* 4.479 lbs
*2) TSS Removed* 4.526 lbs
*3) Deficit/ Excess* 47.00 lbs

| Area Number | Area (AC) | Impervious Cover (AC) | BMP | Efficiency | TSS Removed (lbs) |
|---|---|---|---|---|---|
| VF1 | 0.34 | 0.34 | Filter Strip | 85% | 330 |
| VF2 | 0.76 | 0.76 | Filter Strip | 85% | 738 |
| VF3 | 0.21 | 0.21 | Filter Strip | 85% | 204 |
| VF4 | 0.31 | 0.29 | Filter Strip | 85% | 284 |
| VF5 | 0.32 | 0.32 | Filter Strip | 85% | 311 |
| VF6 | 0.40 | 0.40 | Filter Strip | 85% | 388 |
| VF7 | 0.30 | 0.30 | Filter Strip | 85% | 291 |
| VF8 | 0.31 | 0.31 | Filter Strip | 85% | 301 |
| VF9 | 0.06 | 0.06 | Filter Strip | 85% | 58 |
| VF10 | 0.15 | 0.15 | Filter Strip | 85% | 146 |
| VF11 | 0.21 | 0.21 | Filter Strip | 85% | 206 |
| VF12 | 0.10 | 0.10 | Filter Strip | 85% | 97 |
| VF13 | 0.34 | 0.34 | Filter Strip | 85% | 330 |
| VF14 | 0.33 | 0.33 | Filter Strip | 85% | 320 |
| VF15 | 0.13 | 0.13 | Filter Strip | 85% | 126 |
| VF16 | 0.08 | 0.08 | Filter Strip | 85% | 68 |
| GS1 | 0.26 | 0.13 | Grassy Swale | 70% | 106 |
| GS2 | 1.41 | 0.26 | Grassy Swale | 70% | 222 |
| Total | 7.45 | 4.35 | | Total | 4,526 |

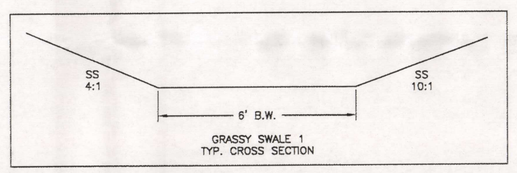


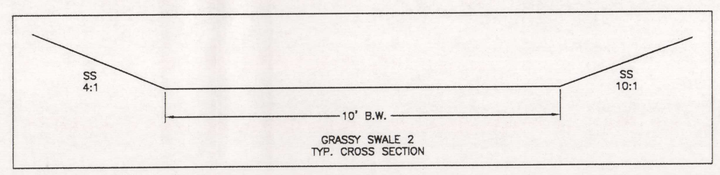

WATER QUALITY AREAS FOR TSS LOAD CALCULATION

SCALE: 1"=80'




## GRASSY SWALE DESIGN

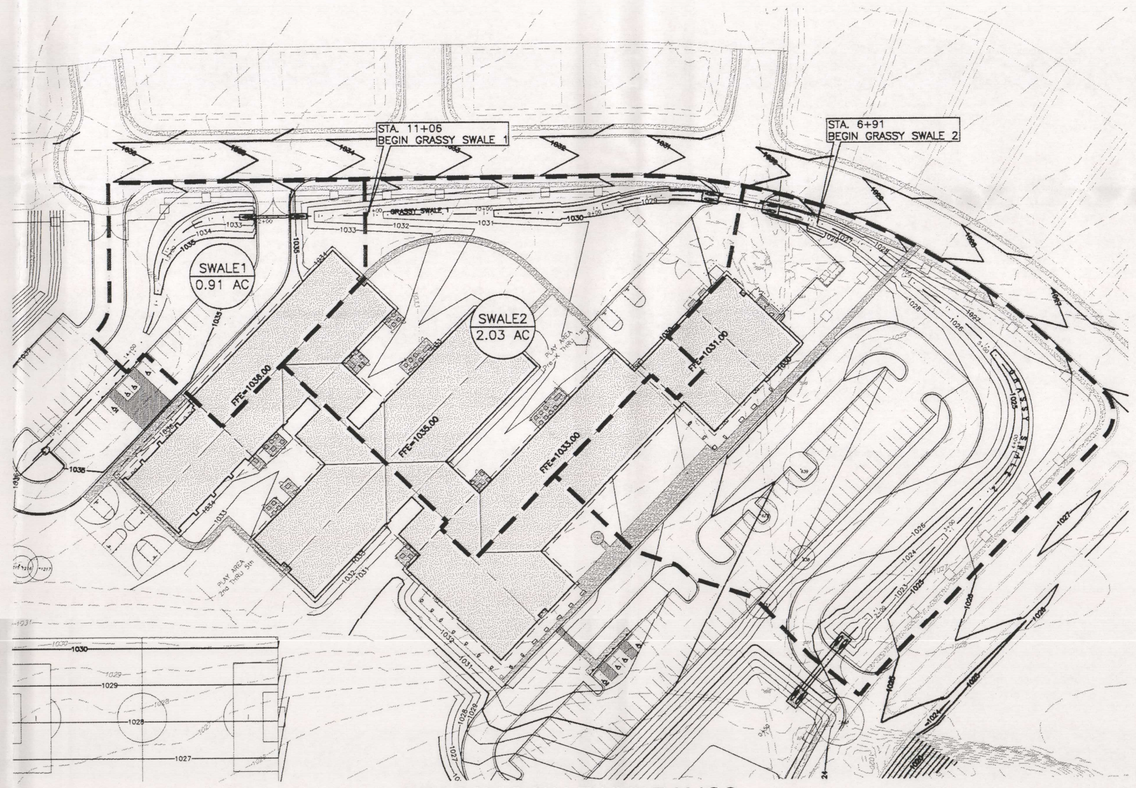



Comal County Elementary School
Water Quality Calculations Based on TCEQ Edwards Aquifer Technical Guidance Manual (June 2005)

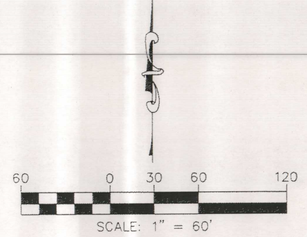
Grassy Swale Data

| 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 | 0.01 | 6 | 4 | 10 | 0.03 | 0.53 | 0.36 | 0.33 | 107 | 300 |
| 2 | 0.017 | 10 | 4 | 10 | 0.03 | 1.78 | 0.47 | 0.33 | 141 | 300 |




GRASSY SWALE HYDRALICS

SCALE: 1"=80'





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

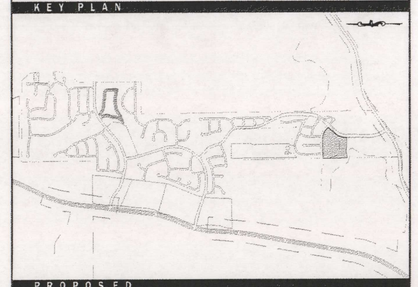
LEGEND

- BOUNDARY LINE
- PROPOSED R.O.W.
- LOT LINE
- CURB AND GUTTER
- DRAINAGE AREA BOUNDARY
- GRASSY SWALE CL
- EXISTING 5ft CONTOUR
- EXISTING 1ft CONTOUR
- PROPOSED 5ft CONTOUR
- PROPOSED 1ft CONTOUR
- WATER QUALITY DISCHARGE HEADWALL
- WATER QUALITY SAFETY END TREATMENT
- HP HIGH POINT
- LP LOW POINT
- RUNOFF FLOW ARROW
- XX / XX.XX DRAINAGE AREA INDENTIFIER
- ROOF W.Q. TREATMENT
- VEGETATIVE FILTER STRIP
- TREE TO BE PRESERVED
- TREE TO BE REMOVED
- FENCE

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
3101 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

SEAL




DATA

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

SHEET TITLE
WATER QUALITY PLAN

C9.1

LOOMIS AUSTIN

ENGINEERING, LAND SURVEYING & ENVIRONMENTAL CONSULTING

# Permanent Pollution Abatement Measures
# Johnson Ranch Elementary School

### Inspection and Maintenance Schedule for Permanent Abatement Measures

| Recommended Frequency | Task to be Performed | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| **After Rainfall** | | | | | | | | | | | | | | |
| **Bianually*** | | | | | | | | | | √ | | | | |

** At least one biannual inspection must occur during or immediately after a rainfall event.*

*√ Indicates maintenance procedure that applies to this specific site.*

See description of maintenance task to be performed on the following pages. Frequency of maintenance tasks may vary depending on amount of rainfall and other weather related conditions.

A written record should be kept of inspection results and maintenance performed.

| Task No. & Description | Included in this project |
|---|---|
| 1. Check Depth of Vegetation | No |
| 2. Check Depth of Silt Deposit in Basin | No |
| 3. Removal of Debris and Trash | No |
| 4. Cut-off Valve | No |
| 5. Inlet Splash Pad | No |
| 6. Underdrain System | No |
| 7. Structural Integrity | No |
| 8. Discharge Pipe | No |
| 9. Drawdown Time | No |
| 10. Vegetated Filter Strips & Grassy Swales | Yes |
| 11. For Pump Stations | No |
| 12. For Pump Stations | No |
| 13. For Pump Stations | No |
| 14. Visually Inspect Security Fencing for Damage or Breach | No |

## Maintenance Procedures for Permanent Pollution Abatement Measures

1. Check Depth of Vegetation. Vegetation in the basin shall not exceed 18-inches in depth. When vegetation needs to be cut, it shall be cut to an approximately 4-inch height. A written record should be kept of inspection results and maintenance performed.

2. Check Depth of Silt Deposit in Basin. Top of cleanouts shall be set 4-inches above sand layer. When silt has accumulated to top of cleanouts, the silt shall be removed the top 2 inches of the sand media shall also be removed and replaced with clean silica based sand. Written record should be kept of inspection results and maintenance performed.

3. Removal of Debris and Trash. The basin and inlet structure shall be checked for the accumulation of debris and trash such as brush, limbs, leaves, paper cups, aluminum cans, plastic bottles etc. Accumulated trash and debris shall be raked or collected from the basin and inlet structure and disposed of properly. Written record should be kept of inspection results and maintenance performed.

4. Cut-off Valve. The cut-off valve shall be turned to confirm full opening and full closure. Prior to operating the valve, the valve setting shall be checked to determine the position to which the valve is to be returned (which should limit drawdown time of the basin between 24-hours and 48 hours). Count should be kept of number of turns to open and close the valve so that the valve can be reset to the starting position. Defects in the operation of the cut-off valve shall be corrected within 7 working days. A written record should be kept of inspection results and maintenance performed.

5. Inlet Splash Pad. The filter area around the inlet splash pad shall be checked for erosion and for the condition of the rock rubble. Erosion or disturbance of the rock rubble should be corrected by removing the rock rubble, restoring missing sand media to appropriate depth and replacement of the rock rubble. If the condition persists in subsequent inspections, the size of the rock rubble should be increased. Rubble should be placed to a density that minimizes the amount of exposed sand between the rock rubble. Deficiencies should be corrected within seven working days. A written record should be kept of inspection results and maintenance performed.

6. Underdrain System. The underdrain system shall be visually inspected for the accumulation of silt in the pipe system. The pipe clean-outs shall have the caps removed and visually inspected for accumulation of silt deposits. If silt deposits appear to have accumulated so as to significantly reduce the drain capacity of the pipes then maintenance shall be performed. When silt deposits have accumulated to the stage described above, the clean-outs and drainpipes can be flushed with a high-pressure water flushing process. Clean-out caps must be replaced onto the clean-outs after maintenance so as to avoid the possibility of short circuiting the filtering process. Sediment accumulation at outlet pipe or in wet well due to flushing shall be removed and disposed of properly. A written record should be kept of inspection results and maintenance performed.

7. Structural Integrity. In addition to Items 1 through 6 the following are measures which should be reviewed during a check of structural integrity:

- Observe the height of the confining berm for visible signs of erosion or potential breach. Signs of erosion should be corrected within 2 weeks or immediately in case of emergency conditions. Corrective measures include but are not limited to addition of top soil or appropriate soil material so as to restore the original berm height of the sand filter basin. Restored areas shall be protected through placement of block sod in a checkerboard pattern.
- Bypass of filter process. This condition can manifest itself in several ways. One way is by visually inspecting the clean-outs for accumulation of silt as described in Item6. Significant accumulations of silt could be a sign of a torn filter fabric. Observations should be made over several inspection cycles to determine whether the condition persists. A second non-intrusive way of making observations for structural condition would be to visually look for collapsed or depressed areas along the edge of the filter media interface with basin side slope. If condition exists, corrective action should be performed within 15 working days. Removal of sand and replacement of filter fabric and/or pipe and gravel may be necessary. A written record should be kept of inspection results and corrective measures taken.

8. Discharge Pipe. The basin discharge pipe shall be checked for accumulation of silt, debris, or other obstructions which could block flow. Soil accumulations vegetative overgrowth, and other blockages should be cleared from the pipe discharge point. Erosion at the point of discharge shall be monitored. If erosion occurs, the addition of rock rubble to disperse the flow should be accomplished. A written record should be kept of inspection results and corrective measures taken.

9. Drawdown Time. This characteristic can be a sign off the need for maintenance. The minimum drawdown time is 24 hours. If drawdown time is less than 24 hours, the gate valve shall be checked and partially closed to limit the drawdown time. Extensive drawdown time greater than 48 hours may indicated blockage of the sand media, the underdrain system and/or discharge pipe. Corrective actions should be performed and completed within 15 working days. A written record should be kept of inspection results and corrective measures taken.

10. Vegetated Filter Strips & Grassy Swales. Vegetation height for native grasses shall be limited to no more than 18-inches. When vegetation exceeds that height, the filter strip shall be cut to a height of approximately 4 inches. Turf grass shall be limited to a height of 4 inches with regular maintenance that utilizes a mulching mower. Trash and debris shall be removed from filter strip prior to cutting. Check filter strip for signs of concentrated flow and erosion. Areas of filter strip showing signs of erosion shall be repaired by scarifying the eroded area, reshaping and placement of block sod in a checkerboard pattern over the affected area. A written record should be kept of inspection results and corrective measures taken.

11. For Pump Stations. Check wet well discharge pipe to confirm flow through the pump system. If flow is not present, allow sufficient time for pump to cycle on and off. If flow does not occur, the wet well should be checked for the level of water. The wet well should be opened and the on/off float switches should be moved up and down to activate the pump. If

the pump does not start, a repair technician shall be called in to repair the malfunction within 5 working days. A written record should be kept of inspection results and corrective measures taken.

12. For Pump Stations. Check the wet well for accumulation for trash, debris, and silt. Trash and debris shall be removed and disposed of properly. Silt depth can be checked by probing the bottom of the wet well with a stick or PVC pipe. Silt accumulations should be removed when silt collects to a depth of 6 inches over the entire wet well bottom. Silt can be removed by vacuum pump method. If silt buildup continues, underdrain system shall be inspected. A written record should be kept of inspection results and corrective measures taken.

13. For Pump Stations. Visually check aboveground pump wiring and connections for damage. Damaged or loose connections should be repaired within 5 working days. A written record should be kept of inspection results and corrective measures taken.

14. Visually Inspect Security Fencing for Damage or Breach. Check maintenance access gates for proper operation. Damage to fencing or gates shall be repaired within 5 working days. A written record should be kept of inspection results and corrective measures taken.

# Permanent Pollution Abatement Measures
# Johnson Ranch Elementary School

## Maintenance Plan and Schedule Acknowledgement and Agreement

This document has been prepared to provide a description of and schedule for the performance of maintenance on permanent pollution abatement measures. Maintenance measures to be performed will be dependent on what permanent pollution abatement measures are incorporated into the project. The project specific water pollution abatement plan should be reviewed to determine what permanent pollution abatement measures are incorporated into a project.

It should also be noted that the timing and procedures presented herein are general guidelines, adjustment to the timing and procedures may have to be made depending on project specific characteristics as well as weather related conditions.

Where a project is occupied by the owner, the owner may provide for maintenance with his own skilled forces or contract for recommended maintenance of Permanent Best Managements Practices. Where a project is occupied or leased by a tenant, the owner shall require tenants to contract for such maintenance services either through a lease agreement, property owner's association covenants, or other binding document.

I understand that I am responsible for maintenance of the permanent pollution abatement measures included in this project until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property is transferred.

I, the owner, have read and understand the requirements of this maintenance plan and schedule.

M H Walker

Marc Walker
Superintendent

8/7/07

Date

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

I Marc Walker,
Print Name

Superintendent
Title - Owner/President/Other

of Comal Independent School District
Corporation/Partnership/Entity Name

have authorized Charles W. Kaough, P.E.
Print Name of Agent/Engineer

of Loomis Austin, Inc.
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 applicants 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.

M H Walker
Applicant's Signature

8/7/07
Date

THE STATE OF Tx §

County of Comal §

BEFORE ME, the undersigned authority, on this day personally appeared Marc Walker 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 7 day of Aug, 2007

NOTARY PUBLIC Jean M. Mendez

Typed or Printed Name of Notary

MY COMMISSION EXPIRES:

JEAN M. MENDEZ
Notary Public, State of Texas
My Commission Expires 2-18-2011

Texas Commission on Environmental Quality
Edwards Aquifer Protection Plan
**Application Fee Form**

NAME OF PROPOSED REGULATED ENTITY: **CISD – Johnson Ranch Elementary**
REGULATED ENTITY LOCATION: **1421 N. Business 35**
NAME OF CUSTOMER:
CONTACT PERSON: Marc Walker PHONE: 830-221-2039
(Please Print)

Customer Reference Number (if issued): CN 600249825 (nine digits)
Regulated Entity Reference Number (if issued): RN _____ (nine digits)

**AUSTIN REGIONAL OFFICE (3373)**
☐ Hays
☐ Travis
☐ Williamson

**SAN ANTONIO REGIONAL OFFICE (3362)**
☐ Bexar
☒ Comal
☐ Kinney
☐ Medina
☐ Uvalde

APPLICATION FEES MUST BE PAID BY CHECK, CERTIFIED CHECK, OR MONEY ORDER, PAYABLE TO THE Texas Commission on Environmental Quality. YOUR CANCELED CHECK WILL SERVE AS YOUR RECEIPT. **THIS FORM MUST BE SUBMITTED WITH YOUR FEE PAYMENT**. THIS PAYMENT IS BEING SUBMITTED TO (CHECK ONE):

☒ **SAN ANTONIO REGIONAL OFFICE**
☐ **Mailed to TCEQ**:
TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☐ **AUSTIN REGIONAL OFFICE**
☐ **Overnight Delivery to TCEQ**:
TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
512/239-0347

| Type of Plan | Size | | Fee Due |
|---|---|---|---|
| Water Pollution Abatement, One Single Family Residential Dwelling | | Acres | $ |
| Water Pollution Abatement, Multiple Single Family Residential and Parks | | Acres | $ |
| Water Pollution Abatement, Non-residential | 16.06 | Acres | $ 5,000.00 |
| 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

8/20/07
Date

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

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

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program
**Application Fee Schedule**
**30 TAC §213.14 (effective 11/14/97) & 30 TAC §213.9 (effective 6/1/99)**

## Water Pollution Abatement Plans and Modifications

| PROJECT | PROJECT AREA IN ACRES | FEE |
|---|---|---|
| One Single Family Residential Dwelling | <5 | $500 |
| Multiple Single Family Residential and Parks | <5<br>5 < 10<br>10 < 50<br>≥50 | $1,000<br>$2,000<br>$3,000<br>$5,000 |
| Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur) | < 1<br>1 < 5<br>5 < 10<br>≥10 | $2,000<br>$3,000<br>$4,000<br>$5,000 |

## Organized Sewage Collection Systems and Modifications

| PROJECT | COST PER LINEAR FOOT | MINIMUM FEE MAXIMUM FEE |
|---|---|---|
| Sewage Collection Systems | $0.50 | $500 - $5,000 |

## 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 | $500 | $500 - $5,000 |

## Exception Requests

| PROJECT | FEE |
|---|---|
| Exception Request | $250 |

## Extension of Time Requests

| PROJECT | FEE |
|---|---|
| Extension of Time Request | $100 |

# TCEQ Core Data Form

TCEQ Use Only

If you have questions on how to fill out this form or about our Central Registry, please contact us at 512-239-5175.

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

## SECTION I: General Information

**1. Reason for Submission** *Example: new wastewater permit; IHW registration; change in customer information; etc.*

New Water Pollution Abatement Plan

| 2. Attachments | | | | Describe Any Attachments: *(ex: Title V Application, Waste Transporter Application, etc.)* |
|---|---|---|---|---|
| | YES | √ | NO | N/A |

| 3. Customer Reference Number-*if issued* | | | | 4. Regulated Entity Reference Number-*if issued* | | | |
|---|---|---|---|---|---|---|---|
| CN | 600249825 | *(9 digits)* | | RN | none | | *(9 digits)* |

## SECTION II: Customer Information

**5. 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 and Operator | |
|---|---|---|---|---|---|---|---|
| | Occupational Licensee | | Volunteer Cleanup Applicant | | | Other | |
| *TCEQ Use Only* | | | **Superfund** | | **PST** | | **Respondent** |

**6. General Customer Information**

| | | | |
|---|---|---|---|
| | New Customer | | Change to Customer Information |
| | Change in Regulated Entity Ownership | √ | No Change * |

***If "No Change" and Section I is complete, skip to Section III - Regulated Entity Information.**

| 7. Type of Customer: | | | | | |
|---|---|---|---|---|---|
| | Individual | | Sole Proprietorship - D.B.A. | | |
| | Partnership | | Corporation | | Federal Government |
| | State Government | | County Government | | City Government |
| | Other Government | Local Government | | Other: | |

| 8. Customer Name *(If an individual, please print last name first)* | *If new name, enter previous name:* |
|---|---|
| | |

| 9. Mailing Address: | | | | |
|---|---|---|---|---|
| | | | | |
| City | State | ZIP | ZIP + 4 | |
| | | | | |

| 10. Country Mailing Information *if outside USA* | 11. E-Mail Address *if applicable* |
|---|---|
| | |

| 12. Telephone Number | 13. Extension or Code | 14. Fax Number *if applicable* |
|---|---|---|
| | | |

| 15. Federal Tax ID *(9 digits)* | 16. State Franchise Tax ID Number *if applicable* | 17. DUNS Number *if applicable (9 digits)* |
|---|---|---|
| | | |

| 18. Number of Employees | | | | | | | | | | 19. Independently Owned and Operated? | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0-20 | | 21-100 | | 101-250 | | 251-500 | | 501 and higher | | Yes | | No |

## SECTION III: Regulated Entity Information

**20. General Regulated Entity Information**

| | | | | | |
|---|---|---|---|---|---|
| √ | New Regulated Entity | | Change to Regulated Entity Information | | No Change* |

*If "No Change" and Section I is complete, skip to Section IV - Preparer Information.

| 21. Regulated Entity Name *(If an individual, please print last name first)* | | | | |
|---|---|---|---|---|
| CISD - Johnson Ranch Elementary | | | | |
| **22. Street Address (No PO Boxes)** | | | | |
| | | | | |
| | City | State | ZIP | ZIP + 4 |
| | | | | |
| **23. Mailing Address** | 1421 North Business 35 | | | |
| | | | | |
| | City | State | ZIP | ZIP + 4 |
| | New Braunfels | Texas | 78130 | |
| **24. E-Mail Address:** | thomas.bloxham@comalisd.org | | | |

| 25. Telephone Number | 26. Extension or Code | 27. Fax Number *if applicable* |
|---|---|---|
| 830-221-2039 | | |

| 28. Primary SIC Code (4 digits) | 29. Secondary SIC Code (4 digits) | 30. Primary NAICS Code (5 or 6 digits) | 31. Secondary NAICS Code (5 or 6 digits) |
|---|---|---|---|
| 8211 | | | |

**32. What is the Primary Business of this entity? (Please do not repeat the SIC or NAICS description)**

Elementary School

**Questions 33 - 37 address geographic location. Please refer to the instructions for applicability.**

| 33. County | Comal |
|---|---|

**34. Description of Physical Location**

Northeast corner of US 281 and Fm 1863. Entrance at FM1863 approximately 0.5 miles east from the intersection with US 281.

| 35. Nearest City Bulverde | State | Nearest Zip |
|---|---|---|
| | Texas | 78163 |

| *36. Latitude (N)* | | | *37. Longitude (W)* | | |
|---|---|---|---|---|---|
| *Degrees* | *Minutes* | *Seconds* | *Degrees* | *Minutes* | *Seconds* |
| 29° | 44' | 57.35" | 98° | 25' | 12.80" |

**38. TCEQ Programs In Which This Regulated Entity Participates** *Not all programs have been listed. Please add to this list as needed. If you don't know or are unsure, please mark "Unknown".* If you know a permit or registration # for this entity, please write it below the program."

| | | | | | |
|---|---|---|---|---|---|
| | Animal Feeding Operation | | Petroleum Storage Tank | | Water Rights |
| | | | | | |
| | Title V - Air | | Wastewater Permit | √ | WPAP Application |
| | | | | | |
| | Industrial & Hazardous Waste | | Water Districts | | |
| | | | | | |
| | Municipal Solid Waste | | Water Utilities | | Unknown |
| | | | | | |
| | New Source Review - Air | | Licensing - TYPE(s) | | |
| | | | | | |

**Section IV: Preparer Information**

| 39. Name | 40. Title |
|---|---|
| Charles W. Kaough, P.E. | Professional Engineer |

| 41. Telephone Number | 42. Extension or Code | 43. Fax Number *if applicable* |
|---|---|---|
| 512-327-1180 | none | 512-327-4062 |

| *44. E-mail Address:* | ckaough@loomisaustin.com |
|---|---|

LOOMIS AUSTIN

ENGINEERING, LAND SURVEYING &
ENVIRONMENTAL CONSULTING

RECEIVED
NOV 15 2007
COUNTY ENGINEER

2007 OCT 22 PM 1:59

"RECEIVED TCEQ"
SAN ANTONIO
REGION

October 9, 2007

Lynn Bamguardner
Water Section Work Leader
TCEQ San Antonio Regional Office
14250 Judson Road
San Antonio, Texas 78233

RE: CISD Johnson Ranch Elementary School; Located on the north side of FM 1863 east of US Hwy 281; Bulverde ETJ, Texas
Investigation No. 593665

We have modified the above referenced plans to address your comments presented in the review report dated October 8, 2007:

1. Clearly label the site boundary for this project. Remove the site boundary notation from other site plan sheets that detail the boundary for the larger development.

RE: This has been corrected.

2. Per 30 TAC 213, the definition of "site" id the legal boundaries of the property. From information provided by Comal County Appraisal District, it appears the 16.06 acre site is part of a larger area of approximately 200 acres. Verify the legal boundaries of the site. Provide new and relevant platting information as necessary. If Comal Independent School District is not the legal owner of the site, then they must be authorized (Agent Authorization Form) by the legal land owner to submit the WPAP or Comal ISD must demonstrate that they have the right to posses and/or control the property.

RE: The CISD parcel was created by the Johnson Ranch plat approved by the City of Bullverde on August 14, 2007 and the CISD has designated Loomis-Austin, Inc. as the Authorized Agent for this WPAP. The plat is included in this response package.

3. Verify if there is any impervious cover proposed for the soccer or baseball fields and if so, verify it has been included in the total impervious cover for the site.

RE: It has been verified that there is no impervious cover proposed for the soccer or baseball field. The baseball field shown is a symbol for an area where ball can be played. This will be an elementary school, so no organized baseball is planned.

4. The onsite total drainage area (15.82 acres) and impervious cover amounts (5.16 acres) provided in the "Drainage – Peak Flow Calculation" table on Sheet C3.2 do not correspond to the total site acreage provided on Item 2 and 4 of TCEQ-0584. Confirm the total site acreage and total impervious cover and revise the plan as necessary.

RE: The site acreage has been confirmed and corrected on the TCEQ-0584 form.

5. Clearly demonstrate the direction of stormwater runoff from impervious cover. Provide additional contours lines, spot elevations and drainage flow arrows for the parking lot and driveway areas, specifically the northwestern parking lot and drive and the northern driveway area.

RE: Additional flow arrows and spot elevations have been provided.

6. For the filter strips adjacent to parking lots and driveways, detail the pavement/filter strip transition.

RE: A cross section of the parking lot and driveways have been included on the grading plan sheet and the curb types are called out on the dimensioning plan.

7. It appears the scale (1"=80') for Water Quality Areas for TSS Load Calculation" is incorrect and should be at the scale of 1"=60'. Verify the correct scale for both site layouts and amend sheet C9.1 as necessary.

RE: This has been corrected

8. Per Section 3.4.6 of the Edwards Aquifer Technical Guidance Manual (TGM, 2005) engineered filter strips must be at least 15 feet wide in the direction of flow and have less than 72 feet of impervious cover in the direction of flow. Clarify the following items to meet the requirements of the TGM (2005).

RE: Due to being unable to get 85% removal credit for the vegetative filter strip treatment the overall strategy of the water quality plan has changed. The water quality plan now accounts for all of the impervious cover and the water quality treatment being provided for that impervious cover and an extended detention pond has been added to the plan. The addition of the extended detention pond has increased removal efficiencies in the drainage area draining to the pond by having a combination of grassy swales and vegetative filter strips in series with the pond.

The categories for treatment and the percentage of impervious cover receiving this treatment is itemized in the table below.

| Comal I.S.D. Impervious Cover Treatment Calcs | | | |
|---|---|---|---|
| I.C. ( ac.) | Treatment | % Impervious of Cover | Treatment Efficiency (%) |
| 0.350 | Ext det | 6.7% | 75.0 |
| 0.380 | Swale | 7.2% | 70.0 |
| 0.230 | Untreated | 4.4% | 0.0 |
| 0.600 | Swale+ Ext Det | 11.4% | 84.6 |
| 0.960 | VFS | 18.3% | 80.0 |
| 2.740 | VFS+ Ext Det | 52.1% | 92.3 |
| 5.26 | Total I.C. | 100.0% | 82.4 |

| | | | |
|---|---|---|---|
| | **Total Removal Efficiency (%) =** | **82.4** | |
| | **Total TSS Removed (Lr) =** | **5108 lbs.** | |
| | **TSS Removal Required(m) =** | **4587 lbs.** | |
| | **Net TSS Removal =** | **521 lbs.** | |

Note that TSS removal efficiencies have been assigned to each treatment method. A total weighted treatment efficiency was calculated to determine the overall "Total TSS Removed". There is a net excess of 521 lbs. TSS removed from the runoff from the site.

Note that vegetative filter strips have been assigned a 80% removal efficiency, even though the TGM and spreadsheet clearly state the efficiency is 85%. Also, the water quality volume for the extended detention pond was calculated assuming a BMP efficiency based on a grassy swale and extended detention pond in series. Much of the upstream impervious cover is pre-treated with vegetative filter strips. See the attached spreadsheets for the overall TSS removal and extended detention

It appears there is greater than 72 feet of impervious cover in the direction of flow to the following filter strips. Provide additional contours lines, spot elevations or flow arrows to clarify the direction of stormwater runoff.

VF1, VF8, VF11, VF12

RE: The Water Quality Plan has been modified to illustrate the flow directions and dimensioning of the vegetative filter strips better.

a. For the following filter strips, it appears the filter strip width is not 15 feet wide in the direction of flow. If there is impervious cover draining to a filter strip from opposite sides (of the filter strip) then the filter strip must be at least 30 feet wide. If the impervious cover makes a right turn (90 degrees) around a filter strip, then 15 feet of impervious cover from one side of the 90 degree corner is not receiving treatment. Revise sheet C9.1 as necessary.

   VF2, VF5, VF6, VF7, VF11, VF13, VF14

RE: The Water Quality Plan has been modified to illustrate the flow directions and dimensioning of the vegetative filter strips better. The 90 degree areas have been accounted for.

b. For the following filter strips, it appears there is uncaptured impervious cover in the drainage area. Provide additional contour lines, flow arrows or spot elevations to clarify the direction of water flow and indicate any areas of impervious cover that will not drain to a filter strip.

   VF1, VF2, VF4, VF5, VF8, VF9, VF10, VF15, VF16

RE: The Water Quality Plan has been modified to illustrate the flow directions and dimensioning of the vegetative filter strips better.

c. For the following filter strips, it appears there are areas of impervious cover shown on the filter strip. Revise as necessary or demonstrate that the filter strip is still providing the required treatment.

   VF1 (culvert), VF3 (sidewalk), VF12 (sidewalk), VF13, VF15 (culvert), VF16 (culvert)

RE: The Water Quality Plan has been modified to illustrate the flow directions and dimensioning of the vegetative filter strips better.

d. For the following filter strips, the area amount shown in the label does not correspond to the area amount provided in the water quality summary table.

   VF6, VF7, 13, VF14

RE: The Water Quality Plan has been modified to illustrate the flow directions and dimensioning of the vegetative filter strips better. Due to being unable to get 85% removal credit for the vegetative filter strip treatment the overall strategy of the water quality plan has changed.

e. Other:

i. Verify the drainage pattern for VF10 by providing additional contour lines, flow arrows, or spot elevations. It appears from the contour lines shown that stormwater would not drain to the filter strip.

RE: This has been corrected. See responses above.

9. Refer to Section 3.4.5 of the TGM (2005), for information on the design criteria for grassy swales. Revise the following items and provide revised calculations as necessary.

a. The minimum channel slope is 0.5%. The channel slopes proposed are 0.01% and 0.017%.

RE: This typographic error has been corrected. See the attached grassy swale design spreadsheet for details of design.

b. Drainage areas shown in "Water Quality Areas for TSS Load Calculations" do not correspond to the drainage areas shown in "Grassy Swale Hydraulics". The boundary line for Swale 1 does not correspond to the boundary lines for GS1 and VF8. The boundary line for Swale2 does not correspond to the lines for GS2 and VF11. Revise sheet C9.1 as necessary and confirm the "Water Quality Summary" table displays the correct information.

RE: This has been corrected the tables have been revised.

c. Clarify how and where stormwater from GS2 enters the swale.

RE: The plans have been modified to clarify how the stormwater drains from the site.

d. It appears there is a sidewalk that crosses grassy swale 2. Revise the plan as necessary so no impervious cover intersects, crosses or contributes (without being accounted) to a grassy swale.

RE: The plans have been revised to account for the sidewalk.

e. It appears there is stormwater from vegetative filter strips draining into the grassy swale before the residence time for stormwater from GS2 has been met. For example, stormwater from VF1 drains through the filter strip and into the swale compromising the TSS treatment of that swale, if not properly accounted for. Provide time of concentration values for the site detailing that all stormwater being treated by the swale has the proper residence time before additional stormwater enters the swale or properly size the swale for the additional stormwater.

RE: The grassy swale plan has been modified to account for this area.

10. The required TSS reduction (Lm) for the site is 4,479 pounds of TSS (5.14 acres of impervious cover with 0.16 acres impervious cover pre-existing). Currently (depending on the amount of uncaptured areas), 3,904.6 pounds of TSS is being treated resulting in a deficiency of 574.4 pounds. As stated on TSS Removal Calculations 05-09-2006 spreadsheet, cell 291-294, "There are no calculations required for determining the load or size of vegetative filter strips. The 80% removal is provided when the contributing drainage area does not exceed 72 feet (direction of flow) and the sheet flow leaving the impervious cover is directed across 15 feet of engineered filter strips..." Overtreatment based upon the efficiency of vegetative filter strips will not be approved. Revise the provided BMPs or provide additional BMPs to meet the required TSS reduction amount.

RE: The water quality plan has been modified based on no over-treatment credit for vegetative filter strips. However, we still believe that 85% removal efficiency should be credited for the vegetative filter strips as was stated in the first submittal. Please refer to the attached letter addressing this issue in the first submittal.

11. It appears a detention basin is shown on sheet C9.1. If a detention basin is proposed as a BMP for TSS reduction, then it must meet the criteria stated in the TGM (2005) for extended detention basins and calculations must be provided. The statement, "When grassy swales are used to convey runoff to detention basins, the required reduction can normally be achieved" refers to extended detention basins that meet the requirements of the TGM (2005).

RE: The detention pond has been modified to include extended detention. See the attached design calculations spreadsheet. Note that the extended detention volume is larger than needed because the treatment with vegetative filter strips was not accounted for in the BMP efficiency. A more conservative value, grassy swale and extended detention, was used. This can account for the area draining directly into the extended detention pond.

12. The following table lists acreage amounts used in the grassy swale calculations and on sheet C9.1. Verify and explain the correct numbers and revise the calculations and plan sheets as necessary.

| | GS1 | GS2 |
|---|---|---|
| Spreadsheet calculations | 0.91 acres total | 2.97 acres total<br>1.56 acres imp. cover |
| Sheet C9.1 Water Quality Areas for TSS Load Calculations | 0.63 acres total<br>0.44 acres imp. cover | 2.11 acres total<br>0.96 acres imp. cover |
| Sheet C9.1 Grassy Swale Hydraulics | 0.91 acres total | 2.06 acres total |
| A: GS1 total is the addition of drainage areas GS1, VF8, VF9<br>GS2 total is the addition of drainage areas GS2, VF6, VF7 | | |

RE: These calculations have been modified.

13. In addition with Item 8C of this letter, indicate and internalize all areas of impervious cover at the site that are uncaptured or not treated by a permanent BMP.

RE: The uncaptured impervious cover areas are shown on the water quality plan and the area has been quantified in the summary table.

Please let me know if you have any questions or comments regarding the updated submittal.

Sincerely,

Charles Kaough, P.E.

Site TSS Load Calcs. 1/2

Texas Commission on Environmental Quality

***TSS Removal Calculations 10-20-2007***

**Project Name:** Comal ISD
**Date Prepared:** 10/20/2007

**Text shown in magenta provide instructions for the use of this spreadsheet.**
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 are calculated fields. Changes to these fields will remove equations used in the spreadsheet.

**1. The Required Load Reduction from 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:
Lm = Required TSS removal
$A_N$ = Net increase in impervious area for site
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 * = | 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 $L_M$ required for this plan = **4587** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = **2**

Separate calculations should be prepared for each drainage basin / outfall area.
The calculations must include Sections 2 through 6 and the Section for the appropriate BMP proposed, e.g Section 9 for Sand Filters.
A summation of the load removal calculations must be provided.
It should include justifcations indicating that the project meets the requirements of the Edwards Aquifer Rules.
The permanent BMP calculations and summary must be signed, sealed, and dated by the P.E. making the submittal.

**2. Calculations for the Required Load Reduction:**

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

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

where:
Lm = Required TSS removal
$A_N$ = Net increase in impervious area for site
P = Average annual precipitation, inches

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

| | | |
|---|---|---|
| Total drainage basin / outfall area * = | 16.10 | acres |
| Predevelopment impervious area within drainage basin / outfall area * = | 0.15 | acres |
| Post-development impervious area within drainage basin / outfall area * = | 5.26 | acres |
| Post-development impervious fraction within drainage basin / outfall area * = | 0.33 | |
| P = | 33 | inches |

$L_M$ = **4587** lbs.

* The values entered in these fields should be for the drainage basin / outfall area.

**3. Indicate the Drainage Basin and Select the desired BMP Code for this Section.**

| | | |
|---|---|---|
| Proposed BMP = | Weighted | abbreviation |
| Removal efficiency = | 82.4 | percent |

| BMP Code: | BMP Type: |
|---|---|
| AC | Aqualogic Cartridge Fi |
| BR | Bioretention |
| CW | Constructed Wetland |
| ED | Extended Detention |
| GS | Grassy Swale |
| RI | Retention / Irrigation |

Site TSS Load calcs.
2/2

| | |
|---|---|
| SF | Sand Filter |
| WB | Wet Basin |
| WV | Wet Vault |

**4. Calculate TSS Load Removed ($L_R$) from this Drainage Basin by the Proposed BMP Type.**

RG 348 Page Equation 3.7: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

where:

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

| | | |
|---|---|---|
| $A_C$ = | **16.10** | acres |
| $A_I$ = | **5.26** | acres |
| $A_P$ = | **10.84** | acres |
| $L_R$ = | **5108** | lbs |

Grassy Swale 1 1.1

**14. Grassy Swales** 1 Designed as Required in RG-348 Pages 3-51 to 3-54

Design parameters for the swale:

**Insert the design parameters for the drainage area and swale:**

| | | | |
|---|---|---|---|
| Drainage Area to be Treated by the Swale = A = | 0.88 | acres | |
| Impervious Cover in Drainage Area = | 0.46 | acres | |
| Rainfall intensity = i = | 1.1 | in/hr | |
| Swale Slope = | 0.01 | ft/ft | **The channel slope must be between 0.005 and 0.025** |
| Side Slope (z) = | 5 | | **z = the side slope of the swale in the form of z(H):1(V)** |
| Design Water Depth = y = | 0.33 | ft | |
| Weighted Runoff Coefficient = C = | 0.54 | | |

**The value for C in cell C209 is calculated from the values entered for the drainage area to the swale.**
**C = (Impervious Cover within Drainage Basin/Drainage Basin Area)*0.74 + (Pervious Cover within Drainage Basin/Drainage Basin Area)*0.33**

| | | |
|---|---|---|
| $A_{CS}$ = cross-sectional area of flow in Swale = | 1.48 | sf |
| $P_W$ = Wetted Perimeter = | 6.21 | feet |
| $R_H$ = hydraulic radius of flow cross-section = $A_{CS}/P_W$ = | 0.24 | feet |
| n = Manning's roughness coefficient = | 0.2 | |

**14A. Using the Method Described in the RG-348**

**Trapezoidal is the most common shape used for swale design. However, rectangular and triangluar shapes may be used.**
**The calculations included below assume that a trapezoidal shape is selected.**

**Use Manning's Equation to estimate the swale bottom width (b).**

$$\text{Mannings Equation:} \quad Q = \frac{1.49}{n} A_{CS} R_H^{2/3} S^{0.5}$$

**Manning's Equation cannot be used directly to solve for the bottom width of a trapezoidal swale.**
**For shallow flows (4 inches or less) the equation can be altered to:**

$$b = \frac{0.134 \times Q}{y^{1.67} S^{0.5}} - zy = 2.85 \text{ feet}$$

**Maximum bottom width = 10 feet**
**If b is greater than 10 feet, change design parameters and recalculate**
**If b is a negative value, set b = 2**

**The values for y, z, and S are taken from the information provided above.**

**To solve for "Q" in the altered Manning's Equation above.**
**Use the Rational Method Equation discussed in the TGM on Page 3-34, Equation 3.4:**

**Q = CiA =** 0.53 cfs

**To calculate the flow velocity in the swale:**

V (Velocity of Flow in the swale) = $Q/A_{CS}$ = 0.36 ft/sec

**If V is less than or equal to 1 ft/sec, the swale will function correctly.**
**If V is greater than 1 ft/sec, the swale will not function correctly and the design assumptions must be revised.**

**To calculate the resulting swale length:**

L = Minimum Swale Length = V (ft/sec) * 300 (sec) = 106.52 feet

If any of the resulting values do not meet the design requirement set forth in RG-348, the design parameters must be modified and the solver rerun.

Grassy Swale 2 (2.1)

**14. Grassy Swale # 2** Designed as Required in RG-348 Pages 3-51 to 3-54

Design parameters for the swale:

**Insert the design parameters for the drainage area and swale:**

| | | | |
|---|---|---|---|
| Drainage Area to be Treated by the Swale = A = | 3.63 | acres | |
| Impervious Cover in Drainage Area = | 1.88 | acres | |
| Rainfall intensity = i = | 1.1 | in/hr | |
| Swale Slope = | 0.025 | ft/ft | **The channel slope must be between 0.005 and 0.025** |
| Side Slope (z) = | 5 | | **z = the side slope of the swale in the form of z(H):1(V)** |
| Design Water Depth = y = | 0.33 | ft | |
| Weighted Runoff Coefficient = C = | 0.54 | | |

**The value for C in cell C209 is calculated from the values entered for the drainage area to the swale.**
**C = (Impervious Cover within Drainage Basin/Drainage Basin Area)*0.74 + (Pervious Cover within Drainage Basin/Drainage Basin Area)*0.33**

| | | |
|---|---|---|
| $A_{CS}$ = cross-sectional area of flow in Swale = | 3.86 | sf |
| $P_W$ = Wetted Perimeter = | 13.40 | feet |
| $R_H$ = hydraulic radius of flow cross-section = $A_{CS}/P_W$ = | 0.29 | feet |
| n = Manning's roughness coefficient = | 0.2 | |

**14A. Using the Method Described in the RG-348**

**Trapezoidal is the most common shape used for swale design. However, rectangular and triangluar shapes may be used.**
**The calculations included below assume that a trapezoidal shape is selected.**

**Use Manning's Equation to estimate the swale bottom width (b).**

$$\text{Mannings Equation: } Q = \frac{1.49}{n} A_{CS} R_H^{2/3} S^{0.5}$$

**Manning's Equation cannot be used directly to solve for the bottom width of a trapezoidal swale.**
**For shallow flows (4 inches or less) the equation can be altered to:**

$$b = \frac{0.134 \times Q}{y^{1.67} S^{0.5}} - zy = 10.04 \text{ feet}$$

**Maximum bottom width = 10 feet**
**If b is greater than 10 feet, change design parameters and recalculate**
**If b is a negative value, set b = 2**

**The values for y, z, and S are taken from the information provided above.**

**To solve for "Q" in the altered Manning's Equation above.**
**Use the Rational Method Equation discussed in the TGM on Page 3-34, Equation 3.4:**

**Q = CiA =** 2.17 cfs

To calculate the flow velocity in the swale:

V (Velocity of Flow in the swale) = $Q/A_{CS}$ = 0.56 ft/sec

**If V is less than or equal to 1 ft/sec, the swale will function correctly.**
**If V is greater than 1 ft/sec, the swale will not function correctly and the design assumptions must be revised.**

**To calculate the resulting swale length:**

L = Minimum Swale Length = V (ft/sec) * 300 (sec) = 168.42 feet

If any of the resulting values do not meet the design requirement set forth in RG-348, the design parameters must be modified and the solver rerun.

Grassy Swale 3 3.1

**14. Grassy Swale 3** Designed as Required in RG-348 Pages 3-51 to 3-54

Design parameters for the swale:

Insert the design parameters for the drainage area and swale:

| | | |
|---|---|---|
| Drainage Area to be Treated by the Swale = A = | 0.44 acres | |
| Impervious Cover in Drainage Area = | 0.38 acres | |
| Rainfall intensity = i = | 1.1 in/hr | |
| Swale Slope = | 0.02 ft/ft | The channel slope must be between 0.005 and 0.025 |
| Side Slope (z) = | 5 | z = the side slope of the swale in the form of z(H):1(V) |
| Design Water Depth = y = | 0.33 ft | |
| Weighted Runoff Coefficient = C = | 0.68 | |

The value for C in cell C209 is calculated from the values entered for the drainage area to the swale.
C = (Impervious Cover within Drainage Basin/Drainage Basin Area)*0.74 + (Pervious Cover within Drainage Basin/Drainage Basin Area)*0.33

| | |
|---|---|
| $A_{CS}$ = cross-sectional area of flow in Swale = | 0.66 sf |
| $P_W$ = Wetted Perimeter = | 3.71 feet |
| $R_H$ = hydraulic radius of flow cross-section = $A_{CS}/P_W$ = | 0.18 feet |
| n = Manning's roughness coefficient = | 0.2 |

**14A. Using the Method Described in the RG-348**

Trapezoidal is the most common shape used for swale design. However, rectangular and triangluar shapes may be used.
The calculations included below assume that a trapezoidal shape is selected.

Use Manning's Equation to estimate the swale bottom width (b).

Mannings Equation: $Q = \frac{1.49}{n} A_{CS} R_H^{2/3} S^{0.5}$

Manning's Equation cannot be used directly to solve for the bottom width of a trapezoidal swale.
For shallow flows (4 inches or less) the equation can be altered to:

$b = \frac{0.134 \times Q}{y^{1.67} S^{0.5}} - zy$ = 0.35 feet

Maximum bottom width = 10 feet

If b is greater than 10 feet, change design parameters and recalcula
If b is a negative value, set b = 2

The values for y, z, and S are taken from the information provided above.

To solve for "Q" in the altered Manning's Equation above.
Use the Rational Method Equation discussed in the TGM on Page 3-34, Equation 3.4:

Grassy Swale 3 3.2

**Q = CiA =** 0.33 cfs

**To calculate the flow velocity in the swale:**

V (Velocity of Flow in the swale) = $Q/A_{CS}$ = 0.50 ft/sec

**If V is less than or equal to 1 ft/sec, the swale will function correctly.**
**If V is greater than 1 ft/sec, the swale will not function correctly and the design assumptions must be revised.**

**To calculate the resulting swale length:**

L = Minimum Swale Length = V (ft/sec) * 300 (sec) = 150.64 feet

If any of the resulting values do not meet the design requirement set forth in RG-348, the design parameters must be modified and the solver rerun.

Extended Detention Sizing Calcs. 1/2

Texas Commission on Environmental Quality

***TSS Removal Calculations 05-09-2006***

**Project Name:** Comal Elementary School
**Date Prepared:** 10/20/2007
**Comments:** Water Quality Volume for Total Site

**Text shown in magenta provide instructions for the use of this spreadsheet.**
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 are calculated fields. Changes to these fields will remove equations used in the spreadsheet.

**1. The Required Load Reduction from 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:
Lm = Required TSS removal
$A_N$ = Net increase in impervious area for site
P = Average annual precipitation, inches

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

| | | |
|---|---|---|
| County = | comal | |
| Total project area included in plan * = | 16.10 | 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 $L_M$ required for this plan = **4587** lbs.

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

Number of drainage basins / outfalls areas leaving the plan area = 2

Separate calculations should be prepared for each drainage basin / outfall area.
The calculations must include Sections 2 through 6 and the Section for the appropriate BMP proposed, e.g Section 9 for Sand Filters.
A summation of the load removal calculations must be provided.
It should include justifcations indicating that the project meets the requirements of the Edwards Aquifer Rules.
The permanent BMP calculations and summary must be signed, sealed, and dated by the P.E. making the submittal.

**2. Calculations for the Required Load Reduction:**

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

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

where:
Lm = Required TSS removal
$A_N$ = Net increase in impervious area for site
P = Average annual precipitation, inches

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

| | | |
|---|---|---|
| Total drainage basin / outfall area * = | 7.35 | acres |
| Predevelopment impervious area within drainage basin / outfall area * = | 0.08 | acres |
| Post-development impervious area within drainage basin / outfall area * = | 4.34 | acres |
| Post-development impervious fraction within drainage basin / outfall area * = | 0.59 | |
| P = | 33 | inches |

$L_M$ = **3824** lbs. 4779.72 4062.762

* The values entered in these fields should be for the drainage basin / outfall area.

**3. Indicate the Drainage Basin and Select the desired BMP Code for this Section.**

Proposed BMP = series abbreviation
Removal efficiency = **84.63** percent

| BMP Code: | BMP Type: |
|---|---|
| AC | Aqualogic Cartridge Filter |
| BR | Bioretention |
| CW | Constructed Wetland |
| ED | Extended Detention |
| GS | Grassy Swale |
| RI | Retention / Irrigation |
| SF | Sand Filter |
| WB | Wet Basin |
| WV | Wet Vault |

**4. Calculate TSS Load Removed ($L_R$) from this Drainage Basin by the Proposed BMP Type.**

Extended Detention Sizing Calcs 2/2

RG 348 Page Equation 3.7: $L_R$ = (BMP efficiency) x P x ($A_I$ x 34.6 + $A_P$ x 0.54)

where:

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

| | | |
|---|---|---|
| $A_C$ = | 7.35 | acres |
| $A_I$ = | 4.34 | acres |
| $A_P$ = | 3.01 | acres |
| $L_R$ = | 4239 | lbs |

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

F = 0.90 If F>1, then a more efficient BMP or a larger treatment area is required.

**6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area.** Calculations from RG-348 Pages 3-34 to 3-36

| | | | |
|---|---|---|---|
| Rainfall Depth = | 1.70 | inches | |
| Post Development Runoff Coefficient = | 0.41 | | IC = Drainage Area to BMP / drainage Area to BMP |
| On-site Water Quality Volume = | 18756 | cubic feet | |
| | 695 | cubic yards | |

Offsite drainage should be conveyed around or through the drainage basin / outfall area without entering the BMP.
If no offsite drainage flows across the drainage basin / outfall area or is bypassed through the site, enter 0 in cells C109 & C110.
If the offsite drainage is directed to the drainage basin, enter offsite area draining to BMP & offsite Impervious cover draining to BMP in cells C109 & C110.

Calculations from RG-348 Pages 3-36 to 3-37

| | | |
|---|---|---|
| Off-site area draining to BMP = | 0.00 | acres |
| Off-site Impervious cover draining to BMP = | 0.00 | acres |
| Impervious fraction of off-site area = | 0 | |
| Off-site Runoff Coefficient = | 0.02 | |
| Off-site Water Quality Volume = | 0 | cubic feet |
| Storage for Sediment = | 3751 | |
| **Total Capture Volume =** | 22508 | cubic feet |
| | 834 | cubic yards |

**Water Pollution Abatement Plan Application**
for Regulated Activities
on the Edwards Aquifer Recharge Zone
and Relating to 30 TAC §213.5(b), Effective June 1, 1999

REGULATED ENTITY NAME: CISD – Johnson Ranch Elementary

**REGULATED ENTITY INFORMATION**

1. The type of project is:
   - ___ Residential: # of Lots:
   - ___ Residential: # of Living Unit Equivalents:
   - ___ Commercial
   - ___ Industrial
   - √ Other: School

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

3. Projected population: 950 persons (not permanent)

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

| Impervious Cover of Proposed Project | Sq. Ft. | Sq. Ft./Acre | Acres |
|---|---|---|---|
| Structures/Rooftops | 85,194.3 | ÷ 43,560 = | 1.96 |
| Parking | 116,396.8 | ÷ 43,560 = | 2.67 |
| Other paved surfaces | 22,390.3 | ÷ 43,560 = | 0.63 |
| Total Impervious Cover | 223,981.6 | ÷ 43,560 = | 5.26 |
| Total Impervious Cover ÷ Total Acreage x 100 = | | | 32.8 % |

5. √ **ATTACHMENT A - Factors Affecting Water Quality.** A description of any factors that could affect surface water and groundwater quality is provided ~~at the end of this form~~ **below.**

**Potential sources of pollution that may be expected to affect the quality of stormwater discharges from the construction site include:**

- **Soil erosion due to the clearing of the site for roads, buildings, and drainage structures.**
- **Oil, grease, fuel, and hydraulic fluid contamination from construction equipment and vehicle drippings.**
- **Hydrocarbons from asphalt paving operations.**
- **Miscellaneous trash and litter from construction workers and material wrappings.**

Extended Detention Volume Sizing

EXTENDED DETENTION SIZING CALCULATION 10/31/07

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

F- CALCULATED SEPARTELY FOR MULTIPLE EFFICIENCIES

F = 0.94

If F>1, then a more efficient BMP or a larger treatment area is required.

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

Calculations from RG-348 Pages 3-34 to 3-36

| | | | |
|---|---|---|---|
| Rainfall Depth = | 2.40 | inches | |
| Post Development Runoff Coefficient = | 0.36 | | IC = Drainage Area to BMP / drainage Area to BMP |
| On-site Water Quality Volume = | 22964 | cubic feet | |
| | 851 | cubic yards | |

Offsite drainage should be conveyed around or through the drainage basin / outfall area without entering the BMP.
If no offsite drainage flows across the drainage basin / outfall area or is bypassed through the site, enter 0 in cells C109 & C110.
If the offsite drainage is directed to the drainage basin, enter offsite area draining to BMP & offsite Impervious cover draining to BMP in cells C109 & C110.

Calculations from RG-348 Pages 3-36 to 3-37

| | | |
|---|---|---|
| Off-site area draining to BMP = | 0.00 | acres |
| Off-site Impervious cover draining to BMP = | 0.00 | acres |
| Impervious fraction of off-site area = | 0 | |
| Off-site Runoff Coefficient = | 0.02 | |
| Off-site Water Quality Volume = | 0 | cubic feet |
| | | |
| Storage for Sediment = | 4593 | |
| **Total Capture Volume =** | 27557 | cubic feet |
| | 1021 | cubic yards |

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for the water quality volume of a BMP Type not selected in cell C64 will show NA.

# Permanent Pollution Abatement Measures
# Johnson Ranch Elementary School

## Maintenance Plan and Schedule Acknowledgement and Agreement

This document has been prepared to provide a description of and schedule for the performance of maintenance on permanent pollution abatement measures. Maintenance measures to be performed will be dependent on what permanent pollution abatement measures are incorporated into the project. The project specific water pollution abatement plan should be reviewed to determine what permanent pollution abatement measures are incorporated into a project.

It should also be noted that the timing and procedures presented herein are general guidelines, adjustment to the timing and procedures may have to be made depending on project specific characteristics as well as weather related conditions.

Where a project is occupied by the owner, the owner may provide for maintenance with his own skilled forces or contract for recommended maintenance of Permanent Best Managements Practices. Where a project is occupied or leased by a tenant, the owner shall require tenants to contract for such maintenance services either through a lease agreement, property owner's association covenants, or other binding document.

I understand that I am responsible for maintenance of the permanent pollution abatement measures included in this project until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property is transferred.

I, the owner, have read and understand the requirements of this maintenance plan and schedule.

Marc Walker
Superintendent

10-30-07
Date

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SAN ANTONIO
REGION

the pump does not start, a repair technician shall be called in to repair the malfunction within 5 working days. A written record should be kept of inspection results and corrective measures taken.

12. For Pump Stations. Check the wet well for accumulation for trash, debris, and silt. Trash and debris shall be removed and disposed of properly. Silt depth can be checked by probing the bottom of the wet well with a stick or PVC pipe. Silt accumulations should be removed when silt collects to a depth of 6 inches over the entire wet well bottom. Silt can be removed by vacuum pump method. If silt buildup continues, underdrain system shall be inspected. A written record should be kept of inspection results and corrective measures taken.

13. For Pump Stations. Visually check aboveground pump wiring and connections for damage. Damaged or loose connections should be repaired within 5 working days. A written record should be kept of inspection results and corrective measures taken.

14. Visually Inspect Security Fencing for Damage or Breach. Check maintenance access gates for proper operation. Damage to fencing or gates shall be repaired within 5 working days. A written record should be kept of inspection results and corrective measures taken.

7. Structural Integrity. In addition to Items 1 through 6 the following are measures which should be reviewed during a check of structural integrity:

- Observe the height of the confining berm for visible signs of erosion or potential breach. Signs of erosion should be corrected within 2 weeks or immediately in case of emergency conditions. Corrective measures include but are not limited to addition of top soil or appropriate soil material so as to restore the original berm height of the sand filter basin. Restored areas shall be protected through placement of block sod in a checkerboard pattern.
- Bypass of filter process. This condition can manifest itself in several ways. One way is by visually inspecting the clean-outs for accumulation of silt as described in Item6. Significant accumulations of silt could be a sign of a torn filter fabric. Observations should be made over several inspection cycles to determine whether the condition persists. A second non-intrusive way of making observations for structural condition would be to visually look for collapsed or depressed areas along the edge of the filter media interface with basin side slope. If condition exists, corrective action should be performed within 15 working days. Removal of sand and replacement of filter fabric and/or pipe and gravel may be necessary. A written record should be kept of inspection results and corrective measures taken.

8. Discharge Pipe. The basin discharge pipe shall be checked for accumulation of silt, debris, or other obstructions which could block flow. Soil accumulations vegetative overgrowth, and other blockages should be cleared from the pipe discharge point. Erosion at the point of discharge shall be monitored. If erosion occurs, the addition of rock rubble to disperse the flow should be accomplished. A written record should be kept of inspection results and corrective measures taken.

9. Drawdown Time. This characteristic can be a sign off the need for maintenance. The minimum drawdown time is 24 hours. If drawdown time is less than 24 hours, the gate valve shall be checked and partially closed to limit the drawdown time. Extensive drawdown time greater than 48 hours may indicated blockage of the sand media, the underdrain system and/or discharge pipe. Corrective actions should be performed and completed within 15 working days. A written record should be kept of inspection results and corrective measures taken.

10. Vegetated Filter Strips & Grassy Swales. Vegetation height for native grasses shall be limited to no more than 18-inches. When vegetation exceeds that height, the filter strip shall be cut to a height of approximately 4 inches. Turf grass shall be limited to a height of 4 inches with regular maintenance that utilizes a mulching mower. Trash and debris shall be removed from filter strip prior to cutting. Check filter strip for signs of concentrated flow and erosion. Areas of filter strip showing signs of erosion shall be repaired by scarifying the eroded area, reshaping and placement of block sod in a checkerboard pattern over the affected area. A written record should be kept of inspection results and corrective measures taken.

11. For Pump Stations. Check wet well discharge pipe to confirm flow through the pump system. If flow is not present, allow sufficient time for pump to cycle on and off. If flow does not occur, the wet well should be checked for the level of water. The wet well should be opened and the on/off float switches should be moved up and down to activate the pump. If

**Maintenance Procedures for Permanent Pollution Abatement Measures**

1. Check Depth of Vegetation. Vegetation in the basin shall not exceed 18-inches in depth. When vegetation needs to be cut, it shall be cut to an approximately 4-inch height. A written record should be kept of inspection results and maintenance performed.

2. Check Depth of Silt Deposit in Basin. Top of cleanouts shall be set 4-inches above sand layer. When silt has accumulated to top of cleanouts, the silt shall be removed the top 2 inches of the sand media shall also be removed and replaced with clean silica based sand. Written record should be kept of inspection results and maintenance performed.

3. Removal of Debris and Trash. The basin and inlet structure shall be checked for the accumulation of debris and trash such as brush, limbs, leaves, paper cups, aluminum cans, plastic bottles etc. Accumulated trash and debris shall be raked or collected from the basin and inlet structure and disposed of properly. Written record should be kept of inspection results and maintenance performed.

4. Cut-off Valve. The cut-off valve shall be turned to confirm full opening and full closure. Prior to operating the valve, the valve setting shall be checked to determine the position to which the valve is to be returned (which should limit drawdown time of the basin between 24-hours and 48 hours). Count should be kept of number of turns to open and close the valve so that the valve can be reset to the starting position. Defects in the operation of the cut-off valve shall be corrected within 7 working days. A written record should be kept of inspection results and maintenance performed.

5. Inlet Splash Pad. The filter area around the inlet splash pad shall be checked for erosion and for the condition of the rock rubble. Erosion or disturbance of the rock rubble should be corrected by removing the rock rubble, restoring missing sand media to appropriate depth and replacement of the rock rubble. If the condition persists in subsequent inspections, the size of the rock rubble should be increased. Rubble should be placed to a density that minimizes the amount of exposed sand between the rock rubble. Deficiencies should be corrected within seven working days. A written record should be kept of inspection results and maintenance performed.

6. Underdrain System. The underdrain system shall be visually inspected for the accumulation of silt in the pipe system. The pipe clean-outs shall have the caps removed and visually inspected for accumulation of silt deposits. If silt deposits appear to have accumulated so as to significantly reduce the drain capacity of the pipes then maintenance shall be performed. When silt deposits have accumulated to the stage described above, the clean-outs and drainpipes can be flushed with a high-pressure water flushing process. Clean-out caps must be replaced onto the clean-outs after maintenance so as to avoid the possibility of short circuiting the filtering process. Sediment accumulation at outlet pipe or in wet well due to flushing shall be removed and disposed of properly. A written record should be kept of inspection results and maintenance performed.

LOOMIS AUSTIN

ENGINEERING, LAND SURVEYING & ENVIRONMENTAL CONSULTING

# Permanent Pollution Abatement Measures
# Johnson Ranch Elementary School

### Inspection and Maintenance Schedule for Permanent Abatement Measures

| Recommended Frequency | Task to be Performed | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| **After Rainfall** | √ | | √ | | | | | | | | | | | |
| **Bianually*** | √ | √ | √ | √ | | | √ | √ | √ | √ | | | | √ |

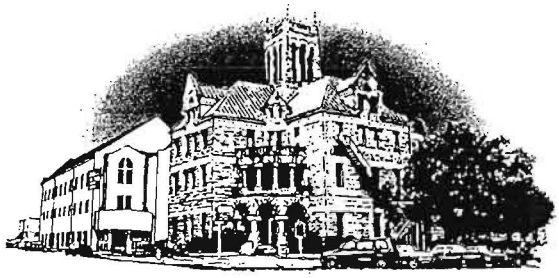
** At least one biannual inspection must occur during or immediately after a rainfall event.*

*√ Indicates maintenance procedure that applies to this specific site.*

See description of maintenance task to be performed on the following pages. Frequency of maintenance tasks may vary depending on amount of rainfall and other weather related conditions.

A written record should be kept of inspection results and maintenance performed.

| Task No. & Description | Included in this project |
|---|---|
| 1. Check Depth of Vegetation | Yes |
| 2. Check Depth of Silt Deposit in Basin & Nuisance Control | Yes |
| 3. Removal of Debris and Trash | Yes |
| 4. Cut-off Valve | Yes |
| 5. Inlet Splash Pad | No |
| 6. Underdrain System | No |
| 7. Structural Integrity & Erosion Control | Yes |
| 8. Discharge Pipe | Yes |
| 9. Drawdown Time | Yes |
| 10. Vegetated Filter Strips & Grassy Swales | Yes |
| 11. For Pump Stations | No |
| 12. For Pump Stations | No |
| 13. For Pump Stations | No |
| 14. Visually Inspect Security Fencing for Damage or Breach | Yes |



# Comal County

OFFICE OF COMAL COUNTY ENGINEER

November 30, 2007

Charles Kaough, P.E.
Loomis Austin
3103 Bee Cave Road, Suite 225
Austin, TX 78746

Re: Proposed development CISD Johnson Ranch Elementary School, at FM 1863 and Hwy. 281, within Comal County, Texas.

Dear Mr. Kaough,

We have received your Water Pollution Abatement Plan for the referenced development. This property is located partially within the special flood hazard area of Zone A as shown on the Comal County Flood Insurance Rate Map (Community Panel No. 485463 0055D, Effective Date July 17, 1995).

The Comal County Flood Damage Prevention Order regulates development within designated special flood hazards areas. Copies of this order are available at the Comal County Engineering Office. Before any development can be done on the property, we will require that the proposed development of your tract comply with the requirements set forth in the Order. You must apply for and receive a Comal County Floodplain Development Permit.

We will require an **engineering analysis** of what impact your development plans will have on the base flood. This analysis must be prepared by a registered professional engineer and be submitted to our office for review. If the engineering analysis indicates that the proposed development will have no adverse impact on the base flood, we will issue a floodplain development permit with the condition that any structures be elevated or flood proofed to or above the base flood elevation.

Sincerely,

Kathy Griffin

Kathy Griffin, CFM
Floodplain Coordinator

cc: Roy Linnartz, CISD

# JOHNSON RANCH SUBDIVISION PHASE 1-A/SCHOOL SITE

FOR REVIEW ONLY

**THE STATE OF TEXAS** )(
**THE COUNTY OF COMAL** )( **KNOW ALL MEN BY THESE PRESENTS:**

THAT CLYDE JOHNSON & SONS HEREFORD RANCH, LTD., A TEXAS LIMITED PARTNERSHIP BY AND THROUGH MICHAEL G. JOHNSON, BEING THE OWNER OF THAT CERTAIN 25.599 ACRES OF LAND IN THE AGAPITA GAYTAN SURVEY NO. 194, A-174, IN COMAL COUNTY, TEXAS, BEING A PORTION OF A CALLED 760 ACRE TRACT DESCRIBED IN THE DEED TO CLYDE JOHNSON & SONS HEREFORD RANCH, LTD., OF RECORD IN DOCUMENT 200006037239, OFFICIAL RECORDS OF COMAL COUNTY, TEXAS, DO HEREBY SUBDIVIDE SAID 25.599 ACRE TRACT IN ACCORDANCE WITH THE ATTACHED PLAT, TO BE KNOWN AS **"JOHNSON RANCH SUBDIVISION PHASE 1-A/SCHOOL SITE"**, SUBJECT TO ANY EASEMENTS PREVIOUSLY GRANTED BUT NOT RELEASED, PURSUANT TO CHAPTER 212 OF THE TEXAS LOCAL GOVERNMENT CODE.

IN WITNESS WHEREOF, CLYDE JOHNSON & SONS HEREFORD RANCH, LTD., HAVE CAUSED THESE PRESENTS TO BE EXECUTED THIS THE _____ DAY OF _____, 2007, A.D.

CLYDE JOHNSON & SONS HEREFORD RANCH, LTD., A TEXAS LIMITED PARTNERSHIP

_____
MICHAEL G. JOHNSON
CLYDE JOHNSON & SONS HEREFORD RANCH, LTD.
3795 FM 1863
BULVERDE, TX 78163

**THE STATE OF TEXAS** )(
**THE COUNTY OF COMAL** )( **KNOW ALL MEN BY THESE PRESENTS:**

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED MICHAEL G. JOHNSON, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSE AND CONSIDERATIONS THEREIN STATED.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS THE _____ DAY OF _____, 2007, A.D.

_____
NOTARY PUBLIC IN AND FOR THE
STATE OF TEXAS

_____ MY COMMISSION EXPIRES ON: _____
PRINTED NAME OF NOTARY

_____
PRINTED ADDRESS OF NOTARY

**SURVEYOR'S STATEMENT:**
I, JOHN D. BARNARD, A REGISTERED PROFESSIONAL LAND SURVEYOR, DO HEREBY CERTIFY THAT I AM AUTHORIZED TO PRACTICE THE PROFESSION OF LAND SURVEYING IN THE STATE OF TEXAS; THAT I PREPARED THE PLAT SUBMITTED HEREWITH; THAT SAID PLAT WAS PREPARED FROM A SURVEY MADE ON THE GROUND, UNDER MY DIRECTION AND SUPERVISION, AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AS LOCATED TO THE SURVEYING PORTIONS THEREOF.

_____ _____
JOHN D. BARNARD DATE
REGISTERED PROFESSIONAL LAND SURVEYOR
NO. 5749-STATE OF TEXAS
LOOMIS AUSTIN, INC.
3103 BEE CAVES ROAD, SUITE 225
AUSTIN, TEXAS 78746

**THE STATE OF TEXAS** )(
**THE COUNTY OF TRAVIS** )( **KNOW ALL MEN BY THESE PRESENTS:**

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED JOHN D. BARNARD, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSE AND CONSIDERATIONS THEREIN STATED.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS THE _____ DAY OF _____, 2007, A.D.

_____
NOTARY PUBLIC IN AND FOR THE
STATE OF TEXAS

_____ MY COMMISSION EXPIRES ON: _____
PRINTED NAME OF NOTARY

_____
PRINTED ADDRESS OF NOTARY

**ENGINEER'S STATEMENT:**
I, ANDREW S. HOLLON, AM AUTHORIZED UNDER THE LAWS OF THE STATE OF TEXAS TO PRACTICE THE PROFESSION OF ENGINEERING, AND HEREBY CERTIFY THAT THIS PLAT IS FEASIBLE FROM AN ENGINEERING STANDPOINT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

_____ _____
ANDREW S. HOLLON, P.E. DATE
REGISTERED PROFESSIONAL ENGINEER
NO. 88521 - STATE OF TEXAS
LOOMIS AUSTIN, INC.
3103 BEE CAVES ROAD, SUITE 225
AUSTIN, TEXAS 78746

**THE STATE OF TEXAS** )(
**THE COUNTY OF TRAVIS** )( **KNOW ALL MEN BY THESE PRESENTS:**

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED ANDREW S. HOLLON, P.E., KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSE AND CONSIDERATIONS THEREIN STATED.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS THE _____ DAY OF _____, 2007, A.D.

_____
NOTARY PUBLIC IN AND FOR THE
STATE OF TEXAS

_____ MY COMMISSION EXPIRES ON: _____
PRINTED NAME OF NOTARY

_____
PRINTED ADDRESS OF NOTARY

ACCEPTED AND AUTHORIZED FOR RECORD BY THE ZONING AND PLATTING COMMISSION OF THE CITY OF BULVERDE, ON THE _____ DAY OF _____, 2007.

_____ _____
CHAIRPERSON SECRETARY

**STATE OF TEXAS** )(
**COUNTY OF COMAL** )( **KNOW ALL MEN BY THESE PRESENTS** )(

I, JOY STREATER, CLERK OF COMAL COUNTY, TEXAS HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT OF WRITING WITH ITS CERTIFICATE OF OF AUTHENTICATION WAS FILED FOR RECORD IN MY OFFICE ON THE

_____ DAY OF _____ 2007, A.D. AT _____ O'CLOCK ___.M., AND DULY RECORDED ON THE

_____ DAY OF _____ 2007, A.D. AT _____ O'CLOCK ___.M., PLAT RECORDS OF SAID COUNTY

AND STATE IN DOCUMENT NO. _____, OFFICIAL RECORDS OF COMAL COUNTY, TEXAS.

WITNESS MY HAND AND SEAL OF OFFICE OF THE COUNTY CLERK, THIS _____ DAY OF _____, 2007, A.D.

JOY STREATER, COUNTY CLERK, COMAL COUNTY, TEXAS.

_____
DEPUTY

**NOTES:**
1. ALL PROPERTY WITHIN THE SUBDIVISION THAT IS NOT IN THE CITY OF BULVERDE'S CORPORATE LIMITS IS LOCATED WITHIN THE BOUNDARIES OF COMAL COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT #1 ("COMAL COUNTY WCID #1").

2. WATER SERVICE SHALL BE PROVIDED BY A CENTRAL WATER DISTRIBUTION SYSTEM PROVIDED BY COMAL COUNTY WCID #1 AND GUADALUPE-BLANCO RIVER AUTHORITY ("GBRA") PURSUANT TO CERTIFICATE OF CONVENIENCE AND NECESSITY NO. 12977 ("CCN") CURRENTLY HELD BY GBRA.

3. WASTEWATER SERVICE SHALL BE PROVIDED BY A CENTRAL COLLECTION, TREATMENT AND EFFLUENT DISPOSAL SYSTEM APPROVED BY THE TCEQ PURSUANT TO PERMIT NO. WQ0014733001 AND TO BE PROVIDED BY COMAL COUNTY WCID #1 AND GUADALUPE-BLANCO RIVER AUTHORITY ("GBRA") PURSUANT TO CERTIFICATE OF CONVENIENCE AND NECESSITY NO. 20892 ("CCN") CURRENTLY HELD BY GBRA.

**METES AND BOUNDS DESCRIPTION**

DESCRIPTION OF 25.599 ACRES OF LAND IN THE AGAPITA GAYTAN SURVEY NO. 194, A-174, COMAL COUNTY, TEXAS; BEING A PORTION OF THAT CERTAIN CALLED 760 ACRE TRACT DESCRIBED IN A DEED TO CLYDE JOHNSON & SONS HEREFORD RANCH, LTD., OF RECORD IN DOCUMENT NO. 200006037239, OFFICIAL PUBLIC RECORDS OF COMAL COUNTY, TEXAS; SAID 25.599 ACRES OF LAND, AS SURVEYED BY LOOMIS AUSTIN, INC., BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

**COMMENCING** AT A TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) BRASS RIGHT-OF-WAY DISK FOUND IN THE NORTH RIGHT-OF-WAY LINE OF F.M. HIGHWAY NO. 1863, SAME BEING THE SOUTH LINE OF THE SAID 760 ACRE TRACT;

**THENCE** N 55° 33' 14" E, WITH THE NORTH LINE OF SAID F.M. HIGHWAY NO. 1863, SAME BEING THE SOUTH LINE OF THE SAID 760 ACRE TRACT, A DISTANCE OF 229.46 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A POINT OF CURVATURE AND BEING THE SOUTHERN SOUTHWEST CORNER AND **POINT OF BEGINNING** OF THE TRACT DESCRIBED HEREIN;

**THENCE** CROSSING THE SAID 760 ACRE TRACT, THE FOLLOWING EIGHT (8) COURSES AND DISTANCES:

1. WITH THE ARC OF A CURVE TO THE LEFT, HAVING A RADIUS OF 30.00 FEET, AN ARC DISTANCE OF 47.12 FEET AND A CHORD OF WHICH BEARS N 10° 33' 14" E, A DISTANCE OF 42.43 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A POINT OF TANGENCY,

2. N 34° 26' 46" W, A DISTANCE OF 141.20 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A POINT OF CURVATURE,

3. WITH THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 420.00 FEET, AN ARC DISTANCE OF 253.39 FEET AND A CHORD OF WHICH BEARS N 17° 09' 46" W, A DISTANCE OF 249.56 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A POINT OF TANGENCY,

4. N 00° 07' 14" E, A DISTANCE OF 934.57 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A RE-ENTRANT CORNER,

5. S 89° 10' 53" W, A DISTANCE OF 314.39 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR AN ANGLE POINT,

6. N 84° 59' 32" W, A DISTANCE OF 172.62 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR AN ANGLE POINT,

7. S 82° 00' 41" W, A DISTANCE OF 156.15 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR AN ANGLE POINT, AND

8. S 76° 28' 09" W, A DISTANCE OF 70.47 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET IN THE EAST LINE OF A CALLED 238.028 ACRE TRACT DESCRIBED IN A DEED TO JUAN JOAQUIN KRITZLER HAHNE, OF RECORD IN VOLUME 317, PAGE 398, DEED RECORDS OF COMAL COUNTY, TEXAS, SAME BEING THE WEST LINE OF THE SAID 760 ACRE TRACT FOR THE WESTERN SOUTHWEST CORNER OF THE TRACT DESCRIBED HEREIN;

**THENCE** N 00° 54' 56" W, WITH THE EAST LINE OF THE SAID 238.028 ACRE TRACT, SAME BEING THE WEST LINE OF THE SAID 760 ACRE TRACT, A DISTANCE OF 820.31 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR THE WESTERN NORTHWEST CORNER OF THE TRACT DESCRIBED HEREIN;

**THENCE** CROSSING THE SAID 760 ACRE TRACT, THE FOLLOWING TWENTY-SIX (26) COURSES AND DISTANCES:

1. N 89° 12' 30" E, A DISTANCE OF 5.00 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A RE-ENTRANT CORNER,

2. N 00° 54' 56" W, A DISTANCE OF 119.84 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR AN ANGLE POINT,

3. N 00° 47' 00" W, A DISTANCE OF 10.16 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A NORTHWEST CORNER OF THE TRACT DESCRIBED HEREIN,

4. N 89° 12' 30" E, A DISTANCE OF 130.59 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR AN ANGLE POINT,

**METES AND BOUNDS DESCRIPTION CONTINUED:**

5. N 07° 18' 45" W, A DISTANCE OF 2.55 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A NORTHWEST CORNER OF THE TRACT DESCRIBED HEREIN,

6. N 82° 41' 15" E, A DISTANCE OF 50.00 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR AN ANGLE POINT,

7. N 89° 29' 00" E, A DISTANCE OF 556.16 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR AN ANGLE POINT,

8. S 87° 52' 52" E, A DISTANCE OF 50.00 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A POINT OF CURVATURE,

9. WITH THE ARC OF A CURVE TO THE LEFT, HAVING A RADIUS OF 325.00 FEET, AN ARC DISTANCE OF 28.55 FEET AND A CHORD OF WHICH BEARS N 00° 23' 52" W, A DISTANCE OF 28.54 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A POINT OF TANGENCY,

10. N 02° 54' 52" W, A DISTANCE OF 37.48 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR THE NORTHERN NORTHWEST CORNER OF THE TRACT DESCRIBED HEREIN,

11. S 77° 57' 21" E, A DISTANCE OF 115.27 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR AN ANGLE POINT,

12. S 71° 24' 29" E, A DISTANCE OF 78.23 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR AN ANGLE POINT,

13. S 59° 04' 39" E, A DISTANCE OF 78.22 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR AN ANGLE POINT,

14. S 55° 38' 54" E, A DISTANCE OF 77.99 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR AN ANGLE POINT,

15. S 49° 07' 15" E, A DISTANCE OF 147.04 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR THE NORTHERN NORTHEAST CORNER OF THE TRACT DESCRIBED HEREIN,

16. S 44° 56' 31" W, A DISTANCE OF 165.88 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A POINT OF CURVATURE,

17. WITH THE ARC OF A CURVE TO THE LEFT, HAVING A RADIUS OF 25.11 FEET, AN ARC DISTANCE OF 39.44 FEET AND A CHORD OF WHICH BEARS N 88° 52' 59" E, A DISTANCE OF 35.51 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A NORTH CORNER OF THE TRACT DESCRIBED HEREIN,

18. S 46° 07' 01" E, A DISTANCE OF 72.00 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR THE EASTERN NORTHEAST CORNER OF THE TRACT DESCRIBED HEREIN,

19. S 43° 52' 59" W, A DISTANCE OF 371.43 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A POINT OF CURVATURE,

20. WITH THE ARC OF A CURVE TO THE LEFT, HAVING A RADIUS OF 481.87 FEET, AN ARC DISTANCE OF 268.95 FEET AND A CHORD OF WHICH BEARS S 27° 53' 36" W, A DISTANCE OF 265.48 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A POINT OF COMPOUND CURVATURE,

21. WITH THE ARC OF A CURVE TO THE LEFT, HAVING A RADIUS OF 400.00 FEET, AN ARC DISTANCE OF 209.75 FEET AND A CHORD OF WHICH BEARS S 03° 07' 08" E, A DISTANCE OF 207.36 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A POINT OF TANGENCY,

22. S 18° 08' 29" E, A DISTANCE OF 111.71 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A POINT OF CURVATURE,

23. WITH THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 420.00 FEET, AN ARC DISTANCE OF 133.87 FEET AND A CHORD OF WHICH BEARS S 09° 00' 38" E, A DISTANCE OF 133.30 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A POINT OF TANGENCY,

**METES AND BOUNDS DESCRIPTION CONTINUED:**

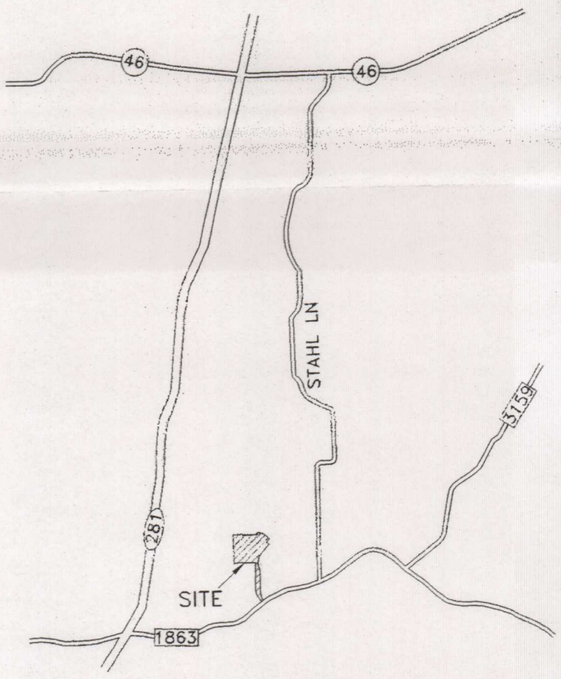
24. S 00° 07' 14" W, A DISTANCE OF 692.06 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A POINT OF CURVATURE,

25. WITH THE ARC OF A CURVE TO THE LEFT, HAVING A RADIUS OF 380.00 FEET, AN ARC DISTANCE OF 227.21 FEET AND A CHORD OF WHICH BEARS S 17° 00' 31" E, A DISTANCE OF 223.84 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET FOR A POINT OF COMPOUND CURVATURE,

26. WITH THE ARC OF A CURVE TO THE LEFT, HAVING A RADIUS OF 30.00 FEET, AN ARC DISTANCE OF 47.24 FEET AND A CHORD OF WHICH BEARS S 79° 15' 08" E, A DISTANCE OF 42.51 FEET TO A ½-INCH IRON ROD WITH PLASTIC CAP STAMPED "LAI" SET IN THE NORTH LINE OF SAID F.M. HIGHWAY NO. 1863, SAME BEING THE SOUTH LINE OF THE SAID 760 ACRE TRACT, FOR THE SOUTHEAST CORNER OF THE TRACT DESCRIBED HEREIN;

**THENCE** S 55° 33' 14" W, WITH THE NORTH LINE OF SAID F.M. HIGHWAY NO. 1863, SAME BEING THE SOUTH LINE OF THE SAID 760 ACRE TRACT, A DISTANCE OF 134.96 FEET TO THE **POINT OF BEGINNING** AND CONTAINING 25.599 ACRES OF LAND, MORE OR LESS.

**LEGAL DESCRIPTION:**
25.559 ACRES OF LAND IN THE AGAPITA GAYTAN SURVEY NO. 194, A-174, COMAL COUNTY, TEXAS; BEING A PORTION OF THAT CERTAIN CALLED 760 ACRE TRACT DESCRIBED IN A DEED TO CLYDE JOHNSON & SONS HEREFORD RANCH, LTD., OF RECORD IN DOCUMENT 200006037239, OFFICIAL RECORDS OF COMAL COUNTY, TEXAS.




VICINITY MAP
(NOT TO SCALE)

| | | | |
|---|---|---|---|
| FILE: H:\SURVEY\JOHNSONRANCH-COMALCO\FINAL | | | |
| DATE: 05-22-07 | DRAWN BY: K. SCHREIBER | | |
| SCALE: 1"=100' | CHECKED BY: J.D. BARNARD | | |
| JOB #: T070316 | F.B. #: | DWG.:Johnson Ranch-Subdivision | |
| NO. | REVISION | BY | DATE |

LOOMIS AUSTIN

ENGINEERING, LAND SURVEYING & ENVIRONMENTAL CONSULTING

3103 Bee Caves Road, Suite 225; Austin Texas 78746 (512) 327-1180
Phone: (512) 327-1180; Fax: (512) 327-4062; www.loomisaustin.com

SURVEY PLAT
JOHNSON RANCH SUBDIVISION
PHASE 1-A/SCHOOL SITE

SHEET 3 OF 3

PLAN #: 1071

PLOT DATE: Oct 22,2007-11:26am

# JOHNSON RANCH SUBDIVISION PHASE 1-A/SCHOOL SITE

FOR REVIEW ONLY

100 0 100

SCALE: 1"=100'

**OCTOBER, 2007**
**CITY OF BULVERDE**
**COMAL COUNTY, TEXAS**

**LEGEND**

| | |
|---|---|
| ● | 1/2" IRON ROD FOUND UNLESS OTHERWISE NOTED |
| ○ | 1/2" IRON ROD W/ PLASTIC CAP STAMPED "LAI" SET |
| ■ | TEXAS DEPARTMENT OF TRANSPORTATION BRASS RIGHT-OF-WAY DISK FOUND |
| ( ) | RECORD INFORMATION |
| P.O.B. | POINT OF BEGINNING |
| P.O.C. | POINT OF COMMENCEMENT |
| P.U.E. | PUBLIC UTILITY EASEMENT |
| B.S.L. | BUILDING SETBACK LINE |
| D.R.C.C.TX. | DEED RECORDS OF COMAL COUNTY, TEXAS |
| O.R.T.C.TX. | OFFICIAL RECORDS OF COMAL COUNTY, TEXAS |

**BEARING AND COORDINATE BASIS:**
TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD 83, GRID

**VERTICAL DATUM:**
NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)

**CURVE TABLE**

| CURVE | RADIUS | ARC LENGTH | CHORD BEARING | CHORD LENGTH |
|---|---|---|---|---|
| C1 | 30.00' | 47.12' | N 10°33'14" E | 42.43' |
| C2 | 420.00' | 253.39' | N 17°09'46" W | 249.56' |
| C3 | 553.87' | 428.89' | S 21°41'57" W | 418.26' |
| C4 | 25.00' | 39.27' | S 01°07'00" E | 35.36' |
| C5 | 550.00' | 426.21' | N 68°19'00" W | 415.62' |
| C6 | 25.00' | 18.69' | N 68°04'00" E | 18.26' |
| C7 | 50.00' | 86.97' | S 83°31'03" E | 76.42' |
| C8 | 25.11' | 39.44' | N 88°52'59" E | 35.51' |
| C9 | 481.87' | 268.95' | S 27°53'36" W | 265.48' |
| C10 | 400.00' | 209.75' | S 03°07'08" E | 207.36' |
| C11 | 420.00' | 133.87' | S 09°00'38" E | 133.30' |
| C12 | 380.00' | 227.21' | S 17°00'31" E | 223.84' |
| C13 | 30.00' | 47.24' | S 79°15'08" E | 42.51' |
| C14 | 50.00' | 51.17' | S 04°22'00" E | 48.97' |
| C15 | 50.00' | 13.90' | S 32°54'52" W | 13.85' |
| C16 | 25.00' | 21.03' | N 16°46'56" E | 20.41' |
| C17 | 25.00' | 36.30' | N 48°54'53" W | 33.20' |
| C18 | 25.00' | 39.27' | S 44°29'00" W | 35.36' |
| C19 | 25.00' | 39.27' | S 45°31'00" E | 35.36' |
| C20 | 600.00' | 301.84' | S 60°31'44" E | 298.67' |
| C21 | 25.00' | 37.27' | N 53°10'35" E | 33.91' |
| C22 | 25.00' | 37.27' | N 32°14'06" W | 33.91' |
| C23 | 275.00' | 40.09' | N 06°17'41" E | 40.05' |
| C24 | 325.00' | 47.37' | N 06°17'41" E | 47.33' |
| C25 | 50.00' | 152.04' | N 46°14'11" W | 99.87' |
| C26 | 600.00' | 49.17' | N 72°35'35" W | 49.16' |
| C27 | 600.00' | 61.35' | N 67°18'59" W | 61.32' |
| C28 | 600.00' | 61.35' | N 61°27'29" W | 61.32' |
| C29 | 600.00' | 61.35' | N 55°36'00" W | 61.32' |
| C30 | 600.00' | 61.40' | N 49°44'20" W | 61.38' |
| C31 | 600.00' | 7.23' | N 46°27'43" W | 7.23' |
| C33 | 325.00' | 28.55' | N 00°23'52" W | 28.54' |
| C35 | 600.00' | 67.01' | N 87°19'02" W | 66.97' |
| C36 | 380.00' | 229.25' | N 17°09'46" W | 225.79' |
| C37 | 10.00' | 28.23' | N 80°59'22" E | 19.75' |
| C38 | 380.00' | 121.12' | S 09°00'38" E | 120.61' |
| C39 | 420.00' | 134.92' | S 09°04'55" E | 134.34' |
| C40 | 6.00' | 17.20' | S 63°49'39" W | 11.89' |

PANEL POINT 7
ELEVATION=1044.48'

(238.028 ACRES)
JUAN JOAQUIN KRITZLER HAHNE
VOLUME 317, PAGE 398
D.R.C.C.TX.

(760 ACRES)
CLYDE JOHNSON & SONS
HEREFORD RANCH, LTD.
DOC. # 200006037239
O.R.C.C.TX.

BLOCK A
BLOCK B
BLOCK B
BLOCK C
STREET A (50' R.O.W.)
STREET B (50' R.O.W.)
STREET C (50' R.O.W.)
STREET D (50' R.O.W.)
STREET E (R.O.W. VARIES)

N 07°18'45" W 2.55'
N 82°41'15" E 50.00'
N 89°29'00" E 556.16'
N 00°47'00" W 10.16'
N 89°12'30" E 130.59'
"MW CUDE"
N 00°54'56" W 119.84'
N 00°54'56" W 119.83'
N 89°12'30" E 94.58'
S 60°00'00" W 33.05'
N 89°12'30" E 5.00'
N=13,823,260.36
E=2,152,152.90
S 87°52'52" E 50.00'
N 02°54'52" W 37.48'
S 77°57'21" E 115.27'
S 71°24'29" E 78.23'
S 59°04'39" E 78.22'
S 55°38'54" E 77.99'
S 49°07'15" E 147.04'
S 89°29'00" W 416.41'
N 89°29'00" E 193.12'
N 89°29'00" E 129.29'
N 46°07'01" W 58.78'
S 46°07'01" E 72.00'
S 44°58'31" W 165.88'
S 45°07'01" E 36.67'
N 43°52'59" E 271.32'
S 43°52'59" W 371.43'
N 00°54'56" W 820.31'

1 0.207 ACRE
2 0.209 ACRE
3 0.196 ACRE
1 0.204 ACRE
4 0.229 ACRE
1 0.318 ACRE
2 0.260 ACRE
3 0.263 ACRE
4 0.260 ACRE
5 0.259 ACRE
6 0.250 ACRE
2 0.172 ACRE

10' P.U.E.
5' B.S.L.(TYP)
15' B.S.L. (TYP)
20' B.S.L.
30' B.S.L.

**SCHOOL SITE**
**BLOCK A**
1
16.050 ACRES

25' DRAINAGE EASEMENT

APPROXIMATE LIMITS OF 100 YEAR FLOOD PLAIN

AGAPITA GAYTAN SURVEY
NO. 194, A-174

S 82°00'41" W 156.15'
S 76°28'09" W 70.47'
N 84°59'32" W 172.62'
S 89°10'53" W 314.39'
N=13,822,467.73
E=2,152,875.47

5.0' PUBLIC UTILITY EASEMENT
DOC. NO. _____
O.R.C.C.TX.

**FLOOD NOTE:**
THE SUBJECT TRACT IS SHOWN TO BE IN FLOOD ZONE A-14, AREAS DETERMINED TO BE AREAS OF MINIMAL FLOODING, AS IDENTIFIED BY THE FLOOD INSURANCE RATE MAP PANEL NO. 485463-0055D, DATED JULY 17, 1995.

THE ABOVE STATEMENT IS MEANT FOR FLOOD INSURANCE DETERMINATION ONLY AND THIS SURVEYOR ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THE CITED MAP(S).

**BENCHMARK LIST:** - NAVD88 -
PANEL POINT-7:
1/2" IRON ROD WITH CAP STAMPED "CDS MUERY TRAV"
ELEVATION = 1,044.48 FEET

**MATCH SHEET 1**
**MATCH SHEET 2**

| | | | |
|---|---|---|---|
| FILE: H:\SURVEY\JOHNSONRANCH-COMALCO\FINAL | | | |
| DATE: 05-22-07 | DRAWN BY: K. SCHREIBER | | |
| SCALE: 1"=100' | CHECKED BY: J.D. BARNARD | | |
| JOB #: T070316 | F.B. #: | DWG.:Johnson Ranch-Subdivision | |
| NO. | REVISION | BY | DATE |

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**SURVEY PLAT**
**JOHNSON RANCH SUBDIVISION**
**PHASE 1-A/SCHOOL SITE**

**SHEET 2 OF 3**

**PLAN #: 1071**

PLOT DATE: Oct 22,2007-11:26am

"RECEIVED TCEQ" SAN ANTONIO REGION
2007 OCT 22 PM 1:59

MATCH LINE

POTENTIAL FUTURE DEVELOPMENT

FEMA 100YR FLOODPLAIN

JOHNSON RANCH PHASE 1A

COMAL ISD SCHOOL SITE

SITE BOUNDARY

TRIBUTARY OF CIBULO CREEK

APPROXIMATE BULVERDE CITY LIMITS

CIBULO CREEK

F.M. 1863

200 0 100 200 400

SCALE: 1" = 200'

LEGEND

BOUNDARY LINE

U.S.281

UNDISTURBED AREA

SHEET 3

SHEET 2

JOHNSON RANCH

SHEET 2

SHEET 1

DISTURBED AREA SCHOOL SITE

F.M.1863

INDEX MAP

"RECEIVED TCEQ" SAN ANTONIO REGION 2007 OCT 22 PM 2:00

| NO. | REVISION | BY | DATE |
|---|---|---|---|
| | | | |

DESIGNED BY: A.S.H.
DRAWN BY: D.W.C.
CHECKED BY: A.S.H.
APPROVED BY: A.S.H.
DATE: October 2006

CHARLES W. KAOUGH 64367 LICENSED PROFESSIONAL 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

COMAL I.S.D.
JOHNSON RANCH ELEMENTARY
PROPOSED CONDITIONS
SITE PLAN
1 OF 3

SHEET NO.
1

H:\Projects\Johnson Ranch\tbl1210-School_CAD\Exhibits\SHT01-03_SITE_PLAN.dwg, SHT1 OF 3 - 200 SCALE, October 22, 2007, 11:54 AM, gsmith

| 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 | 446.44 |
| | GS2 | 0.16 | 0.16 | 85 | 125.66 | 155.28 |
| Veg. F.S + ED | — | 2.72 | 2.72 | 90 | 2,459.42 | 2,755.13 |
| 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:

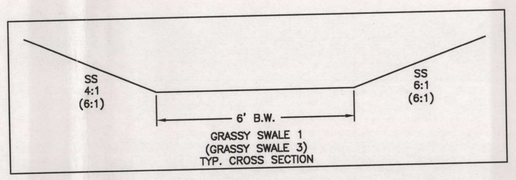
1. VEGETATIVE FILTER STRIPS AND GRASSY SWALES ARE TO BE BUILT ACCORDING TO THE CRITERIA SPECIFIED IN THE T.C.E.Q. EDWARDS AQUIFER TECHNICAL GUIDANCE MANUAL, JUNE 20, 2005.
2. ALL CURBS ARE RIBBON CURB OR STAND-UP CURBS WITH CURB CUTS AT LEAST 12" WIDE TO PREVENT CLOGGING.
3. VEGETATIVE FILTER STRIPS 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 | | |

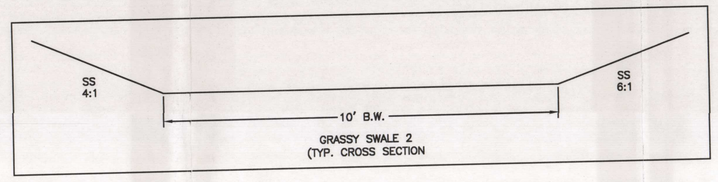
**Stage/Storage/Discharge Relationships**

| Elevation | Area ft² | Area acres | Incremental Volume Ac-ft | Incremental Volume CY | Cumulative Volume Ac-ft | Cumulative Volume CY | Discharge 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** | **305.9** | **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

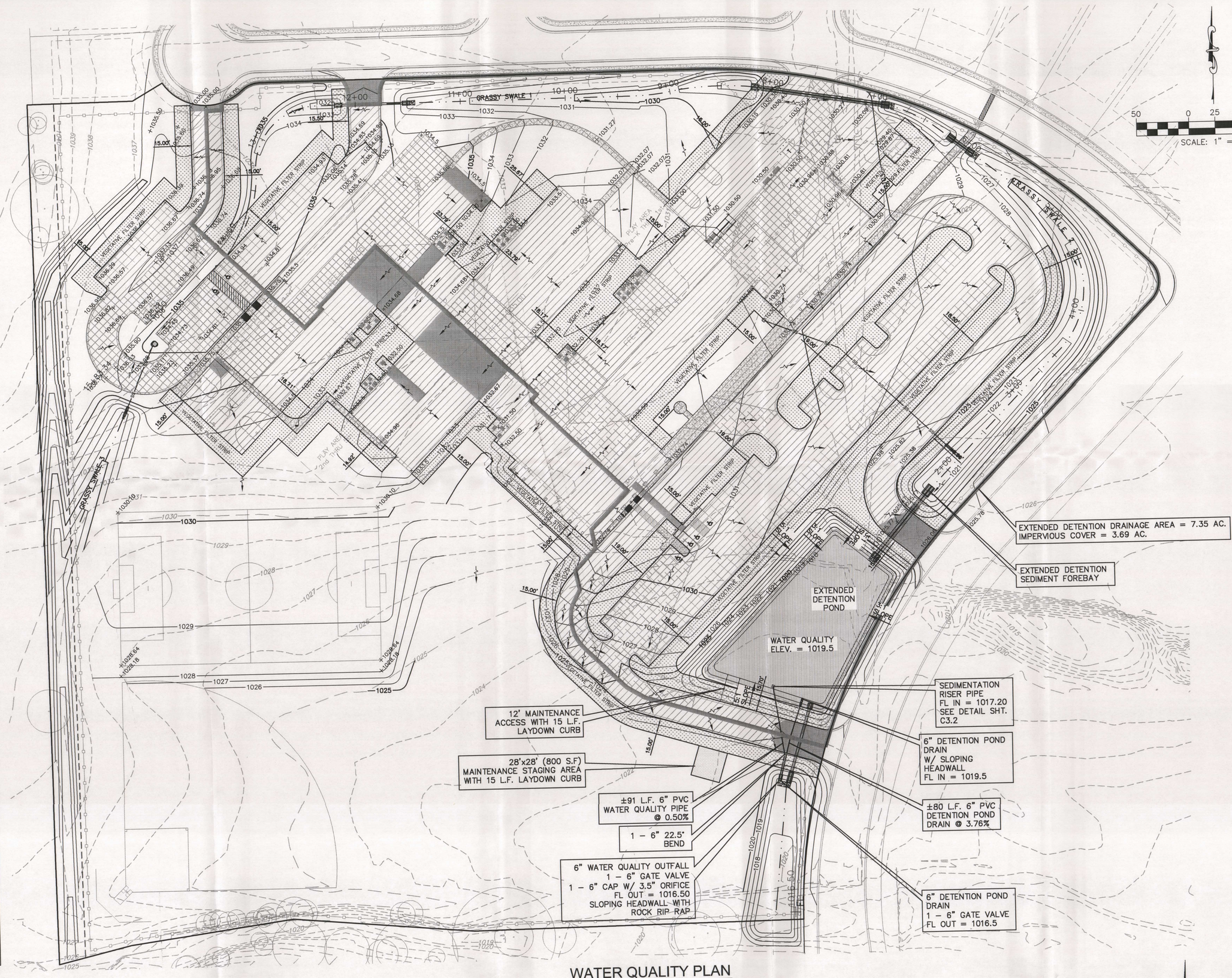



GRASSY SWALE 2
(TYP. CROSS SECTION)

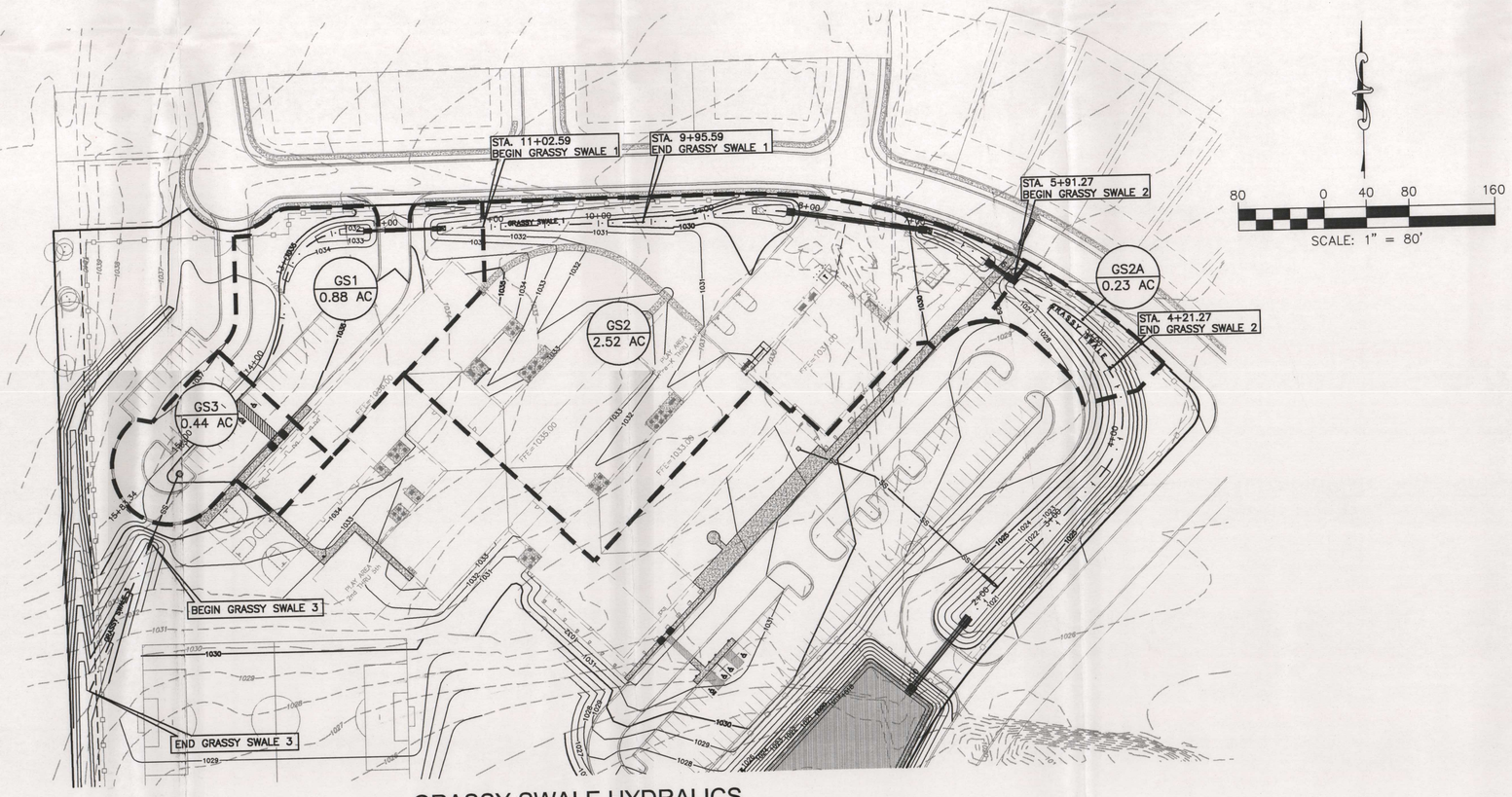
Comal County Elementary School
Water Quality Calculations Based on TCEQ Edwards Aquifer Technical Guidance Manual (June 2005)

Grassy Swale Data

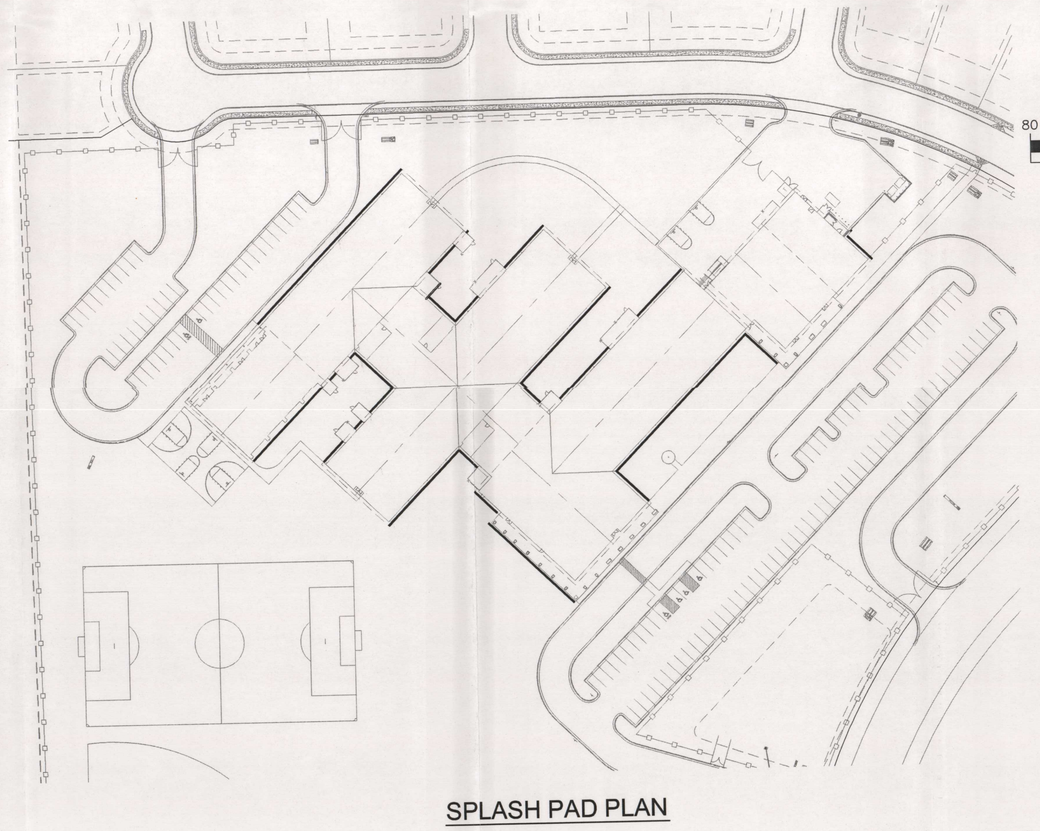
| Swale | Slope % | Bottom Width ft. | Side Slope- Right | Side Slope- Left | Mannings n | Flow Rate cfs | Velocity fps | Depth in | Length ft | Residence Time sec |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.0 | 6 | 4 | 10 | 0.20 | 0.53 | 0.36 | 0.33 | 107 | 300 |
| 2 | 2.5 | 10 | 4 | 6 | 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 |



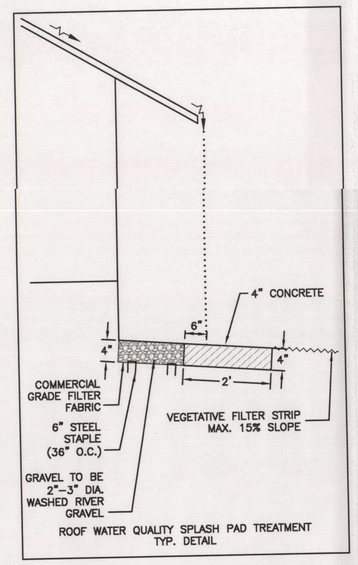

WATER QUALITY PLAN




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 KEYNOTES LEGENDS

## LEGEND

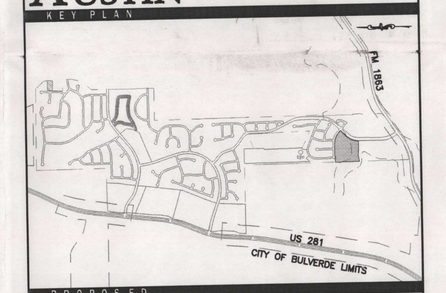
- BOUNDARY LINE
- PROPOSED R.O.W.
- LOT LINE
- CURB AND GUTTER
- RIBBON CURB
- DRAINAGE AREA BOUNDARY
- GRASSY SWALE CL
- SPLASH BLOCK
- 832 EXISTING 5ft CONTOUR
- 830 EXISTING 1ft CONTOUR
- 830 PROPOSED 5ft CONTOUR
- 830 PROPOSED 1ft CONTOUR
- HP HIGH POINT
- LP LOW POINT
- RUNOFF FLOW ARROW
- XX / 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
3101 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 12:03

SEAL

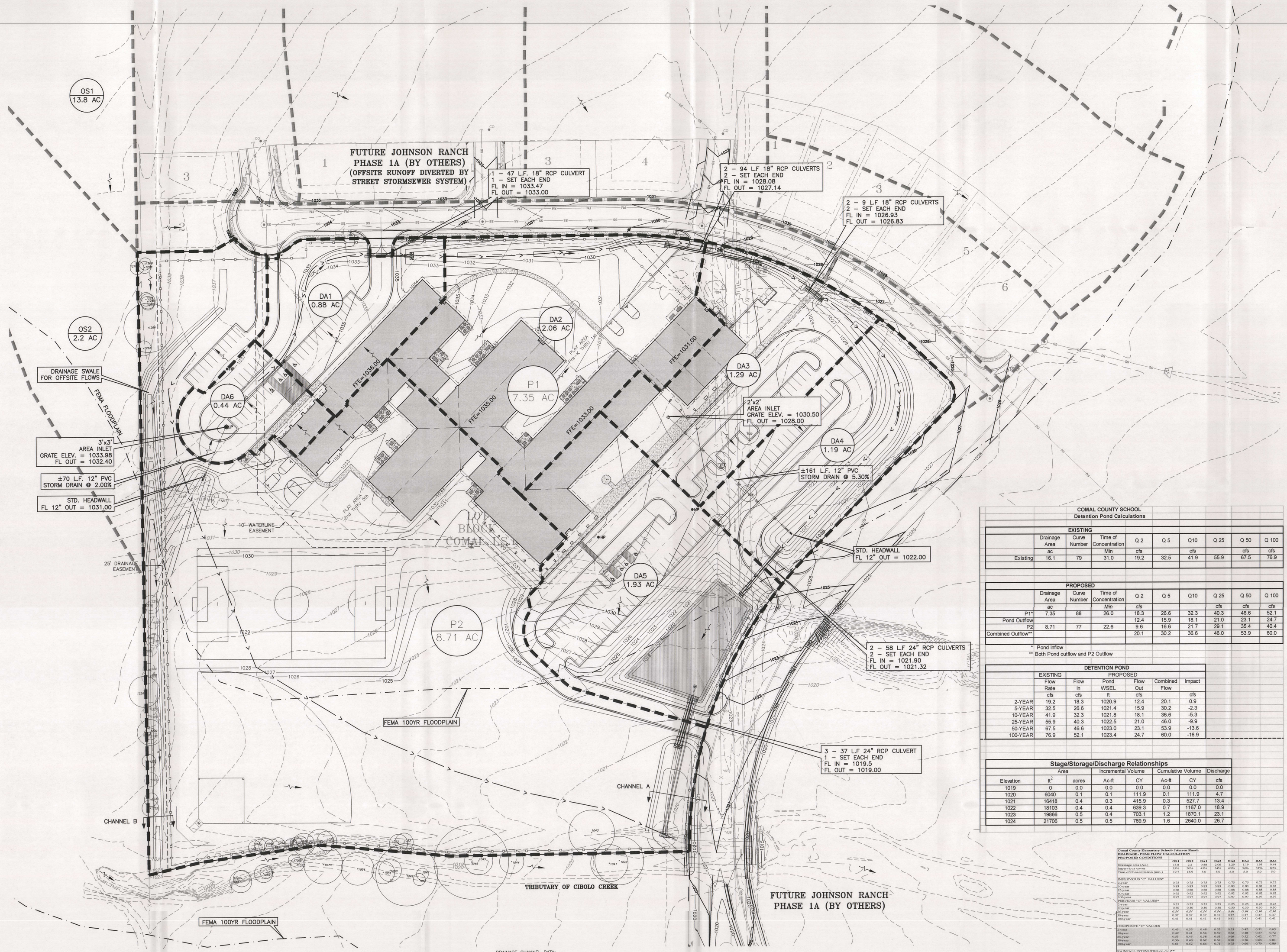
CHARLES W. KAOUGH
10/30/07
LICENSED PROFESSIONAL ENGINEER

DATA

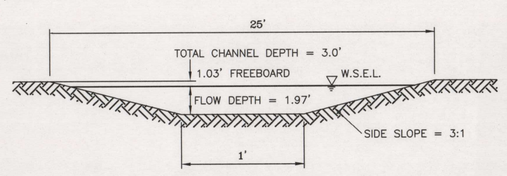
PROJECT NO. 06-12
DATE 03-28-07
REVISIONS

SHEET TITLE
WATER QUALITY PLAN

C9.1

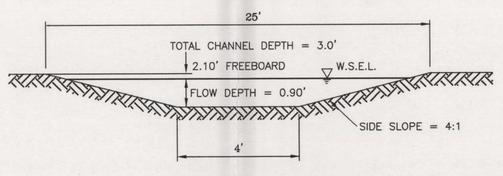



DRAINAGE CHANNEL DATA:
BOTTOM WIDTH = 1 ft
SIDE SLOPES = 3:1
MANNING'S n = 0.03
CHANNEL SLOPE = 0.01
DEPTH = 2.0 ft
DISCHARGE(100) = 80.0 cfs
VELOCITY = 5.90 fps
FLOW AREA = 13.56 sf
FROUDE NUMBER = 1.0




TYPICAL CROSS SECTION
CHANNEL B
B
N.T.S.

DRAINAGE CHANNEL DATA:
BOTTOM WIDTH = 4 ft
SIDE SLOPES = 4:1
MANNING'S n = 0.03
CHANNEL SLOPE = 0.01
DEPTH = 0.90 ft
DISCHARGE(100) = 28 cfs
VELOCITY = 3.47 fps
FLOW AREA = 7.20 sf
FROUDE NUMBER = 0.79




TYPICAL CROSS SECTION
CHANNEL A
A
N.T.S.

**COMAL COUNTY SCHOOL**
**Detention Pond Calculations**

**EXISTING**

| | Drainage Area | Curve Number | Time of Concentration | Q 2 | Q 5 | Q10 | Q 25 | Q 50 | Q 100 |
|---|---|---|---|---|---|---|---|---|---|
| | ac | | Min | cfs | | cfs | | cfs | cfs |
| Existing | 16.1 | 79 | 31.0 | 19.2 | 32.5 | 41.9 | 55.9 | 67.5 | 76.9 |

**PROPOSED**

| | Drainage Area | Curve Number | Time of Concentration | Q 2 | Q 5 | Q10 | Q 25 | Q 50 | Q 100 |
|---|---|---|---|---|---|---|---|---|---|
| | ac | | Min | cfs | | | cfs | cfs | cfs |
| P1* | 7.35 | 88 | 26.0 | 18.3 | 26.6 | 32.3 | 40.3 | 46.6 | 52.1 |
| Pond Outflow | | | | 12.4 | 15.9 | 18.1 | 21.0 | 23.1 | 24.7 |
| P2 | 8.71 | 77 | 22.6 | 9.6 | 16.6 | 21.7 | 29.1 | 35.4 | 40.4 |
| Combined Outflow** | | | | 20.1 | 30.2 | 36.6 | 46.0 | 53.9 | 60.0 |

* Pond Inflow
** Both Pond outflow and P2 Outflow

**DETENTION POND**

| | EXISTING | PROPOSED | | | | |
|---|---|---|---|---|---|---|
| | Flow Rate | Flow In | Pond WSEL | Flow Out | Combined Flow | Impact |
| | cfs | cfs | ft | cfs | cfs | |
| 2-YEAR | 19.2 | 18.3 | 1020.9 | 12.4 | 20.1 | 0.9 |
| 5-YEAR | 32.5 | 26.6 | 1021.4 | 15.9 | 30.2 | -2.3 |
| 10-YEAR | 41.9 | 32.3 | 1021.8 | 18.1 | 36.6 | -5.3 |
| 25-YEAR | 55.9 | 40.3 | 1022.5 | 21.0 | 46.0 | -9.9 |
| 50-YEAR | 67.5 | 46.6 | 1023.0 | 23.1 | 53.9 | -13.6 |
| 100-YEAR | 76.9 | 52.1 | 1023.4 | 24.7 | 60.0 | -16.9 |

**Stage/Storage/Discharge Relationships**

| | Area | | Incremental Volume | | Cumulative Volume | | Discharge |
|---|---|---|---|---|---|---|---|
| Elevation | ft² | acres | Ac-ft | CY | Ac-ft | CY | cfs |
| 1019 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 1020 | 6040 | 0.1 | 0.1 | 111.9 | 0.1 | 111.9 | 4.7 |
| 1021 | 16418 | 0.4 | 0.3 | 415.9 | 0.3 | 527.7 | 13.4 |
| 1022 | 18103 | 0.4 | 0.4 | 639.3 | 0.7 | 1167.0 | 18.9 |
| 1023 | 19866 | 0.5 | 0.4 | 703.1 | 1.2 | 1870.1 | 23.1 |
| 1024 | 21706 | 0.5 | 0.5 | 769.9 | 1.6 | 2640.0 | 26.7 |

**Comal County Elementary School- Johnson Ranch**
**DRAINAGE - PEAK FLOW CALCULATION**
**PROPOSED CONDITIONS**

| | OS1 | OS2 | DA1 | DA2 | DA3 | DA4 | DA5 | DA6 |
|---|---|---|---|---|---|---|---|---|
| Drainage area (Ac.) | 13.8 | 2.2 | 0.88 | 2.06 | 1.29 | 1.19 | 1.93 | 0.44 |
| Impervious cover | 25% | 25% | 30% | 30% | 30% | 30% | 30% | 30% |
| Time of Concentration (min.) | 19.7 | 18.9 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| IMPERVIOUS "C" VALUES* | | | | | | | | |
| 2-year | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| 5-year | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 |
| 10-year | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| 25-year | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| 50-year | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| 100-year | | | | | | | | |
| PERVIOUS "C" VALUES* | | | | | | | | |
| 2-year | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| 5-year | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 |
| 10-year | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 |
| 25-year | 0.57 | 0.57 | 0.57 | 0.57 | 0.57 | 0.57 | 0.57 | 0.57 |
| 50-year | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 |
| 100-year | | | | | | | | |
| COMPOSITE "C" VALUES | | | | | | | | |
| 2-year | 0.41 | 0.35 | 0.48 | 0.52 | 0.55 | 0.42 | 0.51 | 0.65 |
| 5-year | 0.49 | 0.41 | 0.54 | 0.59 | 0.62 | 0.48 | 0.57 | 0.72 |
| 10-year | 0.53 | 0.45 | 0.58 | 0.63 | 0.66 | 0.52 | 0.62 | 0.77 |
| 25-year | 0.56 | 0.48 | 0.62 | 0.67 | 0.70 | 0.56 | 0.65 | 0.81 |
| 50-year | 0.61 | 0.52 | 0.66 | 0.71 | 0.73 | 0.60 | 0.70 | 0.86 |
| 100-year | | | | | | | | |
| RAINFALL INTENSITIES (in./hr.)** | | | | | | | | |
| 2-year | 3.94 | 4.03 | 7.10 | 7.10 | 7.10 | 7.10 | 7.10 | 10.29 |
| 5-year | 5.85 | 5.99 | 10.32 | 10.32 | 10.32 | 10.32 | 10.32 | 14.72 |
| 10-year | 6.72 | 6.86 | 11.78 | 11.78 | 11.78 | 11.78 | 11.78 | 16.74 |
| 25-year | 7.74 | 7.91 | 12.75 | 12.75 | 12.75 | 12.75 | 12.75 | 18.00 |
| 50-year | 8.58 | 8.77 | 14.08 | 14.08 | 14.08 | 14.08 | 14.08 | 20.05 |
| 100-year | | | | | | | | |
| PEAK RUNOFF RATES (cfs) | | | | | | | | |
| 2-year | 23.1 | 3.1 | 3.0 | 7.4 | 5.8 | 3.5 | 6.9 | 3.9 |
| 5-year | 39.2 | 5.3 | 4.9 | 12.5 | 8.2 | 5.9 | 11.4 | 4.7 |
| 10-year | 47.3 | 6.3 | 6.0 | 15.7 | 10.5 | 7.1 | 14.1 | 5.5 |
| 25-year | 57.0 | 7.9 | 8.0 | 17.8 | 13.3 | 8.5 | 16.0 | 6.4 |
| 100-year | 70.1 | 9.8 | 9.6 | 21.5 | 14.1 | 10.5 | 19.7 | 7.9 |

** The runoff coefficients (C) are taken from the City of Austin Drainage Criteria Manual
** The coefficients a,b and c for the Rainfall Intensity-Duration-Frequency Curve, taken from TxDOT Hydraulic Design Manual- Comal County

50 0 25 50 100
SCALE: 1" = 50'

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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
- EASEMENT LINE
- BUILDING LINE
- CURB AND GUTTER
- DRAINAGE AREA
- 832 EXISTING 1 ft CONTOUR
- 830 EXISTING 5 ft CONTOUR
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KEY PLAN




PROPOSED

# Proposed New Johnson Ranch Elementary

OWNER


Comal Independent School District
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New Braunfels, Texas 78130
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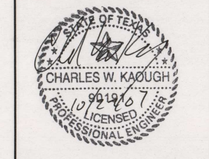
SEAL




DATA

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

SHEET TITLE
PROPOSED CONDITIONS
DRAINAGE PLAN

C3.2

| 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 |

| Comal I.S.D. Impervious Cover Treatment Calcs | | | |
|---|---|---|---|
| I.C. ( ac.) | Treatment | % Impervious of Cover | Treatment Efficiency (%) |
| 0.350 | Ext det | 6.7% | 75.0 |
| 0.380 | Swale | 7.2% | 70.0 |
| 0.230 | Untreated | 4.4% | 0.0 |
| 0.600 | Swale+ Ext Det | 11.4% | 84.6 |
| 0.960 | VFS | 18.3% | 80.0 |
| 2.740 | VFS+ Ext Det | 52.1% | 92.3 |
| 5.26 | Total I.C. | 100.0% | 82.4 |
| | **Total Removal Efficiency (%) =** | **82.4** | |
| | **Total TSS Removed (Lr) =** | **5246 lbs.** | |

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.

lbs

NOTES:

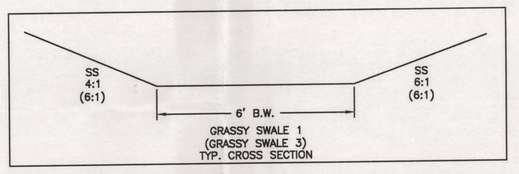
1. VEGETATIVE FILTER STRIPS AND GRASSY SWALES ARE TO BE BUILT ACCORDING TO THE CRITERIA SPECIFIED IN THE T.C.E.Q. EDWARDS AQUIFER TECHNICAL GUIDANCE MANUAL, JUNE 20, 2005.
2. ALL CURBS ARE RIBBON CURB OR STAND-UP CURBS WITH CURB CUTS AT LEAST 12" WIDE TO PREVENT CLOGGING.
3. VEGETATIVE FILTER STRIPS 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) | 4.34 | acres |
| Pervious Area (Ap) | 3.01 | acres |
| BMP Efficiency (%) | 84.63 | (Grassy Swale and Extended Detention in Series) |
| Load Removed (Lr) | 4239 | lbs. |
| Total Capture Volume (CY) | 834 | (Including 20% Extra Volume for Sedimentation) |
| | | |
| Water Quality Outlet - 2.5" Orifice | | |
| Water Quality Volume Drain Down Time- 49.7 Hours | | |

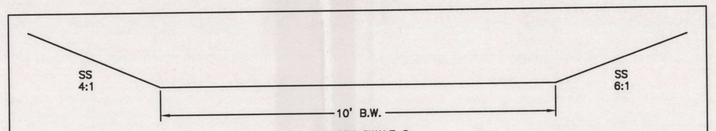
**Stage/Storage/Discharge Relationships**

| | Area | | Incremental Volume | | Cumulative Volume | | Discharge |
|---|---|---|---|---|---|---|---|
| Elevation | ft² | acres | Ac-ft | CY | Ac-ft | CY | cfs |
| 1017.5 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 1018 | 11840 | 0.27 | 0.1 | 109.6 | 0.1 | 109.6 | 4.7 |
| 1019 | 13220 | 0.30 | 0.3 | 464.1 | 0.4 | 573.7 | 13.4 |
| **1019.5** | **15100** | **0.35** | **0.2** | **262.2** | **0.5** | **835.9** | **18.9** |
| 1020 | 16500 | 0.38 | 0.2 | 292.6 | 0.7 | 1128.5 | 23.1 |
| 1021 | 17500 | 0.40 | 0.4 | 629.6 | 1.1 | 1758.1 | 26.7 |
| 1022 | 18550 | 0.43 | 0.4 | 667.6 | 1.5 | 2425.7 | 30.2 |

## GRASSY SWALE DESIGN




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

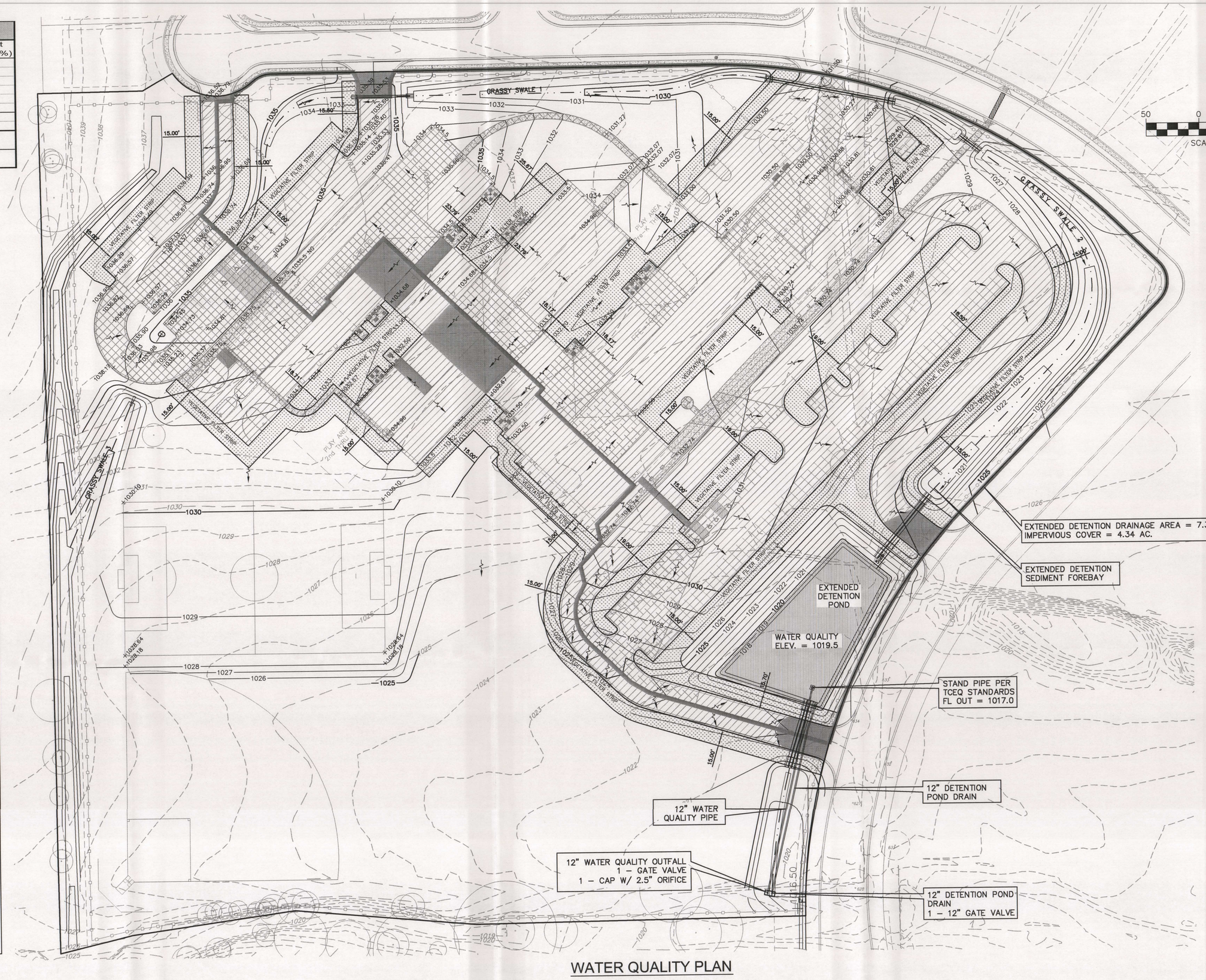



GRASSY SWALE 2
(TYP. CROSS SECTION

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

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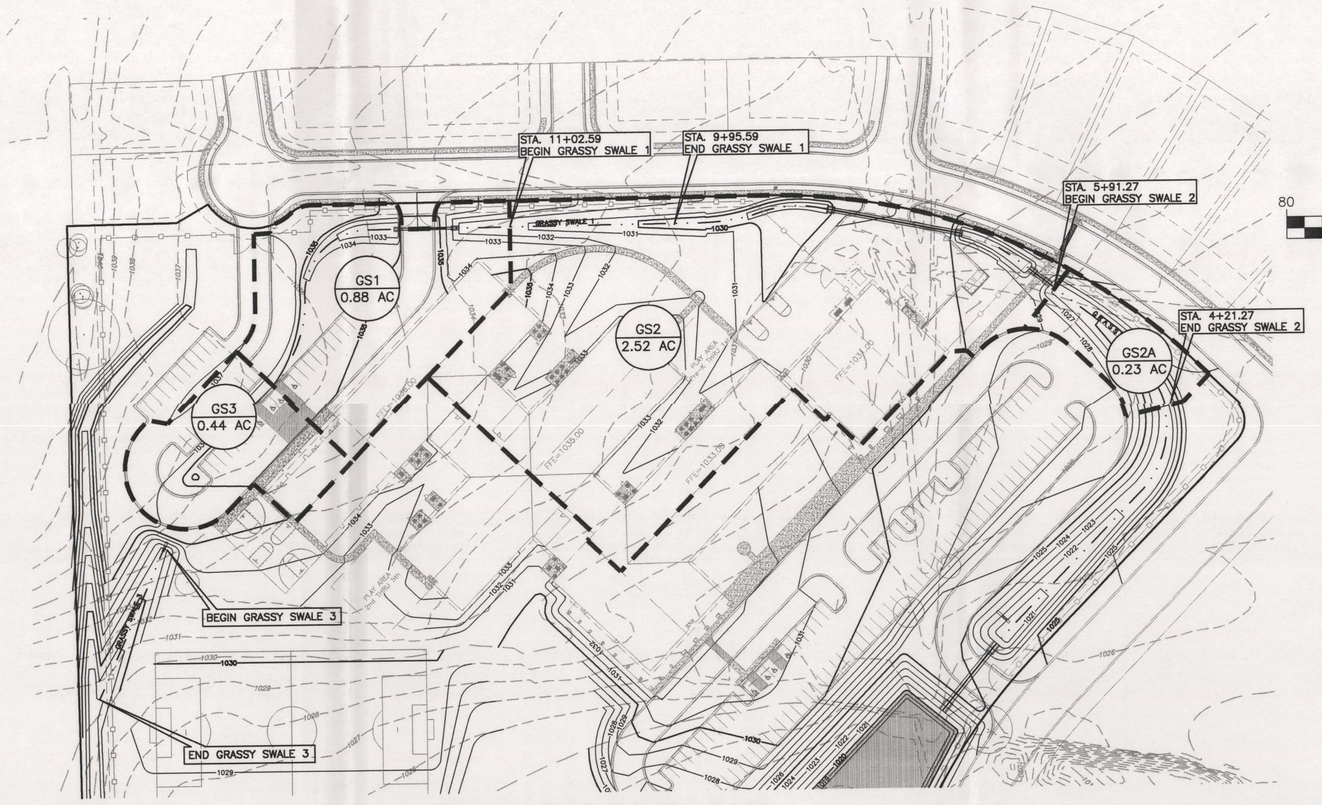
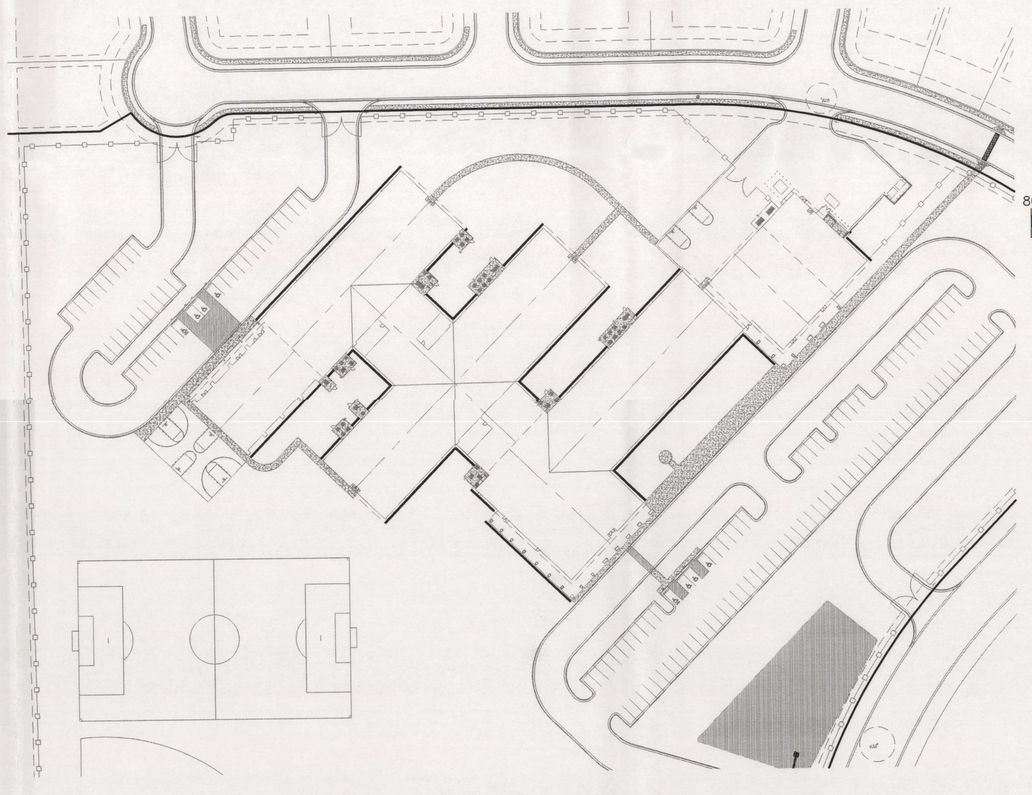
SCALE: 1" = 50'




GRASSY SWALE HYDRALICS

80 0 40 80 160
SCALE: 1" = 80'



SPLASH PAD PLAN

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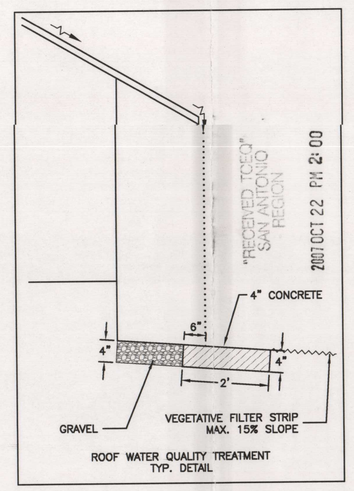
SCALE: 1" = 80'




ROOF WATER QUALITY 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
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- GRASSY SWALE CL
- SPLASH BLOCK
- 832 — EXISTING 5ft CONTOUR
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- 830 — PROPOSED 1ft CONTOUR
- HP — HIGH POINT
- LP — LOW POINT
- RUNOFF FLOW ARROW
- XX / XX.XX — DRAINAGE AREA INDENTIFIER
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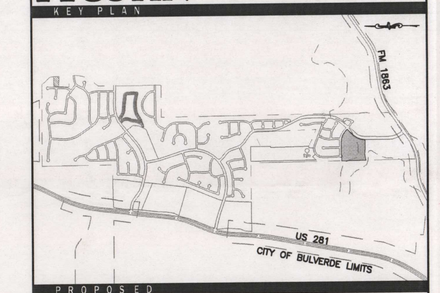


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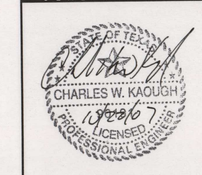
SEAL

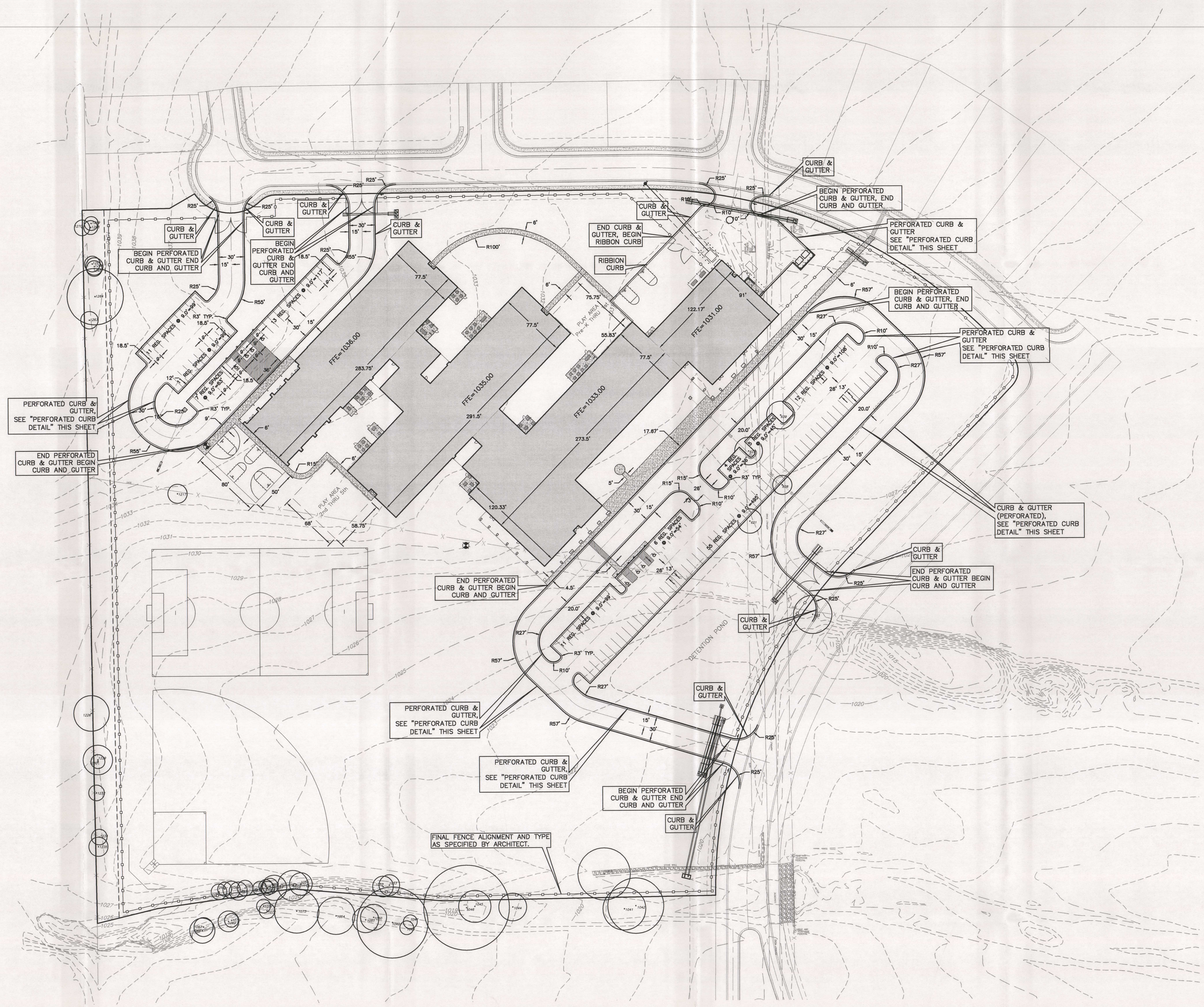


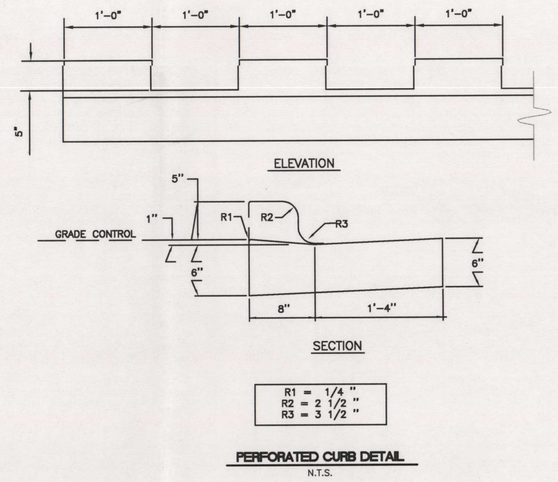

DATA

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

SHEET TITLE
WATER QUALITY PLAN

C9.1




PERFORATED CURB DETAIL
N.T.S.

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# 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

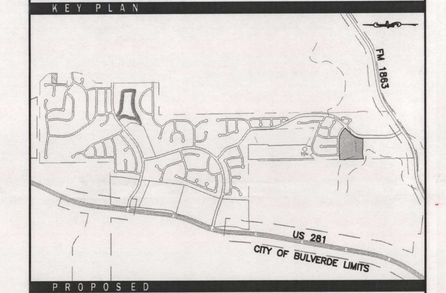
## LEGEND

- BOUNDARY LINE
- PROPOSED R.O.W.
- LOT LINE
- EASEMENT LINE
- FIRE HYDRANT
- CO — CLEAN OUT
- 832 — EXISTING 1 ft CONTOUR
- 830 — EXISTING 5 ft CONTOUR
- CURB AND GUTTER
- WASTEWATER MANHOLE
- XXX — TREE TO BE PRESERVED

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

SEAL

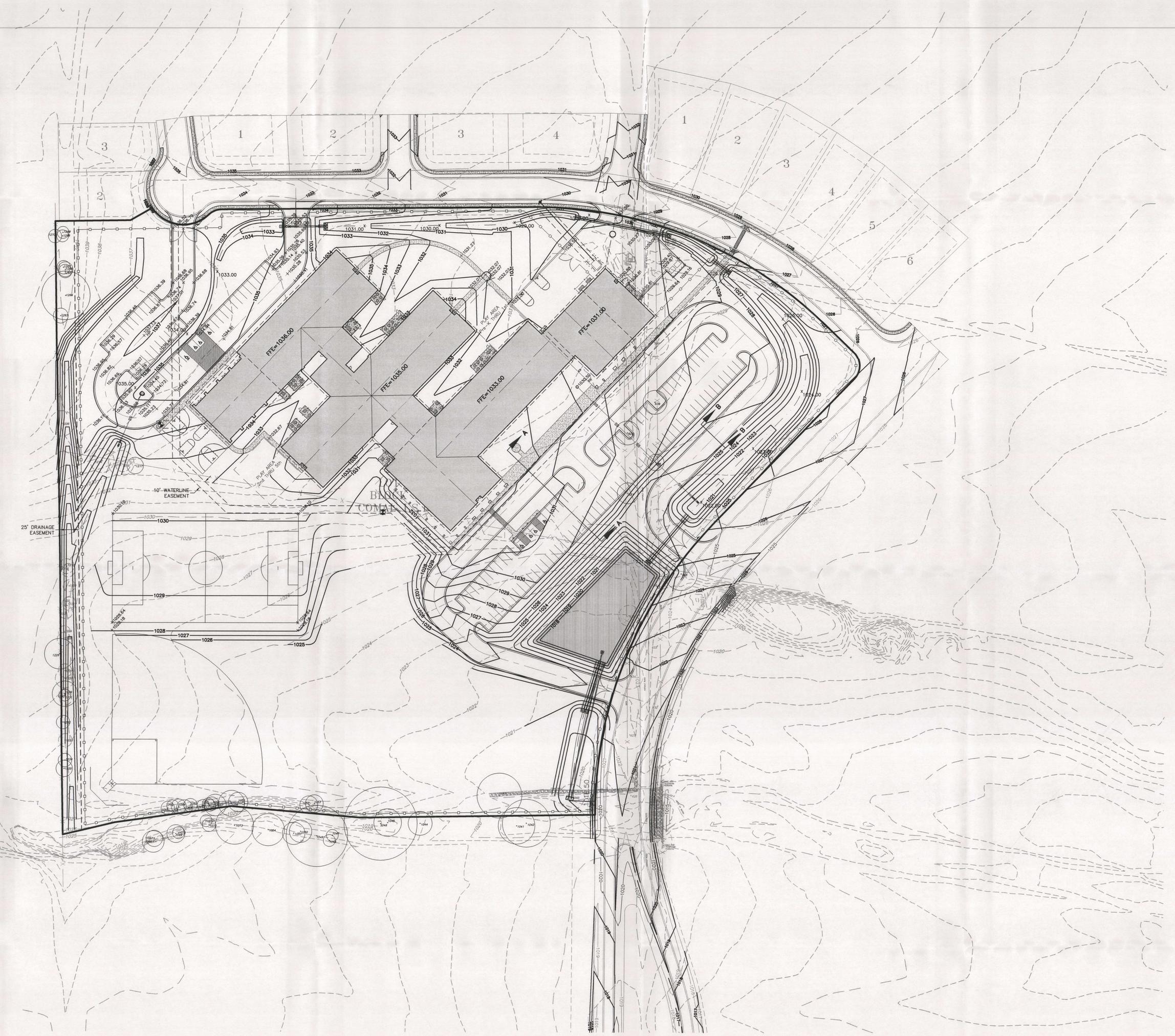
THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW, MARK-UP, AND/OR DRAFTING UNDER THE AUTHORITY OF ANDREW S. HOLLON, P.E. 88521 ON DATE OCTOBER 2007. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

DATA

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

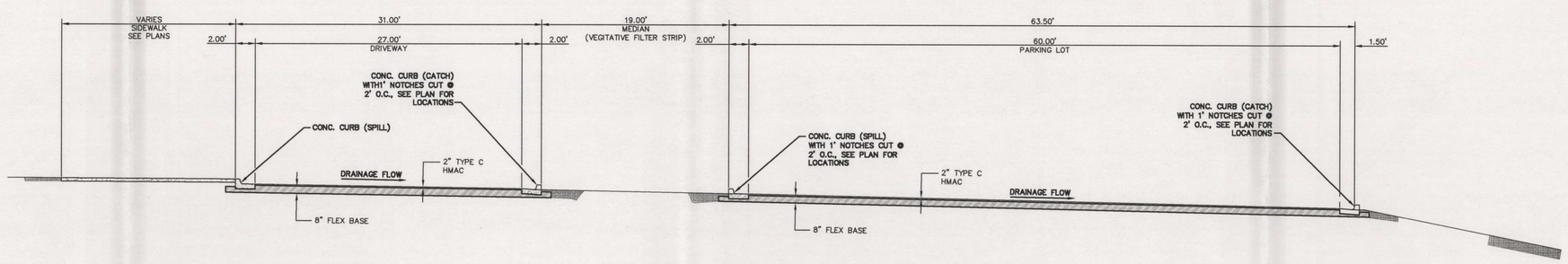
SHEET TITLE
OVERALL SITE PLAN

C4.1



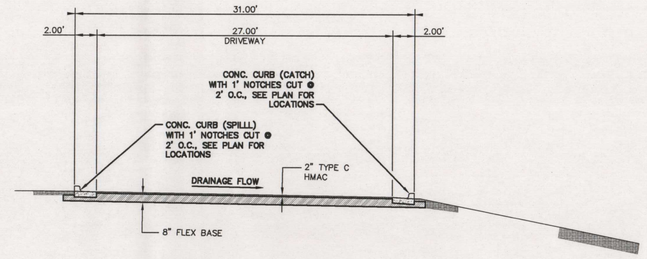

60 0 30 60 120

SCALE: 1" = 60'




## TYPICAL SECTION A-A

N.T.S.




## TYPICAL SECTION B-B

N.T.S.

"RECEIVED TDSHS" SAN ANTONIO REGION

2007 OCT 22 PM 2:00


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
- EASEMENT LINE
- BUILDING LINE
- CURB AND GUTTER
- 832 EXISTING 1 ft CONTOUR
- 830 EXISTING 5 ft CONTOUR
- 832 PROPOSED 1 ft CONTOUR
- 830 PROPOSED 5 ft CONTOUR
- STORM SEWER DISCHARGE HEADWALL
- PROPOSED SS INLET
- HP HIGH POINT
- LP LOW POINT
- xxxx TREE TO BE PRESERVED
- xxxx TREE TO BE REMOVED


CIVIL ENGINEER

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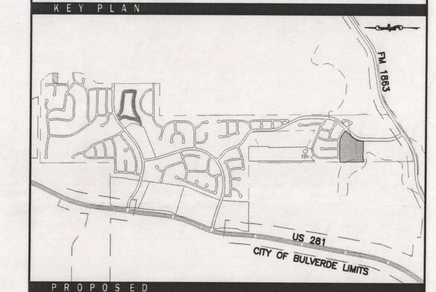
KEY PLAN




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


SEAL

Supplemental

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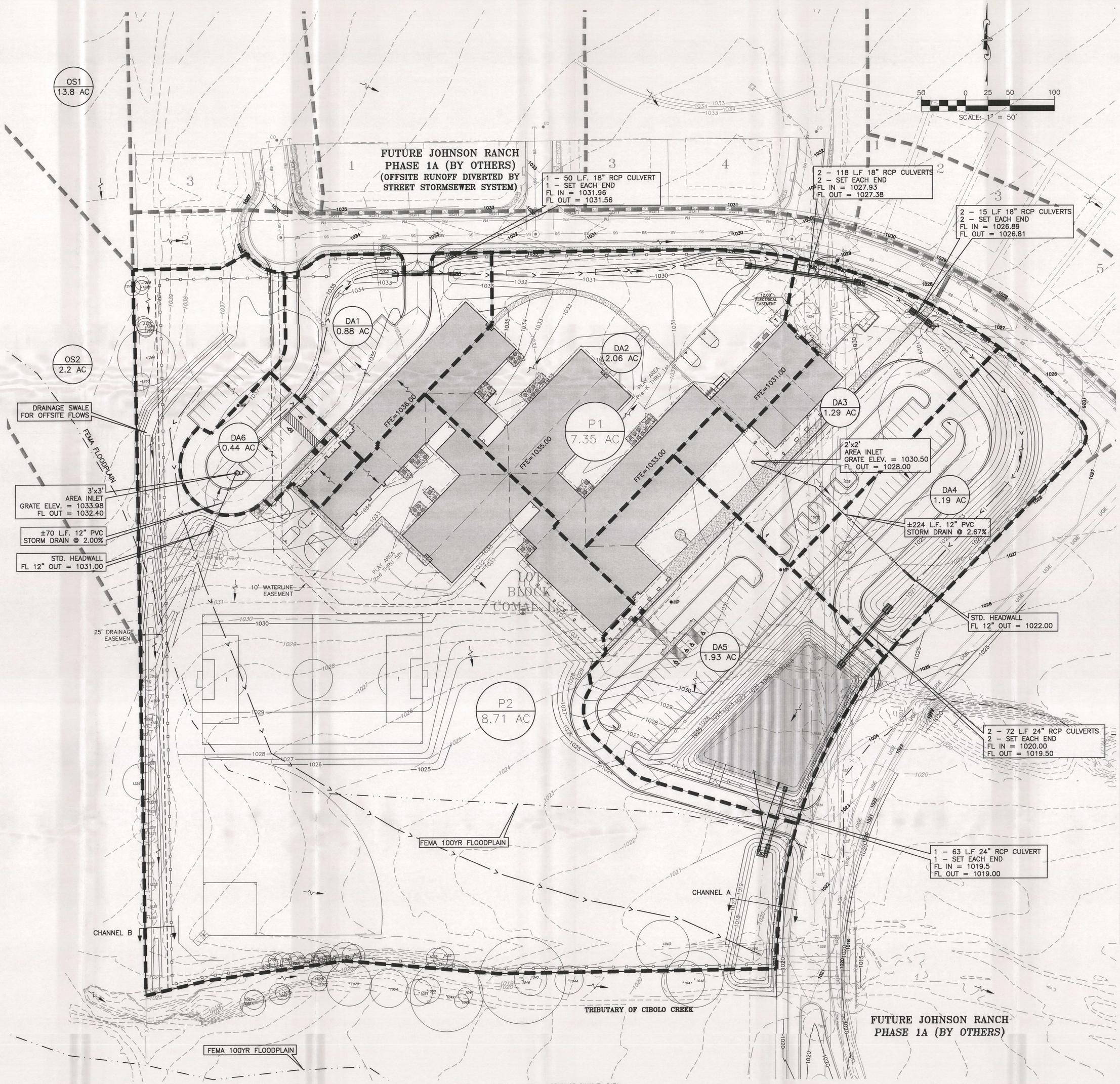
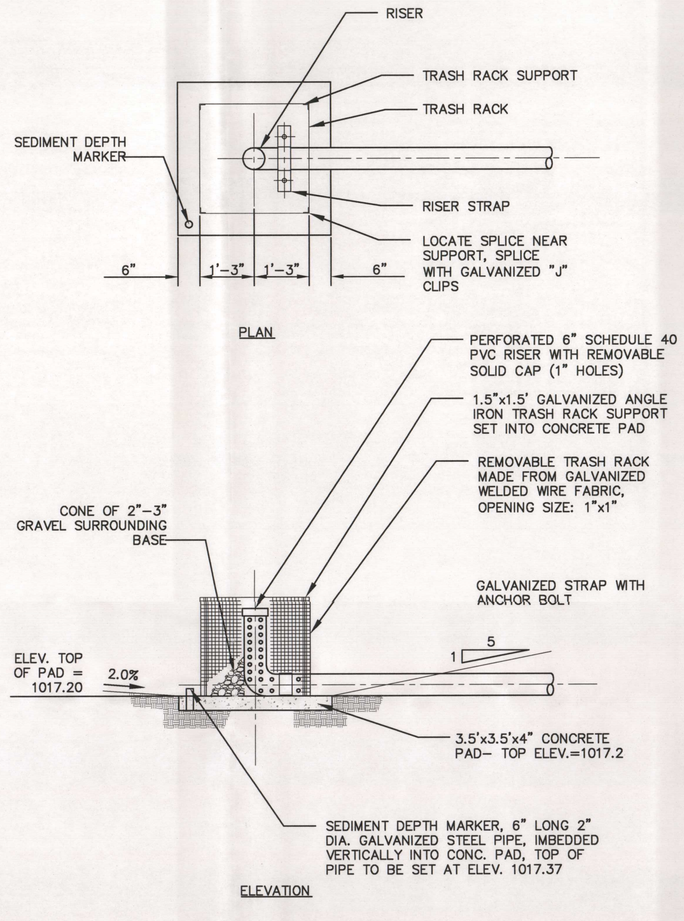
DATA

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

SHEET TITLE
OVERALL GRADING PLAN

C6.1




SEDIMENTATION RISER PIPE

N.T.S.

**COMAL COUNTY SCHOOL**
**Detention Pond Calculations**

**EXISTING**

| | Drainage Area | Curve Number | Time of Concentration | Q 2 | Q 5 | Q10 | Q 25 | Q 50 | Q 100 |
|---|---|---|---|---|---|---|---|---|---|
| | ac | | Min | cfs | | cfs | | cfs | cfs |
| Existing | 16.1 | 79 | 31.0 | 19.2 | 32.5 | 41.9 | 55.9 | 67.5 | 76.9 |

**PROPOSED**

| | Drainage Area | Curve Number | Time of Concentration | Q 2 | Q 5 | Q10 | Q 25 | Q 50 | Q 100 |
|---|---|---|---|---|---|---|---|---|---|
| | ac | | Min | cfs | | | cfs | cfs | cfs |
| P1* | 7.35 | 89 | 26.0 | 16.8 | 24.0 | 28.9 | 40.3 | 41.5 | 46.2 |
| Pond Outflow | | | | 1.4 | 5.6 | 9.0 | 13.9 | 17.3 | 18.8 |
| P2 | 8.71 | 78 | 22.6 | 11.6 | 19.8 | 25.6 | 34.0 | 41.2 | 46.9 |
| Combined Outflow** | | | | 11.8 | 20.0 | 25.9 | 36.4 | 47.4 | 55.6 |

* Pond Inflow
** Both Pond outflow and P2 Outflow

**DETENTION POND**

| | EXISTING | PROPOSED | | | | |
|---|---|---|---|---|---|---|
| | Flow Rate | Flow In | Pond WSEL | Flow Out | Combined Flow | Impact |
| | cfs | cfs | ft | cfs | | cfs |
| 2-YEAR | 19.2 | 16.8 | 1020.0 | 1.4 | 11.8 | -7.4 |
| 5-YEAR | 32.5 | 24.0 | 1020.6 | 5.6 | 20.0 | -12.5 |
| 10-YEAR | 41.9 | 28.9 | 1021.0 | 9.0 | 25.9 | -16.0 |
| 25-YEAR | 55.9 | 40.3 | 1021.5 | 13.9 | 36.4 | -19.5 |
| 50-YEAR | 67.5 | 41.5 | 1021.9 | 17.3 | 47.4 | -20.1 |
| 100-YEAR | 76.9 | 46.2 | 1022.3 | 18.8 | 55.6 | -21.3 |

**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 |

Comal County Elementary School- Johnson Ranch
DRAINAGE - PEAK FLOW CALCULATION
PROPOSED CONDITIONS

| | OS1 | OS2 | DA1 | DA2 | DA3 | DA4 | DA5 | DA6 |
|---|---|---|---|---|---|---|---|---|
| Drainage area (Ac.) | 13.8 | 2.2 | 0.88 | 2.06 | 1.29 | 1.19 | 1.93 | 0.44 |
| Impervious cover | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Time of Concentration (min.) | 19.7 | 18.9 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| IMPERVIOUS "C" VALUES* | | | | | | | | |
| 2-year | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 |
| 10-year | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 |
| 25-year | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| 50-year | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| 100-year | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PERVIOUS "C" VALUES* | | | | | | | | |
| 2-year | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 10-year | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 |
| 25-year | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 |
| 50-year | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 |
| 100-year | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 |
| COMPOSITE "C" VALUES | | | | | | | | |
| 2-year | 0.43 | 0.53 | 0.48 | 0.52 | 0.55 | 0.42 | 0.53 | 0.65 |
| 10-year | 0.49 | 0.61 | 0.54 | 0.59 | 0.62 | 0.48 | 0.57 | 0.72 |
| 25-year | 0.53 | 0.65 | 0.58 | 0.63 | 0.66 | 0.52 | 0.62 | 0.77 |
| 50-year | 0.56 | 0.68 | 0.62 | 0.67 | 0.70 | 0.56 | 0.65 | 0.81 |
| 100-year | 0.61 | 0.72 | 0.66 | 0.71 | 0.74 | 0.60 | 0.70 | 0.86 |
| RAINFALL INTENSITIES (in./hr.)** | | | | | | | | |
| 2-year | 3.94 | 4.03 | 7.10 | 7.10 | 7.10 | 7.10 | 7.10 | 10.29 |
| 10-year | 5.85 | 5.99 | 10.32 | 10.32 | 10.32 | 10.32 | 10.32 | 14.72 |
| 25-year | 6.72 | 6.86 | 11.78 | 11.78 | 11.78 | 11.78 | 11.78 | 16.74 |
| 50-year | 7.34 | 7.51 | 12.73 | 12.73 | 12.73 | 12.73 | 12.73 | 18.00 |
| 100-year | 8.08 | 8.37 | 14.08 | 14.08 | 14.08 | 14.08 | 14.08 | 20.00 |
| PEAK RUNOFF RATES (cfs) | | | | | | | | |
| 2-year | 23.1 | 3.1 | 3.0 | 7.6 | 5.0 | 3.5 | 6.9 | 2.9 |
| 10-year | 39.2 | 5.3 | 4.9 | 12.5 | 8.2 | 5.9 | 11.4 | 4.7 |
| 25-year | 47.0 | 6.3 | 5.9 | 15.6 | 10.3 | 7.3 | 14.4 | 5.8 |
| 50-year | 57.0 | 7.9 | 6.9 | 17.5 | 11.9 | 8.5 | 16.9 | 6.4 |
| 100-year | 70.1 | 9.8 | 8.6 | 21.5 | 14.1 | 10.5 | 19.7 | 7.9 |

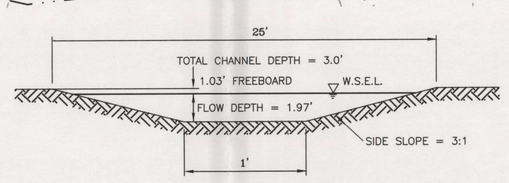
** The runoff coefficients (C) are taken from the City of Austin Drainage Criteria Manual
** The coefficients a,b and d for the Rainfall Intensity-Duration-Frequency Curve, taken from TxDOT Hydraulic Design Manual- Comal County

| PROPERTY | TEST METHOD | UNIT | SPECIFICATION |
|---|---|---|---|
| PERMEABILITY | ASTM D–2434 | cm/sec | $1x10^{-6}$ |
| PLASTICITY INDEX OF CLAY | ASTM D–423 & D–424 | % | NOT LESS THAN 15 |
| LIQUID LIMIT OF CLAY | ASTM D–2216 | % | NOT LESS THAN 30 |
| CLAY PARTICALS PASSING | ASTM D–422 | % | NOT LESS THAN 30 |
| CLAY COMPACTION | ASTM D–2216 | % | 95% OF STANDARD PROCTOR DENSITY |

NOTE:

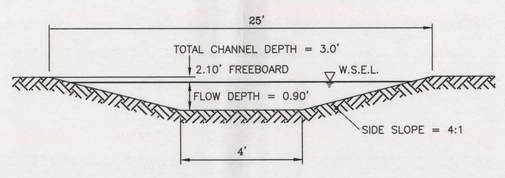
DETENTION POND TO HAVE A CLAY LINER, WHICH IS TO BE 12 INCHES THICK, COVERING THE BOTTOM AND UP THE SIDES TO THE ELEVATION OF 1020.50

DRAINAGE CHANNEL DATA:
BOTTOM WIDTH = 1 ft
SIDE SLOPES = 3:1
MANNING'S n = 0.03
CHANNEL SLOPE = 0.01
DEPTH = 2.0 ft
DISCHARGE(100) = 80.0 cfs
VELOCITY = 5.90 fps
FLOW AREA = 13.56 sf
FROUDE NUMBER = 1.0




TYPICAL CROSS SECTION
CHANNEL B
B
N.T.S.

DRAINAGE CHANNEL DATA:
BOTTOM WIDTH = 4 ft
SIDE SLOPES = 4:1
MANNING'S n = 0.03
CHANNEL SLOPE = 0.01
DEPTH = 0.90 ft
DISCHARGE(100) = 28 cfs
VELOCITY = 3.47 fps
FLOW AREA = 7.20 sf
FROUDE NUMBER = 0.79




TYPICAL CROSS SECTION
CHANNEL A
A
N.T.S.

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

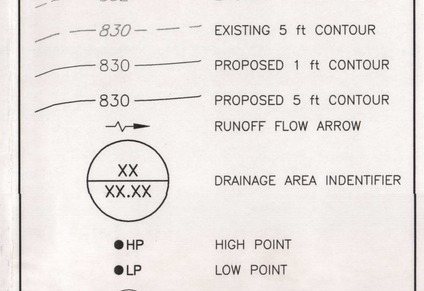
GENERAL NOTES · KEYED NOTES · LEGENDS

LEGEND

- BOUNDARY LINE
- PROPOSED R.O.W.
- LOT LINE
- EASEMENT LINE
- BUILDING LINE
- CURB AND GUTTER
- DRAINAGE AREA
- 832 EXISTING 1 ft CONTOUR
- 830 EXISTING 5 ft CONTOUR
- 830 PROPOSED 1 ft CONTOUR
- 830 PROPOSED 5 ft CONTOUR
- RUNOFF FLOW ARROW
- XX / XX.XX DRAINAGE AREA INDENTIFIER
- HP HIGH POINT
- LP LOW POINT
- TREE TO BE PRESERVED
- TREE TO BE REMOVED
- FENCE
- ROCK RIPRAP

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

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Proposed New
Johnson Ranch Elementary

OWNER

Comal Independent School District

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Phone No. (830) 221-2184
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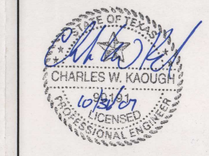
SEAL




DATA

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

SHEET TITLE
PROPOSED CONDITIONS
DRAINAGE PLAN

C3.2

2007 NOV -1 PM 12:35

Buddy Garcia, *Chairman*
Larry R. Soward, *Commissioner*
Bryan W. Shaw, Ph.D., *Commissioner*
Mark R. Vickery, P.G., *Executive Director*

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

April 30, 2009

RECEIVED
MAY 11 2009
COUNTY ENGINEER

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

Re: Edwards Aquifer, Comal County
PROJECT NAME: OSSF for Johnson Ranch Elementary, located on the northeast corner of Hwy 281 and FM 1863, Bulverde, Comal County, Texas
PLAN TYPE: Application for Exception of a Water Pollution Abatement Plan (WPAP) 30 Texas Administration Code (TAC) Chapter 213; Edwards Aquifer Protection Program
EAPP File No.: 2703.01

Dear Mr. Hornseth:

The enclosed Contributing Zone Water Pollution Abatement Plan, received on April 27, 2009 application is being forwarded to you pursuant to the Edwards Aquifer Rules. The Texas Commission on Environmental Quality (TCEQ) is required by 30 TAC Chapter 213 to provide copies of all applications to affected incorporated cities and underground water conservation districts for their comments prior to TCEQ approval.

Please forward your comments to this office by May 26, 2009.

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

Sincerely

Lynn M. Bumguardner
Water Section Work Leader
San Antonio Regional Office

LMB/eg

2703.01

RECEIVED TCEQ
SAN ANTONIO
REGION
2009 APR 21 AM 9:27

TCEQ-R13
APR 27 2009
SAN ANTONIO

# Exception Request

## OSSF for Johnson Ranch Elementary

*Prepared for:*

**DH/JB Partnership, Ltd.**
**102A Cordillera Ridge, Ltd.**
**Boerne, Texas 78006**

*Prepared by:*



LOOMIS | PARTNERS

■ ENGINEERING ■ LAND SURVEYING ■ ENVIRONMENTAL CONSULTING ■

**3101 Bee Cave Road, Suite 100**
**Austin, TX 78746**
**512/327-1180**
**FAX: 512/327-4062**

LAI Proj. No. 090301
**APRIL 2009**

TCEQ-R13
APR 27 2009
SAN ANTONIO

# ON-SITE WASTEWATER EASEMENT

THE STATE OF TEXAS )
)
COUNTY OF COMAL )

KNOW ALL BY THESE PRESENTS:

THAT _____ of the County of Comal, State of Texas, hereinafter referred to as "Grantor," whether one or more, for and in consideration of the sum of TEN DOLLARS ($10.00) and other good and valuable consideration, to Grantor in hand paid by the COMAL INDEPENDENT SCHOOL DISTRICT, the receipt and sufficiency of which is hereby acknowledged and confessed and for which no lien, express or implied, is retained, have this day GRANTED, SOLD, AND CONVEYED unto the COMAL INDEPENDENT SCHOOL DISTRICT, situated in Comal County, Texas, and whose address is 1421 Business 35, New Braunfels, Texas, its successors and assigns (hereinafter "Grantee"), an easement for the location of on-site wastewater treatment and disposal facilities and associated appurtenances and making connections therewith in, upon and across the following described land, to wit:

> All that certain tract, piece or parcel of land, lying and being situated in the County of Comal, State of Texas, described in **EXHIBIT A** attached hereto and made a part hereof for all purposes, to which reference is hereby made for a more particular description of said property (the "Easement Tract").

**TO HAVE AND TO HOLD** the same to Grantee and its successors and assigns together with the right and privilege to utilize the Easement Tract, or any part thereof, for the purpose of allowing an on-site wastewater facility and associated appurtenances thereto to be constructed, maintained and operated by DH/JB Development, Inc. and / or assigns in order to provide wastewater service to the Johnson Ranch Elementary School. In no event shall the Easement Tract be used in any manner that interferes in any material way or is inconsistent with the rights granted hereunder or will any party be allowed to erect or permit to be erected a building or structure, other than is necessary to be utilized for the on-site wastewater facility, on any portion of the Easement Tract during the duration of this easement.

This easement shall automatically expire upon completion of and connection of the Johnson Ranch Elementary School to a centralized wastewater collection and treatment system approved by the Texas Commission on Environmental Quality and acknowledgement of said connection by letter from the Comal Independent School District and the Comal County engineer.

Grantor does hereby covenant and agree to WARRANT AND FOREVER DEFEND title to the Easement herein granted unto the Grantee, its successors and assigns, against every person whomsoever lawfully claiming or to claim the same or any part thereof subject to the matters set forth herein.

**Recharge And Transition Zone**
Exception Request Form
30 TAC §213.9 Effective June 1, 1999

Regulated Entity Name: OSSF for Johnson Ranch Elementary

1. √ **ATTACHMENT A - Nature of Exception.** A narrative description of the nature of each exception requested is provided as **ATTACHMENT A** at the end of this form. All provisions of 30 TAC §213 Subchapter A for which an exception is being requested have been identified in the description.

2. √ **ATTACHMENT B - Documentation of Equivalent Water Quality Protection.** Documentation demonstrating equivalent water quality protection for the Edwards Aquifer is provided as **ATTACHMENT B** at the end of this form.

**ADMINISTRATIVE INFORMATION**

3. √ One (1) original and three (3) copies of the completed application has been submitted to the appropriate regional office of the TCEQ.

4. √ The applicant understands that no exception will be granted for a prohibited activity in Chapter 213.

5. √ The applicant understands that prior approval under this section must be obtained from the executive director for the exception to be authorized.

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 **RECHARGE AND TRANSITION ZONE EXCEPTION REQUEST FORM** application is hereby submitted for TCEQ review and executive director approval. The request was prepared by:

Andy Hollon
Print Name of Customer/Agent

Signature of Customer/Agent

4/20/09
Date

RECEIVED TCEQ
2009 APR 21 AM 9:21
SAN ANTONIO
REGION

TCEQ-R13
APR 27 2009
SAN ANTONIO

# ATTACHMENT A

**Recharge And Transition Zone**
Exception Request Form
30 TAC §213.9 Effective June 1, 1999

# F-0628 Attachment A

This request is for the construction of a temporary OSSF facility necessary to serve Johnson Ranch Elementary School, a Comal ISD school that is under construction (nearing 100% completion) and will open in August, 2009. The school is located on a +/- 16 acre subdivided tract of land in the +/- 760 acre Johnson Ranch development. The land was donated to the school district by the developer and is located in the Recharge Zone of the Edwards Aquifer.

There is an approved WPAP (RN105332530) for the construction on the school's site. Additionally, there is a separate approved WPAP (RN105332522) for the balance of the land within the Johnson Ranch development, which includes approval of the construction activities related to building a road (Johnson Way) from FM 1863 to the school plus Lariat Drive which adjoins the school to the north.

This exception request is necessary because, originally, it was anticipated that the school would be served by a central wastewater system to be built by the developer in conjunction with development of approximately 370 single family lots. The requisite 75,000 gpd wastewater permit was issued by the TCEQ on February 27, 2007 and, during the later part of 2007 through early 2008, the developer obtained commitments from several builders to purchase lots for construction of single family homes. However, in the late spring of 2008, due to the collapse of the housing and financial markets, the builders informed the developer that they were going to have to delay any starts for at least 12 months. This, in turn, made it impossible for the developer to build the planned central wastewater facilities both due to the cost involved and the small amount of sewage (estimated at less than 3,500 gallons per day average) that will be generated by the school.

However, since the school was already far along with its construction, an alternative method of treating and disposing of its wastewater was needed. After evaluating various options, the developer determined that the most effective solution to the problem would be to serve the school with an OSSF that will be used temporarily for the next 18 to 24 months until the market improves and it becomes feasible to build the central system and connect the school to it. However, since construction of the OSSF was not anticipated when both the school and the developer obtained their WPAPs, it has become necessary to add the small area related to construction of the OSSF to the Developer's WPAP. Since (1) the developer's WPAP allowed for 4.44 acres of impervious cover related to its current project and the actual impervious cover installed is approximately 3 acres; (2) the additional impervious cover being added by the OSSF is extremely minimal (~166 square feet); (3) the duration of construction activities will be extremely short (estimated at two to three weeks); (4) the location of the OSSF is directly adjacent to the school as well as the developer's project; and (5) the extent of disturbance of the site will be minimal, it was determined in a meeting on April 3rd between the developer and representatives of the TCEQ's regional office in San Antonio that an application for an Exception was the appropriate way to proceed.

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

REGULATED ENTITY NAME: **OSSF for Johnson Ranch Elementary**
COUNTY: **Comal** STREAM BASIN: **Cibolo Creek**

EDWARDS AQUIFER: √ RECHARGE ZONE
__ TRANSITION ZONE

PLAN TYPE: √ WPAP __ AST √ EXCEPTION
__ SCS __ UST __ MODIFICATION

**CUSTOMER INFORMATION**

1. Customer (Applicant):

Contact Person: Charles Hill
Entity: DH/JB Development Inc.
Mailing Address: 102A Cordillera Ridge
City, State: Boerne, Texas Zip: 78006
Telephone: (830) 336-2518 FAX: (866) 741-4501

Agent/Representative (If any):

Contact Person: Andy Hollon, P.E.
Entity: Loomis Partners, Inc.
Mailing Address: 3101 Bee Cave Road, Suite 100
City, State: Austin, Texas Zip: 78746
Telephone: (521) 327-1180 FAX: (512) 327-4062

2. __ This project is inside the city limits of _____.
√ This project is outside the city limits but inside the ETJ (extra-territorial jurisdiction) of Bulverde, Texas.
__ This project is not located within any city's limits or ETJ.

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

**The project is situated in the northeast corner of the intersection of U.S. 281 and FM 1863, in the southern Comal County. From TCEQ San Antonio Regional office, go north on Judson Road for 2.5 miles, take TX-1604-Loop west for 4.4 miles, take US 281 north for 9.6 miles, then take FM 1863 east for 0.5 miles. Make a left on the Johnson Ranch driveway and proceed 0.3 miles north. The site is on the left.**

4. √ **ATTACHMENT A - ROAD MAP**. A road map showing directions to and the location of the project site is attached at the end of this form.

5. √ **ATTACHMENT B - USGS / EDWARDS RECHARGE ZONE MAP**. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is attached behind this sheet. The map(s) should clearly show:

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

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

7. √ **ATTACHMENT C - PROJECT DESCRIPTION**. ~~Attached at the end of this form~~ **The following** is a detailed narrative description of the proposed project.

   **The OSSF for Johnson Ranch Elementary project, a 3.95-acre tract, is the temporary designated location for the onsite sewage facility for the Comal Independent School District Elementary School. With the future development of the Johnson Ranch property an organized sewage collection system will take place and the discharge of the wastewater will be directed to a future wastewater treatment plant.**

   **Currently, there is no development on this property. Construction activities will disturb approximately 2.75 acres. However, less than 0.1% of impervious cover will be added. There will be no road construction, no drainage improvements, or potable water improvements associated with this project.**

   **It is anticipated that there will be no storage of regulated quantities of hazardous materials within the limits of construction.**

8. Existing project site conditions are noted below:
   ___ Existing commercial site
   ___ Existing industrial site
   ___ Existing residential site
   ___ Existing paved and/or unpaved roads
   √ Undeveloped (Cleared)
   ___ Undeveloped (Undisturbed/Uncleared)
   ___ Other:

## PROHIBITED ACTIVITIES

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

   (1) waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);
   (2) new feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;
   (3) land disposal of Class I wastes, as defined in 30 TAC §335.1;
   (4) the use of sewage holding tanks as parts of organized collection systems; and
   (5) new municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).

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

   (1) waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground Injection Control);
   (2) land disposal of Class I wastes, as defined in 30 TAC §335.1; and
   (3) new municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41 (b), (c), and (d) of this title.

## ADMINISTRATIVE INFORMATION

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

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

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

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

13. √ Submit one (1) original and three (3) copies of the completed application to the appropriate regional office for distribution by the TCEQ to the local municipality or county, groundwater conservation districts, and the TCEQ's Central Office.

14. √ 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.
   ___ No person shall commence any regulated activity until the Contributing Zone Plan for the

activity has been filed with the executive director.

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

Print Name of Customer/Agent

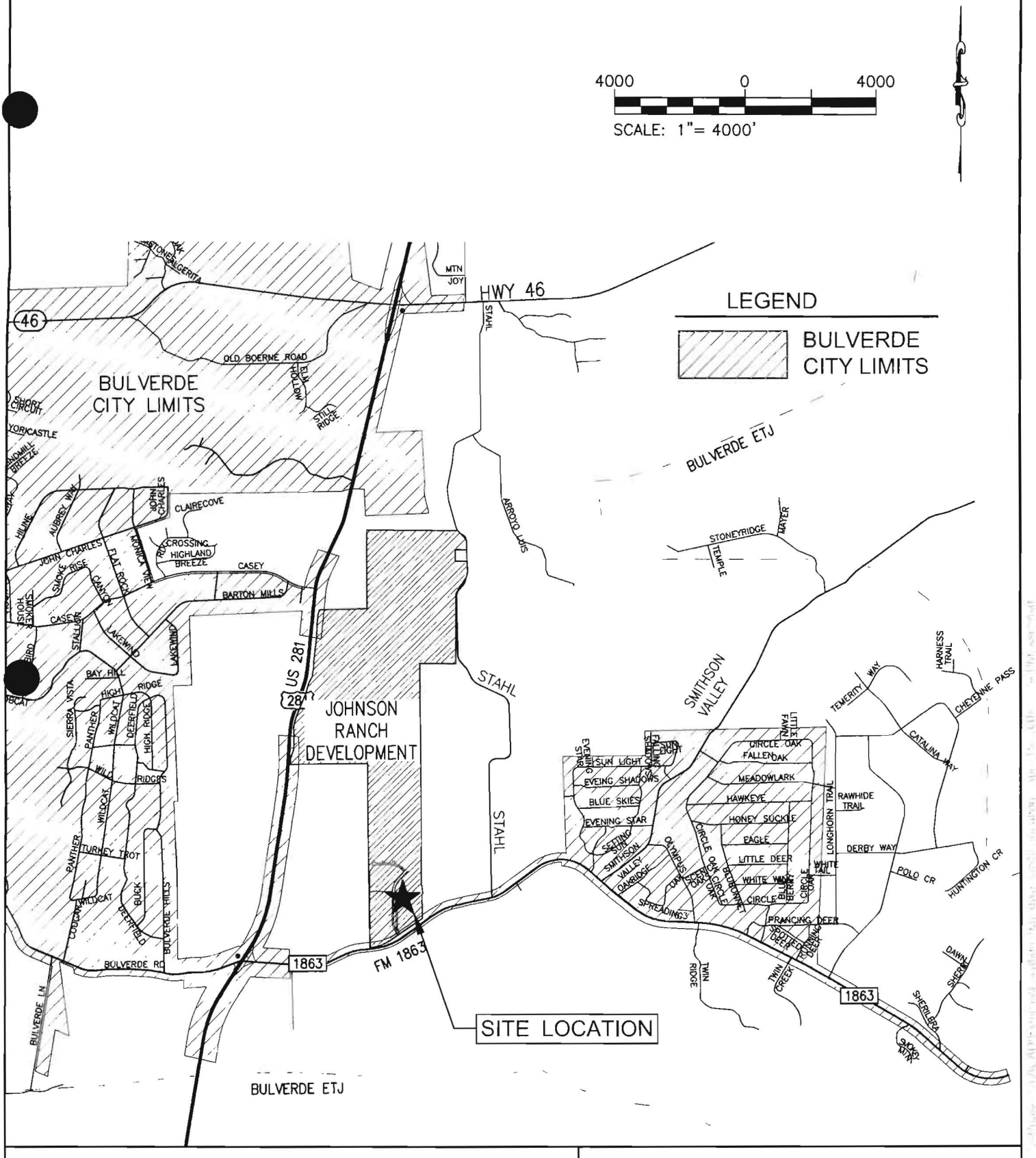
Signature of Customer/Agent

Date 4/20/09

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

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

# ATTACHMENT A

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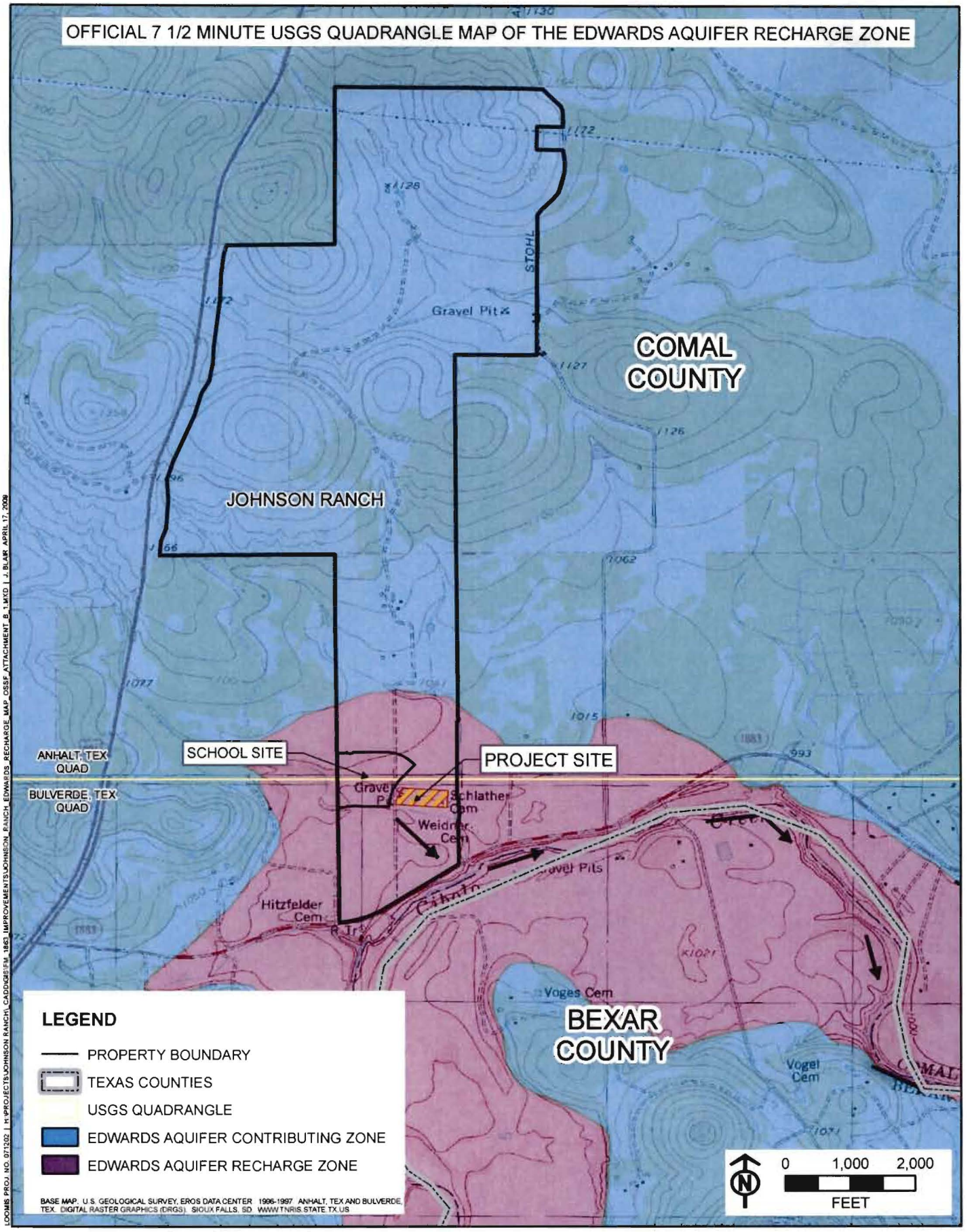
3101 Bee Cave Road, Suite 100 • Austin, Texas 78746
[TEL] 512 327 1180 • [FAX] 512 327.4062 • www.loomis-partners.com
TBPE Firm Registration No F-2986

# ATTACHMENT A
# LOCATION MAP
# OSSF FOR JOHNSON RANCH ELEMENTARY

# ATTACHMENT B

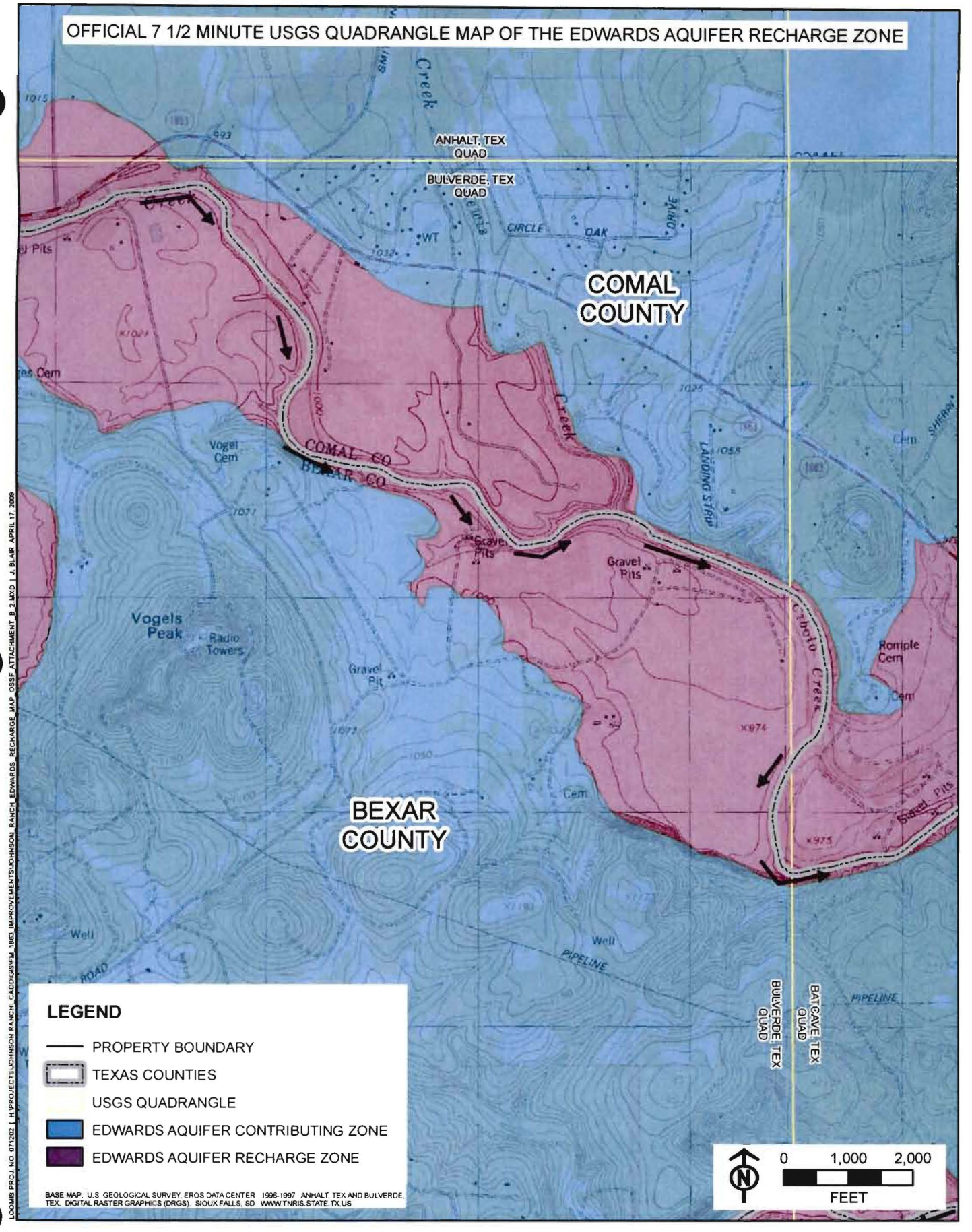



LOOMIS PARTNERS

**ATTACHMENT B SHEET 1 OF 6**

OSSF FOR JOHNSON RANCH ELEMENTARY

EDWARDS AQUIFER RECHARGE ZONE USGS TOPOGRAPHIC MAP

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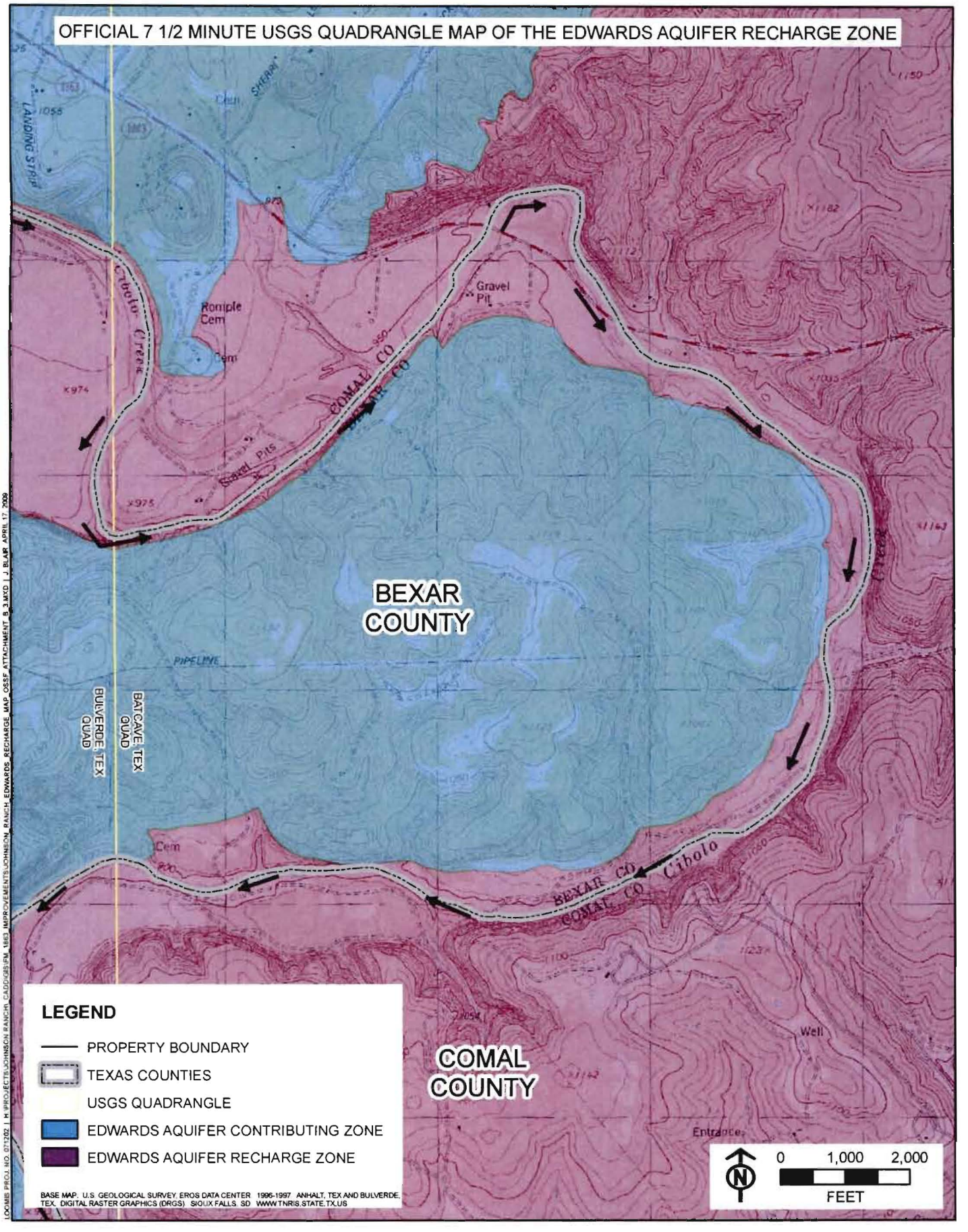
LOOMIS PARTNERS

**ATTACHMENT B SHEET 2 OF 6**

OSSF FOR JOHNSON RANCH ELEMENTARY

EDWARDS AQUIFER RECHARGE ZONE USGS TOPOGRAPHIC MAP

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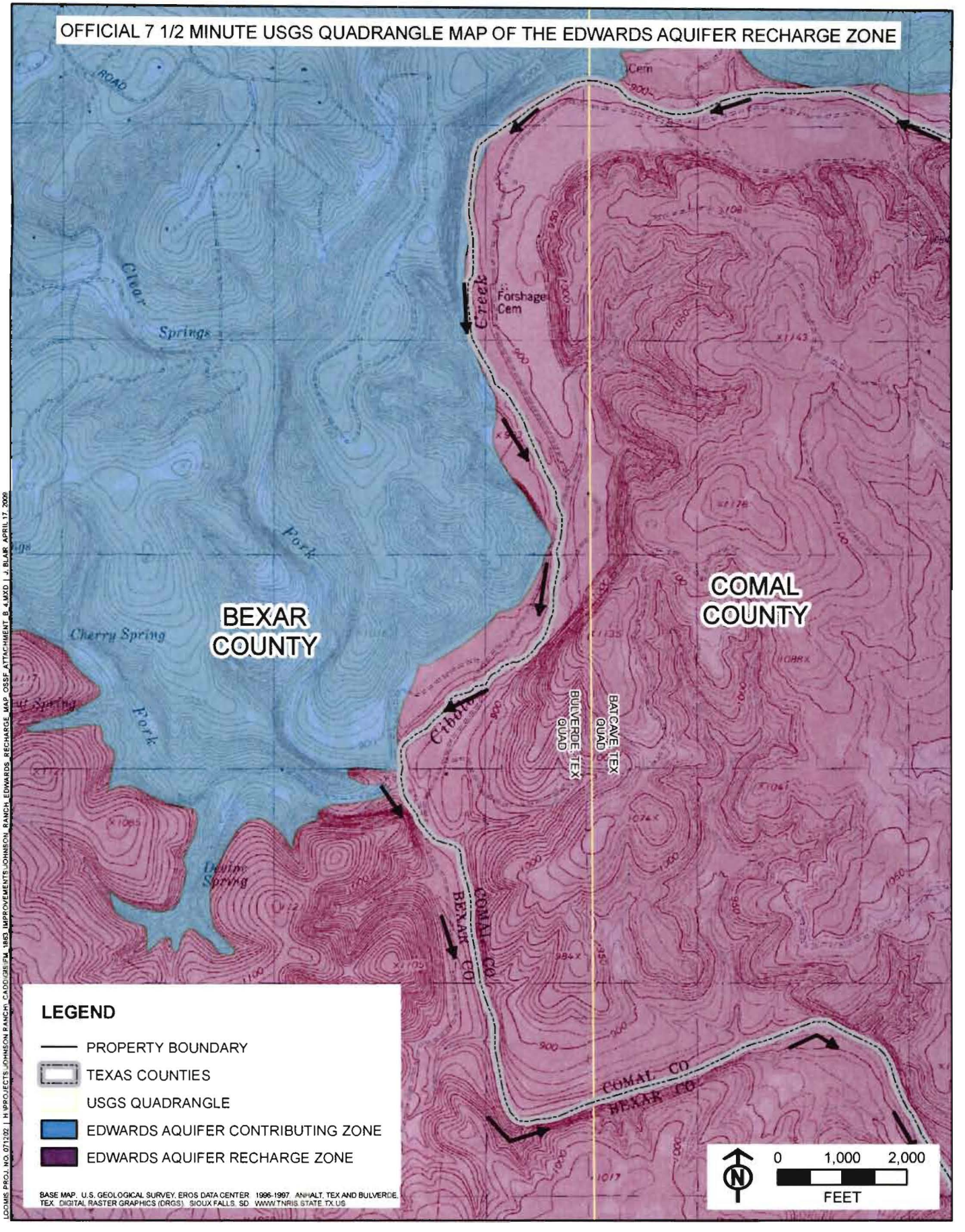
LOOMIS PARTNERS

**ATTACHMENT B SHEET 3 OF 6**

OSSF FOR JOHNSON RANCH ELEMENTARY

EDWARDS AQUIFER RECHARGE ZONE USGS TOPOGRAPHIC MAP

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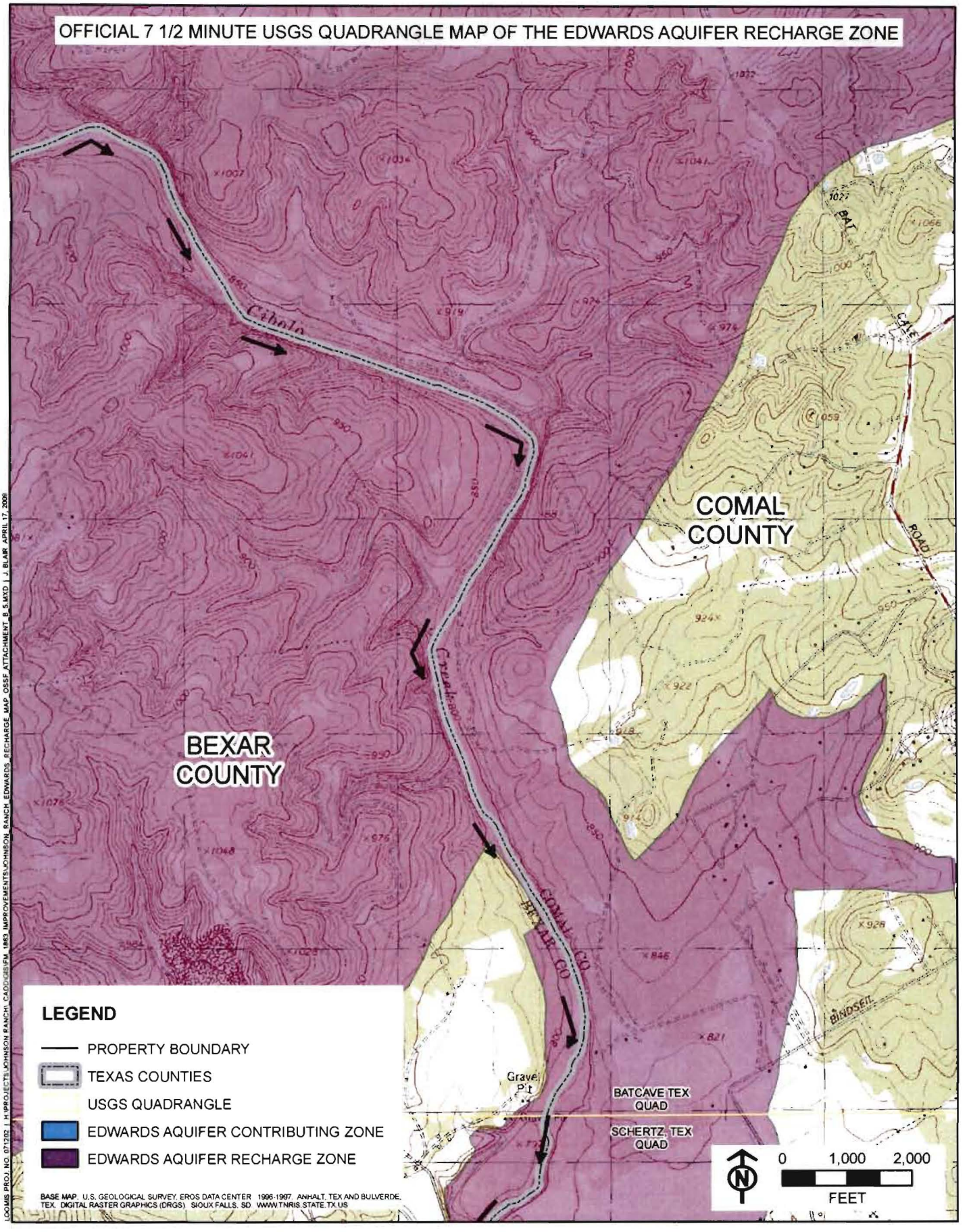
LOOMIS PARTNERS

**ATTACHMENT B SHEET 4 OF 6**

OSSF FOR JOHNSON RANCH ELEMENTARY

EDWARDS AQUIFER RECHARGE ZONE USGS TOPOGRAPHIC MAP

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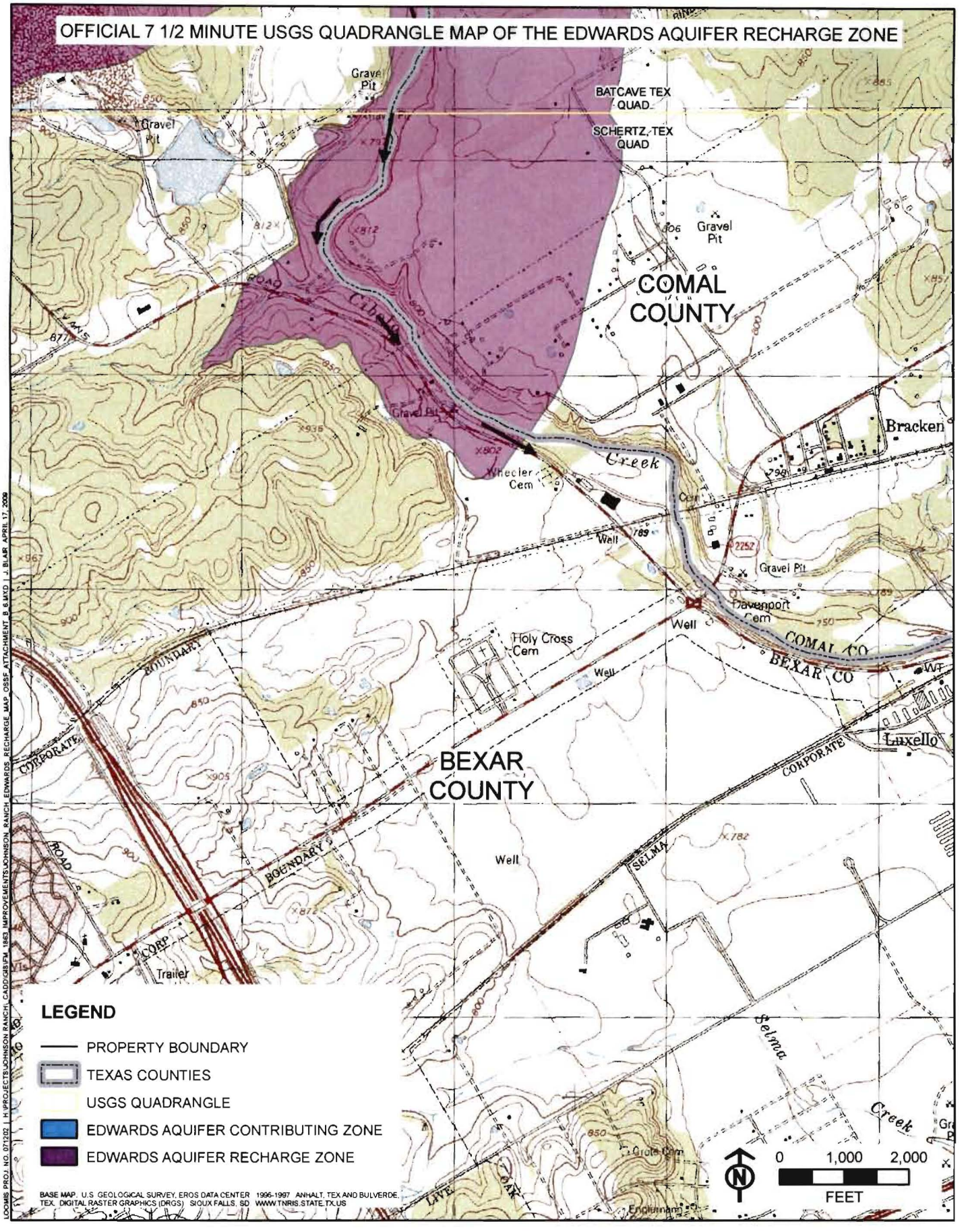
LOOMIS PARTNERS

**ATTACHMENT B SHEET 5 OF 6**

OSSF FOR JOHNSON RANCH ELEMENTARY

EDWARDS AQUIFER RECHARGE ZONE USGS TOPOGRAPHIC MAP




LOOMIS PARTNERS

**ATTACHMENT B SHEET 6 OF 6**

OSSF FOR JOHNSON RANCH ELEMENTARY

EDWARDS AQUIFER RECHARGE ZONE USGS TOPOGRAPHIC MAP

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San Antonio Office
6200 UTSA Boulevard, Suite 102
San Antonio, TX 78249
Tel 210.877.2847 Fax 210.877.2848
www.swca.com

Andy Hollon
Loomis Partners, Inc.
3101 Bee Caves Rd Suite 100
Austin TX 78746

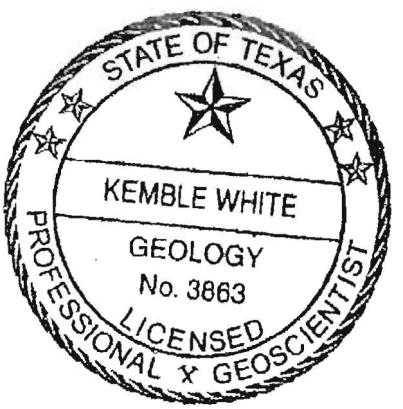
9 April 2009

As we have discussed I was the geologist who conducted the Texas Commission on Environmental Quality Geologic Assessment for the approximately 700-acre Johnson Ranch property located in Western Comal County north of Cibolo Creek and east of U.S. 281. Per your request, this letter verifies that I have reviewed the site plan for the OSSF for Johnson Ranch Elementary School (as depicted in the attached figure) and have determined that no man-made or geologic features with the potential to rapidly transmit recharge to the Edwards Aquifer occur within the proposed project boundaries.

If you have any further questions or comments regarding this matter please do not hesitate to contact me by phone or by e-mail at kwhite@swca.com.

Sincerely,

Kemble White, Ph.D., P.G.



**Geologic Assessment**
For Regulated Activities
on The Edwards Aquifer Recharge/transition Zones
and Relating to 30 TAC §213.5(b)(3), Effective June 1, 1999

REGULATED ENTITY NAME: 700-Acre Johnson Ranch Property

TYPE OF PROJECT: _X_ WPAP __ AST _X_ SCS __ UST

LOCATION OF PROJECT: _X_ Recharge Zone __ Transition Zone __ Contributing Zone within the Transition Zone

PROJECT INFORMATION

1. _X_ Geologic or manmade features are described and evaluated using the attached **GEOLOGIC ASSESSMENT TABLE**

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

| Soil Units, Infiltration Characteristics & Thickness | | |
|---|---|---|
| Soil Name | Group* | Thickness (feet) |
| Krum clay, 1 to 3 percent slopes (KrB) | D | >7 |
| Gruene Clay Series, 1 to 5 percent slopes (GrC) | C | >3 |
| Lewisville silty clay, 1 to 3 percent slopes (LeB) | B | >4 |
| Sunev silty clay loam, 0 to 1 percent slopes (SuA) | C | >4 |
| | | |

* Soil Group Definitions (Abbreviated)

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

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

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

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

3. _X_ A **STRATIGRAPHIC COLUMN** is attached at the end of this form that shows formations, members, and thicknesses. The outcropping unit should be at the top of the stratigraphic column.

4. _X_ A **NARRATIVE DESCRIPTION OF SITE SPECIFIC GEOLOGY** is attached at the end of this form. The description must include a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure, and karst characteristics of the site.

5. _X_ Appropriate **SITE GEOLOGIC MAP(S)** are attached:

The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1" : 400'

Applicant's Site Plan Scale 1" = 100'

Site Geologic Map Scale 1" = 200'
Site Soils Map Scale (if more than 1 soil type) 1" = 2,000'

6. Method of collecting positional data:
X Global Positioning System (GPS) technology.
__ Other method(s).

7. X The project site is shown and labeled on the Site Geologic Map.

8. X Surface geologic units are shown and labeled on the Site Geologic Map.

9. X Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.
__ Geologic or manmade features were not discovered on the project site during the field investigation.

10. X The Recharge Zone boundary is shown and labeled, if appropriate.

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

X There are 1 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
__ The wells are not in use and have been properly abandoned.
__ The wells are not in use and will be properly abandoned.
X The wells are in use and comply with 16 TAC Chapter 76.
__ There are no wells or test holes of any kind known to exist on the project site.

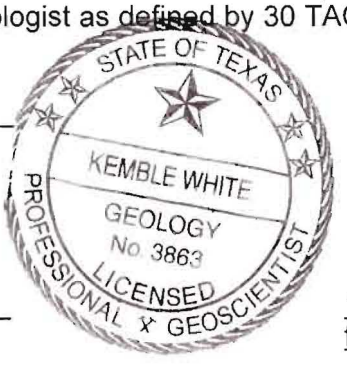
ADMINISTRATIVE INFORMATION

12. X One (1) original and three (3) copies of the completed assessment has been provided.

Date(s) Geologic Assessment was performed:

Date(s) 05 May 2005

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.




Kemble White TX RPG Lic# 3863
Print Name of Geologist

Telephone (512) 476-0891

Fax (512) 476-0893

Signature of Geologist

19 August 2008, this is an updated sheet for GA from 15 Sept 2005
Date

Representing: SWCA Environmental Consultants

(Name of Company)

**If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/3392929 for projects located in the Austin Region.**

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/2393282.

# NARRATIVE DESCRIPTION OF SITE SPECIFIC GEOLOGY FOR AN APPROXIMATELY 50-ACRE PORTION OF THE 700-ACRE JOHNSON RANCH PROPERTY, COMAL COUNTY, TEXAS

## INTRODUCTION

This narrative Geologic Assessment accompanies the Texas Commission on Environmental Quality (TCEQ) Geologic Assessment form #TNRCC-0585 completed for the approximately 700-acre Johnson Ranch Property ("the property"). The property borders the eastern side of highway 281 north of its intersection with FM 1863 in southern Comal County, Texas. An historic home located in the central portion of the property is excluded from the development area along with its water well. Most of the property occurs within the contributing zone to the Edwards Aquifer with approximately 50 acres occurring within the recharge zone adjacent to Cibolo Creek Nearly all of the recharge zone portion of the property is covered by alluvium and, as a result, no geologic features were observed. One water well occurs in the northern portion of the property. Given the thickness of alluvial cover and the absence of recognizable geologic features, the potential for direct recharge of the Edwards Aquifer from the property is therefore very low.

## METHODOLOGY

An SWCA registered professional geologist (Lic. #3863), an SWCA geologist and an environmental technician conducted a field survey for a Geologic Assessment of the property on 05 May 2005. As directed by TCEQ in the Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones (Rev. 5-1-02), the pedestrian survey was completed by walking parallel transects spaced approximately 50 feet apart within portion of the property classified as recharge zone. Closer spacing was used where vegetation inhibited clear observation. All potential karst features, including depressions, holes, and animal burrows, were carefully examined for evidence of subsurface extent. The features were flagged in the field with pink survey tape and their positions were recorded using a Global Positioning System (GPS) receiver. Portions of the property located within the contributing zone were surveyed by driving ranch roads and by walking short transects away from ranch roads in order to verify the accuracy of previous geological mapping.

## RESULTS

### Site Description

The property is mapped on the USGS Anhalt, Texas 7.5-Minute quadrangle. The topography of the property is gentle to undulating, sloping generally from northwest to south with elevations ranging from approximately 1,015 to 1,280 feet.[1] North and central portions of the property are located entirely within the Edwards Aquifer contributing zone. An unnamed tributary of Lewis Creek runs along the northern portion of the property. Undulating topography on the property, drains generally to the east and south toward a tributary of Lewis Creek and south towards Cibolo Creek. The southern approximately 50 acres of the property just below a forked tributary of Cibolo Creek lie within the Edwards Aquifer recharge zone.

Vegetation on the property is a mixture of pasture and open woodland. Grassy openings are dominated by ryegrass (*Lolium sp.*), bermudagrass (*Cynodon dactylon*), King Ranch bluestem (*Andropopon*

[1] United States Geological Survey Anhault, Texas 7.5-Minute quadrangle map.

*ischaemum L.*) and various forbs. Common woody species include live oak (*Quercus virginiana*), Texas persimmon (*Diospyros texana*), prickly pear cactus (*Opuntia lindheimeri*), and agarita (*Berberis trifoliata*). Ashe juniper (*Juniperus ashei*) is uncommon on the property compared to surrounding areas.

## Geology

Rocks outcropping on the property are Quaternary and Cretaceous in age and consist of Alluvium, Terrace alluvium, Undivided slope wash, and the Upper Glen Rose Formation. The geology of the area has been mapped most recently at a useful scale by Collins[2], and SWCA concurs with the findings of that mapping effort. In general the thickness of alluvial cover on the portion of the property classified as recharge zone is sufficient that significant recharge is very unlikely to occur on the property. The great majority of rainfall occurring on the property is more likely cycled back into the atmosphere by evapotranspiration.

The property is located on the Balcones Fault Zone (BFZ). During the middle Tertiary, structural down warping occurred to the southeast associated with the formation of the ancestral Gulf of Mexico. The earth's crust was stretched in response, and the BFZ formed along an area of weakness that today marks the boundary between the Edwards Plateau and the Gulf Coastal Plain throughout central Texas. The zone consists of a series of northeast-trending, predominantly normal, nearly vertical, en echelon faults. As is typical of faults in the area, erosion, sedimentation, and vegetation have largely obscured the precise location of fault outcrops in the field. Fault locations provided on the site geologic map were determined by matching air photo lineations and data from previous maps with field observations of fault outcrops. The faults on the property were not considered by SWCA to be of any hydrologic significance because they are either buried by alluvium or occur outside of the recharge zone. They are therefore not included as geologic features in this report.

## Soils

Soils on the property are mapped within nine different associations (See Site Soils Map)[3]: They include the Bolar clay loam, gently sloping (BrB); Bracket-Rock outcrop-Comfort complex undulating (BtD) and Real steep (BtG); Comfort-Rock outcrop complex, undulating (CrD); Gruene clay (GrC); Krum clay, 0 to 1 percent slopes (KrA) and 1 to 3 percent slopes (KrB); Lewisville silty clay (LeB); Purves clay (PuC); Real-Comfort-Doss complex, undulating (RcD); and Sunev silty clay loam (SuA). Soils overlying the Recharge Zone on the property were listed in a table on the Geologic Assessment cover page as number 2. Soils that comprise the majority of the property include the Real steep, Comfort-Rock outcrop complex, undulating, and Krum clay, 1 to 3 percent slopes, soils associations. Soils series occurring within the Recharge Zone are listed in the soils table. With respect to permeability, the soils with low water capacity generally have moderate to slow infiltration rates, causing run off to be predominant. Surface runoff ranges from slow to rapid for the largest soil association, BtG, mapped on the northern portion of the property.

## Geologic or Man-made Features

No geologic features of significance were observed on the property. One water well was located in the northern part of the property in the contribution zone.

---

[2] Collins, E.W. 1993 Geologic Map of the Bulverde Quadrangle, Texas. Bureau of Economic Geology Open-File Report.
Collins, E.W. 2000. Geologic Map of the New Braunfels, Texas, 30x60 Quadrangle: Geologic Framework of an Urban-Growth Corridor along the EdwardsAquifer; South Central Texas.

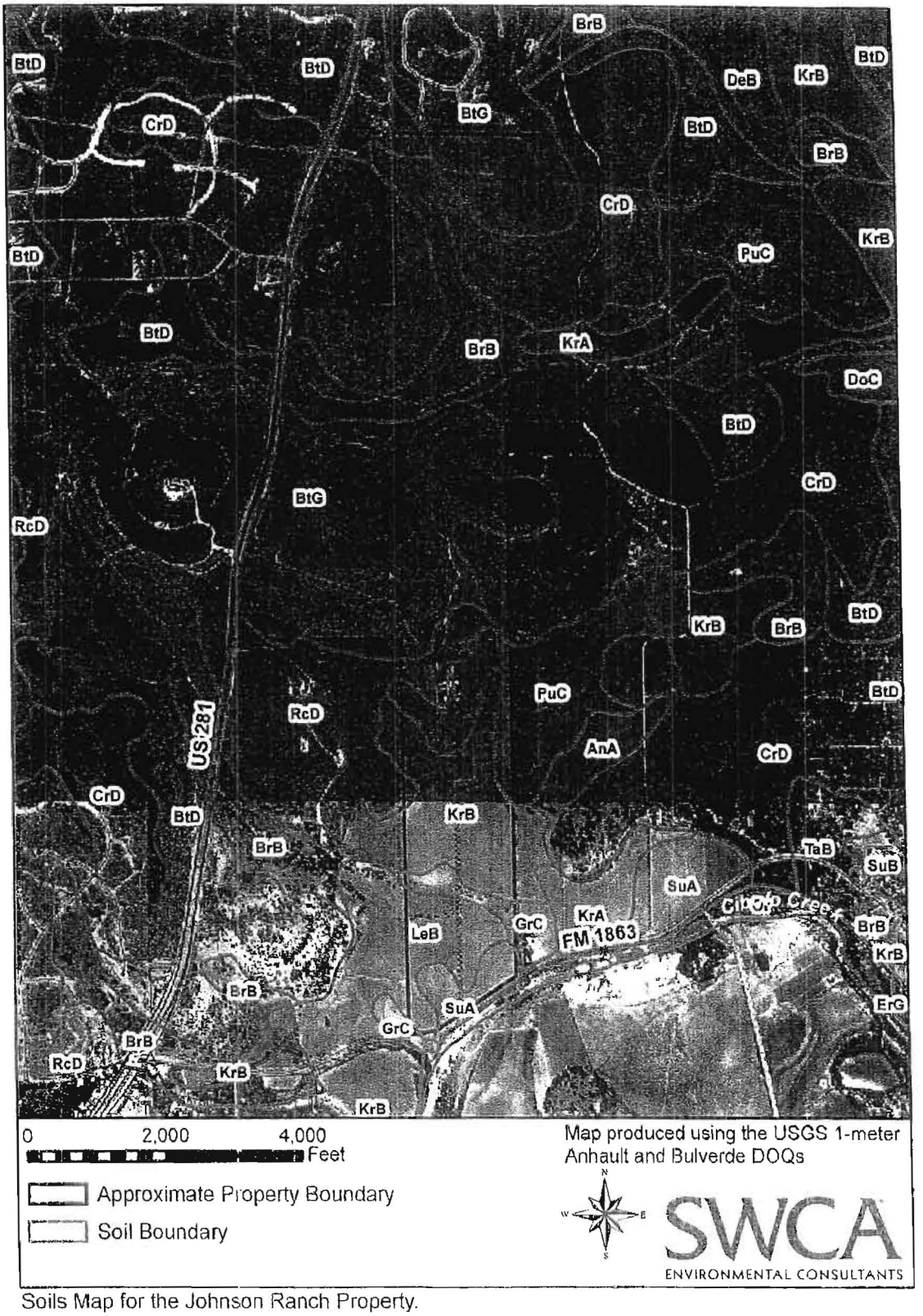
[3] United States Department of Agriculture, Soil Conservation Service, Soil Survey for Comal County, Texas

## 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 / Edwards Group | Georgetown Formation | 10-40 feet thick |
| | II | | 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 | | Upper member of Glen Rose Limestone; 350-500 feet thick | |

[1] Modified From: Stein, W. G., and Ozuna, G. B. 1995. Geologic framework and hydrogeologic characteristics of the Edwards aquifer recharge zone, Bexar County, Texas. U.S. Geologic Survey, WRI 95-4030




Soils Map for the Johnson Ranch Property.

## GEOLOGIC ASSESSMENT TABLE — PROJECT NAME: 700-Acre Johnson Ranch Property

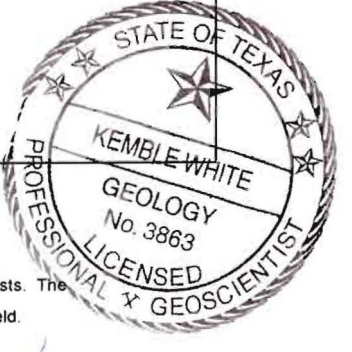
| LOCATION | | | FEATURE CHARACTERISTICS | | | | | | | | | | | EVALUATION | | | PHYSICAL SETTING | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1A | 1B * | 1C* | 2A | 2B | 3 | 4 | | | 5 | 5A | 6 | 7 | 8A | 8B | 9 | 10 | | 11 | | 12 |
| FEATURE ID | LATITUDE | LONGITUDE | FEATURE TYPE | POINTS | FORMATION | DIMENSIONS (FEET) | | | TREND (DEGREES) | DIP | DENSITY (NO/FT) | APERTURE (FEET) | INFILL | RELATIVE INFILTRATION RATE | TOTAL | SENSITIVITY | | CATCHMENT AREA (ACRES) | | TOPOGRAPHY |
| | | | | | | X | Y | Z | | 10 | | | | | | <40 | >40 | <1.6 | >1.6 | |
| F-1 | 29.776 | 98.421 | MB | 30 | Kgru | 1 | 1 | 100 | | | | | | 30 | 60 | | 60 | X | | Hillside |

* DATUM WGS 84

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

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

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




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

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

Date 19 Aug 2007

Sheet 1 of 1

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

Kgru

Edwards Aquifer
Contributing Zone

Qu

Qal

Qal

Qt

Recharge Zone

Kgru

SITE
LOCATION

Kgru

Qt

Qt

Qt

0 200 400 600 Feet

1 inch equals 200 feet

## Legend

- Approximate Property Boundary
- 100-Year Floodplain
- Edwards Aquifer Recharge Zone Boundary
- Fault
- Inferred Fault
- Qal — Quaternary Alluvium
- Qt — Quaternary Terrace Deposits
- Qu — Undivided Alluvium
- Kgru — Upper member of Glen Rose Limestone

# Site Geologic Map
# Johnson Ranch Property

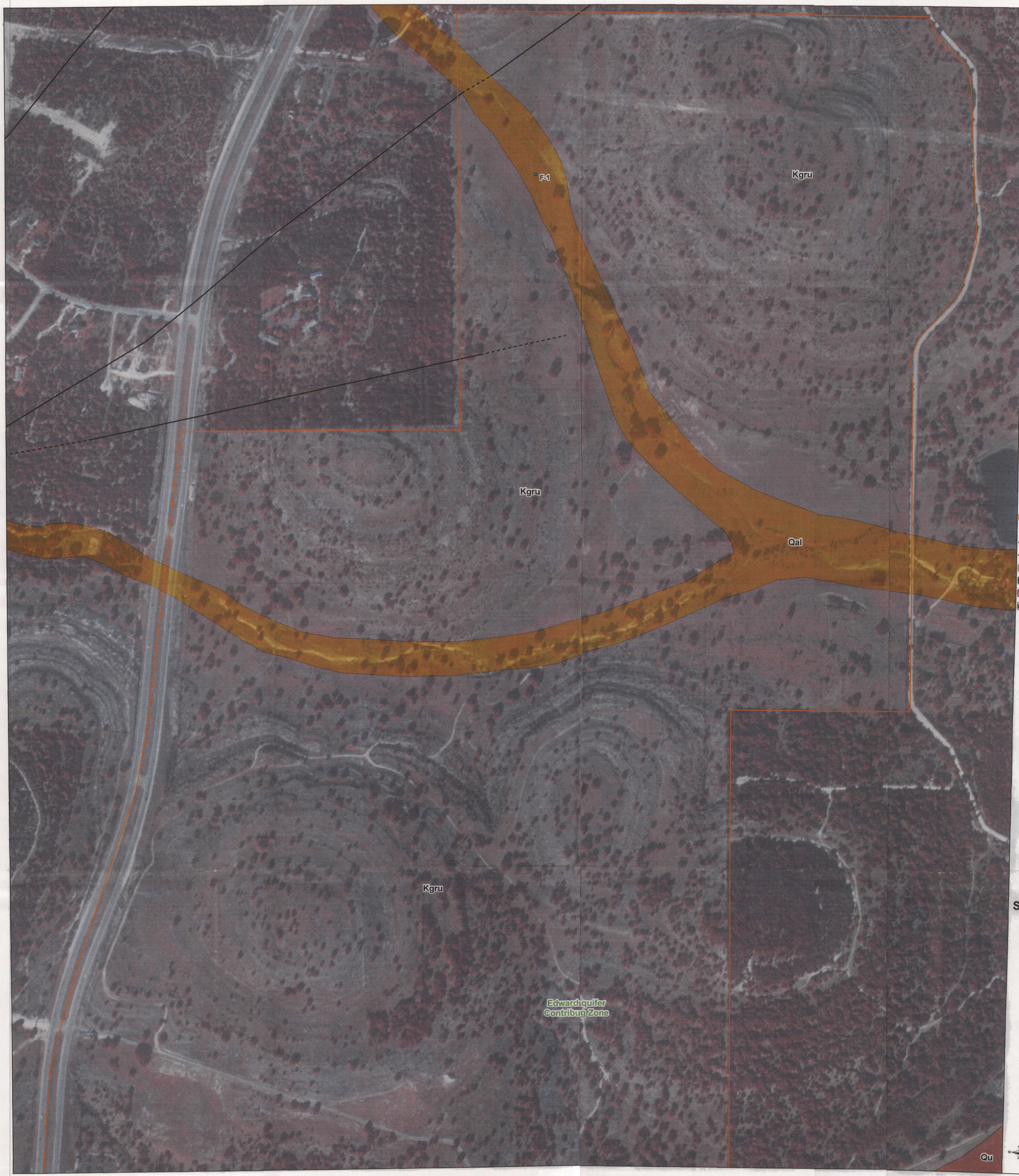
TCEQ-R13
APR 27 2009
SAN ANTONIO

STATE OF TEXAS
KEMBLE WHITE
GEOLOGY
No. 3863
LICENSED
PROFESSIONAL GEOSCIENTIST

15 Sept '05

Map produced using the USGS 1-meter Anhault and Bulverde DOQs.
Geology and Faults from UTBEG, Collins, 2000.
SWCA Project No. 9583-099

SWCA
ENVIRONMENTAL CONSULTANTS




0 200 400 600 Feet

1 inch equals 200 feet

## Legend

- Approximate Property Boundary
- Waterwell
- Fault
- Inferred Fault
- Qal — Quaternary Alluvium
- Qt — Quaternary Terrace Deposits
- Qu — Undivided Alluvium
- Kgru — Upper member of Glen Rose Limestone

# Site Geologic Map for the North Half of the Johnson Ranch Property

TCEQ-R13
APR 27 2009
SAN ANTONIO

STATE OF TEXAS
KEMBLE WHITE
GEOLOGY
No. 3883
LICENSED
PROFESSIONAL GEOSCIENTIST
15 Sept 05

Map produced using the USGS 1-meter Anhalt DOQ.
Geology and Faults from UTBEG, Collins, 2000.
SWCA Project No. 9583-099

SWCA ENVIRONMENTAL CONSULTANTS

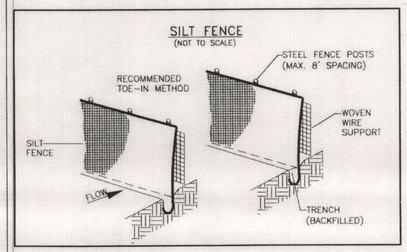
VEGETATION
VEGETATION IS AN INTEGRAL COMPONENT OF THE SYSTEM AND IS NECESSARY FOR PROPER SYSTEM FUNCTION AND OPERATION. THE TANK AND TREATMENT AREA AS WELL AS THE EMITTER DRAINFIELDS MUST BE SODDED OR AT A MINIMUM HYDROMULCHED. DENSE GRASS COVER MUST BE ESTABLISHED OVER THE ENTIRE SYSTEM FOR IT TO FUNCTION PROPERLY. THE GRASS MUST BE MOWED AND MAINTAINED REGULARLY. THIS SYSTEM MUST BE OVER-SEEDED WITH WINTER GRASSES. THE ACTUAL VARIETY OF GRASS COVERING SHALL BE DETERMINED PRIOR TO THE INSTALLATION OF THIS SYSTEM. THE FINAL LICENSE TO OPERATE THIS SYSTEM WILL NOT BE ISSUED UNTIL GRASS IS ESTABLISHED ON THIS SYSTEM. EROSION CONTROL MEASURES MUST BE PROVIDED BY THE INSTALLER AS HE SEES NECESSARY TO ENSURE THAT THE GRASS COVER IS MAINTAINED AND ALWAYS PROTECTED BY EROSION.

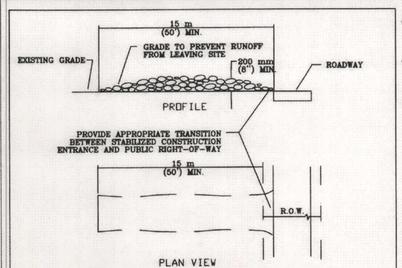
EROSION AND SEDIMENTATION CONTROL: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING THE SILT FENCES PER PLAN AS WELL AS ANY OTHER TEMPORARY EROSION CONTROL DEVICES THAT MAY ALSO BE REQUIRED TO PREVENT SILT AND SOIL FROM LEAVING THE DESIGNATED CONSTRUCTION AREA. THE SILT FENCES MUST BE INSPECTED AFTER ALL PRECIPITATION EVENTS AND CLEANED IF NECESSARY. NO SILT RESULTING FROM THE CONSTRUCTION OF THIS SYSTEM IS TO BE ALLOWED TO MIGRATE BEYOND THE SILT FENCES AND LIMITS OF CONSTRUCTION. ALL CONSTRUCTION ACTIVITY MUST BE CONFINED TO THE AREA INSIDE THE SILT FENCE AND THE LIMITS OF CONSTRUCTION. SILT FENCES AND TEMPORARY EROSION CONTROLS SHALL AND MAY ONLY BE REMOVED AFTER FULL GRASS COVERAGE IS ESTABLISHED OVER ALL AREAS DISTURBED DURING CONSTRUCTION.

THIS DESIGN IS BASED UPON WATER CONSERVING PLUMBING FIXTURES BEING UTILIZED THROUGHOUT THIS BUILDING AND THE WATER CONSERVATION IN GENERAL IS EMPLOYED IN THE CONSTRUCTION OF THE SCHOOL. COMMODES SHALL BE LESS THAN 1.6-GALLONS PER FLUSH AND ALL FAUCETS ARE TO BE EQUIUPED WITH AERATORS AND FLOW RESTRICTION DEVICES. LINES FROM AIR CONDITIONERS AND OTHER CONDENSATE LINES MUST NOT BE CHANNELED INTO THIS SYSTEM. RAIN GUTTERS MUST NOT BE DIRECTED INTO THIS SYSTEM OR TOWARDS THIS SYSTEM ABOVE GROUND. THIS SYSTEM IS NOT DESIGNED TO HANDLE PETROCHEMICALS, SOLVENTS, OR ANY HAZARDOUS MATERIALS.

THIS PLAN HAS BEEN PREPARED BASED UPON INFORMATION PROVIDED BY THE OWNER. THE ACCURACY OF THIS PLAN IS BASED UPON THE TOPOGRAPHICAL AND OTHER DATA PRESENTED ON THE SITE PLAN PROVIDED. IF INACCURACY, INCOMPLETENESS OR ERRORS IN THE SITE PLAN REQUIRES AMMENDMENTS OR REVISIONS TO THE PLANS, THEN TIME DELAYS FOR PLAN MODIFICAITIONS, RESUBMISSIONS, AND APPROVAL MAY RESULT IN ADDITIONAL EXPENSES AND COSTS TO OWNER.

## SILT FENCE
(NOT TO SCALE)

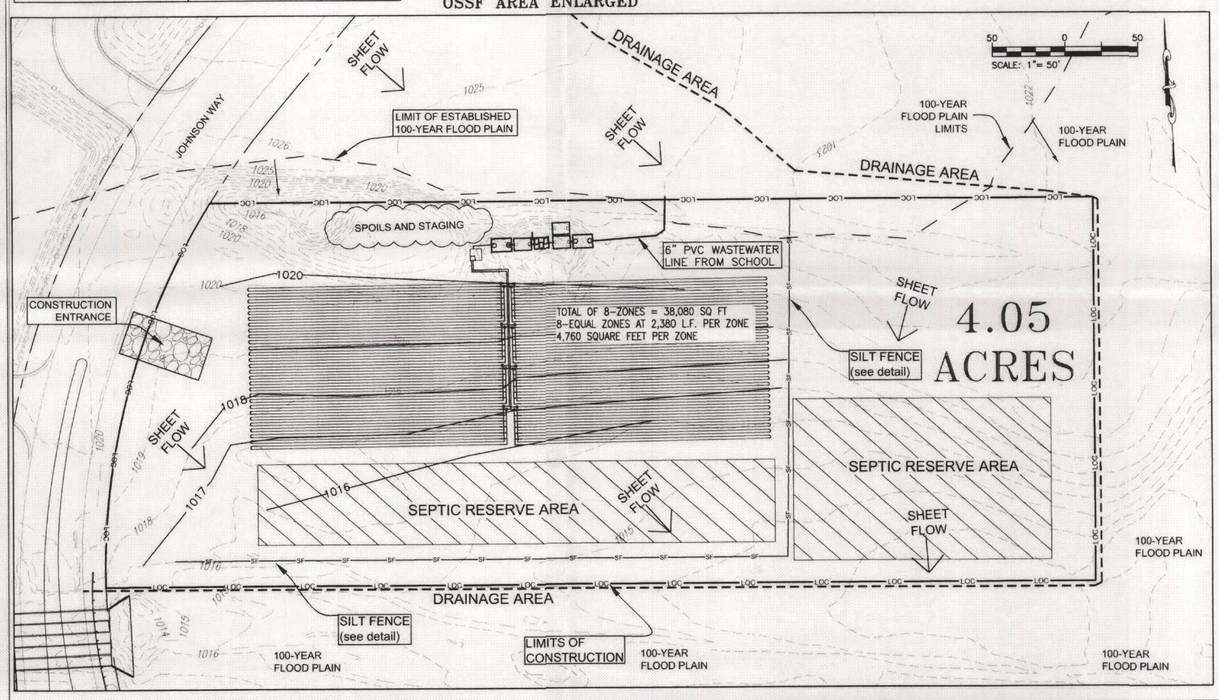


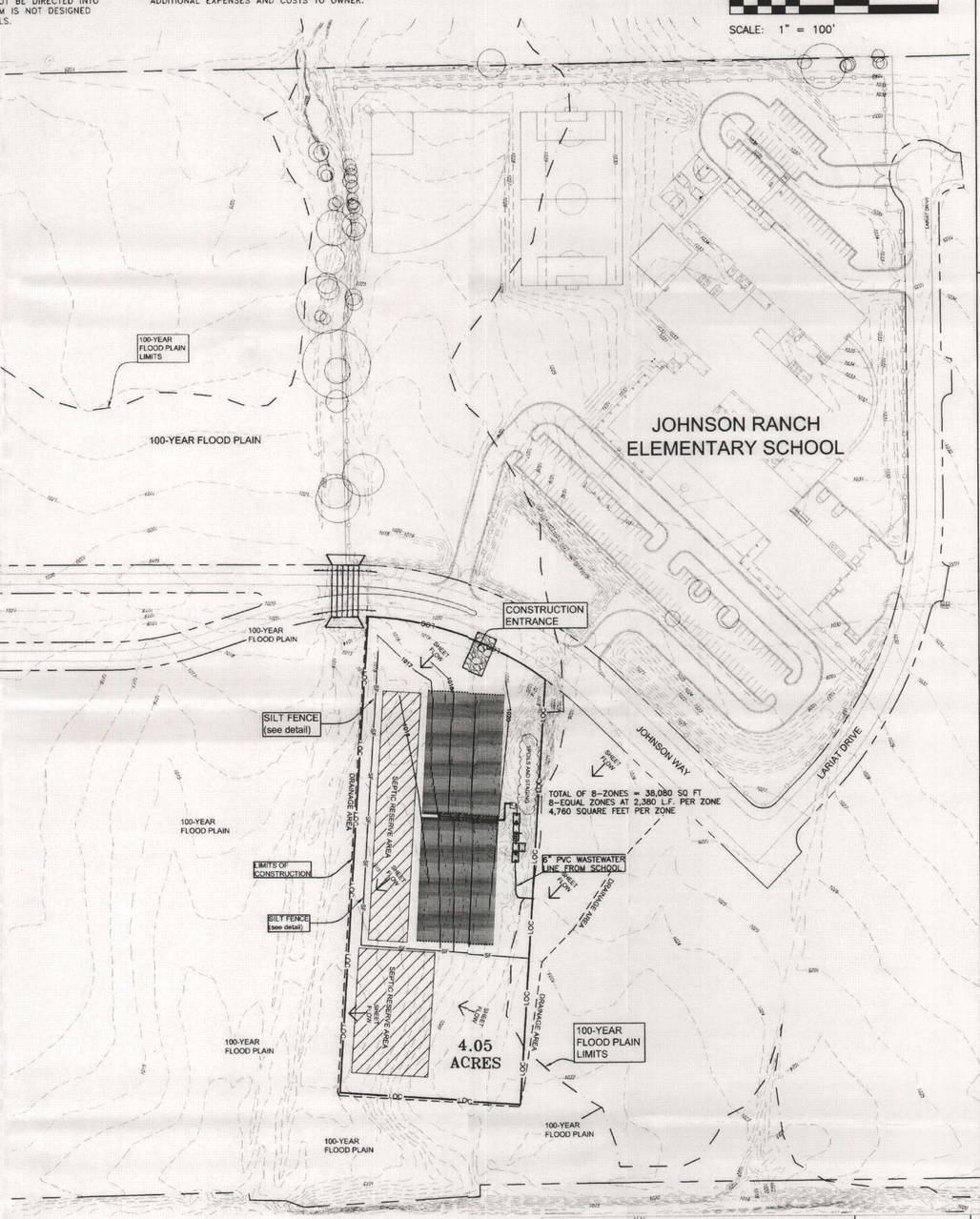




NOTES:
1. STONE SIZE: 75-125 mm (3-5") OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 15 m (50').
3. THICKNESS: NOT LESS THAN 200 mm (8").
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

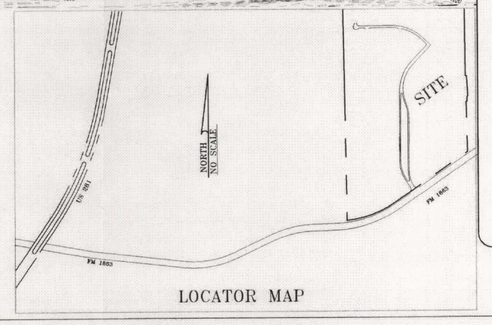
| CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT | STABILIZED CONSTRUCTION ENTRANCE | |
|---|---|---|
| RECORD COPY SIGNED BY J. PATRICK MURPHY 5/23/00 ADOPTED | THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. | STANDARDS NO. 641S-1 |

## OSSF AREA ENLARGED




| IMPERVIOUS COVER | |
|---|---|
| TANK ACCESS LIDS<br>4 @ 24" DIA<br>6 @ 18" DIA. | <br>12.6 SQ. FT.<br>10.6 SQ. FT. |
| TREATMENT TANK LID | 82.6 SQ. FT. |
| PERC RITE UNIT | 12.0 SQ. FT. |
| VALVE BOXES<br>32 @ 12" X 18" | <br>48.0 SQ. FT. |
| TOTAL IMPERVIOUS COVER | 165.8 SQ. FT. |



LOCATOR MAP

SCALE: 1" = 100'

DATE: 03/14/09 DRAWN BY: KS
REVISED:
REVISED:


SCHOENFELT ENGINEERING, INC.
1715 S. Capital of Texas Hwy.
Suite 208
Austin, Texas 78746
(512) 328-0146 Fax. 329-0085
Mob.(512) 626-3504


Sheet 1 of 11

KEITH L. SCHOENFELT 68502 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS
4-16-2009

# 8-ZONE DRIP IRRIGATION OSSF WITH PRE-TREATMENT JOHNSON RANCH ELEMENTARY SCHOOL

SAN ANTONIO

APR 27 2009

TCEQ R13

H:\Projects\Johnson Ranch\2007\3-Phase 1\AUG\ZEL\REDSOF sheet\OSSF Site Plan Hwy 2AUG. April 16, 2009, 2:28 PM, keithhill

**Water Pollution Abatement Plan Application**
for Regulated Activities
on the Edwards Aquifer Recharge Zone
and Relating to 30 TAC §213.5(b), Effective June 1, 1999

REGULATED ENTITY NAME: OSSF for Johnson Ranch Elementary

**REGULATED ENTITY INFORMATION**

1. The type of project is:
   - ___ Residential: # of Lots: 12
   - ___ Residential: # of Living Unit Equivalents:
   - ___ Commercial
   - ___ Industrial
   - √ Other: Educational – OSSF for the Comal ISD Elementary School at Johnson Ranch

2. Total site acreage (size of property): 3.95 acres

3. Projected population: 0 persons

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

| Impervious Cover of Proposed Project | Sq. Ft. | Sq. Ft./Acre | Acres |
|---|---|---|---|
| Structures/Rooftops | 0 | ÷ 43,560 = | 0 |
| Parking | 0 | ÷ 43,560 = | 0 |
| Other paved surfaces | 165.8 | ÷ 43,560 = | 0.0038 |
| Total Impervious Cover | 0 | ÷ 43,560 = | 0 |
| Total Impervious Cover ÷ Total Acreage x 100 = | | | 0.09 % |

5. √ **ATTACHMENT A - Factors Affecting Water Quality.** A description of any factors that could affect surface water and groundwater quality is provided ~~at the end of this form~~ **below.**

**Potential sources of pollution that may be expected to affect the quality of stormwater discharges from the construction site include:**

- **Soil erosion due to the clearing of the site.**
- **Oil, grease, fuel, and hydraulic fluid contamination from construction equipment and vehicle drippings.**
- **Miscellaneous trash and litter from construction workers and material wrappings.**
- **Construction debris.**

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

**FOR ROAD PROJECTS ONLY – This is not a road project**
**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 description of the volume and character (quality) of the stormwater runoff which is expected to occur from the proposed project is provided ~~at the end of this form~~ **below**. The estimates of stormwater runoff quality and quantity should be based on area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

**The project area is currently an undeveloped pasture where livestock graze. It has no existing impervious cover. Runoff currently travels across the project site via sheet flow. The estimate drainage area shown on the site plan is 4.05 acres and yields estimated Rational Method peak runoff flow rates of 8.8 cfs ($Q_{25}$) and 12.8 cfs ($Q_{100}$) that are distributed more or less evenly across the project site due to the absence of concentrated flow patterns.**

**The post-construction condition adds only 166 $ft^2$ of impervious cover. Runoff from this paltry amount of impervious cover must travel via sheet flow through the drip field where the vegetative cover will be considerably more dense and healthy (due to effluent-dosing from the**

**OSSF) than is the case with the existing pasture today. As such, the volume & character of the stormwater resulting from the project is expected to improve (less volume & higher quality) slightly.**

## WASTEWATER TO BE GENERATED BY THE PROPOSED PROJECT

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

| | | |
|---|---|---|
| __ % Domestic | _____ | gallons/day |
| __ % Industrial | _____ | gallons/day |
| __ % Commingled | _____ | gallons/day |
| TOTAL | 0 | gallons/day |

*(Flows to the OSSF will be generated exclusively by Johnson Ranch Elementary School)*

15. Wastewater will be disposed of by:

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

**ATTACHMENT C - Suitability Letter from Authorized Agent.** An on-site sewage facility will be used to treat and dispose of the wastewater. The appropriate licensing authority's (authorized agent) written approval is provided at the end of this form. It states that the land is suitable for the use of an on-site sewage facility or identifies areas that are not suitable.

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

N/A Sewage Collection System (Sewer Lines):

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

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

- __ The SCS was previously submitted on _____.
- __ The SCS was submitted with this application.
- __ The SCS will be submitted at a later date. The owner is aware that the SCS may not be installed prior to executive director approval.

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

- __ existing.
- __ proposed.

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

## SITE PLAN REQUIREMENTS

**Items 17 through 27 must be included on the Site Plan.**

17. The Site Plan must have a minimum scale of 1" = 400'.
Site Plan Scale: 1" = 100 '.

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): **FIRM Map for Comal County, TX – Panel 55 of 130 – 485463 055D – 7/17/95**

19. √ The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Show lots, recreation centers, buildings, roads, etc.

__ The layout of the development is shown with existing contours. Finished topographic contours will not differ from the existing topographic configuration and are not shown.

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

N/A 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 30 TAC §238.

__ 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 and possibly sensitive** geologic or manmade features identified in the Geologic Assessment are shown and labeled.

√ No **sensitive and possibly sensitive** geologic or manmade features were identified in the Geologic Assessment.

N/A **ATTACHMENT D - Exception to the Required Geologic Assessment.** An exception to the Geologic Assessment requirement is requested and explained in ATTACHMENT D provided at the end of this form. Geologic or manmade features were found and are shown and labeled.

N/A **ATTACHMENT D - Exception to the Required Geologic Assessment.** An exception to the Geologic Assessment requirement is requested and explained in ATTACHMENT D provided at the end of this form. No geologic or manmade features were found.

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).

27. __ Locations where stormwater discharges to surface water or sensitive features.

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

## ADMINISTRATIVE INFORMATION

28. √ One (1) original and three (3) copies of the completed application have been provided.

29. √ Any modification of this WPAP will require TCEQ executive director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

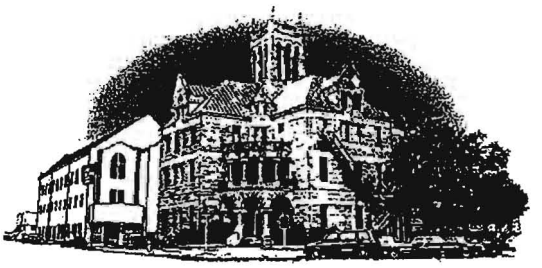
To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **WATER POLLUTION ABATEMENT PLAN APPLICATION FORM** is hereby submitted for TCEQ review and executive director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

Print Name of Customer/Agent

Signature of Customer/Agent

4/20/09
Date

# ATTACHMENT C



# Comal County

**OFFICE OF COMAL COUNTY ENGINEER**

April 17, 2009

Mr. Keith Schoenfelt, P.E.
Schoenfelt Engineering, Inc.
1715 S. Cap of TX Hwy, Suite 208
Austin, TX 78746

Re: Johnson Ranch On-Site Sewage Facility Suitability Letter, within Comal County, Texas

Dear Mr. Schoenfelt:

In accordance with TAC §213.5(b)(4)(F)(ii), Comal County has found that the entire referenced site (except for areas listed below) is suitable for the use of private sewage facilities and will meet the special requirements for on-site sewage facilities located on the Edwards Aquifer recharge zone as specified in TAC §285.40-42 based on the following information submitted to our office on September 5, 2007:

- The Geologic Assessment, prepared by SWCA
- The Water Pollution Abatement Plan, prepared by Loomis Austin

Areas that are not Suitable

The Geologic Assessment identified 1 recharge features as sensitive.

| Feature ID | Latitude | Longitude |
|---|---|---|
| F-1 | N 29.776° | W 98.421° |

Minimum separation distances from this sensitive feature must be complied with in accordance with TAC §285.91, Table X, Minimum Required Separation Distances for On-Site Sewage Facilities.

Moreover, according to TAC §285.41(b), DH/JB Partnership, Ltd., the owner of the referenced site, must inform, in writing, each prospective purchaser, lessee, or renter of the following:

- All lots within Johnson Ranch that utilize OSSFs are subject to the terms and conditions of TAC §285.40-42;
- A Permit to Construct is required from Comal County before an OSSF can be constructed in Johnson Ranch;
- A License to Operate is required from Comal County before an OSSF can be operated in Johnson Ranch;

- That an application for a water pollution abatement plan, as defined in TAC §213, has been made, whether it has been approved, and if any restrictions or conditions have been placed on that approval; and
- Minimum separation distances, as outlined in Table 10 of TAC §285.91, from the sensitive recharge features listed above.

Furthermore, according to TAC §285.42(a), if any recharge feature, not listed above, is discovered during construction of an OSSF, all regulated activities near the feature shall be suspended immediately. The owner shall immediately notify the TCEQ San Antonio office of the discovery of the feature. All activities regulated under TAC §213 shall not proceed near the feature until Comal County, in conjunction with the TCEQ San Antonio office, has reviewed and approved a plan proposed to protect the feature, the structural integrity of the OSSF, and the water quality of the aquifer. The plan shall be sealed, signed, and dated by a professional engineer.

If you have any questions or need additional information, please do not hesitate to contact our office.

Sincerely,

Robert Boyd, P.E.
Comal County Assistant Engineer

**Temporary Stormwater Section**
for Regulated Activities
on the Edwards Aquifer Recharge Zone
and Relating to 30 TAC §213.5(b)(4)(A), (B), (D)(I) and (G); Effective June 1, 1999

REGULATED ENTITY NAME: **OSSF for Johnson Ranch Elementary**

**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:

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

   N/A 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.

   N/A 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-site.

2. √ **ATTACHMENT A - Spill Response Actions**. A description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is provided at the end of this form.

3. √ 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.** Describe **below** ~~in an attachment at the end of this form~~ any other activities or processes which may be a potential source of contamination.

   __ The are no other potential sources of contamination.

**Other potential sources of contamination during construction include:**

**a) 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 the construction staging area.**

**b) Potential Source:** **Miscellaneous trash and litter from construction workers and material wrapping**

**Preventive Measure:** **Trash containers will be place throughout the site to encourage proper trash disposal.**

c) **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.**

## 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 provided ~~at the end of this form~~ **below**. For each activity described, an estimate of the total area of the site to be disturbed by each activity is given.

**The sequence of major activities are described as follow; 1) Installation of the temporary BMP's ; 2) Excavation for OSSF installation; 3) OSSF assembly; 4) Revegetation; 5) Removal of temporary BMP's and site clean out.**

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.** A description of the TBMPs and measures that will be used during and after construction are provided ~~at the end of this form~~ **below**. For each activity listed in the sequence of construction, include appropriate control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

√ TBMPs and measures will prevent pollution of surface water, groundwater, and stormwater. The construction-phase BMPs for erosion and sediment controls have been designed to retain sediment on site to the extent practicable. The following information has been provided ~~in the attachment at the end of this form~~ **below**.

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

b. A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by

contaminated stormwater runoff from the site.

**Site preparation: Site prep for the project involves excavation for the treatment units and minor grading associated with the leveling of the drip fields. Before any of this work commences, the contractor will be responsible for the installation of all on-site temporary BMP's. The methodology for pollution prevention of all on-site stormwater will include: (1) erection of silt-fencing (temporary BMP) along the downgradient boundary of construction activities, (2) installation of stabilized construction entrance/exit to reduce the dispersion of sediment from the site, and (3) location of construction staging areas upgradient from the temporary BMP's.**

**Construction: Prior to the installation of the treatment units and drip lines, all temporary BMP's will be repaired or re-established as necessary to meet their designed or intended purpose. The contractor will be responsible for the installation of all remaining on-site control measures, including installation of the concrete truck washout pit(s), as construction phasing warrants (as required).**

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

**Temporary measures are intended to provide a method of slowing the flow of runoff from the construction site in order to allow sediment and suspended solids to settle out of the runoff. By containing the sediment and solids within the site, they will not enter surface streams and/or sensitive features.**

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

**BMP measures utilized in this plan are intended to allow stormwater to continue downgradient via sheet flow after passing through the BMP's.**

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

N/A **ATTACHMENT E - Request to Temporarily Seal a Feature.** A request to temporarily seal a feature is provided at the end of this form. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

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

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

**The following structural measures will be installed prior to the initiation of site preparation activities:**

- **Erection of silt fences along the downgradient boundary of construction**

**activities and rock berms with silt fence for secondary protection.**

- **Installation of stabilized construction entrance/exit(s) and construction staging area(s).**
- **Installation of concrete truck washout pit(s), as required.**

10. √ **ATTACHMENT G - Drainage Area Map**. A drainage area map is provided at the end of this form **(Sheet # 4 )** to support the following requirements.

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

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

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

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

11. N/A **ATTACHMENT H - Temporary Sediment Pond(s) Plans and Calculations.** Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure has been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are provided as at the end of this form.

12. √ **ATTACHMENT I - Inspection and Maintenance for BMPs.** A plan for the inspection of temporary BMPs and measures and for their timely maintenance, repair, and, if necessary, retrofit is provided at the end of this form. A description of documentation procedures and recordkeeping practices is included in the plan.

13. √ All control measures must be properly selected, installed, and maintained in accordance with the manufacturers specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicates 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. N/A 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 at the end of this form~~ **below**.

**Interim on-site stabilization measures, which are continuous, will include minimizing soil disturbances by exposing only the smallest practical area of land required for the shortest period of time and maximizing use of natural vegetation. As soon as practical, all disturbed soil will be stabilized as per project specifications in accordance with pages 1-35 to 1-60 of the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005). Mulching, netting, erosion blankets, and seeding are acceptable.**

**Stabilization measures will be initiated as soon as practicable in portions of the site where construction activities have temporary or permanent ceased, and except as provided below, will be initiated no more than fourteen (14) days after the construction activity in that portion of the site has temporary or permanently ceased. Where the construction activity on a portion of the site is temporary ceased, and the earth disturbing activities will be resumed within twenty-one (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 14$^{th}$ day after construction activity has temporary or permanently ceased is precluded by seasonably arid condition, stabilization measures must be initiated as soon as practicable.**

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.

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

Signature of Customer/Agent

Date 4/20/09

# ATTACHMENT A

## Spill Prevention and Control

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

The following steps will help reduce the stormwater impacts of leaks and spills:

***Education***

(1) Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills. Employees should also be aware of when spill must be reported to the TCEQ. Information available in 30 TAC 327.4 and 40 CFR 302.4.

(2) Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.

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

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

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

***General Measures***

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

(2) Store hazardous materials and wastes in covered containers and protect from vandalism.

(3) Place a stockpile of spill cleanup materials where it will be readily accessible.

(4) Train employees in spill prevention and cleanup.

(5) Designate responsible individuals to oversee and enforce control measures.

(6) Spills should be covered and protected from stormwater runon during rainfall to the extent that is doesn't compromise clean up activities.

(7) Do not bury or wash spills with water.

(8) Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended puprpose in conformance with the provisions in applicable BMP's.

(9) Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with applicable regulations.

(10) Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.

(11) Place Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.

(12) Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

***Cleanup***

(1) Clean up leaks and spills immediately

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

(3) Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in this section for specific information.

***Minor Spills***

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

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

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

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

(5) Contain the spread of the spill

(6) Recover spilled materials

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

***Semi-Significant Spills***

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

Spills should be cleaned up immediately:

(1) Contain spread of the spill

(2) Notify the project foreman immediately

(3) If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.

(4) If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.

(5) If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

***Significant/Hazardous Spills***

(1) Notify the TCEQ by telephone as soon as possible and within 24 hours at 512-339-2929 (Austin) or 210-490-3096 (San Antonio) between 8 AM and 5 PM. After hours, contact the Environmental Release Hotline at 1-800-832-8224. It is the contractor's responsibility to have all emergency phone numbers at the construction site.

(2) For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.

(3) Notification should first be made by telephone and followed up with a written report.

(4) The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.

(5) Other agencies which may need to be consulted include, but are not limited to, the City Police Department, County Sheriff Office, Fire Departments, etc.

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

***Vehicle and Equipment Maintenance***

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

(2) Regularly inspect onsite vehicles and equipment for leaks and repair immediately.

(3) Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.

(4) Always use secondary containment, such as drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.

(5) Place drip pans or absorbent materials under paving equipment when not in use.

(6) Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.

(7) Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.

(8) Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over the waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.

(9) Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all of the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

***Vehicle and Equipment Fueling***

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

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

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

# ATTACHMENT I

**Inspections**

Designated and qualified person(s) shall inspect Pollution Control Measures every seven days and within 24 hours after a storm event greater than 0.5 inches of rainfall. An inspection report that summarizes the scope of the inspection, names and qualifications of personnel conducting the inspection, date of the inspection, major observations, and actions taken as a result of the inspection shall be recorded and maintained as part of the Storm Water TPDES data for a period of three years after the date of the inspection. A copy of the Inspection Report Form is provided in this Storm Water Pollution Prevention Plan.

As a minimum, the inspector shall observe: (1) significant disturbed areas for evidence of erosion. (2) storage areas for evidence of leakage from the exposed stored materials, (3) structural controls (rock berm outlets, silt fences, drainage swales, etc.) for evidence of failure or excess siltation (over 6 inches deep), (4) vehicle exit point for evidence of off-site sediment tracking, (5) vehicle storage areas for signs of leaking equipment or spills, and (6) concrete truck rinse-out pit for signs of potential failure. Deficiencies noted during the inspection will be corrected and documented within seven (7) calendar days following the inspection or before the next anticipated storm event if practicable.

| **Pollution Prevention Measure** | Inspected | Corrective Action | |
|---|---|---|---|
| | | Description | Date Completed |
| **General** | | | |
| Revegetation | | | |
| Erosion/sediment controls | | | |
| Vehicle exits | | | |
| Material areas | | | |
| Equipment Areas | | | |
| Concrete rinse | | | |
| Construction Debris | | | |
| Trash receptacles | | | |
| **Infrastructure** | | | |
| Roadway clearing | | | |
| Utility clearing | | | |
| Roadway grading | | | |
| Utility construction | | | |
| Drainage construction | | | |
| Roadway base | | | |
| Roadway surfaces | | | |
| Site cleanups | | | |
| **Building** | | | |
| Clearing for building | | | |
| Foundation grading | | | |
| Utility construction | | | |
| Foundation construction | | | |
| Building construction | | | |
| Site grading | | | |
| Site cleanup | | | |

***Indicate N/A where measure does not apply***

By my signature below, I certify that all terms are acceptable and the project site is in compliance with SWPPP.

Inspector's Name _____ Inspector's Signature _____

Name of Owner/Operator (Firm) _____ Date _____

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

## PROJECT MILESTONE DATES

Date when major site grading activities begin:

| Construction Activity | Date |
|---|---|
| | |
| | |
| | |
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| | |
| | |
| | |

Dates when construction activities temporarily or permanently cease on all or a portion of the project:

| Construction Activity | Date |
|---|---|
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| | |
| | |
| | |
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| | |

Dates when stabilization measures are initiated:

| Stabilization Activity | Date |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |

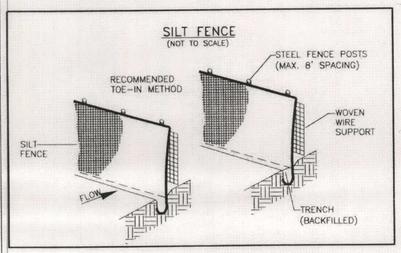
VEGETATION
VEGETATION IS AN INTEGRAL COMPONENT OF THE SYSTEM AND IS NECESSARY FOR PROPER SYSTEM FUNCTION AND OPERATION. THE TANK AND TREATMENT AREA AS WELL AS THE EMITTER DRAINFIELDS MUST BE SODDED OR AT A MINIMUM HYDROMULCHED. DENSE GRASS COVER MUST BE ESTABLISHED OVER THE ENTIRE SYSTEM FOR IT TO FUNCTION PROPERLY. THE GRASS MUST BE MOWED AND MAINTAINED REGULARLY. THIS SYSTEM MUST BE OVER-SEEDED WITH WINTER GRASSES. THE ACTUAL VARIETY OF GRASS COVERING SHALL BE DETERMINED PRIOR TO THE INSTALLATION OF THIS SYSTEM. THE FINAL LICENSE TO OPERATE THIS SYSTEM WILL NOT BE ISSUED UNTIL GRASS IS ESTABLISHED ON THIS SYSTEM. EROSION CONTROL MEASURES MUST BE PROVIDED BY THE INSTALLER AS HE SEES NECESSARY TO ENSURE THAT THE GRASS COVER IS MAINTAINED AND ALWAYS PROTECTED BY EROSION.

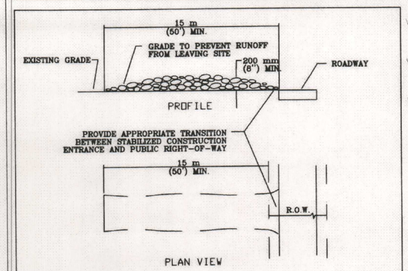
EROSION AND SEDIMENTATION CONTROL: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING THE SILT FENCES PER PLAN AS WELL AS ANY OTHER TEMPORARY EROSION CONTROL DEVICES THAT MAY ALSO BE REQUIRED TO PREVENT SILT AND SOIL FROM LEAVING THE DESIGNATED CONSTRUCTION AREA. THE SILT FENCES MUST BE INSPECTED AFTER ALL PRECIPITATION EVENTS AND CLEANED IF NECESSARY. NO SILT RESULTING FROM THE CONSTRUCTION OF THIS SYSTEM IS TO BE ALLOWED TO MIGRATE BEYOND THE SILT FENCES AND LIMITS OF CONSTRUCTION. ALL CONSTRUCTION ACTIVITY MUST BE CONFINED TO THE AREA INSIDE THE SILT FENCE AND THE LIMITS OF CONSTRUCTION. SILT FENCES AND TEMPORARY EROSION CONTROLS SHALL AND MAY ONLY BE REMOVED AFTER FULL GRASS COVERAGE IS ESTABLISHED OVER ALL AREAS DISTURBED DURING CONSTRUCTION.

THIS DESIGN IS BASED UPON WATER CONSERVING PLUMBING FIXTURES BEING UTILIZED THROUGHOUT THIS BUILDING AND THE WATER CONSERVATION IN GENERAL IS EMPLOYED IN THE CONSTRUCTION OF THE SCHOOL. COMMODES SHALL BE LESS THAN 1.6-GALLONS PER FLUSH AND ALL FAUCETS ARE TO BE EQUIUPED WITH AERATORS AND FLOW RESTRICTION DEVICES. LINES FROM AIR CONDITIONERS AND OTHER CONDENSATE LINES MUST NOT BE CHANNELED INTO THIS SYSTEM. RAIN GUTTERS MUST NOT BE DIRECTED INTO THIS SYSTEM OR TOWARDS THIS SYSTEM ABOVE GROUND. THIS SYSTEM IS NOT DESIGNED TO HANDLE PETROCHEMICALS, SOLVENTS, OR ANY HAZARDOUS MATERIALS.

THIS PLAN HAS BEEN PREPARED BASED UPON INFORMATION PROVIDED BY THE OWNER. THE ACCURACY OF THIS PLAN IS BASED UPON THE TOPOGRAPHICAL AND OTHER DATA PRESENTED ON THE SITE PLAN PROVIDED. IF INACCURACY, INCOMPLETENESS OR ERRORS IN THE SITE PLAN REQUIRES AMMENDMENTS OR REVISIONS TO THE PLANS, THEN TIME DELAYS FOR PLAN MODIFICAITIONS, RESUBMISSIONS, AND APPROVAL MAY RESULT IN ADDITIONAL EXPENSES AND COSTS TO OWNER.

SILT FENCE
(NOT TO SCALE)

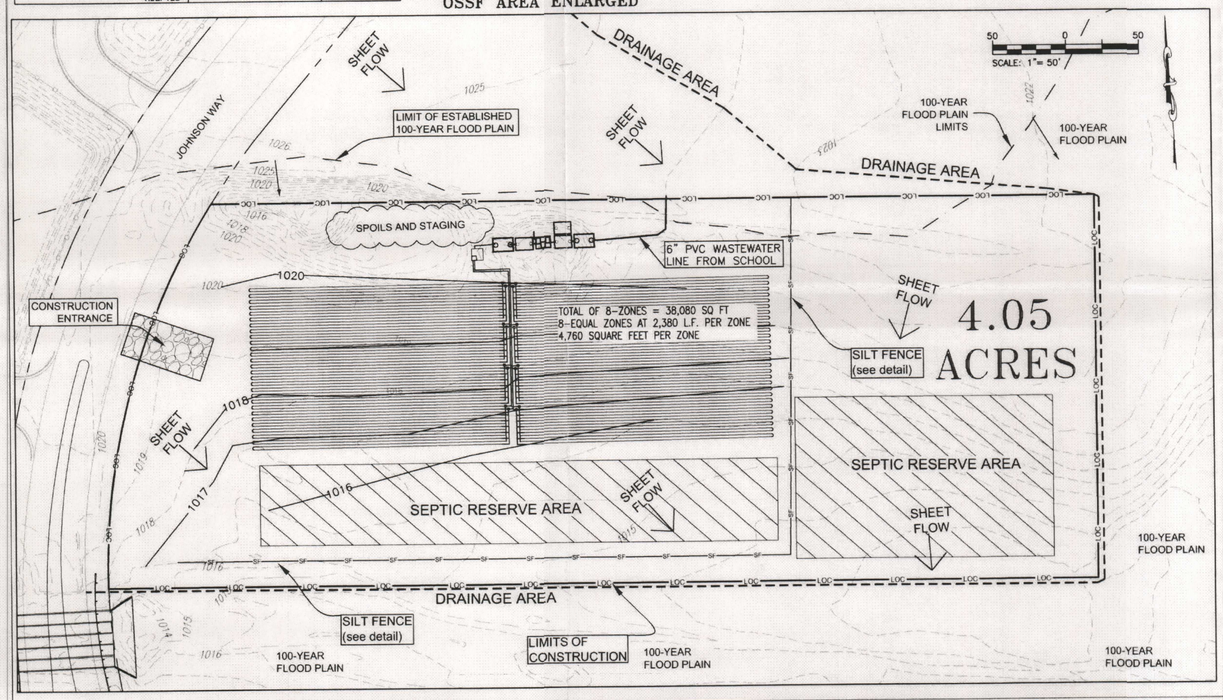


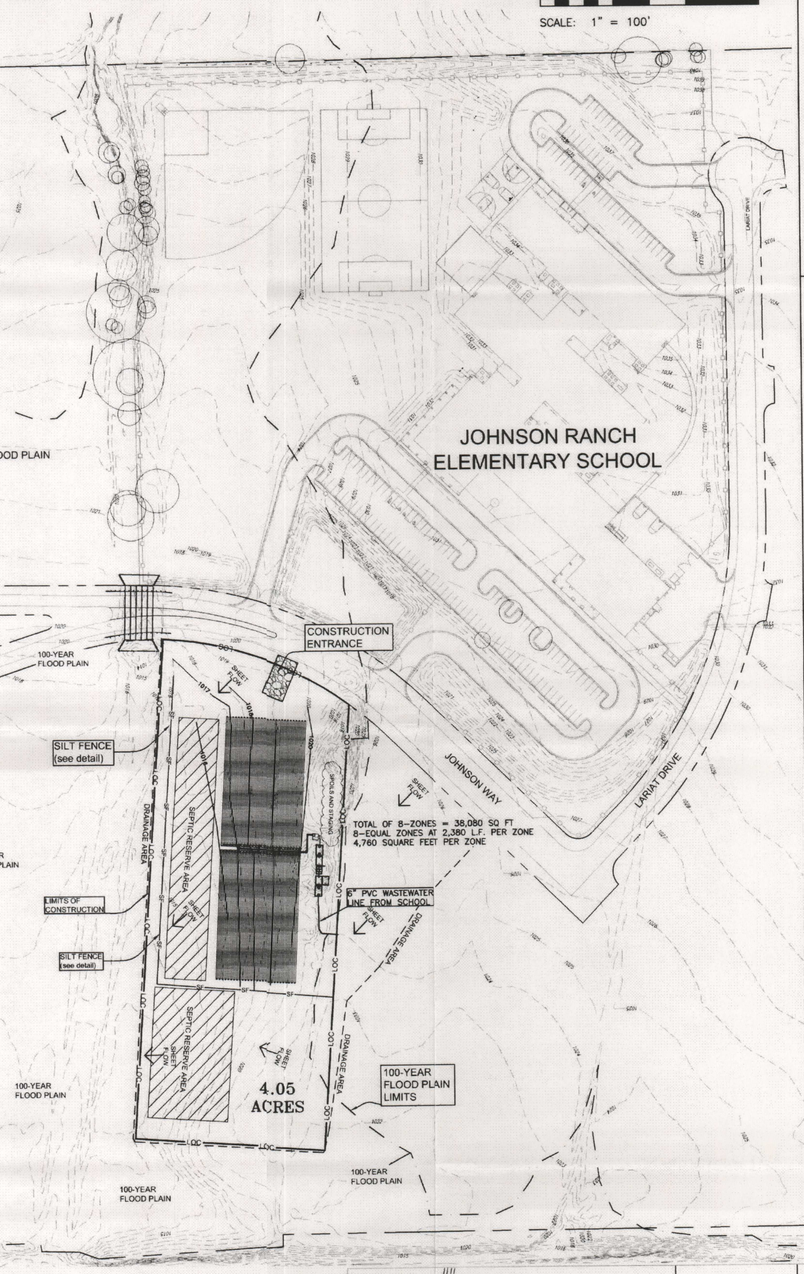




NOTES:
1. STONE SIZE: 75-125 mm (3-5") OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 15 m (50').
3. THICKNESS: NOT LESS THAN 200 mm (8").
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

| CITY OF AUSTIN<br>WATERSHED PROTECTION DEPARTMENT | STABILIZED CONSTRUCTION ENTRANCE | |
|---|---|---|
| RECORD COPY SIGNED BY J. PATRICK MURPHY 5/28/00 ADOPTED | THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD | STANDARD NO. 641S-1 |

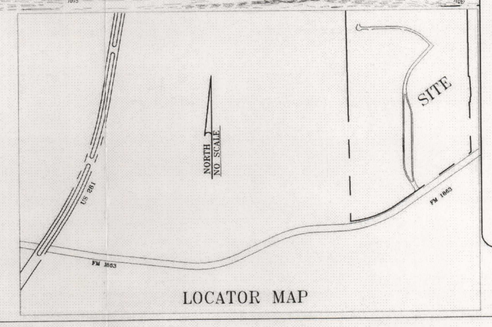
OSSF AREA ENLARGED




IMPERVIOUS COVER

| | |
|---|---|
| TANK ACCESS LIDS | |
| 4 @ 24" DIA | 12.6 SQ. FT. |
| 6 @ 18" DIA. | 10.6 SQ. FT. |
| TREATMENT TANK LID | 82.6 SQ. FT. |
| PERC RITE UNIT | 12.0 SQ. FT. |
| VALVE BOXES | |
| 32 @ 12" X 18" | 48.0 SQ. FT. |
| TOTAL IMPERVIOUS COVER | 165.8 SQ. FT. |



LOCATOR MAP

DATE: 03/14/09 DRAWN BY: KS
REVISED:
REVISED:

SCHOENFELT ENGINEERING, INC.
1715 S. Capital of Texas Hwy.
Suite 208
(512) 328-0146 Austin, Texas 78746
Mob.(512) 626-3504 Fax. 329-0085

Sheet 1 of 11

8-ZONE DRIP IRRIGATION
OSSF WITH PRE-TREATMENT
JOHNSON RANCH
ELEMENTARY SCHOOL

STATE OF TEXAS
KEITH L. SCHOENFELT
58502
REGISTERED
ENGINEER

4-16-2009

TCEQ-R13
APR 27 '09
SAN ANTONIO

K:\Projects\Johnson Ranch\2007\TJ-Peter HVAC\CAD\Landscape\OSSF site Plan.dwg 24x36, April 16, 2009, 2:29 PM, richmell

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

REGULATED ENTITY NAME: OSSF for Johnson Ranch Elementary

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

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

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

   ___ The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.
   ___ A technical guidance other than the TCEQ TGM was used to design permanent BMPs and measures for this site. The complete citation for the technical guidance that was used is provided below

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

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

   ___ This site will be used for low density single-family residential development and has 20% or less impervious cover.
   ___ This site will be used for low density single-family residential development but has more than 20% impervious cover.
   ___ This 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.** This site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is found at the end of this form.

__ This site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.

__ This site will not be used for multi-family residential developments, schools, or small business sites.

6. **ATTACHMENT B - BMPs for Upgradient Stormwater.**

__ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is identified as **ATTACHMENT B** at the end of this form.

__ If no surface water, groundwater or stormwater originates upgradient from the site and flows across the site, an explanation is provided as **ATTACHMENT B** at the end of this form.

√ If permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, an explanation is provided ~~as **ATTACHMENT B** at the end of this form~~ **below**.

**The OSSF is a temporary facility that exclusively serves the Johnson Ranch Elementary School. No significant grading is proposed, and the amount of impervious cover is insignificant (166 ft$^2$) and unconnected to any concentrated runoff conveyance. Given that existing runoff patterns are not materially affected by this project, no permanent BMP's are necessary. A request to waive requirements for school sites with less than 20% impervious cover is presented at the end of this form (Attachment A).**

7. **ATTACHMENT C - BMPs for On-site Stormwater.**

__ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is identified as **ATTACHMENT C** at the end of this form.

√ If permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, an explanation is ~~provided as **ATTACHMENT C** at the end of this form~~ **below**.

**The OSSF is a temporary facility that exclusively serves the Johnson Ranch Elementary School. No significant grading is proposed, and the amount of impervious cover is insignificant (166 ft$^2$) and unconnected to any concentrated**

**runoff conveyance. Given that existing runoff patterns are not materially affected by this project, no permanent BMP's are necessary. A request to waive requirements for school sites with less than 20% impervious cover is presented at the end of this form (Attachment A).**

8. N/A **ATTACHMENT D - BMPs for Surface Streams.** A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is provided at the end of this form. Each feature identified in the Geologic Assessment as "sensitive" or "possibly sensitive" has been addressed.

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

   N/A The permanent sealing of or diversion of flow from a naturally-occurring "sensitive" or "possibly sensitive" feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed for any naturally-occurring "sensitive" or "possibly sensitive" features on this site.

   N/A **ATTACHMENT E - Request to Seal Features.** A request to seal a naturally-occurring "sensitive" or "possibly sensitive" feature, that includes a justification as to why no reasonable and practicable alternative exists, is found at the end of this form. A request and justification has been provided for each feature.

10. N/A **ATTACHMENT F - Construction Plans.** Construction plans and design calculations for the proposed permanent BMPs and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information have been signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed permanent BMPs and measures are provided at the end of this form. Design Calculations, TCEQ Construction Notes, all man-made or naturally occurring geologic features, all proposed structural measures, and appropriate details must be shown on the construction plans.

11. N/A **ATTACHMENT G - Inspection, Maintenance, Repair and Retrofit Plan.** A plan for the inspection, maintenance, repair, and, if necessary, retrofit of the permanent BMPs and measures is provided at the end of this form. The plan has been prepared and certified by the engineer designing the permanent BMPs and measures. The plan has been signed by the owner or responsible party. The plan includes procedures for documenting inspections, maintenance, repairs, and, if necessary, retrofits as well as a discussion of record keeping procedures.

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

   ___ Pilot-scale field testing (including water quality monitoring) may be required for BMPs that are not contained in technical guidance recognized by or prepared by the executive director.

   ___ **ATTACHMENT H - Pilot-Scale Field Testing Plan.** A plan for pilot-scale field testing is provided at the end of this form.

13. N/A **ATTACHMENT I - Measures for Minimizing Surface Stream Contamination.** A

description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is provided at the end of this form. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity which increase erosion that results in water quality degradation.

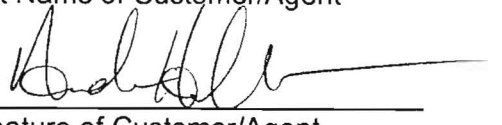
**Responsibility for maintenance of permanent BMPs and measures after construction is complete.**

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

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

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

Print Name of Customer/Agent



Signature of Customer/Agent

4/20/09

Date

# ATTACHMENT A

LOOMIS | PARTNERS

April 20, 2009

Texas Commission on Environmental Quality
14250 Judson Rd.
San Antonio, Texas 78233-4480

RE: **ATTACHMENT A** – 20% OR Less Impervious Cover Waiver

Ms. Fritz,

The intended use of the proposed OSSF is to serve as an interim sewage facility for the brand new Johnson Ranch Elementary School. The school is part of the Comal Independent School District. The school constitutes only a small part of a much larger development scheme for Johnson Ranch that envisions hundreds of single-family lots that will be located in close proximity to the school site. The timing of the development of these lots has been delayed due to the economic downturn and the effect it has had on the credit markets. Once the development of the single-family lots re-commences, an organized sewage collection system will be constructed that the school will tie into. A wastewater treatment facility will be This system will deliver raw wastewater to a new treatment facility (under TCEQ zero discharge permit WQ0014733001) to be constructed within the development. Once the collection and treatment systems are completed and operational, the school's wastewater will be permanently re-directed and the OSSF system abandoned.

The impervious cover added by this interim facility is ~166 $ft^2$, and none of this paltry amount is connected to a concentrated flow stormwater runoff conveyance – all of the runoff generated from the impervious cover will sheet flow across the newly constructed drip irrigation fields, which maintain the overall sheet flow drainage pattern of the pasture that exists today.

We hereby request that the Director waive the requirement for other permanent BMP's in accordance with Chapter § 213.5 (b) (4) (D) (ii) (IV).

Sincerely,

Andy Hollon, P.E.
Loomis Partners

[H:\Projects\Johnson Ranch\070713-Phase 1A\DOCS\Applications\WPAP\OSSF\F-0600_Attachment A.doc]

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

I CHARLES HILL,
Print Name

VICE PRESIDENT
Title - Owner/President/Other

of DH/JB DEVELOPMENT INC
Corporation/Partnership/Entity Name

have authorized Andy Hollon, P.E.
Print Name of Agent/Engineer

of Loomis Partners, Inc.
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 applicants 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.

Applicant's Signature — Date: 4/14/09

THE STATE OF Texas §

County of Kendall §

BEFORE ME, the undersigned authority, on this day personally appeared Charles Hill 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 14th day of April, 2009.

TAMMI BETZ
Notary Public, State of Texas
My Commission Expires
April 04, 2011

NOTARY PUBLIC Tammi Betz

Typed or Printed Name of Notary Tammi Betz

MY COMMISSION EXPIRES: 4-4-2011

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

**Water Pollution Abatement Plans and Modifications**
**Contributing Zone Plans and Modifications**

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

**Organized Sewage Collection Systems and Modifications**

| PROJECT | COST PER LINEAR FOOT | MINIMUM FEE<br>MAXIMUM FEE |
|---|---|---|
| Sewage Collection Systems | $0.50 | $650 - $6,500 |

**Underground and Aboveground Storage Tank System Facility Plans and Modifications**

| PROJECT | COST PER TANK OR PIPING SYSTEM | MINIMUM FEE<br>MAXIMUM FEE |
|---|---|---|
| Underground and Aboveground Storage Tank Facility | $650 | $650 - $6,500 |

**Exception Requests**

| PROJECT | FEE |
|---|---|
| Exception Request | $500 |

**Extension of Time Requests**

| PROJECT | FEE |
|---|---|
| Extension of Time Request | $150 |

TCEQ 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 **Exception for WPAP**

**2. Attachments** **Describe Any Attachments:** *(ex. Title V Application, Waste Transporter Application, etc.)*

☒Yes ☐No WPAP

| 3. Customer Reference Number *(if issued)* | Follow this link to search for CN or RN numbers in Central Registry** | 4. Regulated Entity Reference Number *(if issued)* |
|---|---|---|
| CN 602996472 | | RN |

## SECTION II: Customer Information

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

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

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

**7. General Customer Information**

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐Change in Legal Name (Verifiable with the Texas Secretary of State) ☒ No Change**

***If "No Change" and Section I is complete, skip to Section III – Regulated Entity Information.***

| 8. Type of Customer: | ☐ Corporation | ☐ Individual | ☐ Sole Proprietorship- D.B.A |
|---|---|---|---|
| ☐ City Government | ☐ County Government | ☐ Federal Government | ☐ State Government |
| ☐ Other Government | ☐ General Partnership | ☐ Limited Partnership | ☐ Other: |

| 9. Customer Legal Name *(If an individual, print last name first: ex: Doe, John)* | *If new Customer, enter previous Customer below* | *End Date:* |
|---|---|---|
| | | |

| 10. Mailing Address: | | | | | | | |
|---|---|---|---|---|---|---|---|
| | City | | State | | ZIP | | ZIP + 4 |

| 11. Country Mailing Information *(if outside USA)* | 12. E-Mail Address *(if applicable)* |
|---|---|
| | |

| 13. Telephone Number | 14. Extension or Code | 15. Fax Number *(if applicable)* |
|---|---|---|
| ( ) - | | ( ) - |

| 16. Federal Tax ID *(9 digits)* | 17. TX State Franchise Tax ID *(11 digits)* | 18. DUNS Number *(if applicable)* | 19. TX SOS Filing Number *(if applicable)* |
|---|---|---|---|
| | | | |

**20. Number of Employees**

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

**21. Independently Owned and Operated?**

☐ Yes ☐ No

## SECTION III: Regulated Entity Information

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

☒ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information ☐ No Change** *(See below)*

**If "NO CHANGE" is checked and Section I is complete, skip to Section IV, Preparer Information.**

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

OSSF for Johnson Ranch Elementary

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24. Street Address of the Regulated Entity: *(No P.O. Boxes)* | | | | | | | |
| | City | | State | | ZIP | | ZIP + 4 | |
| 25. Mailing Address: | Charlie Hill | | | | | | |
| | 102A Cordillera Ridge | | | | | | |
| | City | Boerne | State | TX | ZIP | 78006 | ZIP + 4 | 5871 |

| 26. E-Mail Address: | | |
|---|---|---|
| 27. Telephone Number | 28. Extension or Code | 29. Fax Number *(if applicable)* |
| ( 512 ) 394-0635 | | ( 866 ) 260-0077 |

| 30. Primary SIC Code (4 digits) | 31. Secondary SIC Code (4 digits) | 32. Primary NAICS Code (5 or 6 digits) | 33. Secondary NAICS Code (5 or 6 digits) |
|---|---|---|---|
| 1623 | 8211 | 237100 | 611110 |

**34. What is the Primary Business of this entity?** *(Please do not repeat the SIC or NAICS description.)*

Educational Facility

**Questions 34 – 37 address geographic location. Please refer to the instructions for applicability.**

| 35. Description to Physical Location: | Northeast corner of US 281 and Fm 1863. Entrance at FM1863 approximately 0.5 miles east from the intersection with US 281 and 0.3 miles north on Johnson Ranch driveway. |
|---|---|

| 36. Nearest City | County | State | Nearest ZIP Code |
|---|---|---|---|
| Bulverde | Comal | TX | 78163 |

| 37. Latitude (N) In Decimal: | 29.7489 | | 38. Longitude (W) In Decimal: | 98.4197 | |
|---|---|---|---|---|---|
| Degrees | Minutes | Seconds | Degrees | Minutes | Seconds |
| 29 | 44 | 56 | 98 | 25 | 11 |

**39. TCEQ Programs and ID Numbers** Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form or the updates may not be made. If your Program is not listed, check other and write it in. See the Core Data Form instructions for additional guidance.

| | | | | |
|---|---|---|---|---|
| ☐ Dam Safety | ☐ Districts | ☒ Edwards Aquifer | ☐ Industrial Hazardous Waste | ☐ Municipal Solid Waste |
| ☐ New Source Review – Air | ☐ OSSF | ☐ Petroleum Storage Tank | ☐ PWS | ☐ Sludge |
| ☐ Stormwater | ☐ Title V – Air | ☐ Tires | ☐ Used Oil | ☐ Utilities |
| ☐ Voluntary Cleanup | ☐ Waste Water | ☐ Wastewater Agriculture | ☐ Water Rights | ☐ Other: WPAP Application |

## SECTION IV: Preparer Information

| 40. Name: | Andy Hollon, P.E. | 41. Title: | Principal |
|---|---|---|---|

| 42. Telephone Number | 43. Ext./Code | 44. Fax Number | 45. E-Mail Address |
|---|---|---|---|
| ( 512 ) 327-1180 | | ( 512 ) 327-4062 | ahollon@loomis-partners.com |

## SECTION V: Authorized Signature

**46.** By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 9 and/or as required for the updates to the ID numbers identified in field 39.

***(See the Core Data Form instructions for more information on who should sign this form.)***

| Company: | Loomis Partners, Inc. | Job Title: | Principal |
|---|---|---|---|
| Name *(In Print)* : | Andy Hollon, P.E. | Phone: | ( 512 ) 327-1180 |
| Signature: | | Date: | 4/29/09 |