TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

June 7, 2007

Mr. Shawn Soechting
Natural Bridge Wildlife Ranch
26515 Natural Bridge Caverns Rd.
San Antonio, Texas 78266

Re: Edwards Aquifer, Comal County
NAME OF PROJECT: Natural Bridge Wildlife Ranch; Located approximately 7 miles northwest of the intersection of IH-35 and FM 3009; San Antonio, Texas, 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. 2641.00; Investigation No. 555908; Regulated Entity No. RN105194187

Dear Mr. Soechting:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the request for modification of the approved WPAP for the above-referenced project submitted to the San Antonio Regional Office by Slay Engineering Company, Inc. on behalf of Natural Bridge Wildlife Ranch on March 30, 2007. Final review of the WPAP was completed after additional material was received on May 29, 2007. 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.*

BACKGROUND

The Natural Bridge Wildlife Ranch has been a commercial operation since 1964. Several modifications and additions have taken place on the site throughout its operating history. The application noted existing impervious cover on the site. It has been reported as follows:

- 10,895.00 sq. ft. of structures and buildings
- 78,925.00 sq. ft. of parking surface
- 274,341.60 sq. ft. of other paved surfaces

The 127.3 acres site currently has 8.36 acres of impervious cover (or 6.57%)

PROJECT DESCRIPTION

The proposed commercial project is located over the Edward Aquifer Recharge Zone. The project will include the addition of a new building, a concrete swale, and two concrete walkways. The proposed impervious cover is as follows:

- an additional 6,350 sq. ft. of structure/rooftop
- 140 sq. ft. of concrete swale
- 2,835 sq. ft. of additional concrete walkways

The proposed development would add an additional 9,325 sq. ft. of impervious cover. The net result would be a 0.21 acre increase in the sites total impervious cover from 8.36 acres to 8.57 acres (6.73%).

According to a letter dated, May 21, 2007, signed by Robert H. Boyd, P.E., with Comal County, the site is acceptable for the use of on-site sewage facilities.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, engineered vegetative filter strips will be installed/constructed to treat stormwater runoff as shown on the application's site plan exhibit. The approved measures appear to meet the required 80 percent removal of the increased load in total suspended solids caused by the project.

GEOLOGY

According to the geologic assessment included with the application, most of the site lies on the outcrop of the Kainer Formation of the Edwards Limestone. Three features were identified. One feature, a water well, was assessed as sensitive. The San Antonio Regional Office did not conduct a site inspection.

SPECIAL CONDITIONS

I. An "as-built" plan sheet for the facility shall be drawn to scale and in sufficient detail to depict the specific locations and dimensions of all the pre-existing impervious cover on the site (including all the impervious cover listed in the background section of this letter). The plan sheet shall also provide the dates on which the pre-existing impervious cover was installed. A copy of the "as-built" plan sheet shall be provided to the regional office within 30 days of the date of this approval letter.

II. Should the "as-built" plan sheet indicate that pre-existing impervious cover requires treatment; a modification to the approved plan may be required.

III. A Texas Licensed Professional Engineer must certify in writing that the engineered vegetative filter strips were constructed, installed, and are functioning in accordance with the current version of the Edwards Aquifer Technical Guidance Manual (RG 348) vegetative filter strip design criteria. The certification letter must be submitted to the San Antonio Regional Office within 120 days of the installation.

IV. Should future modifications be proposed, a summary of the previously approved impervious cover (see special condition I above) must be updated and included in the application. It is the responsibility of the applicant to maintain this information and keep it current.

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

VI. 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.

VII. All areas designated in the plan as Engineered Filter Strips shall be established and recorded within the deed recordation.

VIII. 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.

IX. A Texas Licensed Professional Engineer must certify in writing that the concrete swale does not contribute to high velocity runoff and does not contribute to erosion or channelization. The certification letter must be submitted to the San Antonio Regional Office within 30 days of the date of the approval letter.

STANDARD CONDITIONS

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

Prior to Commencement of Construction:

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

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

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

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

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

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

<u>During Construction:</u>

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

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

10. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.

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

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

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

After Completion of Construction:

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

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

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

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

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

If you have any questions or require additional information, please contact Amy Burroughs of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210-403-4073.

Sincerely,

Glenn Shankle
Executive Director
Texas Commission on Environmental Quality

GS/AEB/cg

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

cc: Mr. Roger C. Lawhead, P.E., Slay Engineering Company, Inc.
Mr. Tom Hornseth, Comal County
Mr. Robert J. Potts, Edwards Aquifer Authority
TCEQ Central Records MC 212

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 7, 2011

Mr. Shawn Soechting
Natural Bridge Wildlife Ranch, Inc.
26515 Natural Bridge Caverns Rd.
San Antonio, TX 78266

Re: Edwards Aquifer Protection Program, Bexar and Comal County

Name of Project: Natural Bridge Wildlife Ranch Road and Creek Crossing; Located at 26515 Natural Bridge Caverns Road, seven miles northwest of I-35; San Antonio ETJ, Texas

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

Edwards Aquifer Protection Program San Antonio File No. 2641.01; Investigation No. 894454; Regulated Entity No. RN105194187

Dear Mr. Soechting:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP application for the above-referenced project submitted to the San Antonio Regional Office by Westward Environmental, Inc. on behalf of Natural Bridge Wildlife Ranch, Inc. on January 21, 2011. Final review of the WPAP was completed after additional material was received on March 18, 2011 and April 4, 2011. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

Project Description

The proposed commercial project will have a project area of approximately 65 acres within the larger 1,342 acre site. It will include the construction of approximately 8,823 feet of roadway, the widening and improvements to approximately 1,269 feet of roadway and the construction of a 185 foot crossing

over Cibolo Creek. The impervious cover will be 5.45 acres (8.38 percent of the project area). No wastewater is generated by this project.

Permanent Pollution Abatement Measures

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, engineered filter strips, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 4,528 pounds of TSS generated from the 5.45 acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

The individual treatment measures will consist of engineered filter strips adjacent to the roadway surfaces. The filter strips will have a minimum length of 15 feet, slopes less than 20 percent and at least 80% vegetation cover. The filter strips have been designed to allow storm water to sheet flow through the filter strip without gullies or rills or the concentration of flow.

Additional measures include enclosing the animals within a fenced area defined in the WPAP application. The Inspection, Maintenance, Repair and Retrofit Plan will be followed for all areas within the fenced area to ensure vegetation cover will be provided.

Geology

According to the geologic assessment included with the application, three geologic units are located at the site: the Basal Nodular Member of the Edwards formation, the Upper Glen Rose Limestone and Quaternary Alluvium. Twelve karst features (eleven geologic features, one water well) were assesses as non-sensitive by the project geologist. The San Antonio Regional Office site assessment conducted on March 15, 2011 revealed the site was adequately described by the geologic assessment.

Special Conditions

1. The engineered filter strips shall be operational, with at least 80 percent vegetation cover, prior to public use of the roadways or placement of animals within the project area.

2. Notify TCEQ of any of the following: revisions to the road layout or fenced area layout, change in activities occurring at the site or change in the BMPs proposed. Modification to these items may require prior approval of a WPAP modification.

Standard Conditions

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

2. The holder of the approved Edwards Aquifer protection plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits, registrations and/or authorizations from other

TCEQ Programs (i.e., Stormwater, Water Rights, UIC) can be required depending on the specifics of the plan.

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

Prior to Commencement of Construction:

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

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

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

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

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

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

During Construction:

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

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

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

13. One well is located onsite. 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.

After Completion of Construction:

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,

for

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

MRV/CEF/eg

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

cc: Mr. Gary Nicholls, P.E., Westward Environmental, Inc.
Mr. Scott Halty, San Antonio Water System
Ms. Renee Green, P.E., Bexar County Public Works
Mr. Tom Hornseth, P.E., Comal County
Mr. Karl Dreher, General Manager, Edwards Aquifer Authority
Mr. George Wissmann, Trinity Glen Rose GCD
TCEQ Central Records, Building F, MC 212

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

March 2, 2011

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

Re: Edwards Aquifer, Bexar and Comal Counties
PROJECT NAME: Natural Bridge Wildlife Ranch Road and Bridge Crossing, located at 26515 Natural Bridge Caverns Road, San Antonio, Texas
PLAN TYPE: Application for Approval of a Water Pollution Abatement Plan (WPAP) 30 Texas Administration Code (TAC) Chapter 213; Edwards Aquifer Protection Program
EAPP File No.: 2641.02

Dear Mr. Hornseth:

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

Please forward your comments to this office by April 2, 2011.

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

Sincerely,

Todd Jones
Water Section Work Leader
San Antonio Regional Office

TJ/cf

WATER POLLUTION ABATEMENT PLAN (WPAP)

NATURAL BRIDGE WILDLIFE RANCH, INC. ROAD AND CREEK CROSSING

26515 NATURAL BRIDGE CAVERNS RD. SAN ANTONIO, BEXAR COUNTY, TEXAS

Submitted to: TCEQ, Region 13 Office, San Antonio

Jan. 2011

Prepared by: *WESTWARD ENVIRONMENTAL, INC.*
Boerne, Texas
Project No. 10631-03

Westward Environmental, Inc.

P.O. Box 2205
BOERNE, TEXAS
78006

January 11, 2011

Texas Commission on Environmental Quality
Region 13 Office
14250 Judson Road
San Antonio, TX 78233-4480

Project No. 10631-03

Attn.: Richard Garcia

Subject: Water Pollution Abatement Plan (WPAP) and Geologic Assessment (GA) Application
Natural Bridge Wildlife Ranch, Inc. – CN 600660559
Road and Creek Crossing – RN NEW
Bexar and Comal Counties, Texas

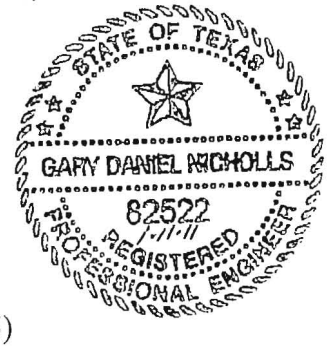
Dear Mr. Garcia,

On behalf of Natural Bridge Wildlife Ranch, Inc., we are submitting this WPAP application for a proposed road and creek crossing on a ranch that is located at 26515 Natural Bridge Caverns Rd. in San Antonio, Bexar and Comal Counties, Texas.

Please find attached the original and five copies of the Natural Bridge Wildlife Ranch, Inc. – Road and Creek Crossing WPAP Application. This WPAP Application has been prepared in accordance with the Texas Commission on Environmental Quality (30 TAC 213) and current policies for construction in the Edwards Aquifer Recharge Zone.

Please copy the office of Westward Environmental, Inc. on all correspondence including the final TCEQ determination. If your staff has any questions regarding this application, please call our office at (830) 249-8284.

Respectfully submitted,
WESTWARD ENVIRONMENTAL, INC.



Gary D. Nicholls, P.E.
Vice President

Distribution: Addressee (original + 5)
Mr. Shawn Soechting - Natural Bridge Wildlife Ranch, Inc. (2 copies)
WEI 10631-03 file

mb

Water Pollution Abatement Plan Checklist

X General Information Form (*TCEQ-0587)*
- ATTACHMENT A - Road Map
- ATTACHMENT B - USGS / Edwards Recharge Zone Map
- ATTACHMENT C - Project Description

X Geologic Assessment Form (*TCEQ-0585)*
- ATTACHMENT A - Geologic Assessment Table (*TCEQ-0585-Table)*
- Comments to the Geologic Assessment Table
- ATTACHMENT B - Soil Profile and Narrative of Soil Units
- ATTACHMENT C - Stratigraphic Column
- ATTACHMENT D - Narrative of Site Specific Geology
- Site Geologic Map(s)
- Table or list for the position of features' latitude/longitude (if mapped using GPS)

X Water Pollution Abatement Plan Application Form (*TCEQ-0584)*
- ATTACHMENT A - Factors Affecting Water Quality
- ATTACHMENT B - Volume and Character of Stormwater
- ATTACHMENT C - Suitability Letter from Authorized Agent (if OSSF is proposed)
- ATTACHMENT D - Exception to the Required Geologic Assessment (if requesting an exception)
- Site Plan

X Temporary Stormwater Section (*TCEQ-0602)*
- ATTACHMENT A - Spill Response Actions
- ATTACHMENT B - Potential Sources of Contamination
- ATTACHMENT C - Sequence of Major Activities
- ATTACHMENT D - Temporary Best Management Practices and Measures
- ATTACHMENT E - Request to Temporarily Seal a Feature, if sealing a feature
- ATTACHMENT F - Structural Practices
- ATTACHMENT G - Drainage Area Map
- ATTACHMENT H - Temporary Sediment Pond(s) Plans and Calculations
- ATTACHMENT I - Inspection and Maintenance for BMPs
- ATTACHMENT J - Schedule of Interim and Permanent Soil Stabilization Practices

X Permanent Stormwater Section (*TCEQ-0600)*
- ATTACHMENT A - 20% or Less Impervious Cover Waiver, if project is multi-family residential, a school, or a small business and 20% or less impervious cover is proposed for the site
- ATTACHMENT B - BMPs for Upgradient Stormwater
- ATTACHMENT C - BMPs for On-site Stormwater
- ATTACHMENT D - BMPs for Surface Streams
- ATTACHMENT E - Request to Seal Features (if sealing a feature)
- ATTACHMENT F - Construction Plans
- ATTACHMENT G - Inspection, Maintenance, Repair and Retrofit Plan
- ATTACHMENT H - Pilot-Scale Field Testing Plan, if BMPs not based on *Complying with the Edwards Aquifer Rules: Technical Guidance for BMPs*
- ATTACHMENT I -Measures for Minimizing Surface Stream Contamination

X Agent Authorization Form (*TCEQ-0599*), if application submitted by agent

X Application Fee Form (*TCEQ-0574*)

X Check Payable to the "Texas Commission on Environmental Quality"

X Core Data Form (*TCEQ-10400)*

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: Road and Creek Crossing
COUNTY: Bexar and Comal STREAM BASIN: Cibolo Creek

EDWARDS AQUIFER: X RECHARGE ZONE
__ TRANSITION ZONE

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

CUSTOMER INFORMATION

1. Customer (Applicant):

Contact Person: Shawn Soechting President
Entity: Natural Bridge Wildlife Ranch, Inc.
Mailing Address: 26515 Natural Bridge Caverns Rd.
City, State: San Antonio, Texas Zip: 78266
Telephone: 830-438-7400 FAX: 830-438-3494

Agent/Representative (If any):

Contact Person: Gary Nicholls, P.E. Vice President
Entity: Westward Environmental, Inc.
Mailing Address: 102 South Main Street, 2nd Floor
City, State: Boerne, Texas Zip: 78006
Telephone: 830-249-8284 FAX: 830-249-0221

2. __ This project is inside the city limits of _____.
X This project is outside the city limits but inside the ETJ (extra-territorial jurisdiction) of San Antonio, 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 Natural Bridge Wildlife Ranch is located at 26515 Natural Bridge Caverns Rd. in San Antonio, Texas 78266. The site is approximately 7 miles northwest of I-35 and FM 3009.

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

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

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

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

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

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

PROHIBITED ACTIVITIES

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

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

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

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

ADMINISTRATIVE INFORMATION

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

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

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

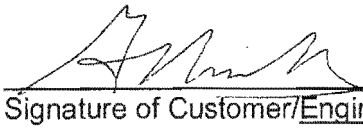
- ___ TCEQ cashier
- ___ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)
- X San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

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

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

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

Gary Nicholls, P.E.
Print Name of Customer/Engineer



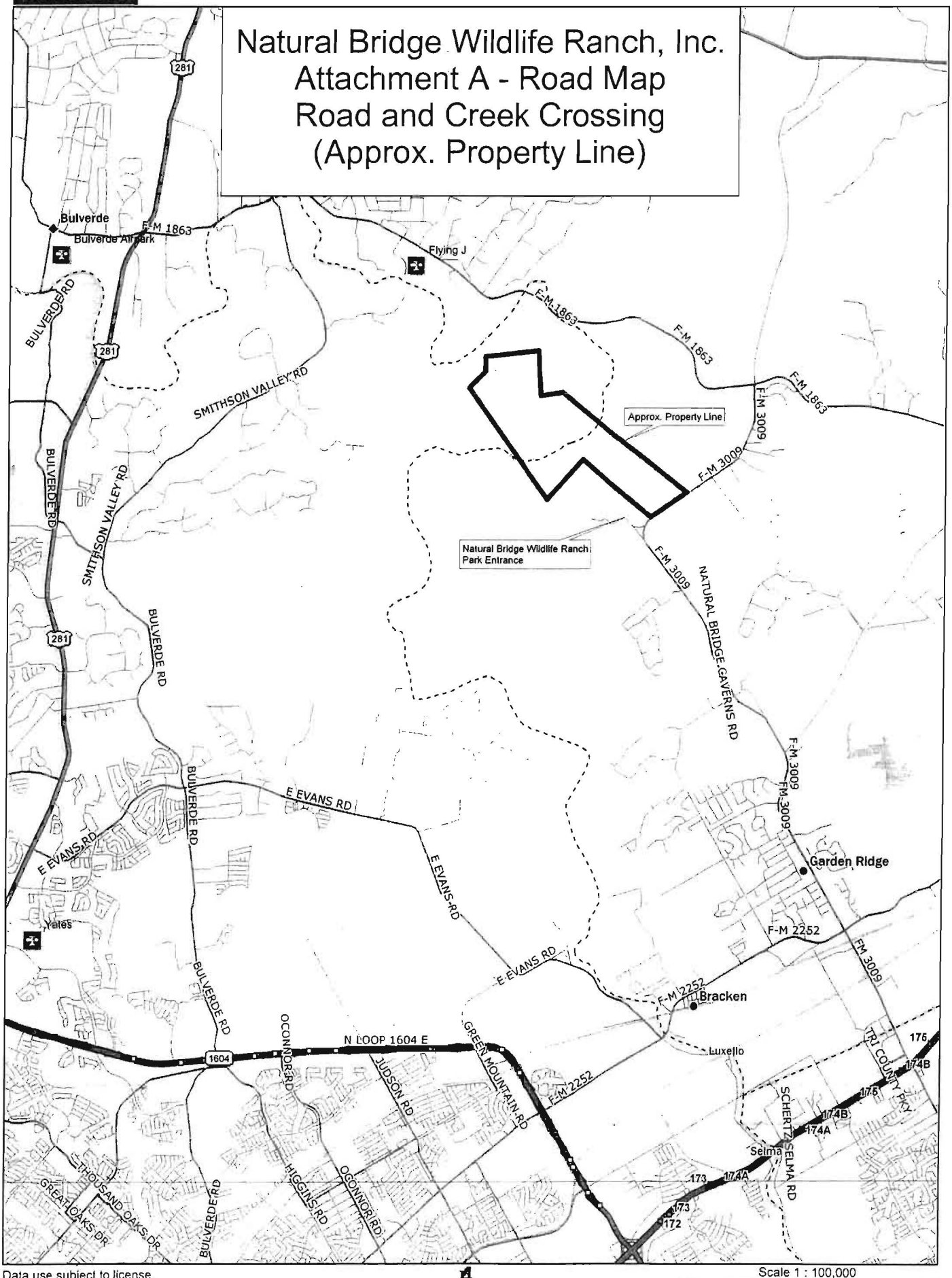
Signature of Customer/Engineer

1-11-11
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.

Natural Bridge Wildlife Ranch, Inc.
Attachment A - Road Map
Road and Creek Crossing
(Approx. Property Line)



Data use subject to license.

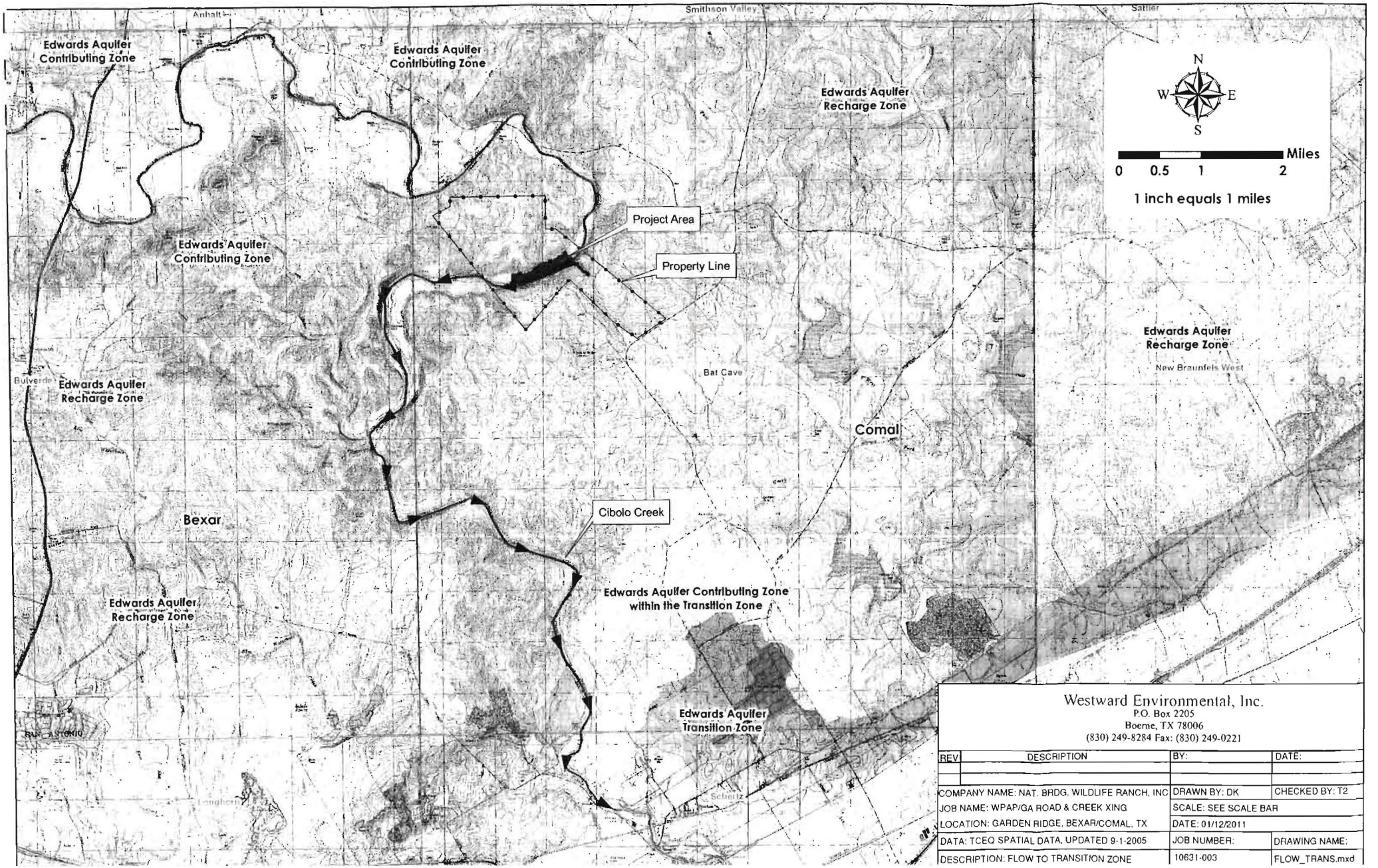
www.delorme.com

MN (5.0°E)

Scale 1 : 100,000

1" = 1.58 mi

Data Zoom 11-0



Westward Environmental, Inc.
P.O. Box 2205
Boerne, TX 78006
(830) 249-8284 Fax: (830) 249-0221

REV	DESCRIPTION	BY:	DATE:
COMPANY NAME: NAT. BRDG. WILDLIFE RANCH, INC		DRAWN BY: DK	CHECKED BY: T2
JOB NAME: WPAP/GA ROAD & CREEK XING		SCALE: SEE SCALE BAR	
LOCATION: GARDEN RIDGE, BEXAR/COMAL, TX		DATE: 01/12/2011	
DATA: TCEQ SPATIAL DATA, UPDATED 9-1-2005		JOB NUMBER:	DRAWING NAME:
DESCRIPTION: FLOW TO TRANSITION ZONE		10631-003	FLOW_TRANS.mxd

Natural Bridge Wildlife Ranch, Inc.
Road and Creek Crossing

General Information Form Attachment C

Project Description

Natural Bridge Wildlife Ranch, Inc. proposes to expand their wildlife ranchto include acreage north of Cibolo Creek and into Bexar County, Texas. An existing caliche ranch road will be improved and paved on both the Comal and Bexar County sides for patrons to drive and see the animals. A proposed crossing will also be built over the Cibolo in order for staff members to safely cross during times of rain. Once the new road is open for business approximately 25 vehicles will use the road per day for the viewing of animals. Of the surveyed 1,342 acres, 65 acres are designated as the "Project Area". The proposed road and creek crossing will be utilized for business purposes but will also allow the landowners to safely access their property in Bexar County. At present time it takes a 4-wheel drive vehicle to access the property in Bexar County and during heavy rain events safe access is unattainable.

The project will consist of three phases: 1) to widen the existing ranch road on the Comal County side by milling the western side of the road cut and grade the road to drain into the proposed engineered filter strips. Add a layer of asphalt or chip seal to the road and add guardrails. 2) Excavate subsurface on the Bexar County side in order to place base and asphalt or chip seal for the proposed loop road. 3) Build a crossing over the Cibolo Creek connecting the two roads. The entire project has a combined length of 10,277 feet (1.95 miles) and will add a total of 5.45 acres of impervious cover.

Location	Proposed Work	Paved Road Dimensions	Impervious Cover	Temporary BMPs	Permanent BMPs
Comal County	Access Road	30 feet wide 1,269 feet long	0.87 acres	Rock berms Silt fencing	Engineered filter strips
Bexar County	Loop Road	22 feet wide 8,823 feet long	4.46 acres	Natural filter strips Silt fencing	Engineered filter strips
Cibolo Creek	Crossing	28 feet wide ~185 feet long	0.12 acres	Rock berm	N/A *

* *Control of runoff from crossing is not practical or required – see permanent section*

As shown on the WPAP Site Plan, the proposed loop road on the Bexar County side and the proposed crossing are located inside the 100-year flood plain. Natural Bridge Wildlife Ranch, Inc. is in the process of permitting the proposed road and crossing through Bexar and Comal County offices. A flood study is currently being developed and will be submitted to both counties. A U.S. Army Corps of Engineers (USACE) Nationwide Permit 14 for Linear Transportation projects is also being performed.

A slight portion of the proposed loop road on the Bexar County side crosses over from the Recharge Zone to the Contributing Zone (< 5 acres) and back over to the Recharge Zone. For purposes of this WPAP, the entire loop road is considered to be entirely on the Recharge Zone.

Natural Bridge Wildlife Ranch, Inc.
Road and Creek Crossing

General Information Form Attachment C

Project Description (continued)

In order to mitigate stormwater runoff during construction activities rock berms will be utilized on the Comal County side. Silt fencing will be utilized around excavated material which will be stockpiled outside of the 100-year floodplain. And on the Bexar County side, land disturbance will be limited to the loop road and adjacent ditch footprint leaving hundreds of feet of natural grass land to mitigate stormwater runoff. Approximately eight pieces of equipment will be used onsite for construction activities. The equipment will be re-fueled and parked at designated staging areas which are shown on the WPAP Site Plan. A mobile fuel truck, which will service the equipment at the designated areas, will not be stored onsite. The staging areas are outside of the 100-year floodplain.

The permanent BMP proposed for the access road on the Comal County side will be an engineered filter strip. The permanent BMP proposed for the loop road on the Bexar County side will be an engineered filter strip.

Trash generated onsite will be disposed of in existing trash receptacles and handled by a licensed waste service. Existing onsite toilets will be utilized by construction workers and paying guests.

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: Natural Bridge Wildlife Ranch, Inc.: Road and Creek Crossing

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)
Patrick soils, 3 to 5 percent slopes, rarely flooded, (PaC)	B	1 – 5
Eckrant-Rock outcrop complex, 15 to 60 percent slopes (TaD)	C	0 - 1
Orif soils, 0 to 1 percent slopes, frequently flooded (Or)	B	0 – 5
Sunev loam, 1 to 3 percent slopes (VaB)	B	2.5 - 5
Comfort-Rock outcrop complex, 1 to 8 percent slopes (CrD)	C	.5 - 2
Eckrant-Rock outcrop complex, 8 to 30 percent slopes (ErG)	B	.5 - 2

* Soil Group Definitions (Abbreviated)

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

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

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

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

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

4. _X_ A **NARRATIVE DESCRIPTION OF SITE SPECIFIC GEOLOGY** is attached at the end

of this form. The description must include a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure, and karst characteristics of the site.

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

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

Applicant's Site Plan Scale	1" = _200_ '
Site Geologic Map Scale	1" = _200_ '
Site Soils Map Scale (if more than 1 soil type)	1" = _200_ '

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.

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

ADMINISTRATIVE INFORMATION

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

Date(s) Geologic Assessment was performed: December 14th, 2010
Date(s)

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

Thomas O. Mathews, PG, REM
Print Name of Geologist

(830) 249-8284
Telephone

(830) 249-0221
Fax

Thomas O Mathews PG 5321
Signature of Geologist

Jan. 19, 2011
Date

STATE OF TEXAS
THOMAS O. MATHEWS
GEOLOGY
5321
LICENSED
PROFESSIONAL GEOSCIENTIST

Representing: Westward Environmental, Inc.
(Name of Company)

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GEOLOGIC ASSESSMENT TABLE

Natural Bridge Wildlife Ranch, Inc.: Road and Creek Crossing

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	>40	<1.6	>1.6	
S-1	29 42.44	98 20.49	SC	20	Kek	1.17	1.34	3	250	10	-	-	N	5	35	X		X		Cliff
S-2	29 42.38	98 20.98	CD	5	Qal	4	6	1	43		-	-	F	19	24	X		X		Floodplain
S-3	29 42.35	98 21.26	CD	5	Qal	9.6	10	1	7		-	-	F	19	24	X		X		Floodplain
S-4	29 42.35	98 21.19	CD	5	Qal	12	12	2	-		-	-	F	19	24	X		X		Floodplain
S-5	29 42.35	98 21.19	CD	5	Qal	12	12	2	-		-	-	F	19	24	X		X		Floodplain
S-6	29 42.24	98 21 02	CD	5	Qal	80	90	5	-		-	-	F	19	24	X		X		Hillside
S-7	29 42.25	98 21.07	CD	5	Qal	50	80	4	-		-	-	F	19	24	X		X		Hillside
S-8	29 42.44	98 20.99	MB	30	Kgru	-	-	-	-		-	-	X	0	30	X		X		Floodplain
S-9	29 42.39	98 21.00	O	5	Kgru	30	2.67		92		1/2	0.06	O	19	24	X			X	Streambed
S-10	29 42.49	98 20.87	CD	5	Qal	7	32	4	-		-	-	F	19	24	X		X		Hillside
S-11a	29 42.47	98 20.54	SC	20	Kgru	3	2	0.7	218		-	-	N	5	25	X		X		Cliff
S-11b	29 42.47	98 20.54	SC	20	Kgru	1	2	3	272		-	-	N	5	25	X		X		Cliff

* DATUM: NAD 83

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

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

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

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

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

Thomas O Mathews

PG 5321

STATE OF TEXAS
THOMAS O. MATHEWS
GEOLOGY
5321
LICENSED
PROFESSIONAL GEOSCIENTIST

Date 1-19-2011

Sheet 1 of 1

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

10

Natural Bridge Wildlife Ranch, Inc.
Road and Creek Crossing

ATTACHMENT B
Soil Profile and Narrative of Soil Units

Six different soil types are present at the site. They are the Patrick soils, 3 to 5 percent slopes (PaC); the Tarrant Association - Eckrant-Rock outcrop complex, hilly (TaD); the Orif soils, frequently flooded (Or); the Sunev loam, 1 to 3 percent slopes (VaB); the Comfort-Rock outcrop complex, undulating (CrD); and the Eckrant-Rock outcrop complex, steep (ErG).

1) Patrick soils (PaC) – 3 to 5 percent slopes, rarely flooded

The surface layer is dark grayish-brown clay loam, gravelly clay loam, or loam and is about 10 inches thick.
The subsurface layer is brown clay loam or loam with granular structure. This layer is moderately permeable, friable when moist, and strongly calcareous.

Patrick slopes are moderate and convex. The mapped areas consists soils that occupy paleoterraces on plains. Shrink-swell potential is low. Water movement in the most restrictive layer is moderately high. This soil has slow to rapid surface drainage and medium internal drainage. Permeability is moderate. Water erosion is slight or moderate.

2) Eckrant-Rock outcrop complex (TaD) – 15 to 60 percent slopes

This surface layer is very dark grayish-brown, calcareous clay loam and is about 10 inches thick. It has a moderate, fine, subanfular blocky structure.
The subsurface layer is about 8 inches thick of hard fractured limestone. Below that is hard limestone.

The Eckrant-Rock outcrop complex has rapid surface drainage and good internal drainage. This soil is mainly found on ridges and plateaus. Runoff is rapid because of the steep slopes and exposed bedrock. Shrink-swell potential is moderate. Water movement in the most restrictive layer is moderately high. The capacity to hold water is low. Water erosion is a hazard.

3) Orif soils (Or) - 0 to 1 percent slopes, frequently flooded

The surface soil is a dark-gray, calcareous clay and is about 50 inches thick. It has medium, subangular blocky structure and is firm when moist.
The subsurface layer is gray , calcareous clay and is about 15 inches thick. This layer has weak, subangular blocky structure.

This component is on flood plains on river valleys. The parent material consists of alluvium derived from limestone. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Shrink-swell potential is low. This soil is frequently flooded.

4) Sunev loam (VaB) – 1 to 3 percent slopes

The surface layer is dark grayish-brown, moderately alkaline loam or clay loam and is about 14 inches thick.
The subsurface layer is brown, limy loam or clay loam and is about 16 inches thick. It has moderate, very fine, subangular blocky structure and fine, granular structure and is firm but crumbly when moist.

Sunev loams are located on stream terraces on plains and are well drained. Internal drainage is medium. Water movement in the most restrictive layer is moderately high. Shrink-swell potential is low. Permeability is moderate. The capacity to hold water is good. Water erosion is a hazard.

5) Comfort-Rock outcrop complex (CrD) – 1 to 8 percent slopes

The surface layer is dark brown sxtremely stony clay about 6 iches thick. Cobbles and stones as much as 4 feet across cover about 45 percent of the surface.
The subsurface layer is extends to a depth of 13 inches. It is dark reddish brown extremely stony clay. The underlying material is indurated fractured limestone. The soil is mildly alkaline and noncalcareous throughout.

The Comfort soil is well-drained. Surface runoff is slow to medium. Permeability is slow, and the available water capacity is very low. Water erosion is a slight hazard.

6) Eckrant-Rock outcrop complex (ErG) – 8 to 30 percent slopes

The surface layer is very dark gary extremely stony clay about 10 inches thick. It is about 35 percent, by volume, cobbles and stones in the upper part and about 75 percent, by volume, stones in the lower part.
The subsurface layer is indureated fractured limestone. The soil is moerately alkaline and noncalcareous throughout.

Eckrant soils are well drained. Surface runoff is rapid. Permeability is moderately slow, and the available water capacity is very low. Water erosion is a severe hazard.

Attachment C
Stratigraphic Column [2]

System	Hydrogeologic Unit		Group, formation, or member			Map Symbol	Thickness (feet)	Lithologic Character and Field Identification
Lower Cretaceous	VIII	Edwards Aquifer	Edwards Group (Ked)	Kainer Formation	Basal Nodular Member	Kek		Shaly, nodular limestone; mudstone and miliolid grainstone. Massive, nodular and mottled, Exogyra texana.
	Lower Confining Unit		Upper member of the Glen Rose Limestone			Kgru	350-500	Gray to yellow, dense to thinly bedded liestone and marl. Alternate beds of hard limestone and marl.
			Quaternary Alluvium			Qal	10 - 30	alluvial deposits of sand, gravel, silt, and clay

Natural Bridge Wildlife Ranch, Inc.
Road and Creek Crossing

Geologic Assessment Attachment D

Geologic Narrative

Overview:

This site specific geologic narrative meets the requirements as set forth in the Texas Commission on Environmental Quality (TCEQ) *Instructions to Geologists for Geologic Assessments (GA) on the Edwards Aquifer Recharge Zone.* The project site consists of approximately 65 acres located within the 1,342 acre Natural Bridge Caverns Wildlife Ranch northeast of San Antonio, Texas along the Cibolo Creek that separates Bexar and Comal counties. The geologic assessment was performed over the entire project site. A total of twelve (12) features were identified and mapped during this investigation. None of the features were sensitive.

Field Work:

Field work was conducted by Westward field personnel consisting of one registered Professional Geologist and one field technician on December 14, 2010. Field transects were walked across the site using a 50-foot spacing. In some areas of the property geologic or manmade features may have been altered or obscured at the time of site visit due to thick vegetative cover, historic site clearing, grubbing and agricultural ranching activities. Geologic and manmade features were field logged, photographed, labeled and GPS coordinates were collected. GPS data are included on the Geologic Assessment Table.

Stratigraphy:

There are three (3) geologic units at the site. The Basal Nodular Member of the Edwards formation, the Upper Glen Rose Limestone and Quaternary Alluvium. The Basal Nodular Member of the Edwards outcrops on the upper portion of the project. It is further exposed by the existing road cut for the ranch road leading down to the Cibolo Creek. The contact between the Basal Nodular Member and the Upper Glen Rose Limestone is exposed in the lower portion of this road cut. The Upper Glen Rose is exposed where the Cibolo Creek has down cut into it. On the portion of the project site west of the Cibolo Creek, the Glen Rose is overlain by Quaternary Alluvium at the lower elevations before outcropping on the far western edge of the project site. The published aquifer zone boundary and unit outcrops do not exactly match the field conditions. The attached geologic map was developed utilizing field collected data and is considered to be more accurate

Structure:

The Site is located in the Balcones Fault Zone northeast of San Antonio, Texas. There was no evidence or surface expression of any faults visible on the ground within the project boundary. The average fault trend in this section of the Balcones Fault Zone is approximately N60E. Features that were trending between N45E and N75E were assigned 10 extra points for aligning with the dominant trend.

Geologic Features:

A total of twelve (12) geologic features were identified during the geologic assessment. Three (3) of the features are considered to be possible karst features. These possible karst features, consist of three (3) solution cavities; and are all located in the face of the road cut. One (1) of the solution cavities is within the Basal Nodular member of the Edwards and the other two (2) are within the Upper Glen Rose. Seven (7) features are non-karst closed depressions; and are all located on the western portion of the project site. Each of these non karst closed depressions are found within the Quaternary Alluvium. The final two (2) features consist of an active water well (man-made) and a fractured rock outcrop (other natural bedrock feature); also located on the western portion of the project site. A more detailed description is provided below.

Caves

No caves were observed during this geologic assessment.

Closed Depressions – Non Karst

S-2, S-3, S-4, S-5, S-6, S-7, and S-10: Not Sensitive

All of the non-karst closed depressions are located within the Quaternary Alluvium and do not display any karst characteristics or evidence of soil sapping.

S-2 measured 4' x 6' x 1' with a soil flooring. Probability of rapid infiltration is low.

S-3 is larger area measuring approximately 9'7" x 10' x 1'. The depression had fine-grained sediment and organic material infilling. Probability of rapid infiltration is low.

S-4 and **S-5** are depressions similar in size (12' x 12' x 1') approximately 15' from each other at a bearing of 54°. The floors are covered in tight black soil with a low probability of rapid infiltration for both features. Evidence of wallowing for both of these features could attribute to their formation.

S-6 and S-7 are pre-existing borrow pits located in the project area. Both pits contain tightly packed soil for the walls and flooring. Probability of rapid infiltration is low.

S-10 is a trench used for the used for burning brush. The flooring and walls of the feature are comprised of tight caliche/alluvium. Probability of rapid infiltration is low.

Faults

No evidence of faulting was identified during the assessment, nor were there any previously mapped faults identified during the literature research.

Man Made Features in Bedrock
S-8: Not Sensitive

S-8 is a water well located on the northwestern portion of the property. The well was in use at the time of this assessment. The well was cemented and properly completed. Probability of infiltration is none.

Other Feature in Bedrock
S-9: Not Sensitive

S-9 is a fractured rock outcrop located in the bottom of draw leading down to Cibolo Creek. The area was field noted as a feature that might correlate to a possible fault. After further research and field reconnaissance it was determined that **S-9** did not correlate to a fault. Hand excavation was performed on the feature and it was determined to lack a connection to the subsurface. Probability of rapid infiltration is low even though the feature has a catchment greater than 1.6 acres.

Sinkholes
No sinkholes were observed during this geologic assessment.

Solution Cavities
S-1, S-11a and S-11b: Not Sensitive
All of the solution cavities identified during the assessment are located above grade and on the wall of the pre-existing road cut that leads down to Cibolo Creek.

S-1 is approximately 1.2' x 1.3' x 3'deep. The floor of the feature is exposed bedrock and has a low rapid infiltration rate due to its location approximately 6' above the existing grade. The feature is within the Basal Nodular Member

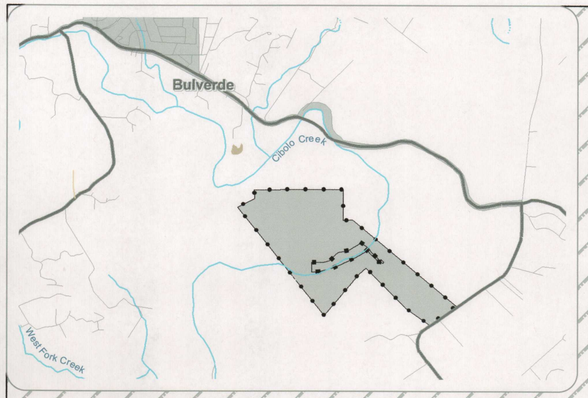
S-11a and **S-11b** are located northwest of feature **S-1** well above grade on the wall of the road cut near the contact between the Edwards and Upper Glen Rose; and within the Upper Glen Rose. Both features are elongated and contain no infilling. Probability of rapid infiltration in low due to their location on the road cut face well above grade.

Solution Cavity Zones
No solution cavity zones were observed during the geologic assessment.

Solution-Enlarged Fractures
No solution enlarged fractures were observed during the geologic assessment.

Swallow Hole
No swallow holes were observed during this geologic assessment.

Zone – Closed Depression
No zones of closed depressions were observed during this geologic assessment.



TaD

VaB

PaC

Or

Project Area Boundaries

CrD

ErG

ErG

SOILS EXPLANATION

- Or - Orif soils, 0 to 1 percent slopes, frequently flooded
- PaC - Patrick soils, 3 to 5 percent slopes, rarely flooded
- TaD - Eckrant-Rock outcrop complex, 15 to 60 percent slopes
- VaB - Sunev loam, 1 to 3 percent slopes
- CrD - Comfort-Rock outcrop complex, 1 to 8 percent slopes
- ErG - Eckrant-Rock outcrop complex, 8 to 30 percent slopes

N W E S

0 100 200 400 Feet

1 inch equals 200 feet

Westward Environmental, Inc.
P.O. Box 2205
Boerne, TX 78006
(830) 249-8284 Fax: (830) 249-0221

REV	DESCRIPTION	BY:	DATE:
COMPANY NAME: NAT. BRDG. WILDLIFE RANCH, INC.		DRAWN BY: DK	CHECKED BY: T2
JOB NAME: WPAP/GA ROAD & CREEK XING		SCALE: 1" = 200'	
LOCATION: GARDEN RIDGE, BEXAR/COMAL, TX		DATE: 01/19/2011	
SOILS DATA: USDA, NRCS, SSURGO		JOB NUMBER:	DRAWING NAME:
DESCRIPTION: SOILS MAP		10631-003	SOILS MAP.mxd

EDWARDS AQUIFER CONTRIBUTING ZONE

Ked

Kgru

Qal

EDWARDS AQUIFER CONTRIBUTING ZONE

PROPERTY LINE

PROPOSED LOW WATER CROSSING

PROPOSED LOOP ROAD

S-10

S-11A
S-11B

S-1

S-8

S-7

S-6

S-9

S-2

EFFECTIVE 100 YEAR FLOODPLAIN BOUNDARY

EFFECTIVE 100 YEAR FLOODPLAIN BOUNDARY

EFFECTIVE 100 YEAR FLOODPLAIN BOUNDARY

N = 13804866.05
E = 2173225.32

S-3

S-4

S-5

EFFECTIVE 100 YEAR FLOODPLAIN BOUNDARY

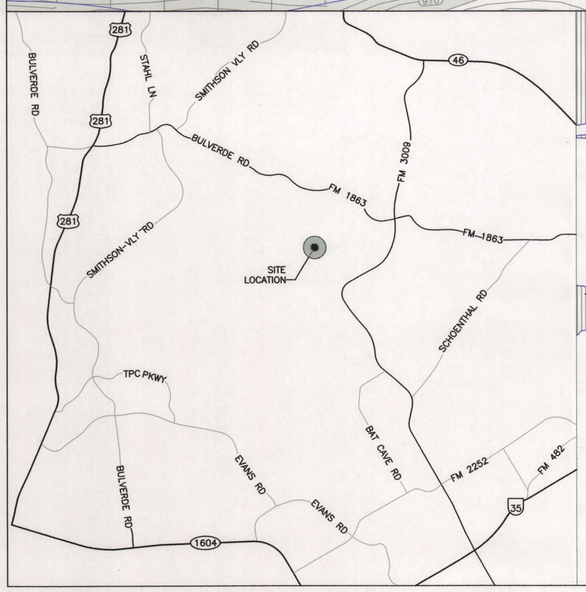
Qal

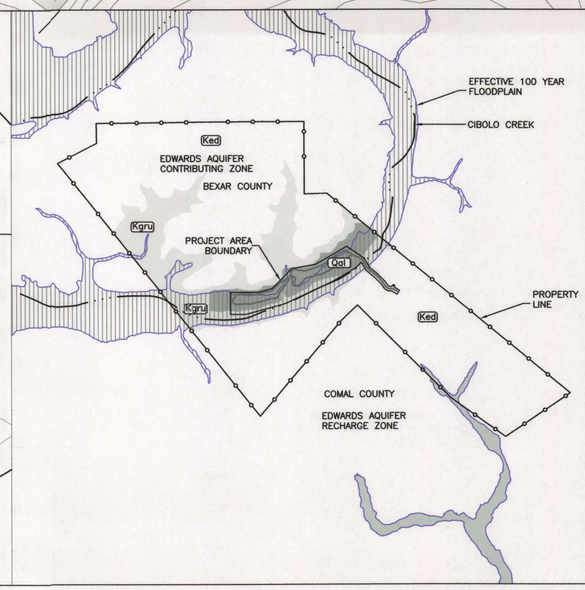
Kgru

Ked

EDWARDS AQUIFER RECHARGE ZONE

EFFECTIVE 100 YEAR FLOODPLAIN BOUNDARY





PROPERTY LINE
PROJECT AREA BOUNDARY
CONTOURS EXISTING GROUND
GEOLOGIC FEATURE
EFFECTIVE 100 YEAR FLOODPLAIN BOUNDARY
PROPOSED LOOP ROAD
CIBOLO CREEK CENTERLINE

GEOLOGY
Ked
Kgru
Qal

0 200 400
1" = 200'

MAP BASED ON TEXAS STATE PLANE, SOUTH CENTRAL ZONE, NAD 83, US SURVEY FOOT

TCEQ-R13
JAN 21 2011
SAN ANTONIO

STATE OF TEXAS
THOMAS O. MATHEWS
GEOLOGY
5321
LICENSED
PROFESSIONAL GEOSCIENTIST

Thomas O. Mathews PG 5321
1-19-11

TBPE REG. NO.: F-4524

Westward Environmental, Inc.
P.O. Box 2205
Boerne, Texas 78006
(830) 249-8284 Fax: (830) 249-0221

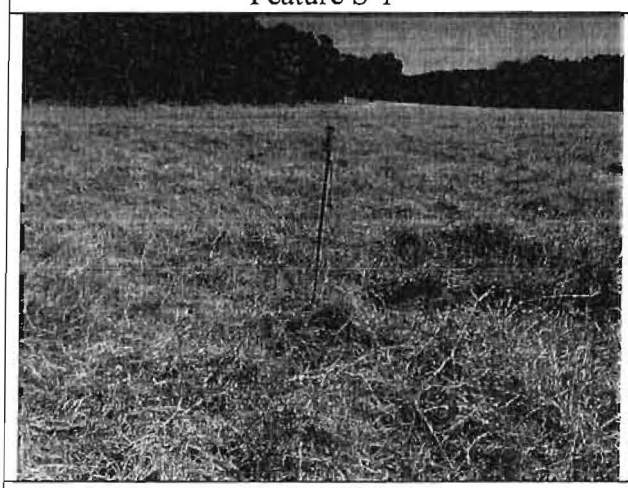
REV.	DESCRIPTION	BY	DATE

COMPANY NAME: NATURAL BRIDGE WILDLIFE RANCH	DRAWN BY: DK	CHECKED BY: TM
JOB NAME: WPAP/GA ROAD & CREEK CROSSING	SCALE: 1" = 200'	
LOCATION: NAT. BRIDGE CAVERNS RD., S.A., TX	DATE: 1/19/2011	
IMAGE: NONE	JOB NUMBER:	DRAWING NAME:
DESCRIPTION: GEOLOGY MAP	10631-003	GEOLOGY.dwg

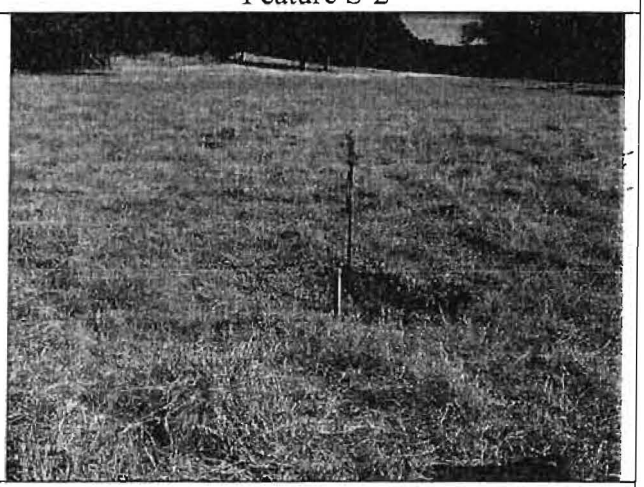
Photos

Feature S-1

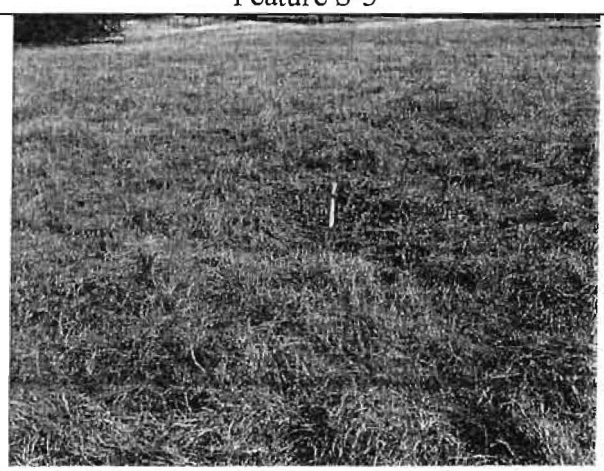
Feature S-2



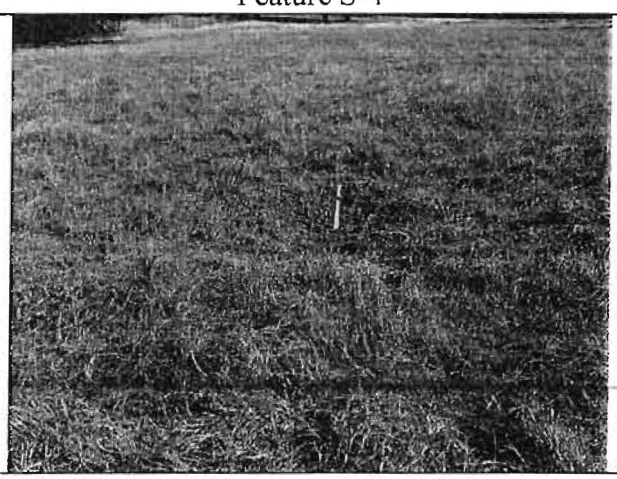
Feature S-3



Feature S-4

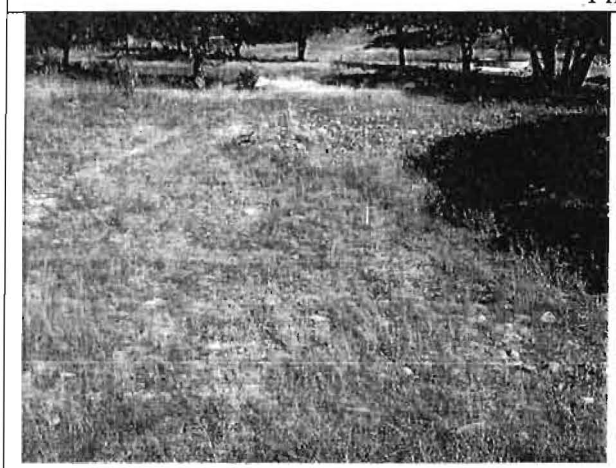


Feature S-5



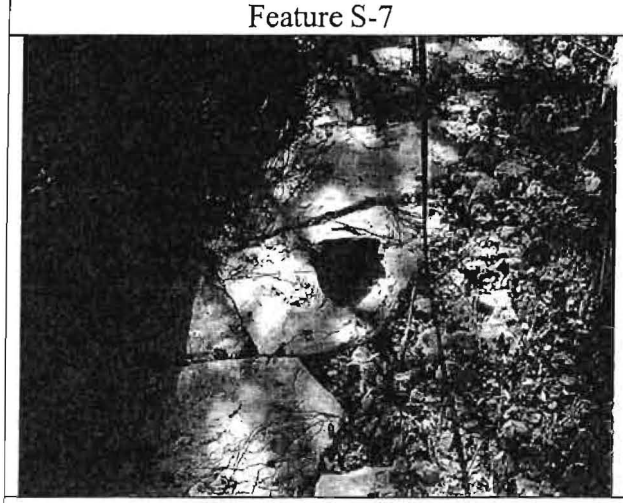
Feature S-6

Photos



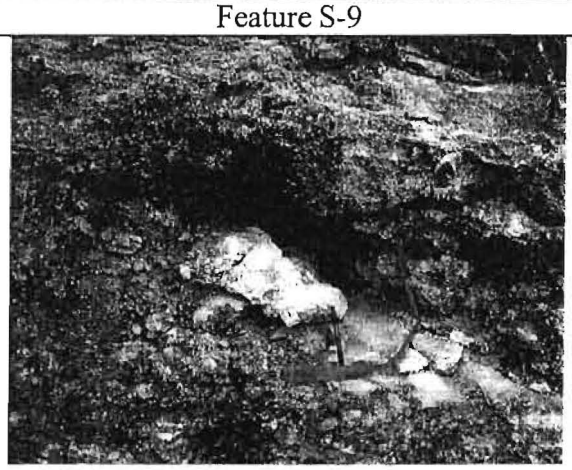
Feature S-7

Feature S-8

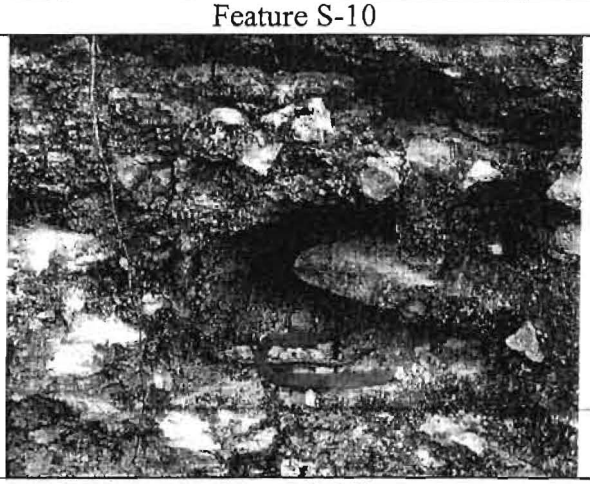


Feature S-9

Feature S-10



Feature S-11a



Feature S-11b

References

Geologic Atlas of Texas, San Antonio Sheet, Bureau of Economic Geology (1983)

Hydrogeologic Map of Bexar County, Bat Cave and Bulverde Sheets, San Antonio Water Systems (1995)

Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Outcrop, Comal County, Texas, USGS Report 94-4117 (1994)

FEMA Base Floodplain digital database

Texas Commission on Environmental Quality (TCEQ) Instructions to Geologists for Geologic Assessments (GA) on the Edwards Aquifer Recharge Zone (2004)

Comal County Engineer's Office, GIS Data, 2010 Aerial Imagery

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: Road and Creek Crossing

REGULATED ENTITY INFORMATION

1. The type of project is:
   ___ Residential: # of Lots: _____
   ___ Residential: # of Living Unit Equivalents: _____
   ___ Commercial
   ___ Industrial
   X Other: Private Wildlife Preserve

2. Total site acreage (size of property): Project area = 65 acres/Total Survey = 1,342 acres

3. Projected population: None

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 **(roads)**	237,356	÷ 43,560 =	5.45
Total Impervious Cover	233,356	÷ 43,560 =	5.45
Total Impervious Cover ÷ Total Acreage x 100 =			**0.4 %**

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

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

FOR ROAD PROJECTS ONLY
Complete questions 7-12 if this application is exclusively for a road project.

7. Type of project:
   ___ TXDOT road project.
   ___ County road or roads built to county specifications.
   ___ City thoroughfare or roads to be dedicated to a municipality.
   ___ Street or road providing access to private driveways.
   X **Private onsite road**

8. Type of pavement or road surface to be used:
   ___ Concrete
   ___ Asphaltic concrete pavement
   X Other: Chip Seal

9. Length of Right of Way (R.O.W.): N/A feet.
   Width of R.O.W.: N/A feet.
   L x W = N/A Ft² ÷ 43,560 Ft²/Acre = N/A acres.
   Paved private ranch road – No ROW

10. Length of pavement area: 10,277 feet.
    Width of pavement area: varies feet.
    L x W = N/A Ft² ÷ 43,560 Ft²/Acre = 5.45 acres.
    Pavement area 5.45 acres ÷ R.O.W. area N/A acres x 100 = N/A % impervious cover.

11. ___ A rest stop will be included in this project.
    X A rest stop will **not** be included in this project.

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

STORMWATER TO BE GENERATED BY THE PROPOSED PROJECT

13. X **ATTACHMENT B - Volume and Character of Stormwater.** A description of the volume and character (quality) of the stormwater runoff which is expected to occur from the proposed project is provided at the end of this form. The estimates of stormwater runoff quality and quantity should be based on area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

WASTEWATER TO BE GENERATED BY THE PROPOSED PROJECT

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

0 % Domestic	0	gallons/day
0 % Industrial	0	gallons/day
0 % Commingled	0	gallons/day
TOTAL	0	gallons/day

15. Wastewater will be disposed of by: **N/A**
    ___ **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:

- __ 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" = 200 '.

18. 100-year floodplain boundaries

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

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

The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s):
San Antonio River Authority (SARA) Sept. 29 2010 (Bexar County)
Comal County Engineers Office Sept. 2010 (Comal County)

19. X The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Show lots, recreation centers, buildings, roads, etc.

__ The layout of the development is shown with existing contours. Finished topographic contours will not differ from the existing topographic configuration and are not shown.

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

X There is 1 (#) well present on the project site and the location is 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 well is in use and comply with 16 TAC §76.
- __ There are no wells or test holes of any kind known to exist on the project site.

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

__ All **sensitive** geologic or manmade features identified in the Geologic Assessment are shown and labeled.

X No **sensitive** geologic or manmade features were identified in the Geologic Assessment.

__ **ATTACHMENT D - Exception to the Required Geologic Assessment**. An exception to the Geologic Assessment requirement is requested and explained at the end of this form.

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

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

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

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

26. X Surface waters (including wetlands).

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

ADMINISTRATIVE INFORMATION

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

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

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

Gary Nicholls, P.E.
Print Name of Customer/Engineer

Signature of Customer/Engineer

1-11-11
Date

Natural Bridge Wildlife Ranch, Inc.
Road and Creek Crossing

WPAP Attachment A

Factors Affecting Water Quality

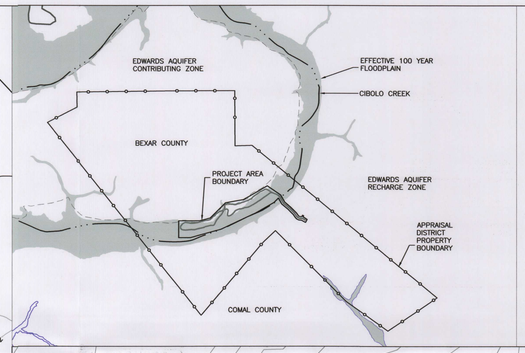
The major factor that could potentially affect water quality is sediment in stormwater runoff from the disturbed soils. More remote factors include fuels and lubricants from vehicles and equipment and trash/debris items.

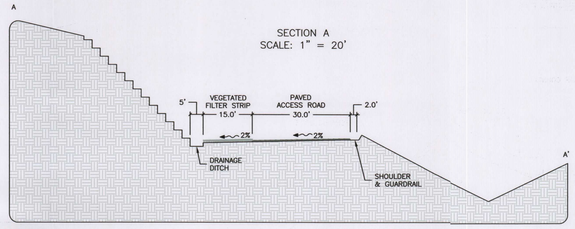
During construction, normal vehicle maintenance such as changing air filters, tires and batteries will be performed on site; major vehicle maintenance will occur offsite. A mobile fuel truck will be utilized onsite to fuel the mobile equipment. The mobile fuel truck will be stored off site at the construction company's office. Spills or leaks will be cleaned up in a timely manner and will be disposed of properly. Trash receptacles are already located onsite for use by employees and visitors.

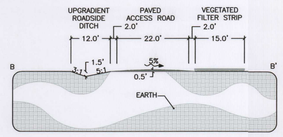
WPAP Attachment B

Volume and Character of Stormwater

During construction the stormwater from disturbed areas may carry an increased level of total suspended solids (TSS); however, downgradient rock berms will intercept and treat this stormwater flow. The rock berms will filter stormwater flows prior to leaving the active project areas and flow into the Cibolo Creek. In addition, 100's of feet of natural vegetated buffer downgradient will also treat stormwater flows. Due to the use of these BMPs during construction and the fact that a ranch road was already in use onsite, the character of stormwater runoff which is expected to occur from the proposed project will be essentially the same as prior to the proposed project. The runoff coefficient for the impervious areas is 0.90 and runoff coefficient for predevelopment is 0.03, per TCEQ guidance.







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. CALL WESTWARD ENVIRONMENTAL AT (830) 249-8284 SO A PROFESSIONAL GEOLOGIST MAY OBSERVE AND RATE THE FEATURE. 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 E&S 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 AND 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 EDWARDS 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;

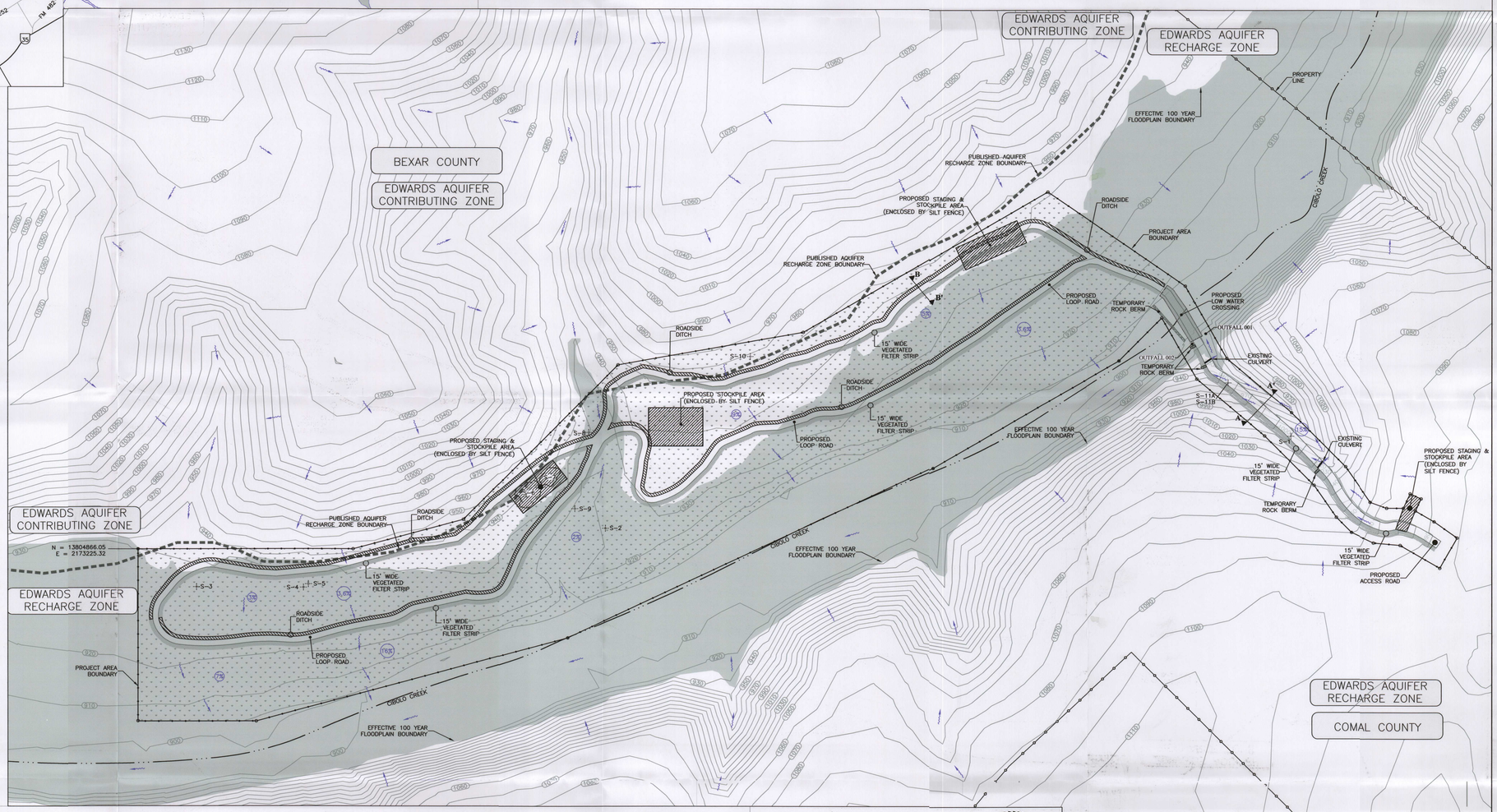
B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED OR A CHANGE WHICH WOULD SIGNIFICANTLY IMPACT THE ABILITY OF THE PLAN TO PREVENT POLLUTION OF THE EDWARDS AQUIFER;

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

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

SAN ANTONIO REGIONAL OFFICE
14250 JUDSON RD.
SAN ANTONIO, TEXAS 78233
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.

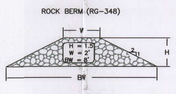


1. ROCK BERM

SHOULD BE SECURED WITH A WOVEN WIRE SHEATING, MAX. OPENING 1" AND MIN. WIRE DIAM. 20 GAUGE GALVANIZED. SECURE WITH SHOAT RINGS.

INSTALLATION:
AGGREGATE USED SHOULD BE COMPRISED OF OPEN GRADED 3-5" DIAMETER ROCK. BERM SHOULD BE PLACED PERPENDICULAR TO FLOW LINE. SIDE SLOPE MUST BE 2:1 OR FLATTER. WIRE SHEATING MUST BE SECURED WITH TIE WIRE SO THEY OVERLAP AT LEAST 2". BERM SHOULD BE BURIED IN A TRENCH APPROX. 4" DEEP.

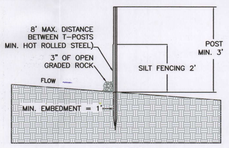
MAINTENANCE:
INSPECT BERMS EVERY 14 CALENDAR DAYS AND WITHIN 24 HRS OF THE CONCLUSION OF EACH RAINFALL
GREATER THAN OR EQUAL TO 0.5" OR INSPECT WEEKLY. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6". REPLACE WHEN ROCK BECOMES CLOGGED WITH SEDIMENT.

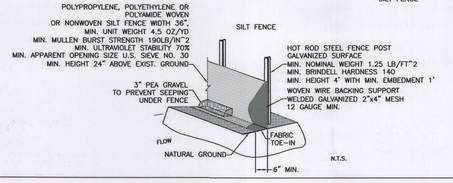


2. SILT FENCE

INSTALLATION:
FOLLOW CONTOUR WHEN INSTALLING
USING HOT ROLLED STEEL T-POSTS AT 8' INTERVALS. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6'.
A MINIMUM DEPTH OF 3" OPEN GRADED ROCK USED AS ANCHOR. AVOID SPACE BETWEEN FENCE AND GROUND. INSTALL PERPENDICULAR TO FLOW ON A SLIGHT ANGLE AND SO THAT THE MAX. DRAINAGE AREA IS ¼ ACRE/100' OF FENCE.
A 3" INTERVAL IS REQUIRED WHERE ENDS OF FABRIC MEET.

MAINTENANCE:
INSPECT EVERY 14 CALENDAR DAYS AND WITHIN 24 HRS OF THE CONCLUSION OF EACH RAINFALL GREATER THAN OR EQUAL TO 0.5" OR INSPECT WEEKLY. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6". REPLACE TORN FABRIC OR FENCING.





PROPERTY LINE
PROJECT AREA BOUNDARY
CONTOURS FINISHED GROUND
CONTOURS EXISTING GROUND
GEOLOGIC FEATURE
EDWARDS AQUIFER ZONE BOUNDARY
EXISTING VEGETATION
PROPOSED LOOP ROAD
CIBOLO CREEK CENTERLINE
TEMPORARY ROCK BERM
VEGETATED FILTER STRIP
ROADSIDE DITCH
PROPOSED STAGING AND STOCKPILE AREAS (ENCLOSED BY SILT FENCE)
EFFECTIVE 100 YEAR FLOODPLAIN

0 200 400
1" = 200'

MAP BASED ON TEXAS STATE PLANE, SOUTH CENTRAL ZONE, NAD 83, US SURVEY FOOT

STATE OF TEXAS
GARY DANIEL NICHOLLS
82522
LICENSED
PROFESSIONAL ENGINEER

TBPE REG. NO.: F-4524
Westward Environmental, Inc.
P.O. Box 2205
Boerne, Texas 78006
(830) 249-8284 Fax: (830) 249-0221

REV.	DESCRIPTION	BY	DATE

COMPANY NAME: NATURAL BRIDGE WILDLIFE RANCH	DRAWN BY: DK	CHECKED BY: GDN
JOB NAME: WPAP/GA ROAD & CREEK CROSSING	SCALE: 1" = 200'	
LOCATION: NAT. BRIDGE CAVERNS RD., S.A., TX	DATE: 01/20/2011	
IMAGE: NONE	JOB NUMBER:	DRAWING NAME:
DESCRIPTION: WPAP SITE PLAN & DRAINAGE MAP	10631-03	631-03-SM.dwg

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: Road and Creek Crossing

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

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

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

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

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

4. X **ATTACHMENT B - Potential Sources of Contamination.** Describe in an attachment at the end of this form any other activities or processes which may be a potential source of contamination.
__ There are no other potential sources of contamination.

SEQUENCE OF CONSTRUCTION

5. X **ATTACHMENT C - Sequence of Major Activities.** A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is provided at the end of this form. For each activity described, an estimate of the total area of the site to be disturbed by each activity is given.

6. X Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: 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. X **ATTACHMENT D - Temporary Best Management Practices and Measures.** A description of the TBMPs and measures that will be used during and after construction are provided at the end of this form. For each activity listed in the sequence of construction, include appropriate control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

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

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

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

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

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

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

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

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

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

10. X **ATTACHMENT G - Drainage Area Map**. A drainage area map is provided at the end of this form to support the following requirements. **(See attached WPAP Site Plan)**

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

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

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

X There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area. **(A combination of erosion and sediment controls will be used with existing natural vegetation. A sediment basin and or sediment traps will not be used)**

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

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

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

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

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

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

SOIL STABILIZATION PRACTICES

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

17. X **ATTACHMENT J - Schedule of Interim and Permanent Soil Stabilization Practices.** A schedule of the interim and permanent soil stabilization practices for the site is attached at the end of this form.

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

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

ADMINISTRATIVE INFORMATION

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

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

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

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

Gary Nicholls, P.E.
Print Name of Customer/Engineer

Signature of Customer/Engineer

1-11-11
Date

Temporary Stormwater Section Attachment A

As outlined in the Technical Guidance Manual (RG-348) the following Spill Response Actions will be followed. Please reference to the onsite stormwater plan for responsible personnel.

Spill Response Actions

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 a spill must be reported to the TCEQ.

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

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

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

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

General Measures

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

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

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

(4) Train employees in spill prevention and cleanup.

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

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

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

Spill Response Actions (continued)

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

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

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

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

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

Cleanup

(1) Clean up leaks and spills promptly.

(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.

Spill Response Actions (continued)

Minor Spills

(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 promptly:

(1) Contain spread of the spill.

(2) Notify the project foreman immediately.

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

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

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

Significant/Hazardous Spills
For significant or hazardous spills that are in reportable quantities:

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

Spill Response Actions (continued)

Significant/Hazardous Spills (continued)

(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.

In the event of a reportable spill, the following Emergency Response Agencies can be contacted for assistance. Always inform your supervisor of a reportable spill immediately. Follow company policy when responding to an emergency.

State Emergency Response Commission	(512) 463-7727
National Response Center	(800) 424-8802
US EPA Region 6, Dallas, 24-hr Number	(866) 372-7745
National Weather Service	(281) 337-5074
TCEQ 24-hr	(800) 832-8224
TCEQ Region 13 San Antonio	(210) 490-3096

Vehicle and Equipment Maintenance

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

(2) Regularly inspect on-site 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 on-site.

Spill Response Actions (continued)

Vehicle and Equipment Maintenance (continued)

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

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

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

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

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

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

Major vehicle and equipment maintenance will occur off-site.

Vehicle and Equipment Fueling

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

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

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

Vehicle fueling will occur with a mobile fuel truck.

Natural Bridge Wildlife Ranch, Inc.
Road and Creek Crossing

DETAILED TELEPHONE SPILL REPORT FORM

Date of Incident: _____

Location of Incident: _____

Description of material spilled: _____

Quantity of material spilled: _____

Cause of spill: _____

Authorities notified: _____

Remediation/clean-up action: _____

_____

_____

_____

Corrective measures taken for prevention of reoccurrence: _____

_____

_____

_____

Signature: _____

Notes: _____

_____

_____

_____

Emergency Number for the National Response Center 1-800-424-8802

Natural Bridge Wildlife Ranch, Inc.
Road and Creek Crossing

Temporary Stormwater Section Attachment B

Potential Sources of Contamination

Potential sources of contamination in the project area are disturbed soils, fuels and lubricants from vehicles and equipment, and trash/debris items.

Temporary Stormwater Section Attachment C

Sequence of Major Activities

Construction will first begin on the Comal County side with the placement of rock berms along the natural drainage along the existing access road. Equipment will be moved to the site and staged at the specified locations shown on the WPAP Site Plan. Milling and excavation of the cut hillside will begin with the material to be stockpiled and used as fill on the Comal and Bexar County sides. Stockpile areas will have silt fencing surrounding the material in order to mitigate stormwater runoff and erosion. The hillside will be cut to create a 52 foot wide area for an access road, filter strip and drainage. Of the 52 feet, 2 feet will be utilized for a shoulder and/or guardrail, 30 feet will be paved with asphalt or chip seal and 15 feet downgradient of the road will be the engineered filter strip. A drainage ditch 5 feet wide in bedrock and downgradient of the filter strip will allow the treated runoff to flow into the Cibolo Creek. The proposed access road will have 8 inches of fall from east to west directing the impervious cover runoff through the filter strip and into the drainage ditch. Two existing culverts will be utilized on the western side of the road to direct stormwater underneath the existing road to the natural draw east of the road. Temporary rock berms will be located in front of the culverts in order to filter the stormwater prior to entering the culvert and leaving the site. The length for this portion of the road is approximately 1,269 feet (0.24 miles) with the slope at approximately 15%. (Work may take up to 4 weeks to complete.)

Topsoil from the Comal County side will be used to dress the 15 foot wide engineered vegetated filter strips. Grass sod or native grass seed will be applied and watered as necessary to promote growth during the stabilization period. (It is recommended that grass sod be used due to a 15% slope.) Temporary rock berms will be placed in the drainage ditch to help filter stormwater runoff and to slow upgradient flows.

Temporary Stormwater Section Attachment C

Sequence of Major Activities (continued)

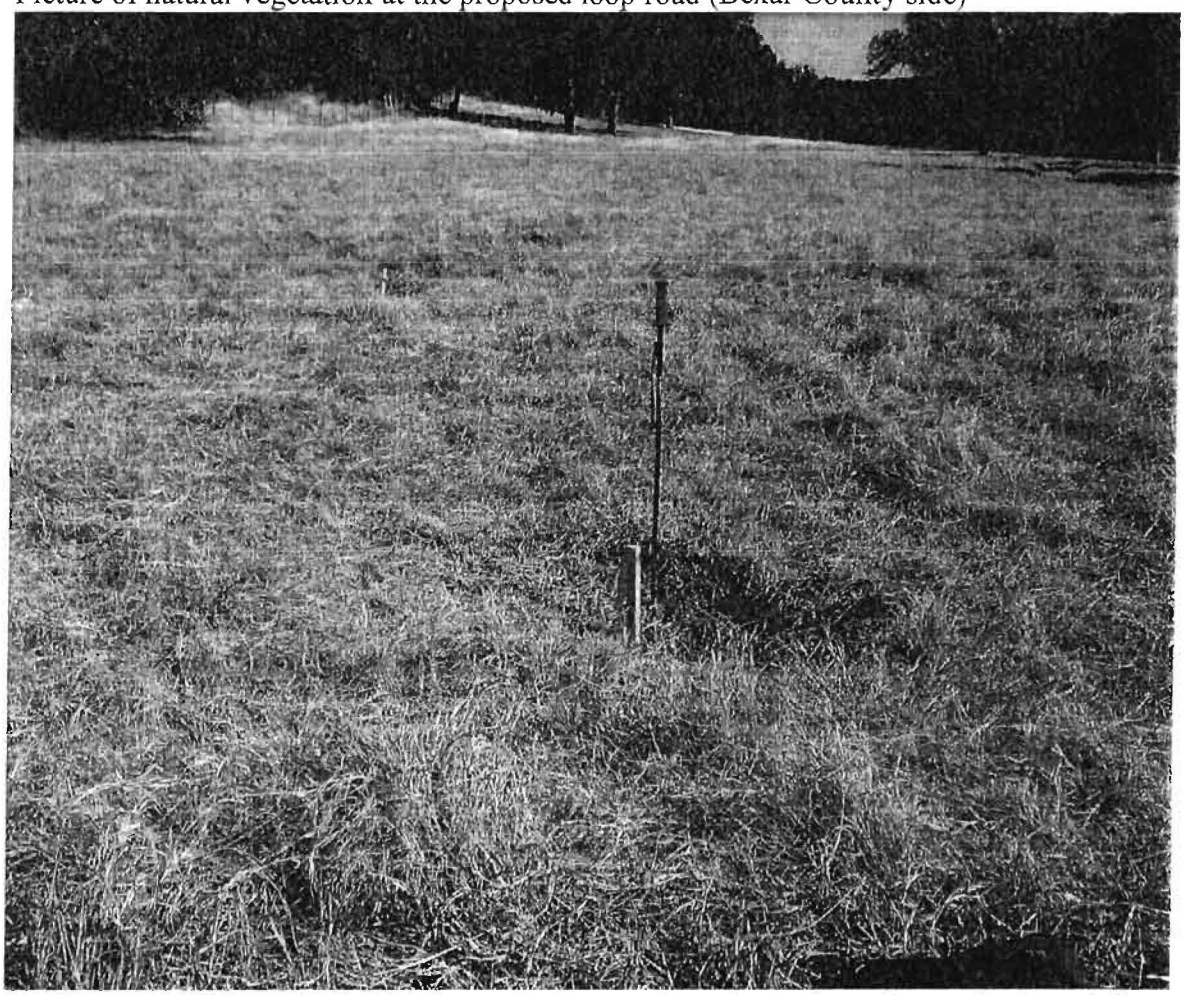
While milling and grading on the Comal County side continues, construction activities will begin on the Bexar County side for the loop road. The proposed loop road follows an existing ranch road for part of the total 8,823 feet (1.67 mile) loop; the rest of the loop is comprised of grassland with an average slope of 9%. Land disturbance will be limited to the road and ditch footprint leaving hundreds of feet of natural grassland to mitigate stormwater runoff (see next page for picture of natural vegetation). Excavation will begin to remove the topsoil and subsurface material for the footprint of the road with a roadside ditch on the upgradient side. The roadside ditch will mitigate upgradient flows from crossing the road. The approximately 6 inches of material removed will be stockpiled in designated areas (see attached WPAP Site Plan) outside of the 100-year flood plain and utilized offsite. Stockpile areas will have silt fencing surrounding the material in order to mitigate stormwater runoff and erosion. The topsoil which was removed and stockpiled will be applied as needed on both the Bexar and Comal County sides for re-vegetation. Base material from the millings on the Comal County side will be used for the foundation for the loop road on the Bexar County side. Culverts may be used along the loop road to allow water to pass from the ditch underneath the road to the natural vegetation. Asphalt or chip seal will be applied to the base and any disturbed areas outside of the paved road will be re-vegetated. The proposed loop road will encompass a 26 foot wide base pad with approximately 22 feet being paved. A roadside ditch on the upgradient side of the road will be cut 18 inches deep with a 5:1 and 3:1 side slopes; this ditch will also be re-vegetated with native seed. Some culverts may be used to direct water from the roadside ditch under the loop road which will discharge through 100's of feet of natural vegetation. The loop road will have a 2% slope draining into the downgradient vegetated filter strip. The existing downgradient vegetation will be utilized as the 15 foot wide engineered vegetated filter strips.

Natural Bridge Wildlife Ranch, Inc.
Road and Creek Crossing

Temporary Stormwater Section Attachment C

Sequence of Major Activities (continued)

Picture of natural vegetation at the proposed loop road (Bexar County side)



Landowners will limit land disturbance in the area in order to keep the aesthetics of the site for the wildlife ranch.

Temporary Stormwater Section Attachment C

Sequence of Major Activities (continued)

The final stage of construction for this project is the creek crossing. The proposed crossing location has a bedrock base with approximately 4 feet of gravel above grade from floods and is approximately 185 feet (0.03 mile) long. The bridge is currently under design and the exact length is yet to be determined. The proposed crossing will connect the road from the Comal County side to the road on the Bexar County side. Due to the crossing being in the 100-year flood plain and directly in the flood way of Cibolo Creek a downgradient temporary rock berm is the only practical BMP for this project. Before work begins on the crossing, contractors will review the 10 day forecast for the area and determine if work needs to be postponed due to forecasted rain events. The proposed bridge design will be a box culvert design with a 28 foot wide deck. Casting of the box culverts will be done on grade with tie-ins to the existing bedrock. Steel reinforced concrete will be utilized.

Natural Bridge Wildlife Ranch, Inc.
Road and Creek Crossing

Temporary Stormwater Section Attachment D

Temporary Best Management Practices (TBMPs) and Measures

7a) Pollution of surface water, groundwater or stormwater that originates upgradient from the access road on the Comal County side will be mitigated by the use of downgradient rock berms placed in a drainage ditch. The drainage ditch will direct upgradient stormwater away from the access road and into Cibolo Creek. Silt fencing will be utilized around material stockpiles.

Pollution of surface water, groundwater or stormwater that originates upgradient from the loop road on the Bexar County side will be mitigated by the use of existing natural vegetation and the upgradient roadside ditch. Silt fencing will be utilized around material stockpiles.

Pollution of surface water, groundwater or stormwater that originates upgradient from the creek crossing will be mitigated by the use of a rock berm.

7b) Pollution of surface water, groundwater or stormwater that originates on-site or flows off site on the Comal County side will be mitigated by the use of downgradient rock berms placed in a drainage ditch. The drainage ditch will direct stormwater away from the access road and into Cibolo Creek. Silt fencing will be utilized around material stockpiles.

Pollution of surface water, groundwater or stormwater that originates on-site or flows off site on the Bexar County side will be mitigated by the use of 100's of feet of natural vegetation downgradient of the proposed loop road which will filter runoff before entering Cibolo Creek. Silt fencing will be utilized around material stockpiles.

Pollution of surface water, groundwater or stormwater that originates on-site or flows off site from the creek crossing will be mitigated by the use of a downgradient rock berm.

7c) The prevention of pollutants from entering surface streams, sensitive features or the aquifer on the Comal County side will be mitigated by rock berms and silt fencing as shown on the attached WPAP Site Plan. No sensitive features exist on site.

The prevention of pollutants from entering surface streams, sensitive features or the aquifer on the Bexar County side will be mitigated by a natural vegetated buffer which exists along the downgradient side of the proposed loop road and silt fencing. No sensitive features exist on site.

The prevention of pollutants from entering surface streams, sensitive features or the aquifer from the creek crossing will be mitigated by the use of a downgradient rock berm.

Temporary Stormwater Section Attachment D

Temporary Best Management Practices (TBMPs) and Measures (continued)

7d) No sensitive features were identified in the 65 acre project area Geologic Assessment. Rock berms, silt fencing, ditches and natural vegetated buffers will be used as pollution prevention measures.

Any possibly sensitive geologic feature discovered during the milling of the hillside or building of the road will be handled in the following manner. Sediment that can be easily removed from the area adjacent to the feature without disturbing the feature will be removed. Then a rock berm will be placed around the feature to control and filter any potential flows into the feature. Work around the feature and upgradient of the feature will stop until a Professional Geologist is called to the site to observe and rate the feature. If the feature is determined to be sensitive in accordance with TAC 213 rules, the TCEQ will be notified and an appropriate method for addressing the feature will be formulated and submitted for TCEQ approval. Work will not resume in the area of the feature until the TCEQ approved method for addressing the feature has been carried out.

Temporary Stormwater Section Attachment F

Structural Practices

Temporary best management practices proposed for the proposed road and crossing include rock berms and silt fencing. The rock berms and silt fencing are used to limit runoff discharge of sediment. Natural vegetative buffers will be left in place in areas not disturbed and will treat runoff from upgradient disturbed areas. Disturbance will be limited to the footprint of the road and ditch.

Temporary Stormwater Section Attachment I

Inspection and Maintenance for BMPs

The rock berms and silt fencing should be inspected weekly or after rainfall greater than 0.5". Written documentation of these inspections should be kept during the course of construction at the project site (see following example Inspection Form.) If a rock berm is no longer able to properly filter the sediment from the stormwater due to contamination from silt, it should be replaced.

When silt accumulates in excess of 6" at the silt fence it will be removed and placed in a protected area onsite to restore the effectiveness of the silt fence. If the silt fence is no longer able to properly filter sediment due to contamination from silt, torn fencing, collapsed fencing or any other damage to the fence it will be repaired or replaced.

During construction, stormwater discharges will be authorized under the TPDES General Permit No. TXR150000 for construction activities. Requirements of the general permit include maintaining a Stormwater Pollution Prevention Plan (SWP3) and performing inspections of the best management practices utilized to control stormwater pollution.

		Rock Berm			Silt Fence			
Date	Inspector Signature	>6" silt retained	Rock berm clogged	Comments	>6" silt retained	water flowing under silt fence	fencing material torn or clogged	Additional Comments

42

If the answer to any of the above questions is "yes", perform maintenance/repair/replacement as described below or in accordance with TCEQ Technical Guidance on BMPs.

Rock Berm
- >6" of silt retained - remove silt, place in protected area
- rock berm clogged - the rock berm should be replaced when accumulated silt, washout or damage to berm occurs

Silt Fence
- >6" of silt retained behind fence - remove silt, place in protected area
- water flow under silt fence - bury bottom of fencing material on upgradient side. If problem continues to occur, place clean rock on both side of the fence in affected areas.
- silt fencing torn or clogged - replace fencing material as needed if torn or water flow is stopped.

Natural Bridge Wildlife Ranch, Inc.
Road and Creek Crossing

Temporary Stormwater Section Attachment J

Schedule of Soil Stabilization Practices

Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Where the initiation of stabilization measures by the 14th day after construction activity has 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 the site. In areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

Examples of soil stabilization practices may include establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, preservation of mature vegetation, and other appropriate measures. Soil stabilization practices to be implemented at this site include establishment of permanent vegetation by hydro-seeding native grasses, placement of sod, and/or preservation of existing vegetation.

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: Road and Creek Crossing

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

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

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

   X The TCEQ Technical Guidance Manual (TGM) was used to design permanent 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. X Owners must insure that permanent BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the appropriate regional office within 30 days of site completion.

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

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

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

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

5. NA 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.**

X 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.

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

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

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

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

X The permanent sealing of or diversion of flow from a naturally-occurring "sensitive" 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.

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

Responsibility for maintenance of permanent BMPs and measures after construction is complete.

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

15. X 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:

Gary Nicholls, P.E.
Print Name of Customer/Engineer

Signature of Customer/Engineer

1-11-11
Date

Permanent Stormwater Section Attachment B

BMPs for Upgradient Stormwater

Permanent stormwater controls are those that are to remain in place after construction has been completed. Pollution of surface water, groundwater or stormwater that originates upgradient from the access road on the Comal County side will be mitigated by the use of the drainage ditch. The drainage ditch will direct upgradient stormwater away from the access road and into Cibolo Creek. An engineered vegetated filter strip will mitigate stormwater runoff from the road.

Pollution of surface water, groundwater or stormwater that originates upgradient from the loop road on the Bexar County side will be mitigated by the use of existing natural vegetation and the upgradient roadside ditch. An engineered vegetated filter strip will mitigate stormwater runoff from the road.

Permanent Stormwater Section Attachment C

BMPs for On-site Stormwater

Pollution of surface water, groundwater or stormwater that originates on-site or flows off site including pollution caused by contaminated stormwater from the site will be mitigated by the use of engineered vegetated filter strips.

On-site stormwater generated from the access road will be mitigated by engineered vegetated filter strips which will be located as shown on the WPAP Site Plan. On-site stormwater that originates from the access road on the Comal County side will be treated by the filter strips and released down a drainage ditch which empties at an outfall on the Cibolo Creek.

On-site stormwater generated from the loop road will be mitigated by engineered vegetated filter strips which will be located as shown on the WPAP Site Plan. On-site stormwater that originates from the loop road on the Bexar County side will be treated by the filter strips and the 100's of feet of natural vegetation until the sheet flow reaches the Cibolo Creek.

The engineered vegetated filter strip on the Comal County side will treat 0.87 acres of impervious cover for the access road. The engineered vegetated filter strips on the Bexar County side will treat 4.46 acres of impervious cover for the loop road.

Water quality protection for the Edwards Aquifer, as it relates to permanent BMPs, is defined in 30 TAC 213.5 (b)(4)(D)(ii)(I): *"... These practices and measures must be designed, constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids from the site caused by the regulated activity is removed."* Control of runoff from the crossing is not practical or required. The crossing may be up to 185 feet long and 28 feet wide which equals 0.12

Permanent Stormwater Section Attachment C

BMPs for On-site Stormwater (continued)

acres of impervious cover. Per the TGM the engineered vegetated filter strips have a control efficiency of 85%; 80% control of the entire impervious cover of 5.45 acres is required.

0.80 x 5.45ac = 4.36ac

Engineered vegetation filters provide 85% control; therefore the number of impervious cover acres requiring control (IC_R) is:

$$IC_R = \frac{4.36ac}{0.85}$$

$IC_R = 5.13ac$

5.45ac – 5.13ac = 0.32ac

The 0.32 acres does not require control. The bridge crossing has only 0.12 acres of impervious cover, therefore sufficient control is provided to achieve 80% total control.

Permanent Stormwater Section Attachment D

BMPs for Surface Streams

The prevention of pollutants from entering surface streams, sensitive features or the aquifer will be mitigated by the engineered vegetated filter strips as shown on the attached WPAP Site Plan and Construction Drawings. Water that originates on-site in the developed portions of the site will be treated in the engineered vegetated filter strips. Upgradient stormwater will be directed around developed portions of the site. No sensitive features were identified during the geologic assessment inside the 65 acre project area. Any discharges during construction activities will be managed in accordance with the TPDES TXR150000 permit.

Permanent Stormwater Section Attachment G

Inspection, Maintenance, Repair and Retrofit Plan

Vegetative Filter Strips

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

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

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

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

- ***Debris and Litter Removal.*** Trash tends to accumulate in vegetated areas, particularly along highways. Any filter strip structures (i.e. level spreaders) should be kept free of obstructions to reduce floatables being flushed downstream, and for aesthetic reasons. The need for this practice is determined through periodic inspection, but should be performed no less than 4 times per year.

Inspection, Maintenance, Repair and Retrofit Plan Continued

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

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

Natural Bridge Wildlife Ranch, Inc.
Road and Creek Crossing

Permanent Stormwater Section Attachment G

Inspection, Maintenance, Repair and Retrofit Plan (continued)

A logbook should be kept to document the date and results of inspections and to record maintenance and repairs made to the permanent BMP. These records should be located onsite. (An example form is attached)

- Access to the site will be authorized at gate at the entrance of the park located at 26515 Natural Bridge Caverns Rd. San Antonio, Bexar County, Texas 78266. For questions please call 830-438-7400.

- Mr. Shawn Soechting – of Natural Bridge Wildlife Ranch, Inc. will be responsible for maintaining the BMP(s) on the Natural Bridge Wildlife Ranch. Mr. Soechting can be reached at (Office 830-438-7400).

Name and signature of responsible party for maintenance of BMP(s) .

Print Name: Shawn Soechting – Natural Bridge Wildlife Ranch, Inc.

Signature: _____ Date: 1/7/11

Name and Signature of Engineer

Print Name: Gary Nicholls, P.E. – Westward Environmental, Inc.

Signature: _____ Date: 1-11-11

		Permanent Vegetation			
Date	Inspector Signature	Trash	Vegetative Cover/Erosion	Water Vegetation	Additional Comments

If the answer to any of the above questions is "yes", perform maintenance/repair/replacement as described below or in accordance with TCEQ Technical Guidance on BMPs.

Permanent Vegetation

* Remove trash if present
* Reseeed eroded areas to reestablish vegetation
* Water as needed

Natural Bridge Wildlife Ranch, Inc.
Road and Creek Crossing

Permanent Stormwater Section Attachment I

Measures for Minimizing Surface Stream Contamination

Surface stream contamination will be minimized due to the engineered filter strips and the downgradient natural vegetation which will treat runoff from the proposed road. These measures will minimize stream contamination and does not change the way water enters the Cibolo Creek from existing site conditions.

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

I **Shawn Soechting**,
Print Name

President,
Title - Owner/President/Other

of **Natural Bridge Wildlife Ranch, Inc.**,
Corporation/Partnership/Entity Name

have authorized **Gary Nicholls, P.E.**
Print Name of Engineer

of **Westward Environmental, 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.

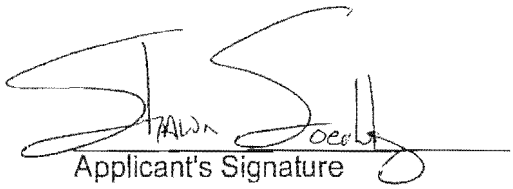
2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

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

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

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

SIGNATURE PAGE:



Applicant's Signature

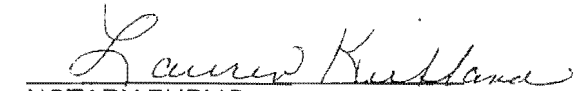
12/14/10
Date

THE STATE OF Texas §

County of Comal §

BEFORE ME, the undersigned authority, on this day personally appeared Shawn Jaechtung 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 14 day of Dec., 2010



NOTARY PUBLIC

LAUREN KIRKLAND
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: _____

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program
Application Fee Form

NAME OF PROPOSED REGULATED ENTITY: Road and Creek Crossing
REGULATED ENTITY LOCATION: 26515 Natural Bridge Caverns Rd. SA, Texas 78266
NAME OF CUSTOMER: Natural Bridge Wildlife Ranch, Inc.
CONTACT PERSON: Shawn Soechting PHONE: 830-438-7400
(Please Print)

Customer Reference Number (if issued): CN 600660559 (nine digits)

Regulated Entity Reference Number (if issued): RN NEW (nine digits)

Austin Regional Office (3373) ☐ Hays ☐ Travis ☐ Williamson

San Antonio Regional Office (3362) ☒ Bexar ☒ Comal ☐ Medina ☐ Kinney ☐ Uvalde

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

☐ **Austin Regional Office**

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

☒ **San Antonio Regional Office**

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

Site Location (Check All That Apply): ☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	Size	Fee Due
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	100 + (1,342) Acres	$ 10,000
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Shawn Soechting
Signature

12/14/10
Date

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

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

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

Water Pollution Abatement Plans and Modifications
Contributing Zone Plans and Modifications

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

Organized Sewage Collection Systems and Modifications

PROJECT	COST PER LINEAR FOOT	MINIMUM FEE MAXIMUM FEE
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

PROJECT	COST PER TANK OR PIPING SYSTEM	MINIMUM FEE MAXIMUM FEE
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

PROJECT	FEE
Exception Request	$500

Extension of Time Requests

PROJECT	FEE
Extension of Time Request	$150

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NATURAL BRIDGE WILDLIFE RANCH, INC
26515 NATURAL BRIDGE CAVERNS RD 830-438-7400
SAN ANTONIO, TX 78266

1/7/2011

PAY TO THE ORDER OF TCEQ $**10,000.00

Ten Thousand and 00/100********** DOLLARS

TCEQ

MEMO wpap fee

AUTHORIZED SIGNATURE

⑈009649⑈ ⑆114909220⑆ ⑈04889 5⑈

Details on Back.

Security Features Included

TCEQ

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 **(EAPP) WPAP**

2. Attachments **Describe Any Attachments:** *(ex. Title V Application, Waste Transporter Application, etc.)*

☒Yes ☐No Water Pollution Abatement Plan Application

3. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	4. Regulated Entity Reference Number *(if issued)*
CN 600660559		RN NEW

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:*
Natural Bridge Wildlife Ranch, Inc.		

10. Mailing Address: 26515 Natural Bridge Caverns, Rd.

City	San Antonio	State	TX	ZIP	78266	ZIP + 4	2671

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)*
(830) 438-7400		(830) 438-3494

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)*
	17422891436		

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)*

Road and Creek Crossing

24. Street Address of the Regulated Entity: *(No P.O. Boxes)*	26515 Natural Bridge Caverns Rd.							
	City	San Antonio	State	TX	ZIP	78266	ZIP + 4	2671
25. Mailing Address:	26515 Natural Bridge Caverns Rd.							
	City	San Antonio	State	TX	ZIP	78266	ZIP + 4	2671

26. E-Mail Address:			
27. Telephone Number	28. Extension or Code	29. Fax Number *(if applicable)*	
(830) 438-7400		(830) 438-3494	
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)
8399		813312	
34. What is the Primary Business of this entity? *(Please do not repeat the SIC or NAICS description.)*			
Wildlife Ranch			

Questions 34 – 37 address geographic location. Please refer to the instructions for applicability.

35. Description to Physical Location:	Approximately 7 miles northwest of I-35 and FM 3009.

36. Nearest City	County	State	Nearest ZIP Code
San Antonio	Bexar/Comal	TX	78266

37. Latitude (N) In Decimal:	29.708333333		38. Longitude (W) In Decimal:	98.342666667	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	42	30	98	20	34

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: Unknown

SECTION IV: Preparer Information

40. Name:	Matt Bellos	41. Title:	Environmental Specialist

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(830) 249-8284		(830) 249-0221	mbellos@westwardenv.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:	Natural Bridge Wildlife Ranch, Inc.	Job Title:	President
Name *(In Print)* :	Shawn Soechting	Phone:	(830) 438-7400
Signature:	Shawn Soechting	Date:	12 | 14 | 10

COYLE
ENGINEERING, INC.
512 EAST BLANCO, SUITE 100 / BOERNE, TEXAS 78006 / PH: (830)249-5533 / FAX: (830)249-5534

April 12, 2004

Mr. John Mauser
Texas Commission on Environmental Quality
14250 Judson Road
San Antonio, Texas 78233-4480

Reference: Water Pollution Abatement Plan, Natural Bridge Caverns/Natural Bridge Wildlife Ranch
EAPP #2142.01
Subject: Responses to Comments for Administrative Completeness

Enclosed is a revised overall site plan showing all properties that are affected by the referenced project. Per your comments, the plan shows A) 100 acre Caverns property, B) 127 acre Wildlife Ranch property, C) Geologic features (cave entrances), and D) all water wells.

Per our latest conversation, we also are providing an update to the existing and proposed impervious cover on the parcels affected by the project:

Property		*Total Acreage*	*Existing IC*	*Proposed IC*
Natural Bridge Caverns (Wuest Legacy Partners)		100 acres	7.11	0.66
Natural Bridge Wildlife Ranch, Inc.		127 acres	7.90	0.46
Wuest Millennium Partners		200 acres	0.05	0.03
	TOTAL	427 Acres	15.06 Acres	1.15 Acres

So, the total existing impervious cover is 15.06/427 = 3.5%.
The total proposed impervious cover is 16.21/427 = 3.8%, for an increase of 0.3% impervious cover.

The Wildlife Ranch impervious cover contains the areas in and around the visitors center, and a parking lot and 2 ¼ mile road network, most of which was not flown as part of the aerial mapping used for this project. We used the scaled aerial photography to calculate the impervious cover for the 127-acre tract. The 150 Acre Wuest Millennium Partners tract shown on the drawing is not affected by the project.

Responses to comments for the technical review are forthcoming.

Sincerely,

Robert D. Leonhard, P.E.
Vice President

Water Pollution Abatement Plan

Entrance Road Widening and Parking Additions

prepared for:

Wuest Legacy Partners, Ltd.
Natural Bridge Wildlife Ranch, Inc.

Natural Bridge Caverns, Texas 78266

March 2004

prepared by:

COYLE
ENGINEERING, INC.

31320 IH 10 WEST, SUITE B / BOERNE, TX 78006
PHONE: (830) 755-8268 / FAX: (830) 755-8267

COPY

Water Pollution Abatement Plan

Entrance Road Widening and Parking Additions

prepared for:

Wuest Legacy Partners, Ltd.
Natural Bridge Wildlife Ranch, Inc.

Natural Bridge Caverns, Texas 78266

March 2004

prepared by:

COYLE
ENGINEERING, INC.
31320 IH 10 WEST, SUITE 8 / BOERNE, TX 78006
PHONE: (830) 755-8268 / FAX: (830) 755-8267

Table of Contents

Water Pollution Abatement Plan

Entrance Road Widening and Parking Additions

for

Wuest Legacy Partners, Ltd.
Natural Bridge Wildlife Ranch, Inc.
Natural Bridge Caverns, Texas 78266

March 2004

prepared by

COYLE
ENGINEERING, INC.
31320 IH 10 WEST, SUITE B / BOERNE, TX 78006
PHONE: (830) 755-8268 / FAX: (830) 755-8267

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: Wuest Legacy Partners, Ltd./Natural Bridge Wildlife Ranch
COUNTY: Comal STREAM BASIN: Bear Creek/ Dry Comal Creek

EDWARDS AQUIFER: x RECHARGE ZONE
__ TRANSITION ZONE

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

CUSTOMER INFORMATION

1. Customer (Applicant): *

Contact Person: Brad Wuest
Entity: Wust Legacy Partners, Ltd.
Mailing Address: 26245 Natural Bridge Caverns Rd
City, State: San Antonio, Texas Zip: 78266
Telephone: 210-651-6101 FAX: 210-651-6144

Agent/Representative (If any):

Contact Person: Rob Leonhard, P.E.
Entity: Coyle Engineering, Inc.
Mailing Address: 512 E. Blanco, Suite 100
City, State: Boerne, Texas Zip: 78006
Telephone: 830-249-5533 FAX: 830-249-5534

2. __ This project is inside the city limits of _____.
x This project is outside the city limits but inside the ETJ (extra-territorial jurisdiction) of The City of San Antonio.
__ 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.

Approximately 7 miles Northwest of the Intersection of IH-35 and FM 3009, off of FM 3009 (Natural Bridge Caverns Road)

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

5. x **ATTACHMENT B - USGS / EDWARDS RECHARGE ZONE MAP**. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone

* Additional Customer
Shawn Soechting
Natural Bridge Wildlife Ranch, Inc
26515 Natural Bridge Caverns Rd
San Antonio, Texas 78266

is attached behind this sheet. The map(s) should clearly show:

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

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

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

8. Existing project site conditions are noted below:

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

* Customer is Available During Operating Hours to Identify Exact Locatin of Improvements to TCEQ Regional Staff Member.

PROHIBITED ACTIVITIES

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

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

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

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

ADMINISTRATIVE INFORMATION

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

x For a Water Pollution Abatement Plan and Modifications, the total acreage of the site

where regulated activities will occur.

__ 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)

x San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

13. x 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. x No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the executive director.

__ 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:

Brad Wuest / Shawn Soechting
Print Name of Customer/Agent

Signature of Customer/Agent

3-31-04
Date

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.

MAPQUEST

ORBITZ

Send To Printer Back to Map

26295 Natural Bridge Caverns Rd
San Antonio TX
US

Notes:

.....

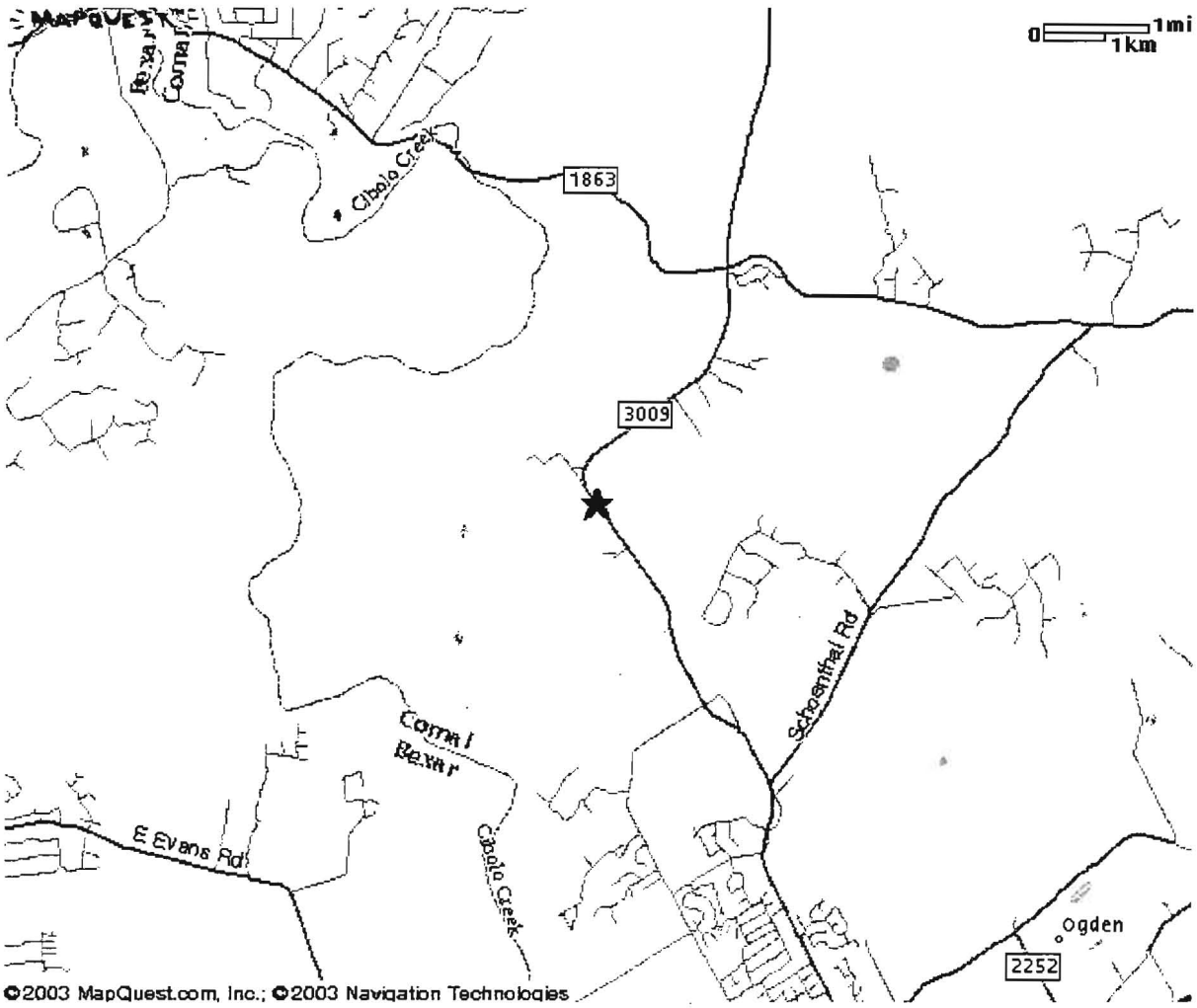
.....

.....

.....

Book a Hotel:

Save up to 70% on
Orbitz Savers Nationwide!
Book Now!



TCEQ 0587 – ATCH A

MAPQUEST

ORBITZ

Send To Printer | Back to Map

26295 Natural Bridge Caverns Rd
San Antonio TX
US

Notes:

.....

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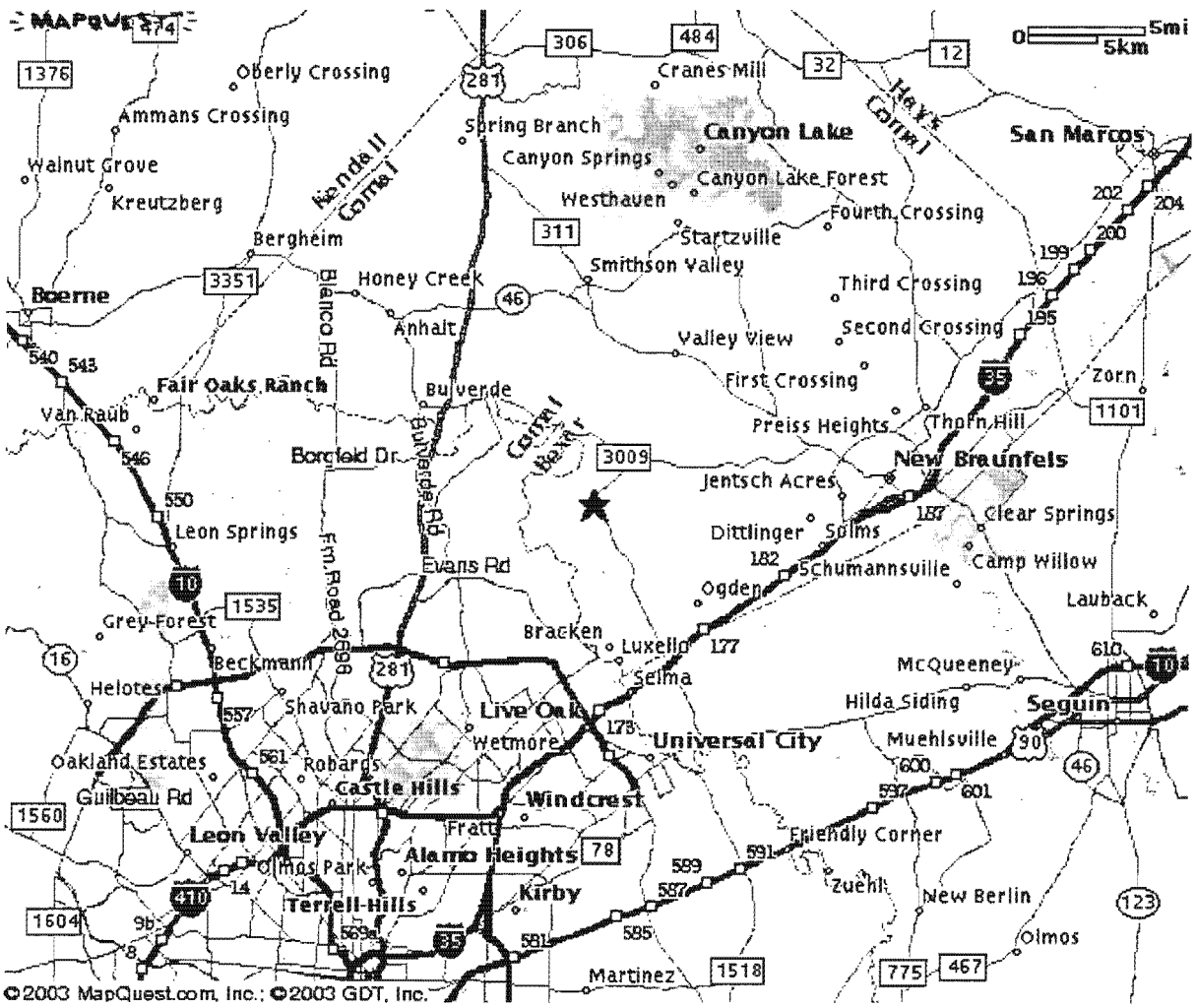
Book a Hotel:
Save up to 70% on
Orbitz Savers Nationwide!
Book Now!



TCEQ 0587 – ATCH A

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

NEW BRAUNFELS WEST QUADRANGLE
TEXAS
7.5 MINUTE SERIES (TOPOGRAPHIC)

RECHARGE ZONE

TRANSITION ZONE

DRAINAGE PATH

Produced by the United States Geological Survey
Revised in cooperation with the Texas Water Development Board

Control by USGS, NOS/NOAA, and USCE

Compiled by the Army Map Service by photogrammetric methods from aerial photographs taken 1956. Field checked 1958
Revised from aerial photographs taken 1986. Field checked 1987
Map edited 1988

Projection and 10,000-foot grid ticks: Texas coordinate system, south central zone (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid, zone 14
1927 North American Datum
To place on the predicted North American Datum 1983 move the projection lines 20 meters south and 28 meters east as shown by dashed corner ticks

Fine red dashed lines indicate selected fence and field lines generally visible on aerial photographs. This information is unchecked

Gray tint indicates area in which only landmark buildings are shown

UTM GRID AND 1986 MAGNETIC NORTH DECLINATION AT CENTER OF MAP DIAGRAM IS APPROXIMATE

SCALE 1:24 000

1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10 000 FEET
1 .5 0 1 MILES
1 .5 0 1 2 KILOMETERS
1000 0 1000 2000 METERS

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

TEXAS
QUADRANGLE LOCATION

2998-413

ROAD CLASSIFICATION

Primary highway, hard surface ..... Light-duty road, hard or improved surface ...
Secondary highway, hard surface ..... Unimproved road ...
Interstate Route U. S. Route State Route

NEW BRAUNFELS WEST, TEX.
29098-F2-TF-024
1988
DMA 6343 II NW-SERIES V822

● INTERIOR-GEOLOGICAL SURVEY, RESTON, VIRGINIA—1988

Official Edwards Aquifer Recharge Zone Map
31 Texas Administrative Code Chapter 313
Subchapter A—San Antonio Region

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

BAT CAVE QUADRANGLE
TEXAS
7.5 MINUTE SERIES (TOPOGRAPHIC)

RECHARGE ZONE

PROJECT SITE

DRAINAGE PATH

RECHARGE ZONE

RECHARGE ZONE

TRANSITION ZONE

Mapped by the Army Map Service
Edited and published by the Geological Survey

Control by USGS, NOS/NOAA, and USCE

Topography by photogrammetric methods from aerial photographs taken 1952. Field annotated 1953. Revised by Geological Survey from aerial photographs taken 1966. Field checked 1967.

Polyconic projection. 1927 North American datum
10,000-foot grid based on Texas coordinate system, south central zone
1000-metre Universal Transverse Mercator grid ticks, zone 14, shown in blue

Fine red dashed lines indicate selected fence lines

Revisions shown in purple compiled by the Geological Survey from aerial photographs taken 1973. This information not field checked

UTM GRID AND 1973 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION

Primary highway, hard surface
Secondary highway, hard surface
Light-duty road, hard or improved surface
Unimproved road
Interstate Route
U. S. Route
State Route

BAT CAVE, TEX.
N2937.5-W9815/7.5

1967
PHOTOREVISED 1973
AMS 6343 III NE-SERIES V882

3

2 00-424

ATTACHMENT C – PROJECT DESCRIPTION

The project will consist of three parts at the Natural Bridge Caverns(NBC) / Natural Bridge Wildlife Ranch (NBWLR) complex about 7 miles west of IH-35 along FM 3009 in Comal County, Texas. The first part is a road widening project affecting less than 1,000 LF at the main entrance to the complex, just following the intersection of two driveways from IH-35 and FM 1863. The second part is a widening of the entrance to the NBC site further within one of the owners' property. The last part will be miscellaneous additions to the Natural Bridge Caverns (NBC) parking lot about one-half mile to the southwest of the main entrance drive.

The project will consist of the removal of some asphalt roadway at the main entrance road and the addition of new asphalt pavement at the main entrance, the entrance drive to NBC, and the NBC parking lot. The project totals a net increase of 1.15 acres of impervious cover (1.40 acres of total new impervious cover and 0.25 acres removal of existing asphalt).

The main entrance project will create more driving lanes, traffic islands, lane delineation (striping) and signage to better direct patrons to their destination at the complex and to improve the overall safety of the entrance roads. The existing general traffic patterns and driveway locations will not be affected by the project.

The thin widening to about ¼ mile of the NBC entrance will allow vehicles to move more safely toward the parking lot.

The miscellaneous additions to the NBC parking lot will allow the lot to be properly striped and maximize the efficiency of the parking layout currently employed with limited pavement markings. This will also increase the overall safety of vehicular movements in the parking lot.

The nature of the activity does not increase permanent potential pollution of runoff, and the runoff flows over natural grass in sheet flow and shallow and wide swales for a significant distance on the owner's property.

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: **Natural Bridge Caverns**

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)
Comfort Rock outcrop	**D**	**0-.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" = 60 ft '
Site Geologic Map Scale 1" = 60 ft '
Site Soils Map Scale (if more than 1 soil type) 1" = _____ '

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.):

__ There are __ (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
__ The wells are not in use and have been properly abandoned.
__ The wells are not in use and will be properly abandoned.
__ The wells are in use and comply with 16 TAC §76.
X 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: **March 29, 2004**
Date(s)

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

Jeffrey S. Neathery, P.G.
Print Name of Geologist

(210) 930-5959
Telephone

(210) 930-6262
Fax

Signature of Geologist

March 30, 2004
Date

Representing: **Neathery Environmental Services**
(Name of Company)

STATE OF TEXAS
Jeffrey S. Neathery
Geology
LICENSED
PROFESSIONAL GEOSCIENTIST

If you have questions on how to fill out this form or about the Edwards Aquifer Protection Program, please contact us at 512/939-2929 (Austin) or 210/403-4024 (San Antonio).

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

GEOLOGIC ASSESSMENT TABLE — PROJECT NAME: Natural Bridge Caverns

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B*	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	≥40	<1.6	≥1.6	
S-1	29° 41' 36.5"	98° 20' 27.5"	CD	5	Kek	3	3	1						15	20	20			X	Drainage
S-2	29° 41' 36.3"	98° 20' 25.7"	CD	5	Kek	72	21	0.5						10	15	15			X	Drainage
S-3	29° 41' 35.3"	98° 20' 05.8"	CD	5	Kek	13	13	0.8						10	15	15		X		Hillside
S-4	29° 41' 34.8"	98° 20' 05.5"	O	5	Kek				N70E	10		0.25	O	25	40		40	X		Hillside
S-5	29° 41' 34.8"	98° 20' 05.5"	CD	5	Kek	3	3	0.5						10	15	15		X		Hillside
S-6	29° 41' 37.0"	98° 20' 08.2"	CD	5	Kek	10	10	0.5						10	15	15			X	Hillside
S-7			F	20	Kek/Kep				N55E	10			OV	10	40		40		X	Hillside

*DATUM

2A TYPE		POINTS
C	Cave	30
SC	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
O	Other natural bedrock feature	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 sediments, 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 understand and I have followed the Texas Natural Resource Conservation Commissions 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 231

STATE OF TEXAS
Jeffrey S. Neathery
Geology
40
LICENSED
PROFESSIONAL GEOSCIENTIST

Date: 03/29/04

Sheet 1 of 1

TNRCC-0585-Table (Rev. 5-1-02)

Site Specific Soils

The SITE lies on a hillside. The topography exhibits the typical stair step topography found on many hillsides in the area. The stair steps are not a pronounced as in some areas of the Recharge Zone. The rock outcrops on the steep slopes have little to no soil cover. The flat areas have a thin cover of a dark brown to black calcareous clay. The clay includes rock fragments ranging in size to pebbles. Although the clay content of the soils would tend to impede the downward flow of water, in areas where the rock fragments are more abundant, the water mobility would increase. The maximum soil cover observed ranged from non-existent to a maximum of 3 to 4 inches.

According to the U.S. Soil Conservation Service, the soils beneath the SITE are classified as Comfort-Rock outcrop complex, undulating.

This complex consists of shallow, clayey soils and rock outcrop on side slopes and on hilltops and ridge tops on uplands in the Edwards Plateau Land Resource Area. Slopes are convex. The areas are irregular in shape and range from 25 to 1,000 acres in size.

Typically, the surface layer of the Comfort soil is dark brown extremely stony clay about 6 inches thick. The Comfort soil is well drained. Surface runoff is slow to medium. Permeability is slow, and the available water capacity is very low. The rooting zone is shallow. Water erosion is a slight hazard.

Stratigraphic Column

Group	Formation	Member	Thickness (ft)
Edwards Limestone	Person	Cyclic and Marine	80-90
		Leached and Collapsed	70-90
		Regional Dense	20-24
	Kainer	Grainstone	50-60
		Kirschberg Evaporite	50-60
		Dolomitic	110-130
		Basil Nodular	50-60
Glen Rose Limestone	Upper Glen Rose		350-500

(From U.S.G.S., 1996)

Site Specific Geology

Most of the site lies on the outcrop of the Kainer Formation of the Edwards Limestone. The SITE lies on a hillside. The topography exhibits the typical stair step topography found on many hillsides in the area. According to the USGS (1994), a large fault (Bat Cave Fault) crosses the site parallel to the hillside cutting across the entrance road. The Fault trends N55°E. Southeast of the fault is the outcrop of the Person formation.

A single fracture was found in the vicinity of the fault (S-4). The trend on the fracture is N70°E. It is possible that this fracture is related to the Bat Cave Fault.

No portion of the site lies within the 100-year floodplain.

Feature Comments

S-1 This feature is a closed depression associated with a drainage culvert that runs beneath the exiting roadway. It is filled with fine and coarse grained soils and native grasses.

S-2 This feature is a closed depression along the side of the road. It appears to be in a bit of a natural swale, associated with the stair step topography. The western portion of the feature is formed by the berm that is the base of the roadway.

S-3 This feature is a closed depression near the roadway. It is in the manicured lawn area. This feature may have been created or at least modified by the construction of the roadway.

S-4 This feature is a single fracture in the rock. The feature was almost obscured by grass growing around the feature. The fracture is approximately 1.5 feet long and ranges in width from 2 to 4 inches. The fracture widens towards the southwest. The fracture was filled with rock fragments to a depth of one foot. At one foot, there are fine-grained soils filling the fracture. There are no signs of flow into the feature. Although this feature ranks as sensitive on the Feature Assessment Table, the fracture is not likely to be sensitive due to the existing roadway and altered shoulders and the slope that allows much of the water to run over the feature.

S-5 This feature is a closed depression near the roadway. It is in the manicured lawn area. This feature may have been created or at least modified by the construction of the roadway.

S-6 This feature is a closed depression along the side of the road. It appears to be in a bit of a natural swale, associated with the stair step topography.

S-7 This feature is the Bat Cave fault. The fault was not observed in the field. The location of the fault is shown on the map but is inferred from published sources. This fault may be related to feature S-4, however, the trend is off by approximately 15 degrees. Although this feature ranks as sensitive on the Feature Assessment Table, the fault is not likely to be sensitive due to the existing roadway and altered shoulders and the slope that allows much of the water to run over the feature.

References

Bureau of Economic Geology (1982) *Geologic Atlas of Texas, San Antonio Sheet*

Soil Conservation Service (1984), *Soil Survey of Comal County Texas*, US Department of Agriculture

Texas Administrative Code (1999), *Official Edwards Aquifer Recharge Zone Map*, 30 TAC, Chapter 313, Subchapter A, San Antonio Region, Bat Cave Quadrangle

Texas Natural Resource Conservation Commission (2002), *Instructions to Geologists*

U.S. Geological Survey (1988), *Bat Cave, Texas* 7.5-Minute Series (Topographic)

U.S. Geological Survey (1994), *Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Outcrop, Comal County, Texas*, Water Resources Investigations Report 95-4117

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: Wuest Legacy Partners, Ltd.
Natural Bridge Wildlife Ranch, Inc.

REGULATED ENTITY INFORMATION

1. The type of project is:
   - __ Residential: # of Lots: ____
   - __ Residential: # of Living Unit Equivalents: ____
   - x Commercial
   - __ Industrial
   - __ Other: _____

2. Total site acreage (size of property): 227.3 Acres

3. Projected population: None

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		÷ 43,560 =	
Parking	16,626	÷ 43,560 =	0.38
Other paved surfaces (Roads)	33,619	÷ 43,560 =	0.77
Total Impervious Cover	50,245	÷ 43,560 =	1.15
Total Impervious Cover ÷ Total Acreage x 100 =			0.51 %

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

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

FOR ROAD PROJECTS ONLY
Complete questions 7-12 if this application is exclusively for a road project.

7. Type of project:
   - __ TXDOT road project.
   - __ County road or roads built to county specifications.
   - __ City thoroughfare or roads to be dedicated to a municipality.
   - __ Street or road providing access to private driveways.
8. Type of pavement or road surface to be used:

__ Concrete
__ Asphaltic concrete pavement
__ Other: _____

9. Length of Right of Way (R.O.W.): _____ feet.
Width of R.O.W.: _____ feet.
L x W = _____ Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.

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

11. __ A rest stop will be included in this project.
__ A rest stop will **not** be included in this project.

12. __ Maintenance and repair of existing roadways that do not require approval from the TNRCC 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 TNRCC.

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. The estimates of stormwater runoff quality and quantity should be based on area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

WASTEWATER TO BE GENERATED BY THE PROPOSED PROJECT

14. The character and volume of wastewater is shown below:
__ % Domestic _____ gallons/day
__ % Industrial _____ gallons/day
__ % Commingled _____ gallons/day

TOTAL N/A gallons/day

15. Wastewater will be disposed of by:
N/A **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 §285.

N/A Sewage Collection System (Sewer Lines):

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

N/A 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. N/A 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" = 200 '.

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

The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s):

FIRM 485463 0075 D July 17, 1995

19. x The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Show lots, recreation centers, buildings, roads, etc.
x 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.

(Parking Lot Improvements Only)

20. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):
x There are 1 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)
__ The wells are not in use and have been properly abandoned.
__ The wells are not in use and will be properly abandoned.
x 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:
x 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. x The drainage patterns and approximate slopes anticipated after major grading activities.

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

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

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

26. N/A Surface waters (including wetlands).

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

ADMINISTRATIVE INFORMATION

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

29. x Any modification of this WPAP will require TNRCC 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 TNRCC review and executive director approval. The form was prepared by:

Brad Wuest
Print Name of Customer/Agent

Brad Wuest
Signature of Customer/Agent

3-31-04
Date

Shawn Soechting
Print Name of Customer/Agent

Shawn Soechting
Signature of Customer/Agent

3-31-04
Date

ATTACHMENT A - FACTORS AFFECTING WATER QUALITY:

Factors associated with this project that could affect surface and groundwater quality include the following:

1. Clearing, grubbing, earthwork, or other various forms of soil disturbance.

2. Use of chemicals (paints, oils, greases, compounds, asphalt, etc.) during road and parking lot additions.

3. Tracking of soil off site before construction or complete re-vegetation is complete.

4. Storm water runoff carrying oils, greases, hydrocarbons downstream from the site.

ATTACHMENT B - VOLUME AND CHARACTER OF STORM WATER

The rational method (Q=CIA) for calculating hydrologic using industry standard methods (Soil Conservation Service, or SCS method) for computing runoff coefficients, time of concentration, rainfall intensities for corresponding storm events, and runoff for acreage of this size was employed to calculate the volume of runoff. The quantity of runoff in the pre- and post- development conditions can be expected to be as follows.

Entrance Roads:

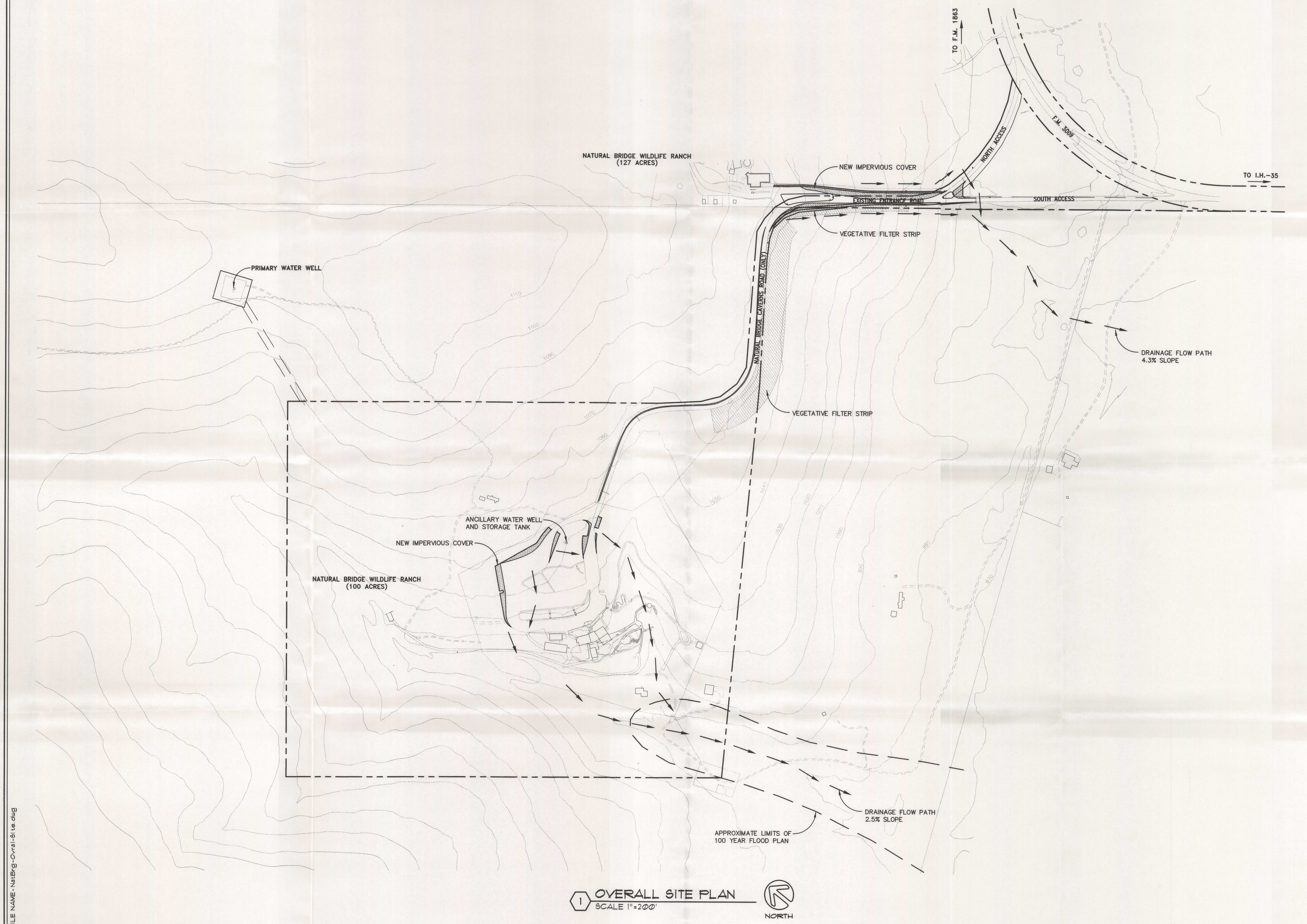
The runoff coefficient for the part of the site is approximately 0.45 in the predevelopment condition, and approximately 0.455 in the post development condition. The contributing area is approximately 60 acres, mostly to the southeast of the site. The small amount of increased impervious cover (0.77 acres) in this drainage area as compared to the total area is the main factor in the runoff increasing only 1 percent.

Parking Lot:

The runoff coefficient for this area is approximately 0.50 in the predevelopment condition, and does not perceptibly change in the post development condition. The contributing drainage area is very large (330 acres), emanating from the far west, just off of a 450 acre tract owned by one of the regulated entities. The small amount of increased impervious cover (0.38 acres) makes the change in runoff imperceptible.

EXISTING AND PROPOSED RUNOFF CALCULATIONS ARE UNDER A SEPARATE TAB IN THIS REPORT.

The quality or character of the storm water runoff would be as expected from similar roads and parking lots, including mostly cars, school and tour buses and occasional delivery tucks. Typical dirt, oils and greases and hydrocarbons that would normally be associated with about 150 vehicles per day, including about four peak tourist holidays and buses, as well as employees would be within the runoff. But a vast majority of the portion of the site will remain naturally vegetated or will be grassed / landscaped, including over 200 acres in the primary tracts associated with the two businesses. Only about 18 acres of the 227 acres in the two primary tracts will be developed after the completion of the project. We expect the final quality of the runoff to be very similar to the existing, undeveloped condition of the site.



1 OVERALL SITE PLAN
SCALE 1"=200'

FILE NAME- NatBrg-Ovral-Site.dwg

NOTES

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SAN ANTONIO REGION

STATE OF TEXAS
ROBERT D. LEONHARD
74492
REGISTERED PROFESSIONAL ENGINEER
3-31-04

C O Y L E
ENGINEERING, INC.
512 EAST BLANCO, SUITE 100 ~ BOERNE, TX 78006
PHONE: (830) 249-5533 ~ FAX: (830) 249-5534

NATURAL BRIDGE CAVERNS and
NATURAL BRIDGE WILDLIFE RANCH
WATER POLLUTION
ABATEMENT PLAN
COMAL COUNTY, TEXAS

DESIGNED	RDL
DRAWN	TM
CHECKED	RDL
DATE	03/31/04

REVISIONS

SHEET TITLE
OVERALL
SITE PLAN

SHEET
C1
OF 01


NATURAL BRIDGE WILDLIFE RANCH
(127 ACRES)
NATURAL BRIDGE WILDLIFE RANCH
VISITOR'S CENTER
NEW IMPERVIOUS COVER
ON ENTRANCE ROADS
(1.007 ACRES TOTAL)
NORTH ACCESS
F.M. 3009
EXISTING ENTRANCE ROAD
SOUTH ACCESS
NEW PERVIOUS COVER
40' ROCK FILTER BERM
SEE SHEET C2/4
20' ROCK FILTER BERM
SEE SHEET C2/4
VEGETATIVE FILTER STRIP
FOR MITIGATING NEW
IMPERVIOUS COVER
(0.205 ACRES TOTAL)
200 L.F. ~ SILT FENCE
SEE SHEET C2/3
WUEST MILLENNIUM PARTNERS, LTD.
(200 ACRES)
DRAINAGE FLOW PATH
(TYPICAL)
WUEST MILLENNIUM PARTNERS, LTD.
(150 ACRES)
NATURAL BRIDGE CAVERNS DRIVEWAY
VEGETATIVE FILTER STRIP
FOR MITIGATING NEW
IMPERVIOUS COVER
(0.304 ACRES TOTAL)
1050
1040
1030
1020
1010
1070
1
TEMPORARY/PERMANENT
POLLUTION ABATEMENT PLAN
SCALE 1"=60'
NORTH
SILT FENCE
B
A
A
FLOW
SILT FENCE
B
PLAN
1'
GALVANIZED WIRE MESH
2
1
2'
INVERT
OPEN GRADED
(4" - 8" DIA. ROCK)
SECTION A-A
CENTER IN CHANNEL
6"
SILT FENCE
SECTION B-B
4
ROCK FILTER BERM
SCALE.- N.T.S.
NYLON REINFORCED POLYPROPYLENE FABRIC
SHALL LAY ON TRENCH BOTTOM BENEATH
COMPACTED BACKFILL
6' MAX.
30" MINIMUM
STEEL POST SLIGHTLY
ANGLED TOWARD
ANTICIPATED RUNOFF
SOURCE
WOVEN WIRE
SUPPORT
3" - 5" OPEN GRADED
6" MIN.
FLOW
6" MIN.
TENSILE STRENGTH .... 90 LBS.
PUNCTURE RATING .... 60 LBS
MULLEN BURST RATING .... 280 PSI
APPARENT OPENING SIZE, U.S. SIEVE NO. 20
3
SILT FENCE
SCALE.- N.T.S.
MATCH LINE
MATCH LINE
1060
1070
1050
NEW IMPERVIOUS COVER
ON ENTRANCE ROADS
(1.007 ACRES TOTAL)
VEGETATIVE FILTER STRIP
FOR MITIGATING NEW
IMPERVIOUS COVER
(0.304 ACRES TOTAL)
MATCH LINE
SEE SHEET C3 OF 03
2
TEMPORARY/PERMANENT
POLLUTION ABATEMENT PLAN
SCALE 1"=60'
NORTH
FILE NAME - NatBrg-PAPI.dwg
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COUNTY ENGINEER
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4-28-04
STATE OF TEXAS
ROBERT D. LEONHARD
74492
REGISTERED
PROFESSIONAL ENGINEER
C O Y L E
E N G I N E E R I N G, I N C.
512 EAST BLANCO, SUITE 100 ~ BOERNE, TX 78006
PHONE: (830) 244-5533 ~ FAX: (830) 244-5534
NATURAL BRIDGE CAVERNS and
NATURAL BRIDGE WILDLIFE RANCH
WATER POLLUTION
ABATEMENT PLAN
COMAL COUNTY, TEXAS
DESIGNED RDL
DRAWN TM
CHECKED RDL
DATE 04/28/04
REVISIONS
1 SUPERCEDES PLANS DATED 03/31/04.
SHEET TITLE
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POLLUTION
ABATEMENT
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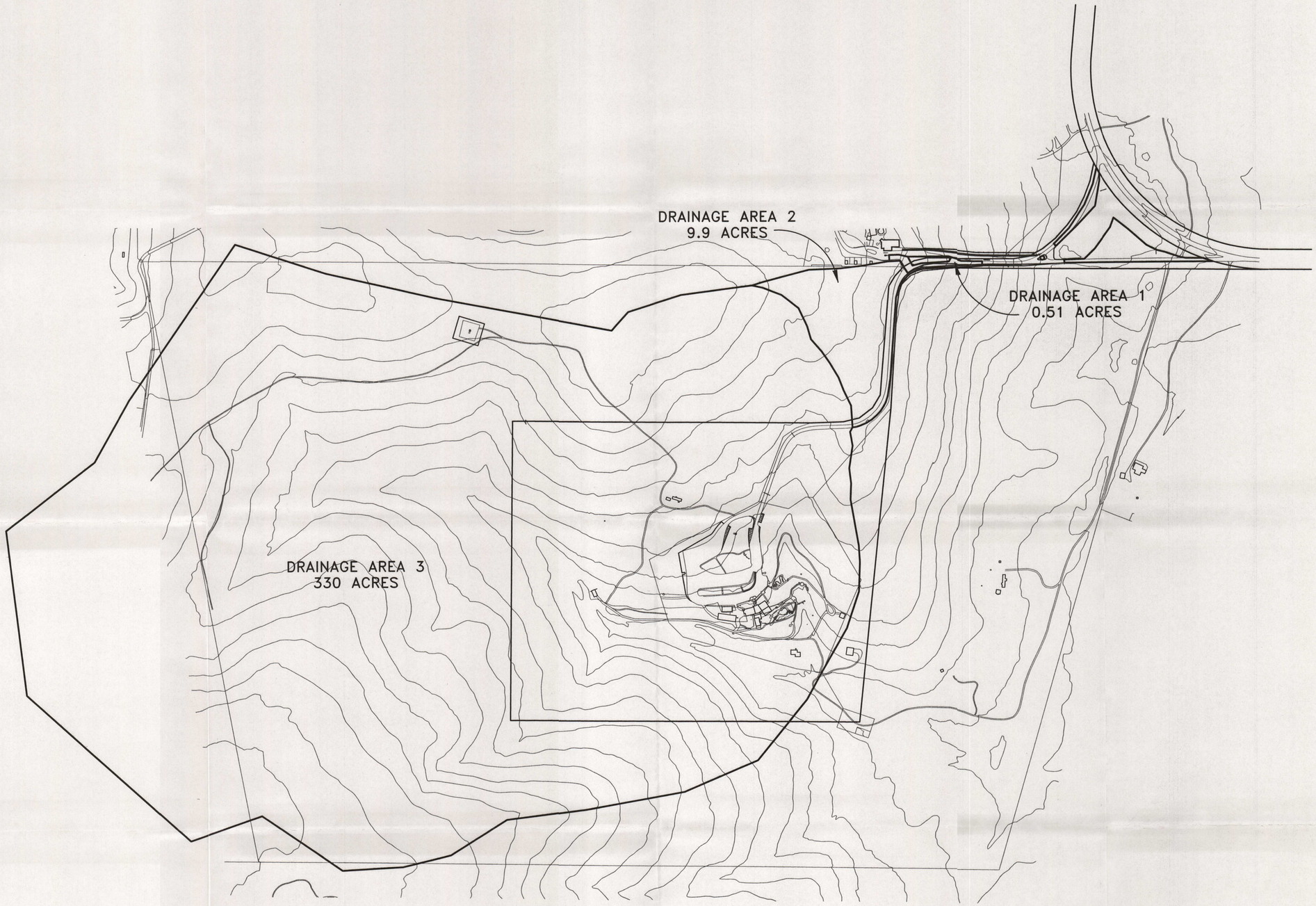

1 DRAINAGE AREA MAP
SCALE 1"=300'

NORTH

NOTES

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MAY 05 2004
COUNTY ENGINEER

STATE OF TEXAS
ROBERT D. LEONHARD
74492
REGISTERED
PROFESSIONAL
ENGINEER
4-29-04

COYLE
ENGINEERING, INC.
512 EAST BLANCO, SUITE 100 ~ BOERNE, TX 78006
PHONE: (830) 249-5593 ~ FAX: (830) 249-5594

NATURAL BRIDGE CAVERNS and
NATURAL BRIDGE WILDLIFE RANCH
DRAINAGE AREA MAP
COMAL COUNTY, TEXAS

DESIGNED	RDL
DRAWN	MVT
CHECKED	RDL
DATE	04/28/04

REVISIONS

SHEET TITLE

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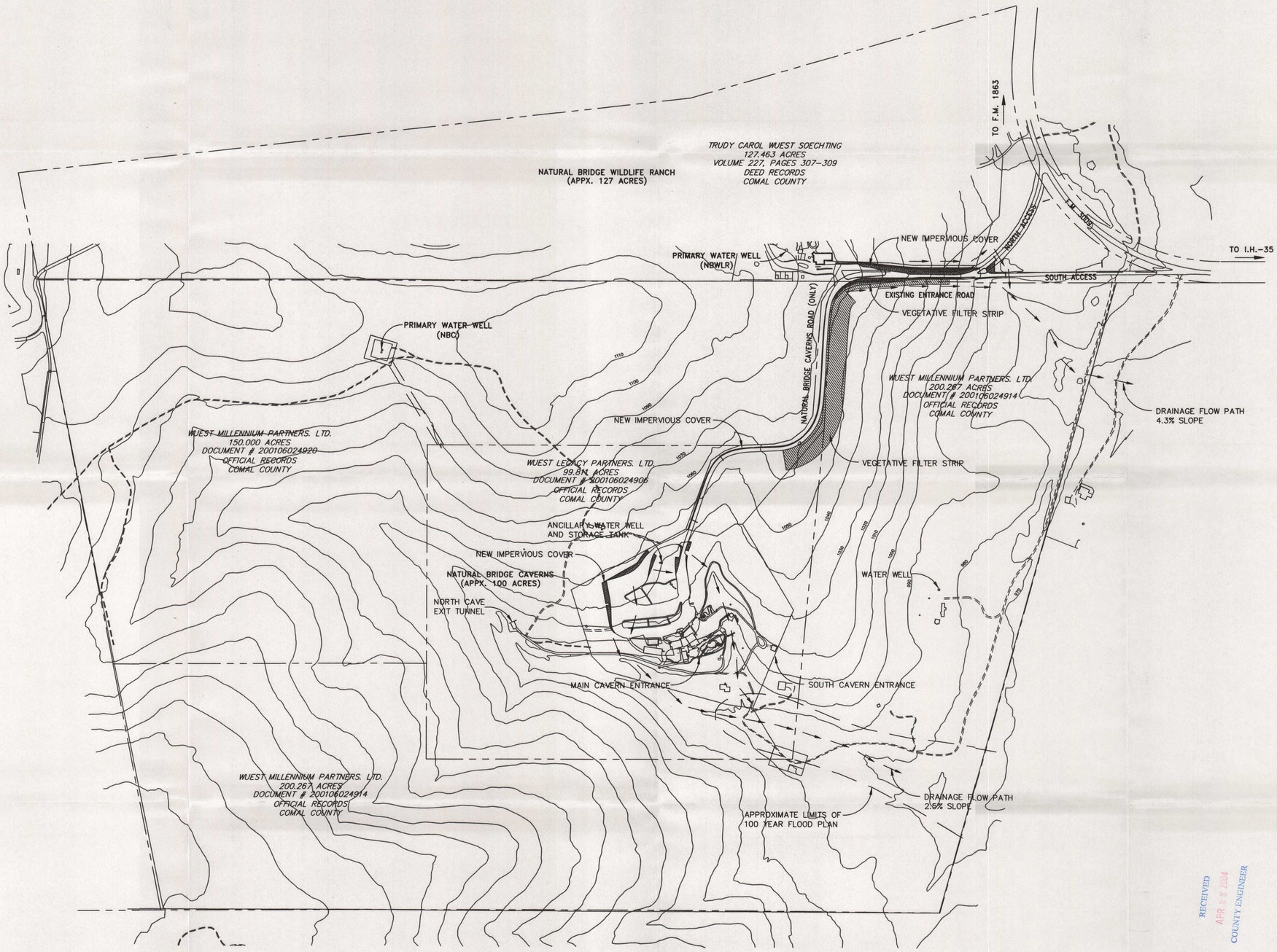

1 OVERALL SITE PLAN
SCALE 1"=300'

NORTH

NOTES

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SAN ANTONIO REGION

STATE OF TEXAS
ROBERT D. LEONHARDT
74492
REGISTERED
PROFESSIONAL
ENGINEER
3-8-04

COYLE ENGINEERING, INC.
512 EAST BLANCO, SUITE 100 ~ BOERNE, TX 78006
PHONE: (830) 249-5533 ~ FAX: (830) 249-5534

NATURAL BRIDGE CAVERNS and
NATURAL BRIDGE WILDLIFE RANCH

WATER POLLUTION ABATEMENT PLAN

COMAL COUNTY, TEXAS

DESIGNED	RDL
DRAWN	TM, MT
CHECKED	RDL
DATE	03/31/04

REVISIONS

SHEET TITLE
OVERALL SITE PLAN

SHEET
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OF 01

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COUNTY ENGINEER

FILE NAME: NatBrg-Overall-Site1.dwg

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: Wuest Legacy Partners, Ltd.
Natural Bridge Wildlife Ranch, Inc.

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 TNRCC prior to moving the tanks onto the project.

x Fuels and hazardous substances will not be stored on-site.

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

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

4. x **ATTACHMENT B - Potential Sources of Contamination.** Describe in an attachment at the end of this form any other activities or processes which may be a potential source of contamination.

__ The are no other potential sources of contamination.

SEQUENCE OF CONSTRUCTION

5. x **ATTACHMENT C - Sequence of Major Activities.** A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is provided at the end of this form. For each activity described, an estimate of the total area of the site to be disturbed by each activity is given.

6. __ 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: Bear Creek / Dry Comal 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. _x_ **ATTACHMENT D - Temporary Best Management Practices and Measures.** A description of the TBMPs and measures that will be used during and after construction are provided at the end of this form. For each activity listed in the sequence of construction, include appropriate control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

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

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

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

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

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

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

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

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

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

10. N/A **ATTACHMENT G - Drainage Area Map**. A drainage area map is provided at the end of this form to support the following requirements.

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

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

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

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

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

12. X **ATTACHMENT I - Inspection and Maintenance for BMPs.** A plan for the inspection of temporary BMPs and measures and for their timely maintenance, 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. X 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. X If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).

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

SOIL STABILIZATION PRACTICES

Examples: establishment of temporary vegetation, establishment of permanent vegetation, mulching,

geotextiles, sod stabilization, vegetative buffer strips, protection of trees, or preservation of mature vegetation.

17. x **ATTACHMENT J - Schedule of Interim and Permanent Soil Stabilization Practices.** A schedule of the interim and permanent soil stabilization practices for the site is attached at the end of this form.

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

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

ADMINISTRATIVE INFORMATION

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

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

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

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

Brad Wuest
Print Name of Customer/Agent

Brad Wuest
Signature of Customer/Agent

3-31-04
Date

Shawn Soechting
Print Name of Customer/Agent

Shawn Soechting
Signature of Customer/Agent

3-31-04
Date

ATTACHMENT A - SPILL RESPONSE ACTIONS

The following material management practices will be used to reduce the risk of spills or other accidental exposure of material and substance to storm water run-off.

GOOD HOUSEKEEPING:

The following good housekeeping practices will be followed on-site during construction:

1. An effort will be made to store only enough product required to do the job.
2. All materials stored on-site will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or within an enclosure.
3. Products will be kept in their original containers with the original manufacturer's label until used.
4. Substances will not be mixed with one another unless recommended by the manufacturer.
5. Whenever possible, all of a product will be used up before disposing of the container.
6. Manufacturer's recommendations for proper use and disposal will be followed.
7. The site construction superintendent will inspect during workdays to ensure proper use and disposal of materials onsite.

HAZARDOUS PRODUCTS:

1. Products will be kept in original containers unless the containers are not re-sealable.
2. Original labels and materials safety data will be retained; they contain important information.
3. If surplus product must be disposed of, manufacturer's or local and State recommended methods for proper disposal will be followed.

PETROLEUM PRODUCTS:

All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers, which are clearly labeled. Any asphaltic substances used onsite will be applied according to the manufacturer's recommendations.

FERTILIZERS:

Fertilizers used will be applied only as recommended by the manufacturer. Once applied, fertilizer will be worked into the soil to limit exposure to storm water. Storage will be in a covered room. The contents of any partially used bags of fertilizer shall be transferred to a sealable plastic bin.

PAINTS:

Paint products will be stored in tightly sealed containers that are clearly labeled. Any paint product used onsite will be applied according to the manufacturer's recommendations.

CONCRETE TRUCKS:

Concrete trucks will not be allowed to wash out or discharge surplus concrete or drum wash water on-site.

SPILL CONTROL PRACTICES:

In addition to the good housekeeping and material management practices discussed above, the following practices will be followed for spill prevention and clean-up:

1. Manufacturer's recommended methods for spill clean up will be clearly posted and site personnel will be made aware of the procedures and the locations of the information and clean-up supplies.

2. Materials and equipment needed for spill clean up will be kept in the material storage area on-site. Equipment and materials will include but not be limited to brooms, dust pans, mops, rags, gloves, goggles, sawdust, kitty litter, sand and plastic and metal trash containers specifically for this purpose.

3. All spills will be cleaned up immediately after they are discovered.

4. The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.

5. Spills of toxic or hazardous material will be reported to the appropriate State or local government agency, regardless of the size of the spill.

6. The spill prevention plan will be adjusted as needed to prevent any spill from re-occurring and to specify how better to clean it up should a similar spill occur. A description of the spill, what caused it, and the cleanup measures will be kept in the log of the temporary and permanent BMP inspections.

7. The site construction superintendent will be the spill prevention and cleanup coordinator. He will designate at least one other site person who will receive spill prevention and clean-up training. The names of the spill personnel will be posted in the materials storage area and in the office.

ATTACHMENT B - POTENTIAL SOURCES OF CONTAMINATION

The materials or substances listed below are expected to be present onsite during construction:

1. Concrete
2. Detergents
3. Fertilizers
4. Herbicides
5. Petroleum Based Products (Asphalt, Fuel, Etc.)
6. Cleaning solvents
7. Wood products
8. Seed or sod
9. Paints

ATTACHMENT C - SEQUENCE OF MAJOR ACTIVITIES

The sequence of major activities for this project is as follows:

1. Install Temporary Controls including silt fencing and rock filter dams.
2. Perform the clearing, grubbing, and earthwork for the sites.
3. Remove existing asphalt and prepare for installing new asphalt in all project areas.
4. Lay new asphalt in roadways and parking lot. Add concrete curbing to construct islands.
5. Add parking lot and road pavement markings. Place appropriate signage.
6. Ensure complete grass coverage for vegetative filter strips at mitigated areas.
7. Remove Temporary BMPs after establishing vegetation.

ATTACHMENT D - TEMPORARY BMP'S AND MEASURES

Temporary BMPs for this project include

1) Silt fences

2) Rock filter dams

3) Hydomulch seeding for restoration of vegetation.

ATTACHMENT F - STRUCTURAL PRACTICES

Structural practices for the temporary filtration of storm water runoff from this site include

1) Silt fencing at various areas that do not flow toward downstream areas filtered by rock filtration devices, and

2) Rock filtration devices installed at downstream concentration points in swales for affected storm water runoff.

Due to the exposed soil generated by the project being spread out over a large area, stabilized construction entrances are not a good method of temporary structural practice and will not be employed. Construction contractors will ensure that tracking of exposed soil will be minimized by cleaning vehicles as necessary within the areas under construction and protected by other temporary BMPs.

ATTACHMENT I - INSPECTION AND MAINTENANCE FOR BMPs

Temporary BMP's will be inspected weekly or after any rainfall event of ½ inch or more. Any irregularities will be corrected immediately. These controls include the silt fencing and rock filtration berms as shown of the plans. A log will be kept of the inspections and any repair/maintenance activities shall be noted in the log.

ATTACHMENT J - INTERIM AND PERMANENT SOIL STABILIZATION

The grass surface of the areas disturbed during construction shall be planted as soon in the construction process as realistic for the survival of the grass. A hydromulch seeding operation will be performed after the additional asphalt is laid. Other landscaping will be planted in the created islands as soon as possible based on the construction activity and season. Watering will occur until plantings have been established and be performed as necesssary after road and parking lot construction is completed.

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: Wuest Legacy Partners, Ltd.
Natural Bridge Wildlife Ranch, Inc.

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

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

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

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

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

4. 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. x The executive director may waive the requirement for other permanent BMPs for multi-

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

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

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

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

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

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

___ 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.

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

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

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

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

x The permanent sealing of or diversion of flow from a naturally-occurring "sensitive" 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. x **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, TNRCC 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. x **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. x The TNRCC Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

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

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

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

Responsibility for maintenance of permanent BMPs and measures after construction is complete.

14. x The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's

association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.

15. X 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 TNRCC review and executive director approval. The application was prepared by:

Brad Wuest
Print Name of Customer/Agent

Brad Wuest
Signature of Customer/Agent

3-31-04
Date

Shawn Soechting
Print Name of Customer/Agent

3-31-04
Date

Shawn Soechting
Signature of Customer/Agent

ATTAHCMENT A – 20% OR LESS IMPERVIOUS COVER WAIVER

We request you consider a waiver to the construction of permanent BMPs for this project, as outlined in our February 2, 2004 letter to your office and our February 9 exception package submitted on February 11, 2004.

In summary, the reasons for this request include:

1) A maximum total of 8% impervious cover will exist on the tracts housing all of the main facilities for the two businesses after the construction of this project.

2) The property included in this project and the area surrounding the project is characterized by open ranch land covered with thick, native grasses on slopes and in swales. The downstream lengths before exiting the properties are 800-1200 linear feet.

3) The businesses are characterized as small due to the number of employees and the average low traffic entering and exiting over the course of a typical year.

ATTACHMENT B – BMPs FOR UPGRADIENT STORMWATER

Upgradient storm water that passes through the proposed road widening, parking areas and mitigation areas all emanates from the owner's property. Therefore, no BMPs for diversion of this runoff need to be employed.

Calculations for the creation of the mitigated vegetative filter strip include the upgradient storm water that will pass over the existing roadway to the south-southwest of the main entrance road project. The summary of this calculation is in the appendix of this report.

If future development occurred anywhere in the upgradient area, an interceptor swale could be constructed on the west side of the portion of the NBC entrance road to divert runoff around the mitigated area. At that point, a modification to this WPAP, including a large reduction in the vegetative filter strip depth, could be submitted.

ATTACHMENT C - BMP'S FOR ON-SITE STORM WATER

(Please note: This attachment has been submitted in the event the 20% or less impervious cover waiver is not accepted.)

Because of the vast undeveloped ranch land surrounding the project, the best and most efficient method for reducing pollution reduction requirements will be the use of vegetated filter strips. The additions to the main entrance road and Natural Bridge Caverns (NBC) drive and parking lot will be partially mitigated by vegetative filter strips immediately adjacent to other portions of the on site existing asphalt road network for the following reasons:

Some of the portion of the main entrance road to be widened is on a relatively steep slope and falls off quickly at the roadside. Therefore, the runoff tends to flow in a shallow concentrated flow soon after leaving the impervious surface. We are slightly modifying the grade on the south portion of the roadway to include the adjacent area as part of the vegetative filter strip area.

The NBC drive slim widening and runoff from the NBC parking lot additions are diverted to various areas around the main caverns and the associated building, walkways and miscellaneous attractions. This runoff quickly enters a dry creek bed until it flows off of the site. Because of existing roads and general development, there is no down stream area suitable to create vegetative filter strips.

Conversely, the mitigation areas are both immediately connected to the main entrance road project area, and adjacent grassland can be more easily used as vegetative filter strips. The mitigated areas flow into the same dry creek bed as both project areas just downstream of the property. Specifically, the two areas more suitable for creation of the vegetative filter strips are

1) About 500 LF of the southern half of the main entrance road, both existing and proposed, and

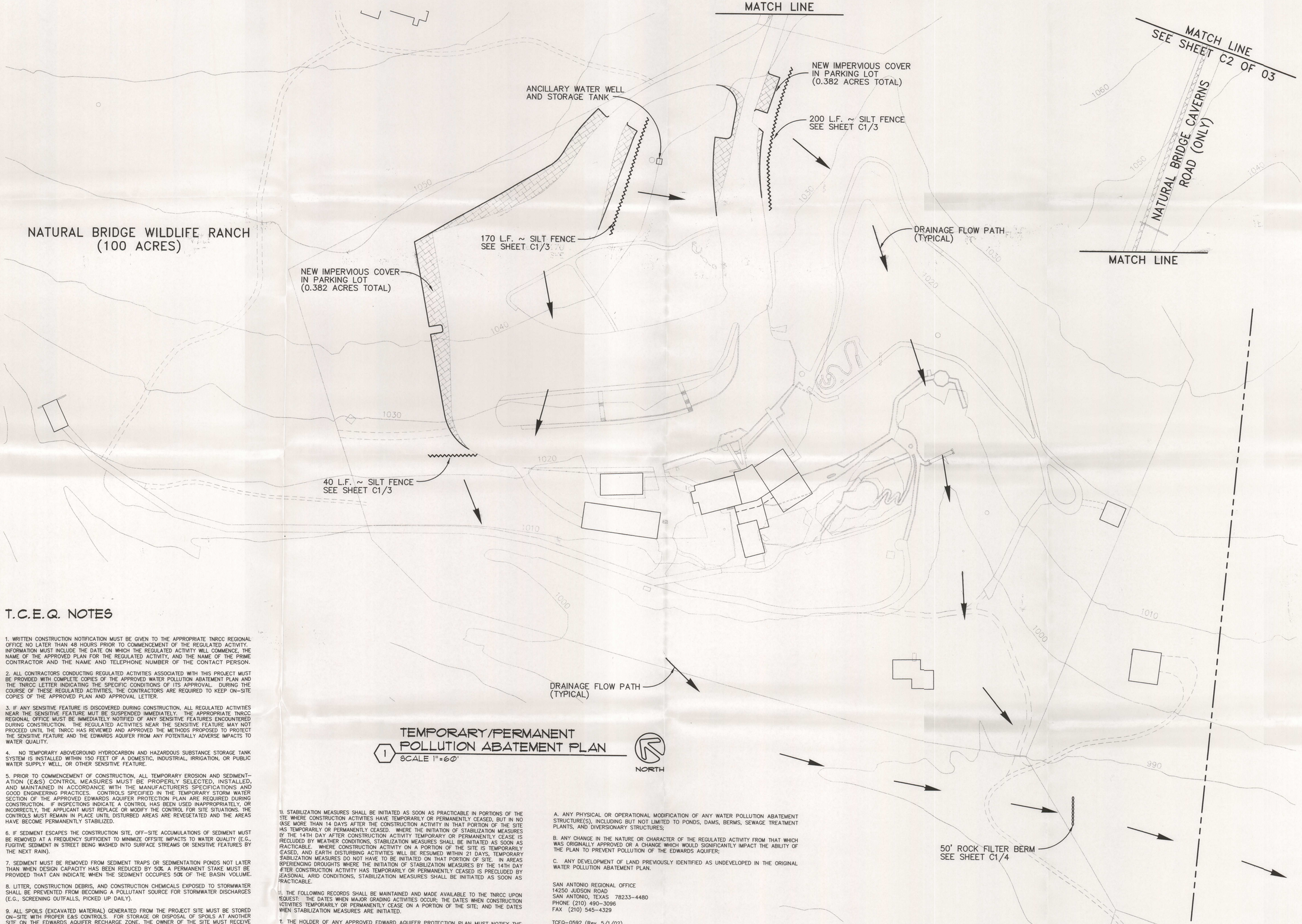
2) About 1100 LF of the drive to the southwest of the main entrance road project.

The total areas to be used as mitigation and for some of the proposed increase in asphalt are slightly greater than the total proposed impervious cover area. In addition, the vegetative strip areas are already mostly covered with native grasses and should provide the necessary filtration. If affected by the required area calculations, significant oaks and stands of oak trees will be maintained.

It is important to note that while the areas downstream of the proposed impervious cover will not be used as dedicated filtration areas, there are significant grasses in the swales where runoff flows. As indicated in the overall site plan, the runoff flows from 800 to 1200 LF downstream through the grassed swales prior to exiting the owner's property.

ATTACHMENT F - CONSTRUCTION PLANS

See the following sheets for Temporary and Permanent Water Pollution Abatement Plans.



TEMPORARY/PERMANENT POLLUTION ABATEMENT PLAN

1 SCALE 1"=60'

NORTH

T.C.E.Q. NOTES

1. WRITTEN CONSTRUCTION NOTIFICATION MUST BE GIVEN TO THE APPROPRIATE TNRCC 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 TNRCC 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 MUT BE SUSPENDED IMMEDIATELY. THE APPROPRIATE TNRCC 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 TNRCC 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 TNRCC 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.

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

TCEQ-0592 (Rev. 5/1/02)

FILE NAME - NatBrg-PAP2.dwg

NOTES

RECEIVED-TCEQ
2004 APR 13 AM 9:47
SAN ANTONIO REGION

STATE OF TEXAS
ROBERT D. LEONHARD
74482
LICENSED PROFESSIONAL ENGINEER
3-31-04

COYLE ENGINEERING, INC.
512 EAST BLANCO, SUITE 100 ~ BOERNE, TX 78006
PHONE: (830) 249-5593 ~ FAX (830) 249-5534

NATURAL BRIDGE CAVERNS and
NATURAL BRIDGE WILDLIFE RANCH
WATER POLLUTION ABATEMENT PLAN
COMAL COUNTY, TEXAS

DESIGNED	RDL
DRAWN	TM
CHECKED	RDL
DATE	03/31/04

REVISIONS

SHEET TITLE
TEMPORARY/ PERMANENT POLLUTION ABATEMENT PLAN

SHEET
C2
OF 02

NATURAL BRIDGE WILDLIFE RANCH
VISITOR'S CENTER

NEW IMPERVIOUS COVER
ON ENTRANCE ROADS
(1.007 ACRES TOTAL)

NEW PERVIOUS COVER

EXISTING ENTRANCE ROAD

NORTH ACCESS

F.M. 3009

SOUTH ACCESS

VEGETATIVE FILTER STRIP
FOR MITIGATING NEW
IMPERVIOUS COVER
(0.415 ACRES TOTAL)

15' ROCK FILTER BERM
SEE SHEET C2/4

40' ROCK FILTER BERM
SEE SHEET C2/4

200 L.F. ~ SILT FENCE
SEE SHEET C2/3

DRAINAGE FLOW PATH
(TYPICAL)

NATURAL BRIDGE WILDLIFE RANCH
(127 ACRES)

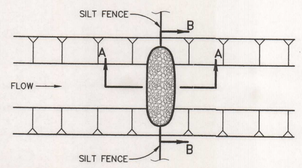
NATURAL BRIDGE CAVERNS ROAD (ONLY)

VEGETATIVE FILTER STRIP
FOR MITIGATING NEW
IMPERVIOUS COVER
(2.894 ACRES TOTAL)

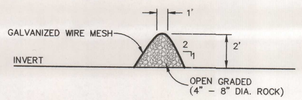
MATCH LINE

1 TEMPORARY/PERMANENT POLLUTION ABATEMENT PLAN
SCALE 1"=60'

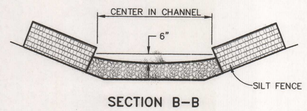
NORTH



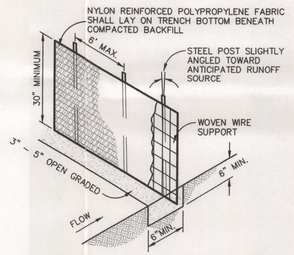
PLAN



SECTION A–A



SECTION B–B



TENSILE STRENGTH ..... 90 LBS.
PUNCTURE RATING ..... 60 LBS
MULLEN BURST RATING ..... 280 PSI
APPARENT OPENING SIZE, U.S. SIEVE NO. 20

3 SILT FENCE
SCALE: N.T.S.

4 ROCK FILTER BERM
SCALE: N.T.S.

MATCH LINE

NEW IMPERVIOUS COVER
ON ENTRANCE ROADS
(1.007 ACRES TOTAL)

VEGETATIVE FILTER STRIP
FOR MITIGATING NEW
IMPERVIOUS COVER
(2.894 ACRES TOTAL)

MATCH LINE
SEE SHEET C2 OF 02

2 TEMPORARY/PERMANENT POLLUTION ABATEMENT PLAN
SCALE 1"=60'

NORTH

NOTES

RECEIVED-TCEQ
2004 APR 13 AM 9:47
SAN ANTONIO REGION

STATE OF TEXAS
ROBERT D. LEONHARD
74482
REGISTERED
PROFESSIONAL ENGINEER
3-31-04

CYCLE
ENGINEERING, INC.
512 EAST BLANCO, SUITE 100 ~ BOERNE, TX 78006
PHONE: (830) 249-5593 ~ FAX: (830) 249-5534

NATURAL BRIDGE CAVERNS and
NATURAL BRIDGE WILDLIFE RANCH
WATER POLLUTION ABATEMENT PLAN
COMAL COUNTY, TEXAS

DESIGNED	RDL
DRAWN	TM
CHECKED	RDL
DATE	03/31/04

REVISIONS

SHEET TITLE
TEMPORARY/
PERMANENT
POLLUTION
ABATEMENT
PLAN

SHEET
C1
OF 02

FILE NAME - NatBrg-PAP1.dwg

ATTACHMENT G - INSPECTION, MAINTENANCE, REPAIR & RETROFIT PLAN

The owner will ensure that there is complete grass coverage in areas dedicated as vegetative filter strips throughout the year. Inspections will be made on a monthly basis. Areas inspected and not exhibiting grass growth shall be planted immediately.

All of the general activities listed here shall be documented in written form and kept on file at both affected businesses. Copies of documentation may be kept at other locations as deemed appropriate by the parties involved.

Signed: Richard D. Yarbrough, P.E. Date: 31 MAR 04

Coyle Engineering, Inc., Professional Engineer

Signed: Bud Wuest Date: 3-31-04

Wuest Legacy Partners, Ltd., Owner

Signed: Steve Sockwell Date: 3-31-04

Natural Bridge Wildlife Ranch, Inc., Owner

ATTACHMENT I - MEASURES FOR MINIMIZING SURFACE STREAM CONTAMINATION

The erection of temporary BMPs, the construction of proposed permanent BMPs (vegetative filter strips) and the maintenance of these facilities, as described in detail in this Water Pollution Abatement Plan, are the measures that are proposed to avoid and minimize surface stream contamination off-site. There are only dry creek beds on the site and close to the proposed project. There are no running streams immediately adjacent to the owner's property.

Texas Natural Resource Conservation Commission
Edwards Aquifer Protection Plan
Application Fee Form

NAME OF PROPOSED REGULATED ENTITY: Wuest Legacy Partners, Ltd. Natural Bridge Wildlife Ranch, Inc.
REGULATED ENTITY LOCATION: 26245/26515 Natural Bridge Caverns Road
NAME OF CUSTOMER: Brad Wuest/Shawn Soechting
CONTACT PERSON: Rob Leonhard, P.E. PHONE: 830-249-5533
(Please Print)

Customer Reference Number (if issued): CN 602569725 (nine digits)
Regulated Entity Reference Number (if issued): RN 104161500 (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 NATURAL RESOURCE CONSERVATION COMMISSION. 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 TNRCC:**
TNRCC - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☐ **AUSTIN REGIONAL OFFICE**
☐ **Overnight Delivery to TNRCC:**
TNRCC - 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	$ 3,000
Water Pollution Abatement, Non-residential	Acres	$
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature

3-31-04
Date

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 Natural Resource Conservation Commission
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 5 < 10 10 < 50 ≥50	$1,000 $2,000 $3,000 $5,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1 1 < 5 5 < 10 ≥10	$2,000 $3,000 $4,000 $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

RUNOFF CALCULATIONS

Entrance Road Area (Northeast part of site)

1. Contributing Area, A = 60 Acres

2. Runoff Coefficient, C = 0.45 (thick grasslands over 3 % slope)

2. Long Flow Path, L = 3400 feet

3. Time of Concentration, Tc

    a. Initial Tc = 20 minutes

    b. Velocity, $v = 16 (slope)^{1/2} = 16 (.042)^{1/2} = 3.3$ feet per second

    c. Final Tc = L/V = 3400/3.3(60sec/min) = 17 minutes

    d. Total T = 20 + 17 = 37 minutes

4. Intensity, using local averages for a 25-year storm event, Intensity, I = 4.5 inches/hour
   For a 100-year event, I = 5.5 inches/hour

5. Thus, the Existing Quantity of Runoff for the drainage basin
   Q = C*I*A = 0.45 * 4.5 * 60 = 121.5 cfs (25 year)
   Q = 0.45 * 5.5 * 60 = 148.5 cfs (100 year)

6. The Proposed Runoff is calculated by very slightly modifying (weighting) the runoff coefficient based on the increase of 0.77 acres of impervious cover, a 0.95 runoff coefficient. Thus, 0.95(0.77/60) + 0.45 (59.23/60) = 0.455

7. Q 25 = 0.455*4.5* 60 = 122.9 cfs
   Q 100 = 0.455*5.5*60 = 150.2 cfs

Thus, increase in runoff is approximately 1%

Parking Lot Area (Southwest part of site)

4. Contributing Area, A = 330 Acres

2. Runoff Coefficient, C = 0.50 (thick grasslands over 1 % slope)

5. Long Flow Path, L = 6500 feet

6. Time of Concentration, Tc

   a. Initial Tc = 20 minutes

   b. Velocity, $v = 16 (slope)^{1/2} = 16 (.025)^{1/2}$ = 2.5 feet per second

   e. Final Tc = L/V = 6500/2.3(60sec/min) = 47 minutes

   f. Total T = 20 + 47 = 67 minutes

4. Intensity, using local averages for a 25-year storm event, Intensity, I = 3.25 inches/hour, and for a 100-year event, I = 4.1 inches/hour

5. Thus, the Existing Quantity of Runoff for the drainage basin

   Q = C*I*A = 0.5 * 3.25 * 330 = 536.3 cfs (25 year)
   Q = 0.5 * 4.1 * 330 = 676.5 cfs (100 year)

7. The Proposed Runoff is calculated by very slightly modifying (weighting) the runoff coefficient based on the increase of 0.38 acres of impervious cover, a 0.95 runoff coefficient. Thus, 0.95(0.38/330) + 0.5 (329.62/330) = 0.455

7. Q 25 = 0.500*3.25* 330 = 536.5 cfs
   Q 100 = 0.500*4.1*330 = 676.5 cfs

   Thus, increase in runoff is imperceptible.

Stormwater Design Manager

Natural Bridge Complex - Entrance Road Widening and Parking Improvements - Vegetative Filter Strip Via Mitigation

Assumptions:	
Raw Land TSS	80
Developed Land TSS	170
Rainfall	33
Contributing Area (Acres)	0.85
Impervious Cover (Acres)	0.64
Runoff Coefficient (Rv)	0.59
Previously Undeveloped (Au)	0.85
Developed (Ad)	0.85

BMP	Efficiency
Retention/Irrigation	100%
Vegetative Strip	85%
Detention	75%
Sand Filters	89%
Constructed Wetlands	93%

BMP in Series	Efficiency Factor
Stage 1	100%
Stage 2	80%
Stage 3	30%

Pollutant Loadings for Design

Percent Impervious Cover		**100%**	
	Lr=	297	Equation 3.1
	Rvr =	0.59	Equation 3.2
	Lm=	974	Equation 3.4
	Rvm =	0.90	Equation 3.2
Pre Development Load (Raw)		**297**	
Post Development Load		**974**	
Required Reduction (lbs)		**541**	

Vegetated Strip Removed (lbs)	20691 lbs	Required Area %	0.65
Strip width	30 ft	Require Area to be Treated	0.56
Fraction of Site Treated	25.00	Required Treatment Area	0.34
Length of Strip Required	**ft**		

USE 15 FT FOR A MINIMUM LENGTH

3/31/2004

Stormwater Design Manager

Natural Bridge Complex - Entrance Road Widening and Parking Improvements - Vegetative Filter Strip Via Mitigation

Assumptions:	
Raw Land TSS	80
Developed Land TSS	170
Rainfall	33
Contributing Area (Acres)	9.9
Impervious Cover (Acres)	0.58
Runoff Coefficient (Rv)	0.05
Previously Undeveloped (Au)	9.32
Developed (Ad)	0.58

BMP	Efficiency
Retention/Irrigation	100%
Vegetative Strip	85%
Detention	75%
Sand Filters	89%
Constructed Wetlands	93%

BMP in Series	Efficiency Factor
Stage 1	100%
Stage 2	80%
Stage 3	30%

Pollutant Loadings for Design

Percent Impervious Cover		**6%**	
	Lr=	302	Equation 3.1
	Rvr =	0.05	Equation 3.2
	Lm=	620	Equation 3.4
	Rvm =	0.05	Equation 3.2
Pre Development Load (Raw)		**302**	
Post Development Load		**620**	
Required Reduction (lbs)		**255**	

Vegetated Strip Removed (lbs)	255 lbs	Required Area %	0.48
Strip width	115 ft	Require Area to be Treated	4.79
Fraction of Site Treated	0.48	Required Treatment Area	2.92
Length of Strip Required	[redacted] **ft**		

USE 15 FT FOR A MINIMUM LENGTH

3/31/2004

NATURAL BRIDGE WILDLIFE RANCH

WATER POLLUTION ABATEMENT PLAN

FOR

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

RECEIVED
APR 0 3 2007
COUNTY ENGINEER

MARCH 2007

Prepared by:

STATE OF TEXAS
ROGER C. LAWHEAD
46411
REGISTERED
PROFESSIONAL ENGINEER

Roger C. Lawhead
3-28-07

SLAY ENGINEERING COMPANY, INC.
EST. 1982

CIVIL – SURVEYING – CONSULTING
4335 W. PIEDRAS DR., SUITE 210 LAMAR BUILDING
SAN ANTONIO, TEXAS, 78228
(210) 734-4388

Water Pollution Abatement Plan Checklist

___ General Information Form (*TCEQ-0587)*
- ATTACHMENT A - Road Map
- ATTACHMENT B - USGS / Edwards Recharge Zone Map
- ATTACHMENT C - Project Description

___ Geologic Assessment Form (*TCEQ-0585)*
- ATTACHMENT A - Geologic Assessment Table (*TCEQ-0585-Table)*
- Comments to the Geologic Assessment Table
- ATTACHMENT B - Soil Profile and Narrative of Soil Units
- ATTACHMENT C - Stratigraphic Column
- ATTACHMENT D - Narrative of Site Specific Geology
- Site Geologic Map(s)
- Table or list for the position of features' latitude/longitude (if mapped using GPS)

___ Water Pollution Abatement Plan Application Form (*TCEQ-0584)*
- ATTACHMENT A - Factors Affecting Water Quality
- ATTACHMENT B - Volume and Character of Stormwater
- ATTACHMENT C - Suitability Letter from Authorized Agent (if OSSF is proposed)
- ATTACHMENT D - Exception to the Required Geologic Assessment (if requesting an exception)
- Site Plan

___ Temporary Stormwater Section (*TCEQ-0602)*
- ATTACHMENT A - Spill Response Actions
- ATTACHMENT B - Potential Sources of Contamination
- ATTACHMENT C - Sequence of Major Activities
- ATTACHMENT D - Temporary Best Management Practices and Measures
- ATTACHMENT E - Request to Temporarily Seal a Feature, if sealing a feature
- ATTACHMENT F - Structural Practices
- ATTACHMENT G - Drainage Area Map
- ATTACHMENT H - Temporary Sediment Pond(s) Plans and Calculations
- ATTACHMENT I - Inspection and Maintenance for BMPs
- ATTACHMENT J - Schedule of Interim and Permanent Soil Stabilization Practices

___ Permanent Stormwater Section (*TCEQ-0600)*
- ATTACHMENT A - 20% or Less Impervious Cover Waiver, if project is multi-family residential, a school, or a small business and 20% or less impervious cover is proposed for the site
- ATTACHMENT B - BMPs for Upgradient Stormwater
- ATTACHMENT C - BMPs for On-site Stormwater
- ATTACHMENT D - BMPs for Surface Streams
- ATTACHMENT E - Request to Seal Features (if sealing a feature)
- ATTACHMENT F - Construction Plans
- ATTACHMENT G - Inspection, Maintenance, Repair and Retrofit Plan
- ATTACHMENT H - Pilot-Scale Field Testing Plan, if BMPs not based on *Complying with the Edwards Aquifer Rules: Technical Guidance for BMPs*
- ATTACHMENT I -Measures for Minimizing Surface Stream Contamination

___ Agent Authorization Form (*TCEQ-0599*), if application submitted by agent

___ Application Fee Form (*TCEQ-0574*)

___ Check Payable to the "Texas Commission on Environmental Quality"

___ Core Data Form (*TCEQ-10400)*

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: Wuest Legacy Partners, Ltd. / Natural Bridge Wildlife Ranch Inc.
COUNTY: Comal
STREAM BASIN: Bear Creek

EDWARDS AQUIFER: x RECHARGE ZONE
__ TRANSITION ZONE

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

CUSTOMER INFORMATION

1. Customer (Applicant):

Contact Person: Shawn and Tiffany Soechting
Entity: Natural Bridge Wildlife Ranch
Mailing Address: 26515 Natural Bridge Caverns Rd.
City, State: San Antonio, Texas Zip: 78266
Telephone: (830)-438-7400 FAX: (830)-438-3494

Agent/Representative (If any):

Contact Person: Roger C. Lawhead, PE
Entity: Slay Engineering Company, Inc.
Mailing Address: 4335 West Piedras Dr. Suite 210
City, State: San Antonio, Texas Zip: 78228
Telephone: (210)-734-4338 FAX: (210)-734-6401

2. __ This project is inside the city limits of _____.
x This project is outside the city limits but inside the ETJ (extra-territorial jurisdiction) of The City of San Antonio.
__ 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.

Approximately 7 miles northwest of the intersection of IH-35 and FM 3009, off of FM 3009 (Natural Bridge Caverns Road).

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

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

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

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

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

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

PROHIBITED ACTIVITIES

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

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

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

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

ADMINISTRATIVE INFORMATION

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

- x For a Water Pollution Abatement Plan and Modifications, the total acreage of the site where regulated activities will occur.
- __ 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)
- x San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

13. x 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. x No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the executive director.
- __ 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:

Roger C. Lawhead P.E.
Print Name of Customer/Agent

Roger C Lawhead
Signature of Customer/Agent

3-28-07
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.

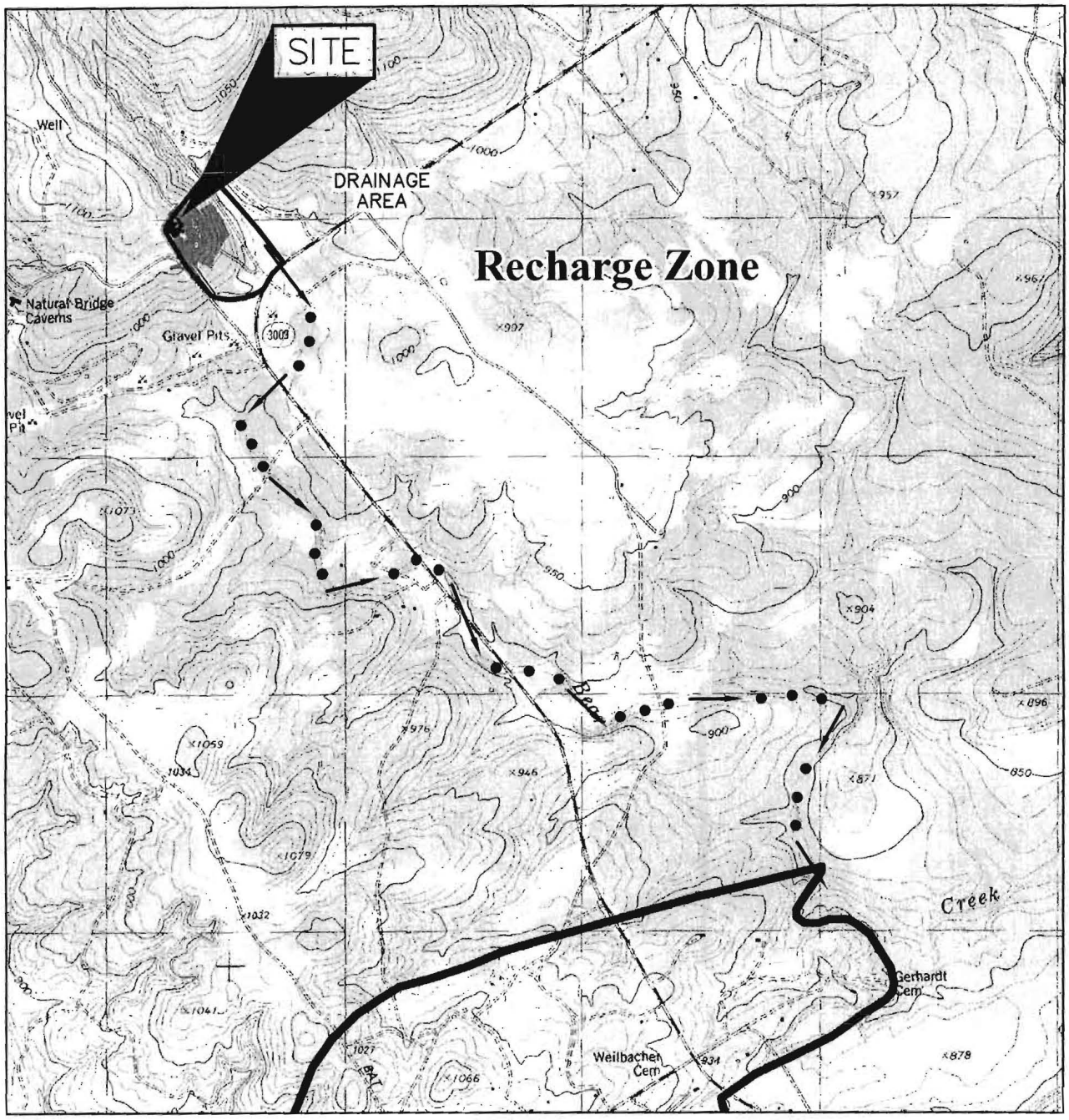
LOCATION MAP

ATTATCHMENT A

LOCATION MAP

USGS TOPOGRAPHY MAP

ATTATCHMENT B



DRAINAGE AREA ——————

FLOW LINE — · · · — · · ·

0 1000 2000 4000

SCALE: 1"=2000'

N

BAT CAVE QUADRANGLE
USGS TOPOGRAPHY MAP

ATTACHMENT C – PROJECT DESCRIPTION

This project is located at the Natural Bridge Wildlife Ranch approximately 7 miles west of IH-35 along FM 3009 in Comal County, Texas. The project is an addition of a new building and associated concrete walks.

The proposed building will be located approximately 100 feet northwest of the existing main building and existing parking lot. The existing site for the proposed building will be cleared and graded adding approximately 6,350 square feet of impervious cover.

Additional impervious areas are as follows:

1. Concrete walk located on the northwest side of the proposed building extending to the existing asphalt walkway on the west side of the Natural Bridge Wildlife Ranch and to an existing concrete walkway on the north end of the Natural Bridge Wildlife Ranch measuring approximately 1105 square feet.

2. Concrete walk located on the southeast side of the proposed building extending to an existing concrete walkway located on the northeast side of the Natural Bridge Wildlife Ranch and extending to a building located approximately 60 feet northwest from the existing main building measuring approximately 1,730 square feet.

The proposed concrete walk areas will add approximately 2,835 square feet of impervious cover. The total proposed impervious cover for this project is approximately 9,185 square feet.

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: **Natural Bridge Wildlife Ranch**

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)
Comfort Rock outcrop	**D**	**0-1**

* Soil Group Definitions (Abbreviated)

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

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

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

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

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

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

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

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

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

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 •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: **October 26, 2006**
Date(s)

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

Jeffrey S. Neathery, P.G.
Print Name of Geologist

(210) 541-9871
Telephone

(210) 541-9837
Fax

Signature of Geologist

November 7, 2006
Date

Representing: **DNA Geosciences, Inc**
(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 512/939-2929 (Austin) or 210/403-4024 (San Antonio).

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

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: Natural Bridge Wildlife Ranch

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)	CODE	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
	D	M	S	D	M	S					X	Y	Z		10						<40	>40	<1.6	>1.6	
S-1	29	41	42.30	98	20	9.30		MB	30	Kek								N	20	50		X	X		Hillside
S-2	29	41	41.30	98	20	10.10		CD	5	Kek	12	1	1					C,O	15	20	X		X		Hillside
S-3	29	41	41.60	98	20	9.60		CD	5	Kek	18	1.5	1.5					C,O	15	20	X		X		Hillside

* DATUM: **NAD83**

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

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

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

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

STATE OF TEXAS
Jeffrey S. Neathery
Geology
40
LICENSED
PROFESSIONAL GEOSCIENTIST

Date: October 26, 2006

Sheet 1 of 1

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

Site Specific Soils

The SITE lies on a gently sloping hillside. The topography is relatively flat but slopes gently to the east. Soils cover most of the site. There are a few isolated flat rock outcrops. The site is covered with a dark brown to black calcareous clay. The clay includes rock fragments ranging in size to pebbles. Although the clay content of the soils would tend to impede the downward flow of water, in areas where the rock fragments are more abundant, the water mobility would increase. Soil thickness observed in a sprinkler line trench was about 1 foot thick.

There sere several small parches of a lighter brown to tan soil. This soil was recently placed on the surface. It appears that the soils were applied on the surface to help promote grass growth. The maximum thickness of these soils is just a few inches.

Note patch of soil in tree shadow.

According to the U.S. Soil Conservation Service, the soils beneath the SITE are classified as Comfort-Rock outcrop complex, undulating.

This complex consists of shallow, clayey soils and rock outcrop on side slopes and on hilltops and ridge tops on uplands in the Edwards Plateau Land Resource Area. Slopes are convex. The areas are irregular in shape and range from 25 to 1,000 acres in size.

Typically, the surface layer of the Comfort soil is dark brown extremely stony clay about 6 inches thick. The Comfort soil is well drained. Surface runoff is slow to medium. Permeability is slow, and the available water capacity is very low. The rooting zone is shallow. Water erosion is a slight hazard.

Stratigraphic Column

Group	Formation	Member	Thickness (ft)
Edwards Limestone	Person	Cyclic and Marine	80-90
		Leached and Collapsed	70-90
		Regional Dense	20-24
	Kainer	Grainstone	50-60
		Kirschberg Evaporite	50-60
		Dolomitic	110-130
		Basil Nodular	50-60
Glen Rose Limestone	Upper Glen Rose		350-500

(From U.S.G.S., 1996)

Site Specific Geology

Most of the site lies on the outcrop of the Kainer Formation of the Edwards Limestone. The SITE lies on a gently sloping hillside. The topography is relatively flat but slopes gently to the east. Soils cover most of the site. There are a few isolated flat rock outcrops. These outcrops were unremarkable.

According to the USGS (1994), a large fault (Bat Cave Fault) located several hundred feet east of the site. The Fault trends N55°E. Southeast of the fault is the outcrop of the Person formation.

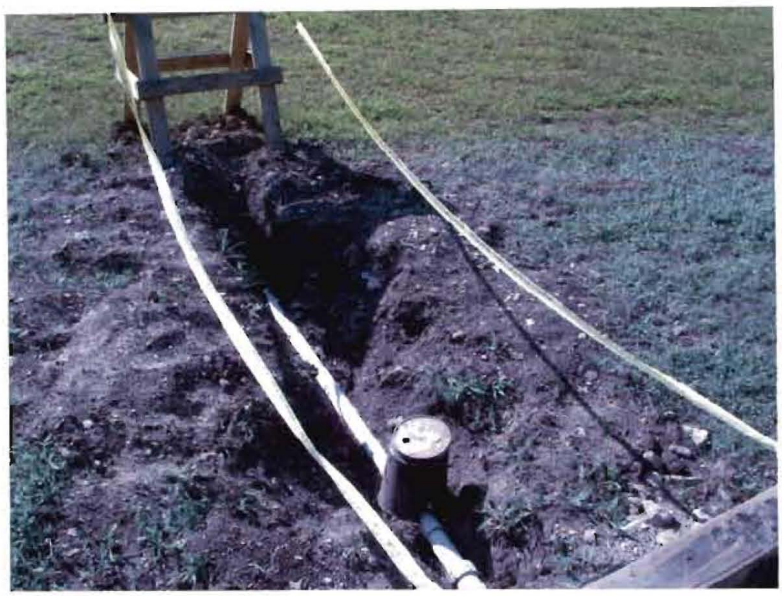
No portion of the site lies within the 100-year floodplain.

Feature Comments

S-1 This feature is a water well.

S-2 This feature is an excavation to repair a water line for a sprinkler system.

S-3 This feature is an excavation to repair a water line for a sprinkler system.



References

Bureau of Economic Geology (1982) *Geologic Atlas of Texas, San Antonio Sheet*

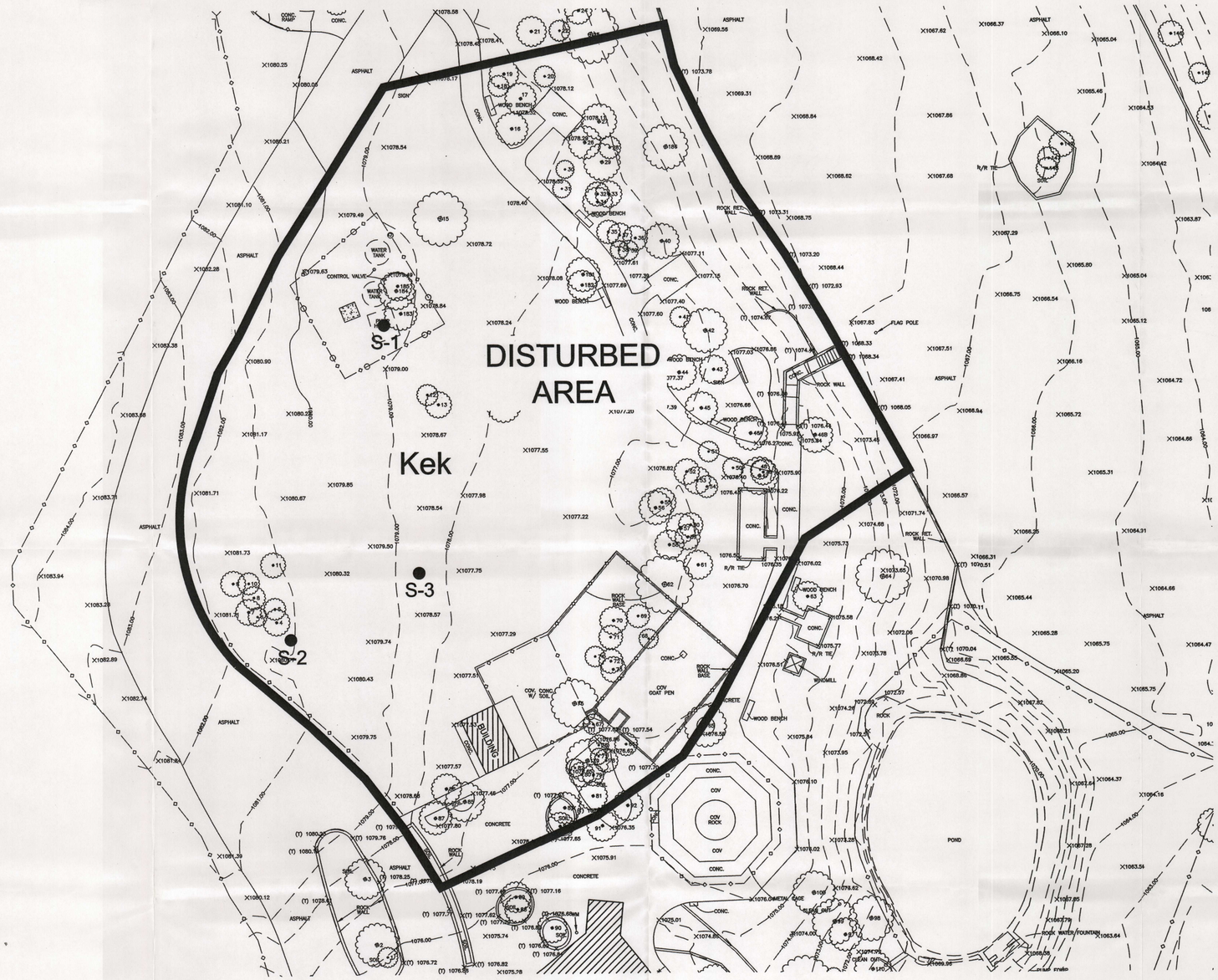
Soil Conservation Service (1984), *Soil Survey of Comal County Texas*, US Department of Agriculture

Texas Administrative Code (1999), *Official Edwards Aquifer Recharge Zone Map*, 30 TAC, Chapter 313, Subchapter A, San Antonio Region, Bat Cave Quadrangle

Texas Natural Resource Conservation Commission (2002), *Instructions to Geologists*

U.S. Geological Survey (1988), *Bat Cave, Texas* 7.5-Minute Series (Topographic)

U.S. Geological Survey (1994), *Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Outcrop, Comal County, Texas*, Water Resources Investigations Report 95-4117



CONSTRUCTION DOCUMENTS
NATURAL BRIDGE WILDLIFE RANCH
SAN ANTONIO, TEXAS

MADELINE ANZ SLAY ARCHITECTURE, PLLC
4335 W. Piedras, West Suite 210
San Antonio, Texas 78228
Phone: 210.736.3008 Fax: 210.734.6401

STATE OF TEXAS
Jeffrey A. Hamilton
Geology
40
LICENSED
PROFESSIONAL V GEOLOGIST

Project No.:	05028
Date:	11/07/06
Revisions:	

GEOLOGICAL MAP

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: Wuest Legacy Partners, Ltd. Natural Bridge Wildlife Ranch, Inc.

REGULATED ENTITY INFORMATION

1. The type of project is:
   - __ Residential: # of Lots:
   - __ Residential: # of Living Unit Equivalents:
   - x Commercial
   - __ Industrial
   - __ Other:

2. Total site acreage (size of property): 127.3 Acres (Total Area)
   1.05 Acres (Disturbed Area)

3. Projected population: 50 employees and customers

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

Total Area:

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	6,350.00	÷ 43,560 =	0.15
Parking	0.00	÷ 43,560 =	0.00
Other paved surfaces	2,385.00	÷ 43,560 =	0.06
Total Impervious Cover	9,185.00	÷ 43,560 =	0.21
Total Impervious Cover ÷ Total Acreage x 100 =			20.00 %

Disturbed Area:

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	6,350.00	÷ 43,560 =	0.15
Parking	0.00	÷ 43,560 =	0.00
Other paved surfaces	2,385.00	÷ 43,560 =	0.06
Total Impervious Cover	9,185.00	÷ 43,560 =	0.21
Total Impervious Cover ÷ Total Acreage x 100 =			0.16 %

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

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

FOR ROAD PROJECTS ONLY
Complete questions 7-12 if this application is exclusively for a road project.

7. Type of project:
   __ TXDOT road project.
   __ County road or roads built to county specifications.
   __ City thoroughfare or roads to be dedicated to a municipality.
   __ Street or road providing access to private driveways.
8. Type of pavement or road surface to be used:

   __ Concrete
   __ Asphaltic concrete pavement
   __ Other:

9. Length of Right of Way (R.O.W.): _____ feet.
   Width of R.O.W.: _____ feet.
   L x W = _____ Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.

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

11. __ A rest stop will be included in this project.
    __ A rest stop will **not** be included in this project.

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

STORMWATER TO BE GENERATED BY THE PROPOSED PROJECT

13. x **ATTACHMENT B - Volume and Character of Stormwater.** A description of the volume and character (quality) of the stormwater runoff which is expected to occur from the proposed project is provided at the end of this form. The estimates of stormwater runoff quality and quantity should be based on area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

WASTEWATER TO BE GENERATED BY THE PROPOSED PROJECT

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

x	% Domestic	2,000 gallons/day
__	% Industrial	_____ gallons/day
__	% Commingled	_____ gallons/day
	TOTAL	2,000 gallons/day

15. Wastewater will be disposed of by:

x ~~**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.

NA 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). The treatment facility is :

__ existing.

__ proposed.

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

SITE PLAN REQUIREMENTS

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

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

18. 100-year floodplain boundaries

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

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

The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA FIRM #485463-0075D
Revised: July 17, 1995

19. x The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Show lots, recreation centers, buildings, roads, etc.

__ The layout of the development is shown with existing contours. Finished topographic contours will not differ from the existing topographic configuration and are not shown.

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

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

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

__ 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.

x No **sensitive and possibly sensitive** geologic or manmade features were identified in the Geologic Assessment.

__ **ATTACHMENT D - Exception to the Required Geologic Assessment.** An exception to the Geologic Assessment requirement is requested and explained in ATTACHMENT D provided at the end of this form. Geologic or manmade features were found and are shown and labeled.

__ **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. x The drainage patterns and approximate slopes anticipated after major grading activities.

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

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

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

26. NA Surface waters (including wetlands).

27. x Locations where stormwater discharges to surface water or sensitive features.

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

ADMINISTRATIVE INFORMATION

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

29. x 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:

Roger C. Lawhead P.E.
Print Name of Customer/Agent

Roger C Lawhead 3-28-07
Signature of Customer/Agent Date

ATTACHMENT B – VOLUME AND CHARACTER OF STORMWATER

Quality:

The quality of the stormwater runoff will be that of a restaurant site. The majority of the impervious cover will be rooftop. Runoff from rooftops will be contaminated mostly by airborne pollutants, which come to rest on the roofs.

Volume:

Existing Conditions:

The site for the proposed Natural Bridge Wildlife Ranch restaurant is 1.05 acres. The runoff coefficient prior to development is estimated to be 0.55 based on the existing terrain and slopes.

Proposed Conditions:

The slopes and terrain for the proposed site change very little after construction. Pervious areas will be well vegetated and maintained.

After construction is complete, the runoff coefficient and stormwater runoff is estimated to be:

Drainage Area:

- C = 0.63
- Q2 = 3.63 CFS
- Q5 = 4.63 CFS
- Q10 = 5.36 CFS
- Q25 = 6.15 CFS
- Q50 = 6.68 CFS
- Q100 = 7.61 CFS

ATTACHMENT C – WASTEWATER SYSTEM DESIGN

WASTEWATER SYSTEM DESIGN

For

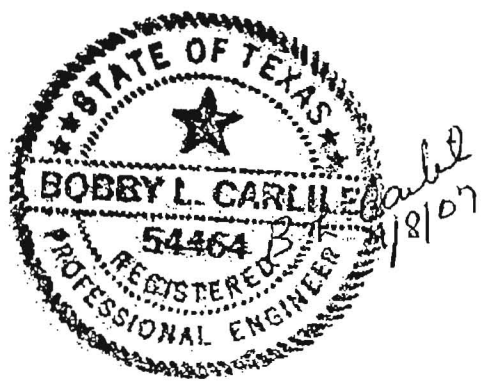
Natural Bridge Wildlife Ranch
Food Services Building
26515 Natural Bridge Cavern Road
San Antonio, Texas 78266
(Comal County)

Designed by:

B.L. Carlile & Associates, Inc.
P.O. Box 63624
Pipe Creek, Texas 78063

B.L. Carlile, Ph.D., P.E.
839-510-6150
830-535-6250 Fax
carlilepipecreek@aol.com

January 8, 2007



Wastewater System Design – Natural Bridge Wildlife Ranch

Proposed Facilities

This proposed facility is to be a food services building located near the entrance to the Natural Bridge Wildlife Ranch located just off FR 3009 approximately 5.6 miles west of the town of Garden Ridge. The facility to be constructed will be a 5,014 square foot building with table, bench and bar seats to serve 148 visitors per seating. A small kitchen will serve essentially fast food type eating facilities such as hamburgers, pizza, hot dogs and other sandwiches as well as salads and fountain drinks.

The restrooms serving this facility will consist of a female restroom with four commodes and two wash basins and a male restroom with 1 commode, 2 urinals and 2 washbasins. There will be a small office located at the rear of the kitchen area and a small restroom with one commode and washbasin to serve the office personnel.

Design Wastewater Flow

The maximum seating capacity of this facility is 148 people including tables for 24 people outside of the building under a covered patio. TCEQ Chapter 285 regulations call for a design flow rate of 12 gallons per day per seat for fast food type facilities or a total of:

148 seats x 12 gpd/seat = 1,776 gpd. plus 10% contingency = 1,954 gpd

This maximum flow rate will only occur during week ends and holidays during the months of June thru October and then drop off considerably during the remainder of the year when visitor numbers are low at the ranch.

Grease Interceptor Design for Kitchen

Even though the kitchen will be designed for minimal fry cooking with minimal grease generation, a properly designed grease trap is necessary to insure that any grease generated and is discharged in the kitchen drains is trapped and removed from the wastewater stream prior to entering the wastewater treatment system serving the restrooms. A grease trap is similar to a septic tank except the inlet and outlet tees should extend closer to the bottom of the tank to facilitate maximum separation of oils and grease.

The formula for sizing a grease trap is found in the EPA Design Manual for On-site Sewage Systems. It is as follows:

D x GL x ST x HR/2 x LF = required volume in gallons, where

D = number of seats
GL = wastewater flow per meal (4 gallons in this case)
ST = storage capacity factor, taken as 2.5 for facilities served by OSSF's
HR = number of hours of daily operation, 8 hours in this case
LF = loading factor based on class of adjacent highway. A factor of 0.5 is used.

The required grease trap volume then becomes:

148 seats x 4 gal/meal x 2.5 x 8/2 x 0.5 = 2,960 gallons

Since two tanks are normally required to facilitate cooling of the water as it flows from one tank to the next, two 1,500 gallon grease tanks installed in series is recommended for this facility. Grease will have to be pumped from these tanks periodically and should be installed with surface access to the tanks and an all weather road near to the tanks for easy truck access.

Septic Tank Capacity and Treatment

The two common contaminants of wastewater, BOD (biochemical oxygen demand) and TSS (total suspended solids) are generally reduced by 40 to 60 percent for BOD and 60 to 90 percent for TSS in a properly sized septic tank.

For normal commercial systems, the size of the septic tank needed to provide adequate primary treatment is given in Table II of TCEQ's chapter 285 rules. The formula is:

Vol. of Septic Tank = 1750 + 0.75 Q

The septic tank treatment capacity needed for this system would be:

Vol. = 1750 + 0.75 (1,954 gal.) = 3,216 gallons.

The septic tank must have two compartments for optimum treatment, thus it is proposed that two tanks, the first a 2,000 gallon single compartment tank followed by a single compartment 1,500 gallon tank be installed in series to provide adequate primary treatment of the wastewater. The flow from the second grease trap is to be plumbed into the inlet pipe of the first septic tank.

Waste Strength following Primary Treatment

For a minimal use kitchen as proposed for this facility, waste strength from the kitchen should be no more than 600 ppm of BOD. At this concentration and with minimal fats and oils contributing to the organic load, there should be at least a 50 percent reduction in BOD in the oversized grease trap treating the kitchen waste. This would result in a BOD

of about 300 ppm entering the septic tank from the kitchen waste. The remaining bathroom waste should be no more than 200 ppm BOD and comprise about 66 percent of the total flow. The proportionate strength of the combined waste flows will then be about 240 ppm of BOD entering the septic tanks. Assuming at least a 40 percent reduction of BOD in the two septic tanks, the primary treated effluent should be less than 145 ppm of BOD to be treated in the secondary treatment process.

Design Loading for Secondary Treatment

The design loading of the secondary treatment system is calculated as:

1954 gpd x 8.34 lbs/gal x 145 ppmBOD / 1,000,000 = 2.4 lbs BOD/day

The 1,954 gallons of effluent from the septic tanks containing 2.4 lbs of BOD per day will be further treated in an aerobic treatment unit(s) to provide secondary treatment to the wastewater prior to disinfection and spray irrigation. The aerobic treatment units must be designed to treat both the hydraulic loading and the organic loading of the wastewater.

As determined above, the wastewater flow of 1,954 gallons will have an organic load of 2.4 pounds of BOD per day. The organic treatment capacity of various sized Clearstream treatment units or equivalent type of aerobic treatment units has the capacity to remove BOD loadings as follows:

Clearstream Treatment System Capabilities

Capacity (gpd)	BOD Removal Rate (lbs.day)	Effluent Quality (BOD, ppm)
500	1.25	<20
750	1.88	<20
1000	2.50	<20
1500	3.75	<20

While the 1,000 gallon unit would have the capacity to treat the organic loading from this facility, it would not be adequate to handle the hydraulic loading. Two 1,000 gallon units installed with equal parallel flow are called for in this system. This will offer over 100 percent excess capacity with regards to the organic loading while offering adequate capacity for the hydraulic loading. During off season periods when flows are reduced, one of the units can be shut down to reduce the cost of aeration.

This system should produce an effluent quality of less than 10 ppm or BOD and TSS be ideally suited for water to be disinfected used in a spray irrigation system.

The flow from the second septic tank will flow into a flow divider and be equally split into the two aerobic treatment units . This flow should be measured initially and periodically after installation to insure the flow is actually equally divided between the two ATU units. During the off season, the flow divider can be adjusted such that all the flow enters just one of the ATU units and the other unit shut off.

Pump Tank and Pumps

A 3,000 gallon, single compartment pump tank will be utilized in this system. If such a size tank cannot be purchased, then two 1500 gallon tanks can be installed be plumbing the two tanks together at the bottom to serve as a 3,000 gallon pump tank This tank will have 1.54 days of total storage and be installed so as to have a capacity of at least 1/3 of the daily flow (651 gallons) above the high water alarm. This still leaves over 2300 gallons of capacity below the alarm lever to minimize inadvertent alarm activation.

The pump tank will be installed with duplex pumps to be controlled by a duplex control panel such that each pump will activate on alternating pump cycles. The system will have the "alarm-on" level below the second "pump-on" level and shall have a lock-on feature in the alarm circuit that once the alarm is activated, it will not go off when the second pump draws the liquid below the "alarm-on" level.

The pump tank shall be installed with an audio and visual high water alarm. The alarm will be on a power circuit separate from the pump. The pump will be controlled by a 24 hour timer or photo cell and timer such that the pumps will only activated between 2:00 a.m. and 5.00 a.m. The pumps will be connected to a low-water float that turns the pumps off if water levels should drop below the intakes level of pump in the pump tank.

All electrical components shall be UL approved.

Disinfection

A chlorinator on the TCEQ approved list for wastewater disinfection will be installed on the outlet of the ATU units prior to the effluent entering the pump tank. If a tablet chlorinator is utilized, only chlorine tablets approved by the E.P.A. for use with wastewater shall be used. A liquid chlorinator utilizing sodium hypochlorite instead of chlorine tablets may be used instead. Either system used must insure that the chlorine residual is at least 0.1 mg/l in the effluent prior to irrigation. The owner/operator of the wastewater system must insure that the chlorinator is functioning properly and chlorine is present in the chlorinator at all times.

Wastewater Irrigation Area

Following secondary treatment and disinfection, the treated wastewater will be applied by sprinkler irrigation on approximately 0.7 acre of ground on the northeast side of the parking lot and to the east of the pond just inside the animal containment fence.

The maximum wastewater application rate allowed by TCEQ for surface application in Comal county is 0.064 gallons per square foot per day. This requires a minimum spray area as calculated below:

1,954 gpd / 0.064 gpd/s.f. = 30,531 s.f. = 0.70 acres.

The area between the parking lot and the field fence that was filled, shaped and seeded when the parking lot was constructed includes as area approximately 35' x 500' or 17,500 s.f. The additional 13,031 s.f. will be developed in the pasture to the east of the pond. An area of approximately 100' x 131 feet will be set aside and fenced to exclude animals and developed for the remaining application area required.

The soils in the application areas are classified as Comfort clays (Class IV), 5 – 8 % slope with rock outcrops. The surface rocks have been removed from the proposed application areas and six to ten inches of fill added to the area adjacent to the parking lot to finish shaping the area and establish a grass cover. A similar grass cover of lawn fescue and rye grass will be established of the other application area prior to start-up of the system.

Sprinkler Installation

The sprinklers selected for this system is the Rainbird Maxi-Paw pop-up sprinklers with an 07 nozzle. This nozzle will spray a 35 foot radius at a nozzle pressure of 23 psi and a flow of 1.7 gpm. The area adjacent to the parking lot will be developed using half-circle sprinkler patterns with each sprinkler placed on 56' centers (70'-20% overlap). This will require 9 sprinkler heads to cover the 500' length.

Using 9 sprinkler heads at a flow rate of 1.7 gpm, the pumps used to apply water to the field must have a pumping capacity of :

9 sprinklers @ 1.7 gpm / sprinkler = 15.3 gpm

The alternate area of application will be 13,100 s.f. and require the following sprinklers to get total coverage, utilizing half- circle sprinkler patterns:

Area of coverage/sprinkler = 3.14 x R_2 = 3.14 x (35 x 35) =3,846 s.f./2 = 1923 s.f

Pg 6 Natural Bridge Wildlife Ranch

Sprinklers required = 13,100 s.f. / 1,923 s.f./sprinkler = 6.8 sprinklers + 20% = 8 sprinklers required

Pumps are specified that produces 20 gpm to ensure that all sprinklers are uniformly pressurized upon activation. At 20 gpm, each pump will require a pumping time to apply the daily design flow as follows:

1954 gpd / 20 gpm = 98 minutes total pumping time per day

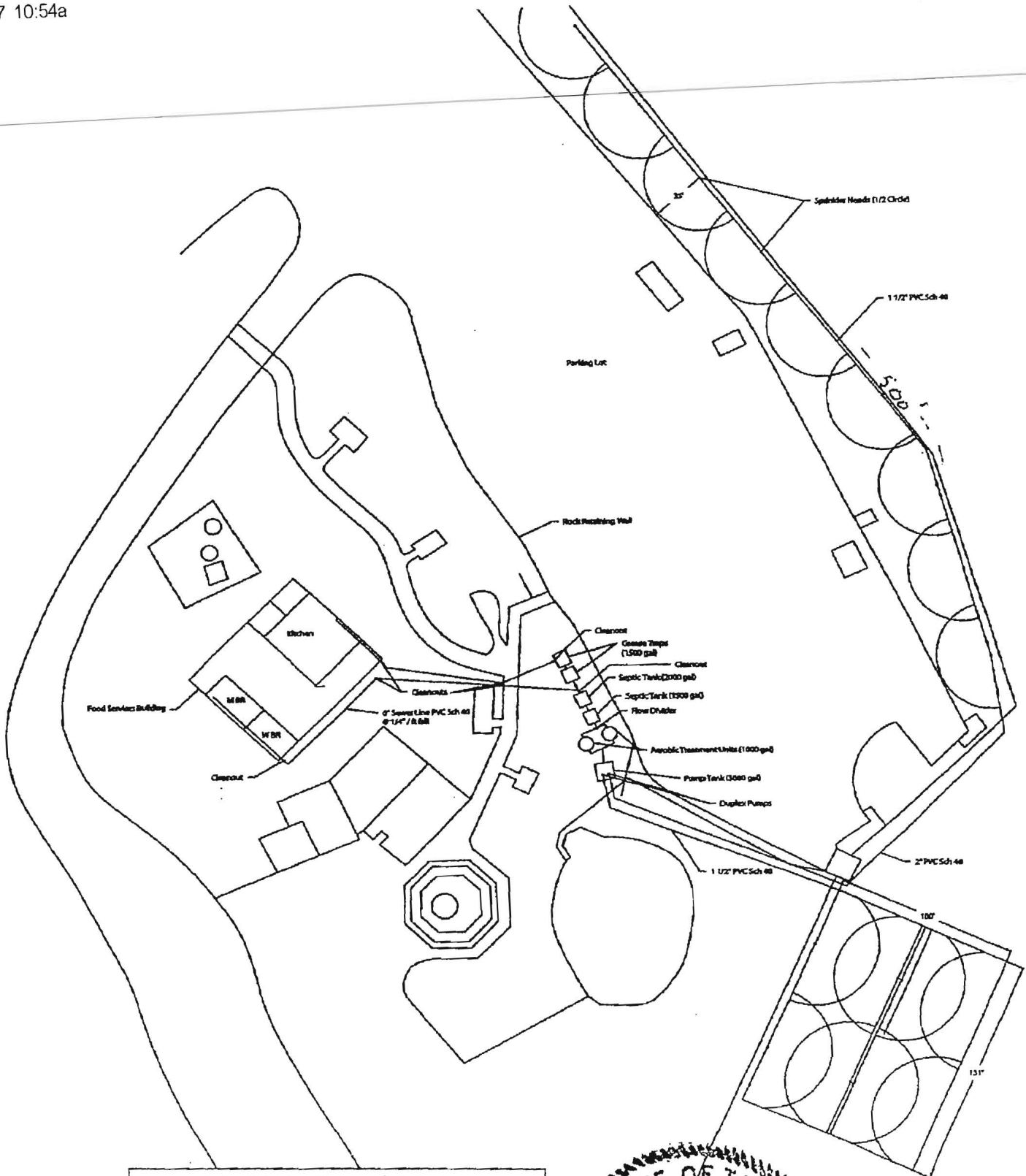
Sprinklers will be installed so that a minimum of 10 foot separation is between the sprinkler head and the base of any tree.

System Maintenance

The contractor who installs the system will furnish the owner and the County Inspector a certification for a 2 Year Full Service Contract on the system as required by TCEQ. At the end of the initial two year period, the maintenance company will file a final report to the owner and County Inspector the dates and maintenance performed during the initial service contract.

The system must be kept under a continuous maintenance contract with a certified maintenance company for the duration of operation of the system.

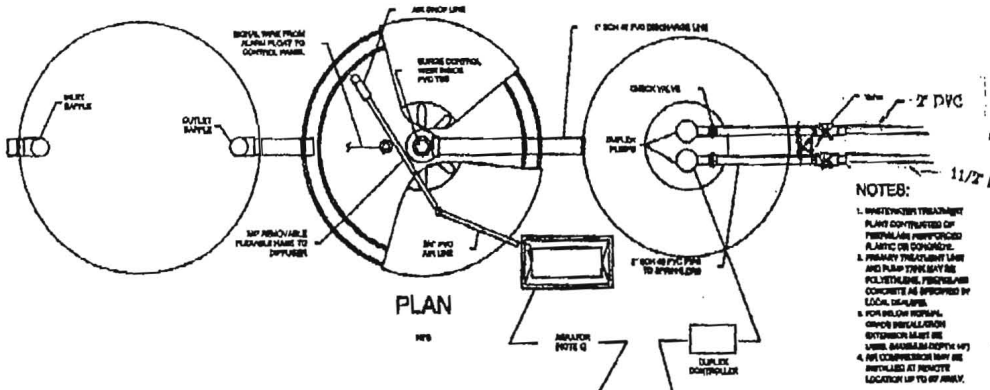
This will require periodic sampling and analyses of residual chlorine levels and/or fecal coliform analysis as required by TCEQ.



B.L. CARLILE & ASSOC., Inc		
DATE: 15 JAN 07	APPD: B.L. CARLILE, Ph.D., P.E. P.O. BOX 63624 PIPE CREEK, TX 78063 830-510-6150	DRAWN BY: BK
NATURAL BRIDGE WILDLIFE RANCH PROPOSED SPRAY SYSTEM DESIGN		
1" = 68'		

STATE OF TEXAS
BOBBY L. CARLILE
54464
REGISTERED
PROFESSIONAL ENGINEER

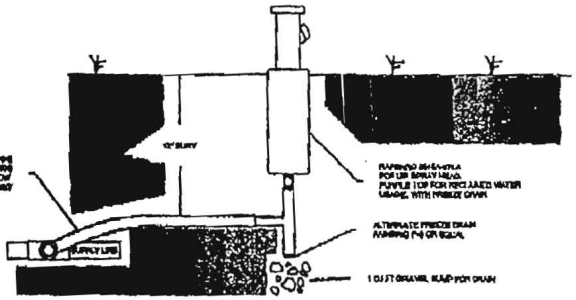
1/22/07



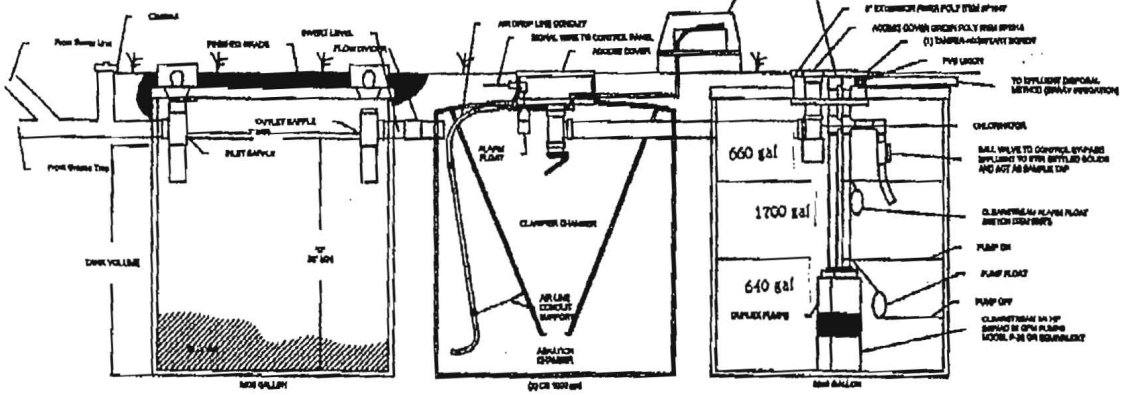
PLAN

NOTES:

1. WASTEWATER TREATMENT PLANT CONSISTED OF FIBERGLASS REINFORCED PLASTIC OR CONCRETE.
2. PRIMARY TREATMENT UNIT AND PUMP TANK MAY BE POLYETHYLENE, FIBERGLASS CONCRETE AS SPECIFIED BY LOCAL DEALERS.
3. FOR BELOW NORMAL GRADE INSTALLATION EXTENSION MUST BE USED. (MAXIMUM DEPTH 48")
4. AIR COMPRESSOR MAY BE INSTALLED AT REMOTE LOCATION UP TO 50' AWAY.



POP-UP SPRINKLER HEAD



PRIMARY TREATMENT TANK

AERATION TANKS

PUMP TANK

SECTION

DESIGN SUMMARY

DAILY FLOW	-	1,854 GPD W/LOW FLOW FIXTURES
APLLICATION RATE	-	0.064 g/ft2/d
REQUIRED AREA	-	30,631 SQ FT
AREA PROVIDED	-	30,600 SQ FT
SEPTIC TANK	-	3500 GAL (TWO TANKS)
ATU	-	2 X 1000 GAL
PUMP TANK	-	3000 GAL (SINGLE COMPARTMENT)
PUMP	-	3/4 HP DUPLEX, 20 GPM @ 30 PSI

SITE SUMMARY

PROPOSED IMPROVEMENTS	-	6,041 ft² FOOD SERVICE BUILDING
STORM DRAINAGE TYPE	-	SURFACE
SEASONAL WATER TABLE	-	NO
DEPTH TO WATER TABLE	-	GREATER THAN 10 FEET
WATER SUPPLY	-	PUBLIC WATER
	-	UNIFORM 5% TO 8% (AFTER GRADING)
	-	NATIVE GRASSES
	-	OUTSIDE 100 YD FLOODPLAIN

GENERAL NOTES

1. AN ON-SITE FACILITY LICENSE MUST BE OBTAINED FROM THE REGULATING AGENCY PRIOR TO INSTALLING THIS WASTEWATER DISPOSAL SYSTEM.
2. SYSTEM INSTALLATION MUST BE BY A REGISTERED INSTALLER OF ON-SITE SEWAGE FACILITIES AS REQUIRED BY ARTICLE 4477-7B OF VERNONS CIVIL STATUES. NO COMPONENT OF THIS SYSTEM SHALL BE OPERATED WITHOUT THE REGULATING AGENCY'S WRITTEN APPROVAL.
3. IF ANY DISCREPANCIES EXIST BETWEEN THIS DESIGN ANCTUAL FIELD CONDITIONS, IT IS THE INSTALLERS RESPONSIBILITY TO IMMEDIATELY NOTIFY THE ENGINEER PRIOR TO START OF ANY WORK.
4. ALL CONSTRUCTION METHODS AND MATERIALS MUST BE IN ACCORDANCE WITH COUNTY AND STATE RULES AND POLICIES UNLESS SPECIFICALLY NOTED ON THIS DRAWING AND APPROVED BY THE REGULATING PARTY.
5. SITE SHALL BE CAREFULLY FINISH GRADED AFTER COMPLETION OF SYSTEM INSTALLATION TO PROVIDE POSITIVE STORM WATER RUNOFF.
6. I, HEREBY CERTIFY THAT THE PROPOSED ON-SITE SEWAGE FACILITY IF INSTALLED AS PLANNED AND PROPERLY OPERATED, WILL NOT CREATE A NUISANCE CONDITION OR CONTAMINATE ANY EXISTING OR PROPOSED WELLS.

B.L. CARLILE & ASSOC., Inc		
DATE: 15 JAN 07	APPD: B.L. CARLILE, Ph.D., P.E. P.O. BOX 63624 PIPE CREEK, TX 78063 830-510-6150	DRAWN BY:
NATURAL BRIDGE WILDLIFE RANCH PROPOSED SPRAY SYSTEM DESIGN		
NATURAL BRIDGE WILDLIFE RANCH PROJECT		

EXHIBIT "A"

127.463 acres of land in Comal County, Texas, being the same 127.463 acre tract described in a Partition Deed dated April 1, 1975, recorded in Vol. 227, Page 311, of the Deed Records of Comal County, Texas, BEING 45.228 acres of land out of the William Clarcy Survey No. 759; 79.160 acres of land out of the Toribio Losoya Survey No. 571; 0.575 of an acre of land out of the Estaban Casas Survey No. 351; and 2.500 acres of land out of the George W. Pleasants Survey No. 749, Comal County, Texas, and being 127.463 acres of land, out of that certain 838 acre tract of land designated as Tract One and set aside to Hilmar Wuest in the Subdivision of the Chas. Wuest 3352 acre tract out of various surveys in Comal and Bexar County, Texas, as recorded in Volume 39, Page 308, of the Probate Minutes of Comal County, Texas, and described more particularly by metes and bounds as follows:

FROM a corner post set for the South corner of that certain 1,347.6 acre tract of land willed by Louis Forshage to Hilmar Wuest; THENCE, with the fence, the Southwest line of said 1,347.6 acre tract, N. 38° 08' W. 1,908.73 feet, and N. 38° 40' W. 2,585.44 feet to an iron pin set for the South corner of a 922.339 acre tract of land, for the West corner of a 200.267 acre tract of land; THENCE, with the Southeast line of said 922.339 acre tract, the Northwest line of said 200.267 acre tract and a 150.000 acre tract, N. 40° 25' E. 3,676.40 feet to a corner post in the Southwest line of the above described 838 acre tract, set for the North corner of the said 150.000 acre tract, for the West corner and POINT OF BEGINNING of the herein described 127.463 acre tract;

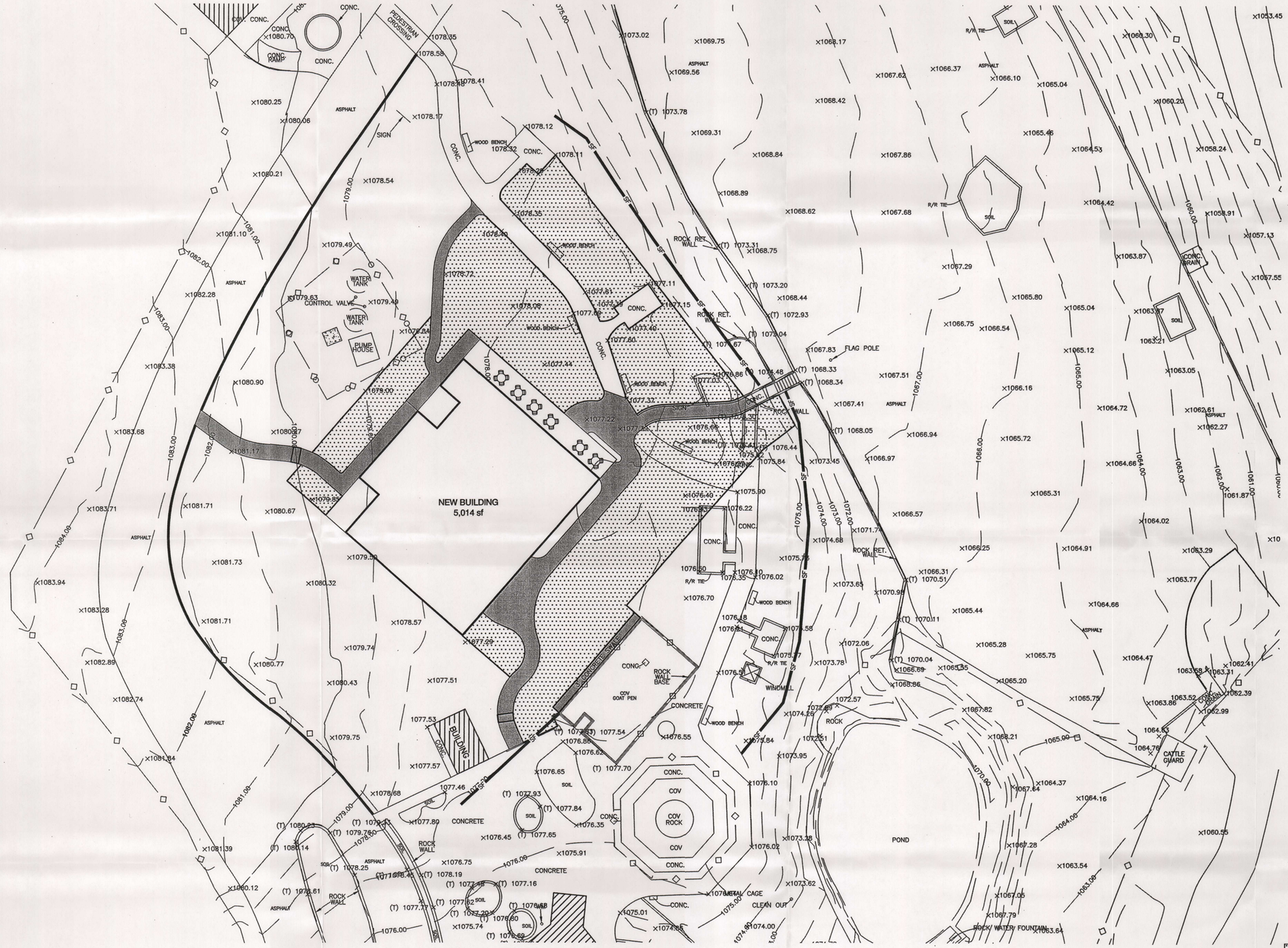
THENCE, with the fence, N. 47° 12' E. 621.52 feet to a corner post in the Northeast line of the said 838 acre tract, set for the North corner of this tract;

THENCE, with the fence, the Northeast line of the said 838 acre tract, S. 44° 56' E. 3,819.73 feet, and S. 54° 33' E. 1,951.88 feet to a corner post in the Northwest line of a County Road designated as the Caverns Road, set for a re-entrant corner of the said 838 acre tract, for the East corner of this tract;

THENCE, with the Northwest line of the said Caverns Road, S. 56° 06' 30" W. 285.90 feet to the beginning of a curve; THENCE, in a Southwesterly direction along the arc of a circular curve to the left having a radius of 1,206.0 feet, a length of arc distance of 693.83 feet to a corner post set for a Northeast corner of a 100.000 acre tract, for the Southeast corner of this tract;

THENCE, with the fence, the North line of the said 100.000 acre tract as follows: S. 63° 26' W. 107.95 feet, S. 71° 51' W. 100.40 feet, S. 78° 08' W. 100.40 feet, S. 87° 07' W. 99.50 feet, N. 86° 55' W. 105.10 feet, N. 77° 53' W. 96.0 feet, N. 68° 15' W. 96.37 feet, N. 47° 32' W. 95.52 feet, N. 38° 46' W. 522.74 feet, N. 51° 35' W. 78.90 feet, and N. 68° 30' W. 73.84 feet to a corner post in the Southwest line of the aforesaid 838 acre tract, set for the East corner of the aforesaid 150.000 acre tract, for a salient corner of the said 100.000 acre tract, for a salient corner of this tract;

THENCE, with the Southwest line of the said 838 acre tract, the Northeast line of the said 150.000 acre tract, N. 38° 32' W. 4,595.25 feet to the PLACE OF BEGINNING.



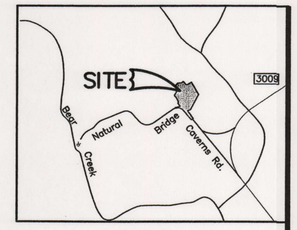
SCALE: 1" = 20'-0"

0 20 40

N

LEGEND

- PROPOSED VEGETATIVE FILTER STRIP
- PROPOSED CONCRETE
- SF — SILT FENCE



LOCATION MAP

MAS ARCHITECTURE

CONSTRUCTION DOCUMENTS

NATURAL BRIDGE WILDLIFE RANCH

SAN ANTONIO, TEXAS

MADELINE ANZ SLAY ARCHITECTURE, PLLC
4335 W. Piedras, West Suite 210
San Antonio, Texas 78228
Phone: 210.736.3009 Fax: 210.734.6401

STATE OF TEXAS
ROGER C. LAWHEAD
46411
REGISTERED
PROFESSIONAL ENGINEER

Roger C. Lawhead
3-20-07

Project No.:	05028
Date:	03/20/07
Revisions:	

SITE PLAN

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: Wuest Legacy Partners, Ltd. / Natural Bridge Wildlife Ranch, Inc.

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

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

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

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

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

4. x **ATTACHMENT B - Potential Sources of Contamination.** Describe in an attachment at the end of this form any other activities or processes which may be a potential source of contamination.
   __ The are no other potential sources of contamination.

SEQUENCE OF CONSTRUCTION

5. x **ATTACHMENT C - Sequence of Major Activities.** A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is provided at the end of this form. For each activity described, an estimate of the total area of the site to be disturbed by each activity is given.

6. x Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Bear Creek and Dry Comal 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. x **ATTACHMENT D - Temporary Best Management Practices and Measures.** A description of the TBMPs and measures that will be used during and after construction are provided at the end of this form. For each activity listed in the sequence of construction, include appropriate control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

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

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

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

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

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

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

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

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

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

10. x **ATTACHMENT G - Drainage Area Map**. A drainage area map is provided at the end of this form to support the following requirements.

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

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

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

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

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

12. x **ATTACHMENT I - Inspection and Maintenance for BMPs.** A plan for the inspection of temporary BMPs and measures and for their timely maintenance, 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. x 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. x If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).

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

SOIL STABILIZATION PRACTICES

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

vegetation.

17. x **ATTACHMENT J - Schedule of Interim and Permanent Soil Stabilization Practices.** A schedule of the interim and permanent soil stabilization practices for the site is attached at the end of this form.

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

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

ADMINISTRATIVE INFORMATION

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

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

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

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

Roger C. Lawhead P.E.
Print Name of Customer/Agent

Roger C Lawhead
Signature of Customer/Agent

3-28-07
Date

ATTACHMENT A–SPILL RESPONSE ACTIONS

The Objective of this section is to describe measures to prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance of 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 appropriate response for "significant" and "insignificant" spills. Employees should also be aware of when spill must be reported to the TCEQ. Information available in 30 TAC 327.4 and 40 CFR 302.4.

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

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

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

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

General Measures

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

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

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

(4) Train employees in spill prevention and cleanup.

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

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

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

(8) Store and dispose of used clean materials, contaminated materials, and recovered spill material that is no longer suitable for the intented purpose in conformance with the provisions in applicable BMPs.

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

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

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

(12) Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed 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 spills material is hazardous, then the used cleanup materials 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 foreman, etc. This response may require the cessation of all other activities.

Spills should be cleaned up immediately:

(1) Contain spread of the spill.

(2) Notify the project foreman immediately.

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

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

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

Significant/Hazardous Spills

For significant or hazardous spills that are in reportable quantities:

(1) Notify the TCEQ by telephone as soon as possible and within 24 hours at 512-339-2929 (Austin) or 210-490-3096 (San Antonio) between 8 AM AND 5 PM. After hours, contact the Environmental release Hotline at 1-800832-8224. It is the contractor's responsibility to have all emergency phone numbers at the construction site.

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

Vehicle and Equipment Fueling

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

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

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

(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 oils and fluids. Do not allow leaking vehicles or equipment onsite.

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

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

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

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

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

ATTACHMENT B–POTENTIAL SOURCES OF CONTAMINATION

The materials of substances listed below are expected to be present onsite during construction:

1. Concrete
2. Detergents
3. Fertilizers
4. Herbicides
5. Petroleum Based Products (Asphalt, Fuel, Etc.)
6. Cleaning solvents
7. Wood products
8. Seed or sod
9. Paints

ATTACHMENT C–SEQUENCE OF MAJOR ACTIVITIES

The sequence of major activities for this project is as follows:

1. Install temporary controls including silt fence and rock filter dams.
2. Perform the clearing, grubbing, and earthwork for the sites.
3. Remove existing concrete walkways and prepare for installing proposed concrete walkways and proposed building foundation in all project areas.
4. Construction of proposed building and associated walkways.
5. Ensure complete grass coverage for vegetative filter strips at mitigated areas.
6. Remove Temporary BMPs after establishing vegetation.

ATTACHMENT D–TEMPORARY BMPS AND MEASURES

Temporary BMP's for this project include:

1. Silt Fence - Silt fence is a barrier consisting of geotextile fabric supported by metal posts to prevent soil and sediment loss from a site. Silt fence will intercept and detain water-borne sediment from unprotected areas of a limited extent. Silt fence is used during the period of construction near the perimeter of a disturbed area to intercept sediment while allowing water to percolate through. This fence should remain in place until the disturbed area is permanently stabilized. Silt fences will be added prior to construction and will remain until construction is complete.

    a) Surface water, groundwater or stormwater that originates upgradient from the site will be diverted by a 6'curb on the northwest side of the property.

    b) Silt fences 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, by intercepting the sediment while allowing the water to percolate through.

    c) Silt fences will prevent pollutants from entering surface streams, or the aquifer by intercepting the sediment while allowing the water to percolate through.

    d) Silt fences will maintain the flow by intercepting the sediment while allowing the water to percolate through.

2. Hydraulic Mulch–Hydraulic mulch is a mixture of shredded wood fiber or a hydraulic matrix. A stabilizing emulsion or tackifier with with hydro-mulching equipment will temporarily protect exposed soil from erosion by raindrop impact or wind. Hydraulic mulch will be added prior to construction and will remain until construction is complete.

    a) Surface water, groundwater or stormwater that originates upgradient from the site will be diverted by a 6'curb on the northwest side of the property.

    b) Hydraulic mulch 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, by temporarily protecting exposed soil from erosion by raindrop impact or wind.

c) Hydraulic mulch will prevent pollutants from entering surface streams, or the aquifer by temporarily protecting exposed soil from erosion by raindrop impact or wind.

d) Hydraulic mulch will maintain the flow by temporarily protecting exposed soil from erosion by raindrop impact or wind.

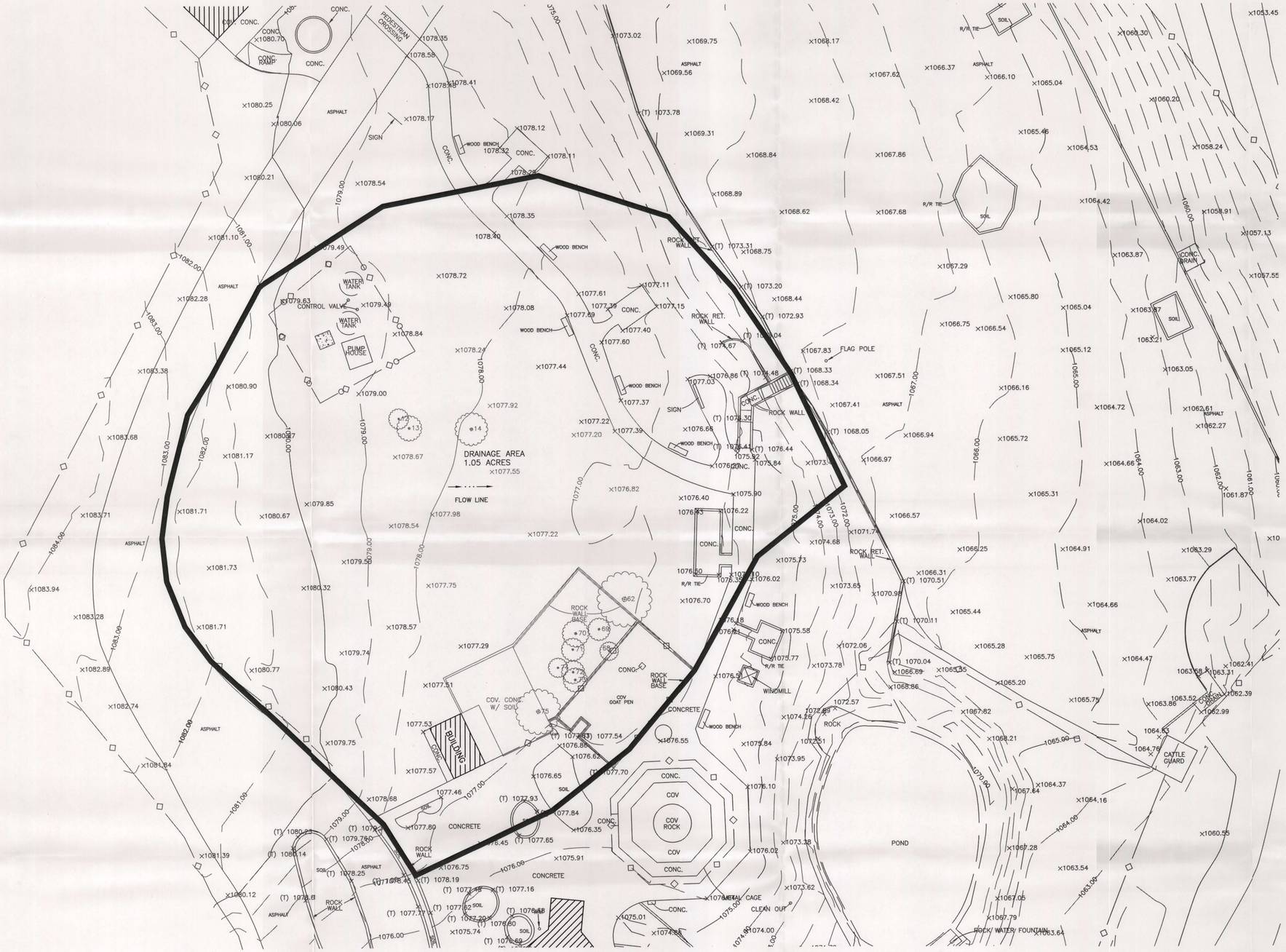
ATTATCHMENT F–STRUCTURAL PRACTICES

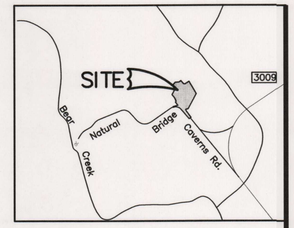
Structural practices for the temporary filtration of storm water runoff from this site include:

1. Silt fencing at various areas that do not flow toward downstream areas filtered by rock filtration devices.

2. Rock filtration devices installed at down stream concentration points in swales for affected storm water runoff.

3. A construction entrance shall be placed at the entrance of the project site to reduce the tracking of exposed soil out of the job site.





LOCATION MAP

SCALE: 1" = 20'-0"

0 20 40

N

LEGEND

- DRAINAGE AREA
- FLOW LINE

CONSTRUCTION DOCUMENTS

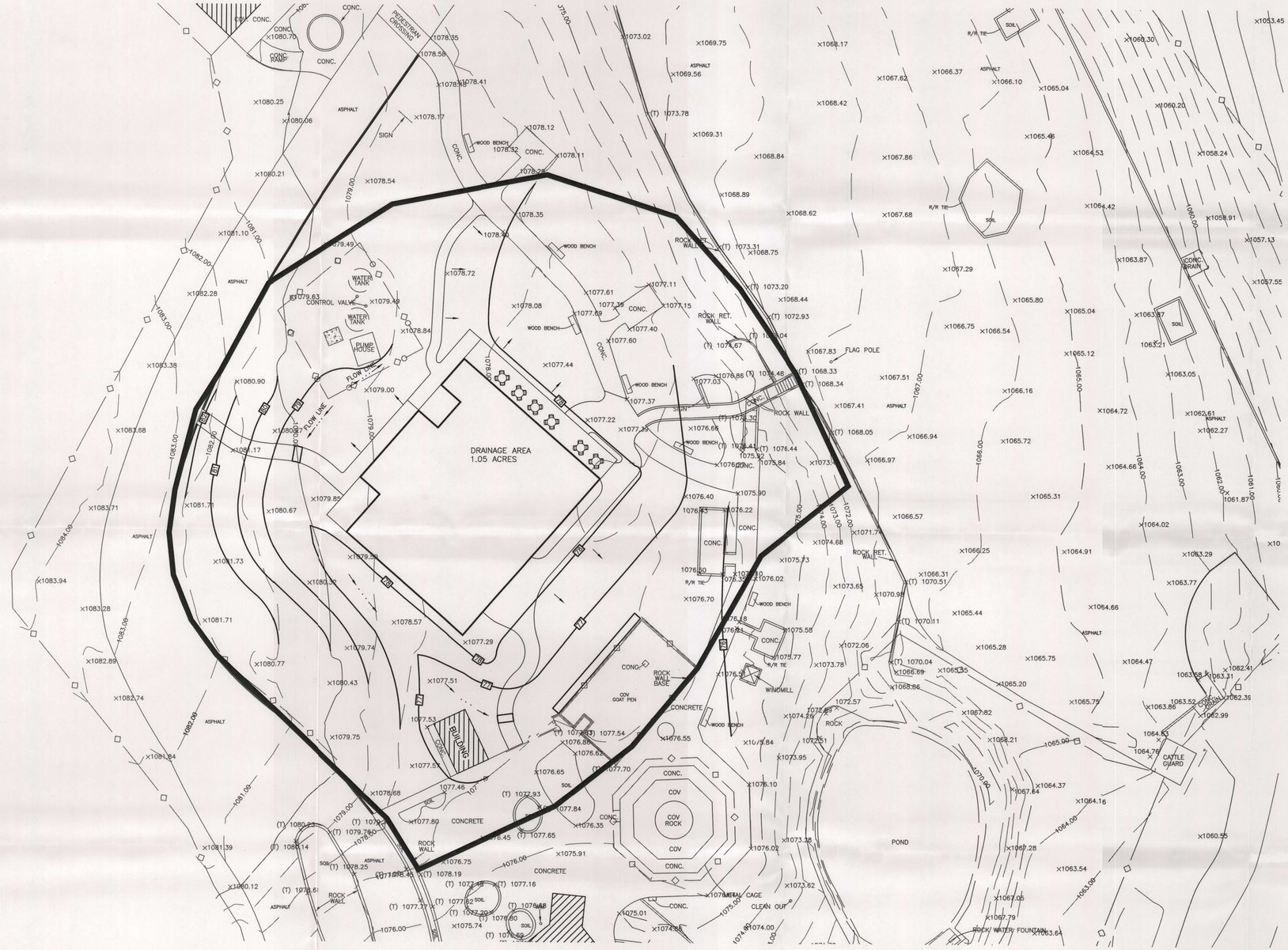
NATURAL BRIDGE WILDLIFE RANCH

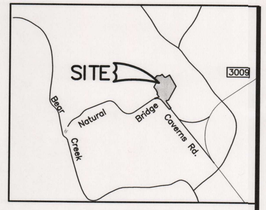
SAN ANTONIO, TEXAS

MADELINE ANZ SLAY ARCHITECTURE, PLLC
4335 W. Piedras, West Suite 210
San Antonio, Texas 78228
Phone: 210.736.3009 Fax: 210.734.6401

Project No.:	05028
Date:	03/19/07
Revisions:	

EXISTING DRAINAGE AREA PLAN





LOCATION MAP

LEGEND

DRAINAGE AREA

FLOW LINE

MAS ARCHITECTURE

CONSTRUCTION DOCUMENTS

NATURAL BRIDGE WILDLIFE RANCH

SAN ANTONIO, TEXAS

MADELINE ANZ SLAY ARCHITECTURE, PLLC
4335 W. Piedras, West Suite 210
San Antonio, Texas 78228
Phone: 210.736.3009 Fax: 210.734.6401

Project No.:	05028
Date:	03/19/07
Revisions:	

PROPOSED DRAINAGE AREA PLAN

ATTACHMENT I–INSPECTION AND MAINTENCE FOR BMPS

Temporary BMP's will be inspected weekly or after any rainfall event. Any irregularities will be corrected immediately. These controls include the silt fencing as shown on the plans. A log will be kept of the inspections and any repair and or maintenance activities shall be noted in the log.

ATTACHMENT J–SCHEDULE OF INTERM AND PERMANENT SOIL STABILIZATION PRACTICES

Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than fourteen days after construction activity in that portion of the site has temporarily or permanently ceased. Where the initiation of stabilization measures by the fourteenth 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 twenty one 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 fourteenth day after construction activity has temporarily or permanently ceased is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

Permanent Stormwater Section

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:

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

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

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

   x The TCEQ Technical Guidance Manual (TGM) was used to design permanent 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. x Owners must insure that permanent BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the appropriate regional office within 30 days of site completion.

4. 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. 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.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Responsibility for maintenance of permanent BMPs and measures after construction is complete.

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

15. x 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:

Roger C. Lawhead P.E.
Print Name of Customer/Agent

Roger C Lawhead 3-28-07

Signature of Customer/Agent Date

ATTACHMENT B – BMPs FOR UPGRADIENT STORMWATER

Upgradient flows will be diverted by a 6" curb on the northwest side of the property and will not cross proposed building site, therefore permanent BMP's for upgradient flow are not necessary.

ATTACHMENT C – BMPs FOR ON-SITE STORMWATER

A vegetative filter strip will be constructed around the perimeter of the proposed building and extending to an existing walkway located west of the proposed building.

The filter strip will:

1. be contiguous with developed area,
2. be at the same elevation as the developed area,
3. and be have a required length in the direction of flow longer than 15 feet and a slope less than 20 percent.

This approved measure is presented to meet the required 80 percent removal of the increased load in total suspended solids on the site.

The Owner will protect the vegetative filter strip area with an easement described by metes and bounds and have it recorded with the County.

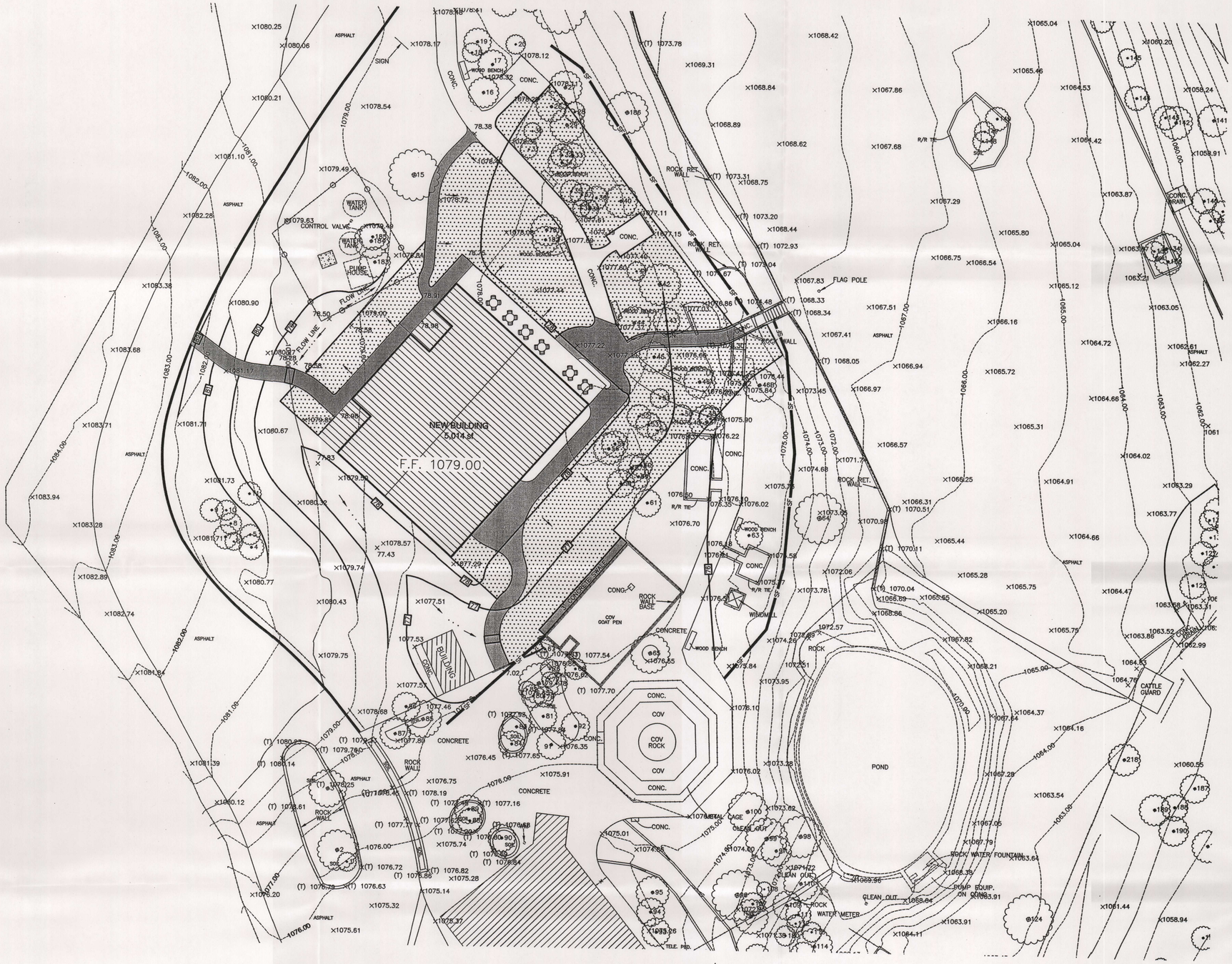
ATTACHMENT D – BMPs FOR SURFACE STREAMS

Vegetative filter strips will used to prevent pollutants from entering surface streams or the aquifer.

The filter strip will:

1. be contiguous with developed area,
2. be at the same elevation as the developed area,
3. and be have a required length in the direction of flow longer than 15 feet and a slope less than 20 percent.

This approved measure is presented to meet the required 80 percent removal of the increased load in total suspended solids on the site.



SCALE: 1" = 20'-0"

0 20 40

N

LEGEND

- PROPOSED VEGETATIVE FILTER STRIP
- PROPOSED CONCRETE
- 78 PROPOSED CONTOURS
- 1065 EXIST. CONTOURS
- SF SILT FENCE

CONSTRUCTION DOCUMENTS

NATURAL BRIDGE WILDLIFE RANCH

SAN ANTONIO, TEXAS

MADELINE ANZ SLAY ARCHITECTURE, PLLC
4335 W. Piedras, West Suite 210
San Antonio, Texas 78228
Phone: 210.736.5059 Fax: 210.734.6401

STATE OF TEXAS
ROGER C. LAWHEAD
46411
REGISTERED
PROFESSIONAL ENGINEER

Roger C. Lawhead 3-20-07

Project No.:	05028
Date:	03/20/07
Revisions:	

GRADING PLAN

ATTACHMENT G – INSPECTION, MAINTENANCE, REPAIR AND RETROFIT PLAN

Vegetative Filter Strips

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

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

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

4. **Debris and Litter Removal** – Trash tends to accumulate in swale areas, particularly along highways. Any swale structures should be kept free of obstructions to reduce floatables from being flushed downstream, and for aesthetic reasons. The need for this practice is determined though periodic, but should be performed no less than two times a year.

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

6. **Grass Reseeding and Mulching** – A healthy dense grass should be maintained on the filter strip. If areas are eroded, they should be filled, compacted, and reseeded so that the final grade is level. Grass damaged during the sediment removal process should be promptly replaced using the same seed mix used during the filter strip's establishment. If possible, flow should be diverted from

~~the damaged areas until the grass is firmly established. Bare spots and areas of~~ erosion identified during semi-annual inspections must be replanted and restored to meet specifications. Corrective maintenance, such as weeding and replanting should be more frequently in the first two to three years after installation to ensure stabilization. Dense vegetation mat require irrigation immediately after planting, and during particularly dry periods, particularly as vegetation is initially established.

Signature Roger C Lawhead Date 3-7-07
Printed Name ROGER C LAWHEAD
Organization SLAY ENGINEERING CO., INC.

ATTACHMENT I – MEASURES FOR MINIMIZING SURFACE STREAM CONTAMINATION

Vegetative filter strips will be used to prevent or minimize surface stream contamination.

The filter strip will:

1. be contiguous with developed area,
2. be at the same elevation as the developed area,
3. and be have a required length in the direction of flow longer than 15 feet and a slope less than 20 percent.

This approved measure is presented to meet the required 80 percent removal of the increased load in total suspended solids on the site.

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

I Shawn Soechting,
Print Name

Owner
Title - Owner/President/Other

Of Natural Bridge Wildlife Ranch
Corporation/Partnership/Entity Name

have authorized Roger C. Lawhead, PE
Print Name of Agent/Engineer

Of Slay Engineering Company, 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.

Shawn Soechting
Applicant's Signature

3-7-07
Date

THE STATE OF Texas §

County of Comal §

BEFORE ME, the undersigned authority, on this day personally appeared Shawn Soechting 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 March, 2007

Judi K Boyd
NOTARY PUBLIC

JUDI K. BOYD
Notary Public
State of Texas
Comm. Expires 04-17-2008

Typed or Printed Name of Notary: JUDI K. BOYD

MY COMMISSION EXPIRES: 04-17-2008

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

NAME OF PROPOSED REGULATED ENTITY: Wuest Legacy Partners, Ltd. / Natural Bridge Wildlife Ranch
REGULATED ENTITY LOCATION: 26515 Natural Bridge Caverns Rd. San Antonio Texas, 78266
NAME OF CUSTOMER: Shawn Soechting
CONTACT PERSON: Roger C. Lawhead, PE PHONE: (210)-734-4388
(Please Print)
Customer Reference Number (if issued): CN 602569725 (nine digits)
Regulated Entity Reference Number (if issued): RN 104161500 (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	1.05 Acres	$ 1,000.00
Water Pollution Abatement, Non-residential	Acres	$
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Roger C Lawhead
Signature

3-28-07
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 5 < 10 10 < 50 ≥50	$1,000 $2,000 $3,000 $5,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1 1 < 5 5 < 10 ≥10	$2,000 $3,000 $4,000 $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.*

Modification of a previously approved plan

2. Attachments				Describe Any Attachments: *(ex: Title V Application, Waste Transporter Application, etc.)*
	YES		NO	

3. Customer Reference Number-*if issued*				4. Regulated Entity Reference Number-*if issued*		
CN	602569725	*(9 digits)*		RN	104161500	*(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:		X	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	X	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.		
X	Partnership		Corporation		Federal Government
	State Government		County Government		City Government
	Other Government		Other:		

8. Customer Name *(If an individual, please print last name first)*	*If new name, enter previous name:*
Shawn Soechting	Brad Wuest

9. Mailing Address:	Natural Bridge Wildlife Ranch			
	26515 Natural Bridge Caverns Rd.			
	City	State	ZIP	ZIP + 4
	San Antonio	Texas	78266	

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*
(830)-438-7400		(830)-438-3494

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)*				
Wuest Legacy Partners, Ltd. / Natural Bridge Wildlife Ranch				
22. Street Address (No PO Boxes)	Natural Bridge Wildlife Ranch			
	26515 Natural Bridge Caverns Rd.			
	City	State	ZIP	ZIP + 4
	San Antonio	Texas	78266	
23. Mailing Address	Natural Bridge Wildlife Ranch			
	26515 Natural Bridge Caverns Rd.			
	City	State	ZIP	ZIP + 4
	San Antonio	Texas	78266	
24. E-Mail Address:				

25. Telephone Number	26. Extension or Code	27. Fax Number *if applicable*
(830)-438-7400		(830)-438-3494

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)

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

Entertainment

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

33. County Comal

34. Description of Physical Location

Approximately 7 miles west of IH-35 along FM 3009 in Comal County, Texas

35. Nearest City	State	Nearest Zip
San Antonio	Texas	78266

36. Latitude (N)			*37. Longitude (W)*		
Degrees	*Minutes*	*Seconds*	*Degrees*	*Minutes*	*Seconds*

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."

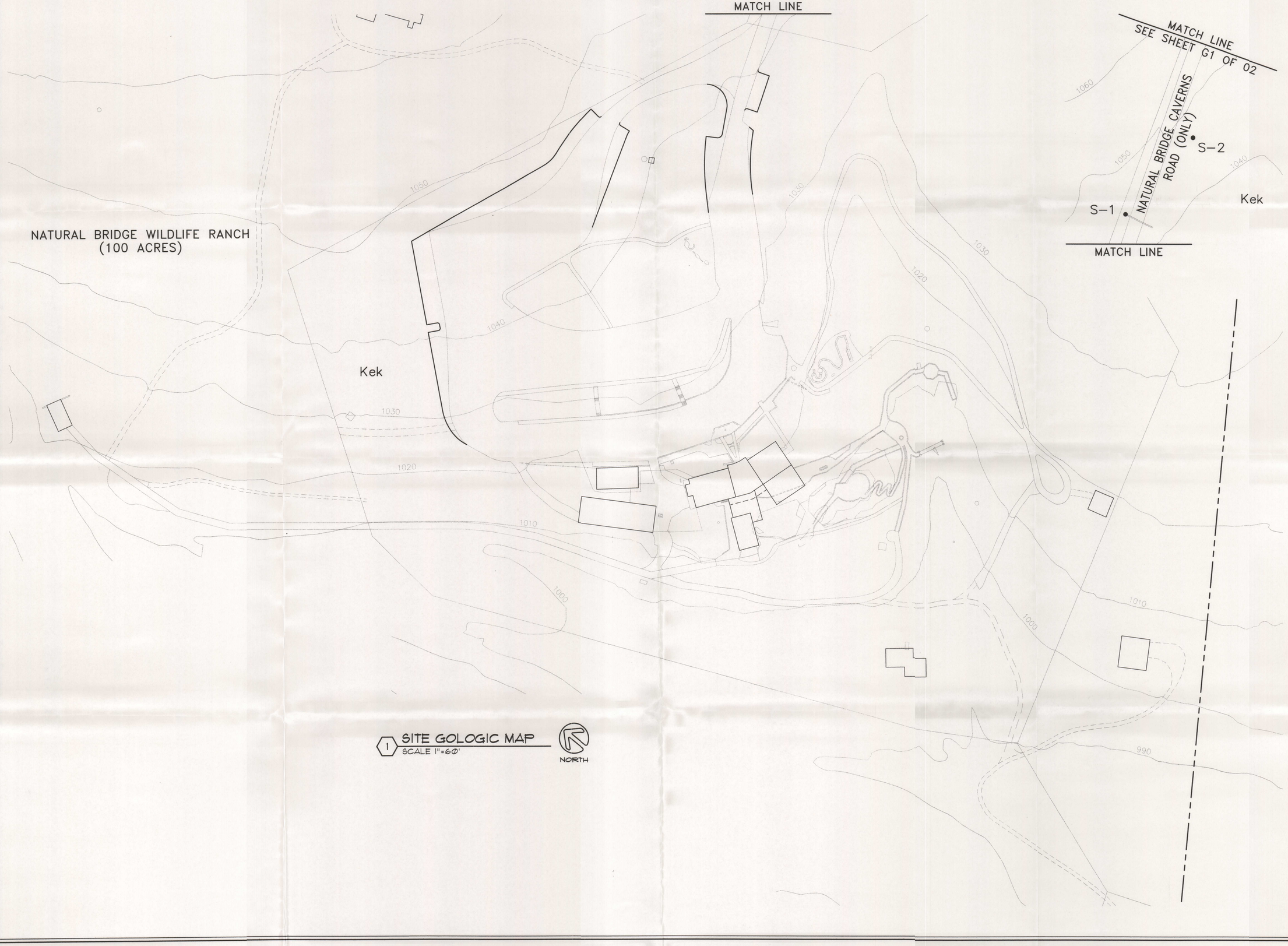
	Animal Feeding Operation		Petroleum Storage Tank		Water Rights
	Title V - Air		Wastewater Permit	x	Edwards Aquifer Protection Program
	Industrial & Hazardous Waste		Water Districts		
	Municipal Solid Waste		Water Utilities		Unknown
	New Source Review - Air		Licensing - TYPE(s)		

Section IV: Preparer Information

39. Name	40. Title
Roger C. Lawhead, PE	P.E.

41. Telephone Number	42. Extension or Code	43. Fax Number *if applicable*
(210)-734-4388	101	(210)-734-6401

44. E-mail Address:	rlawhead@slayengineering.com



1 SITE GOLOGIC MAP
SCALE 1"=60'

NORTH

FILE NAME - NatBrg-Geo-2.dwg

Dodson, Neathery & Associates
900 N.E. Loop 410, Suite D-315
San Antonio, Texas 78209

Dodson, Neathery & Associates Geology 140

RECEIVED-TCEQ
2004 APR 13 AM 9:41
SAN ANTONIO REGION

DODSON ENGINEERING, INC.
512 EAST BLANCO, SUITE 100 - BOERNE, TX 78006
PHONE: (830) 249-5533 - FAX: (830) 249-5534

NATURAL BRIDGE CAVERNS and
NATURAL BRIDGE WILDLIFE RANCH

WATER POLLUTION ABATEMENT PLAN

COMAL COUNTY, TEXAS

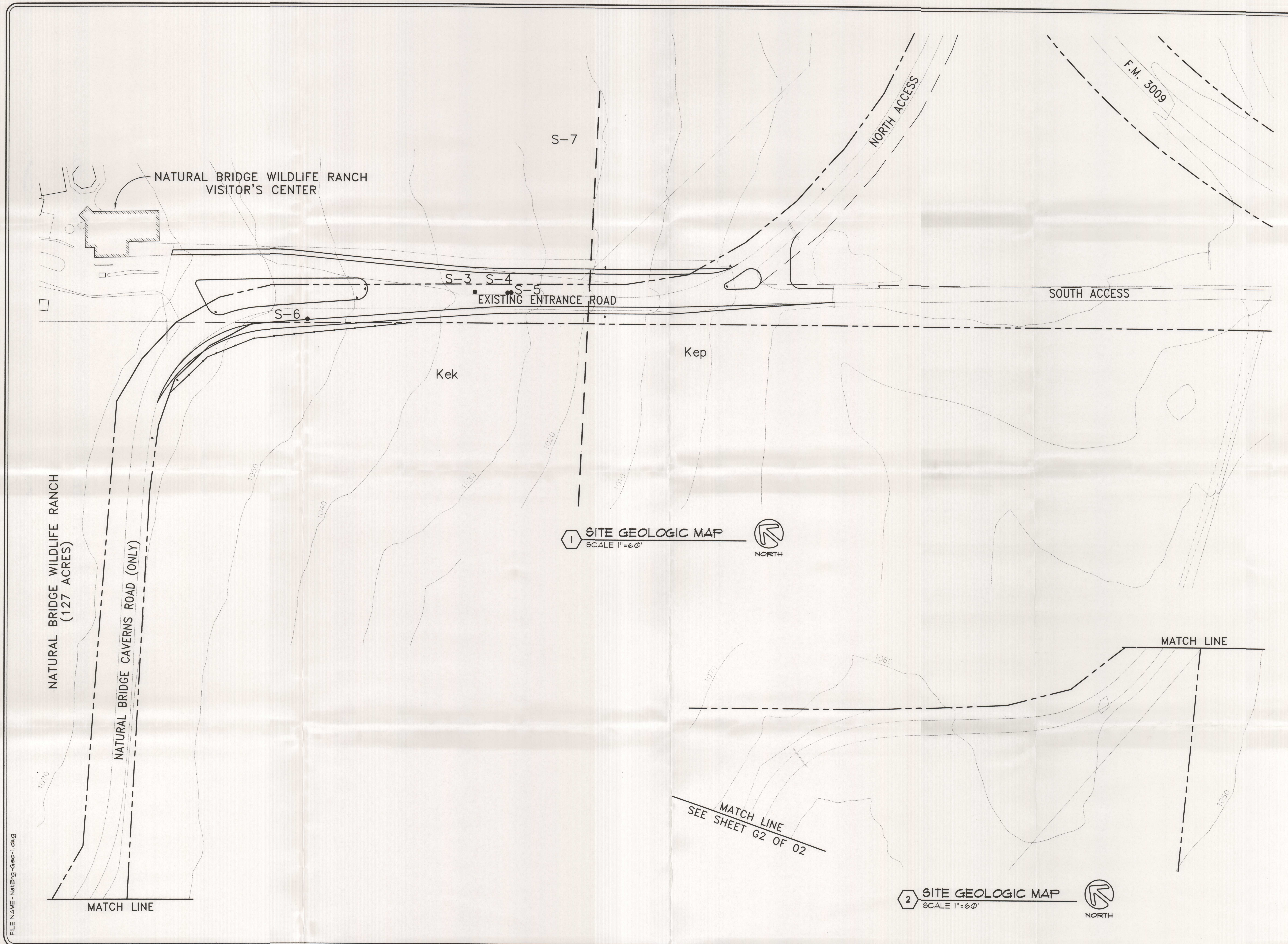
DESIGNED
DRAWN
CHECKED
DATE 03/31/04

REVISIONS

SHEET TITLE

SITE GEOLOGIC MAP

SHEET
G2
OF 02



1 SITE GEOLOGIC MAP
SCALE 1"=60'

2 SITE GEOLOGIC MAP
SCALE 1"=60'

Dodson, Neathery & Associates
900 N.E. Loop 410, Suite D-315
San Antonio, Texas 78209

STATE OF TEXAS
Jeffrey S. Neathery
Geology
40
LICENSED
PROFESSIONAL GEOSCIENTIST

RECEIVED-TCEQ
2004 APR 13 AM 9:46
SAN ANTONIO REGION

COYLE
ENGINEERING, INC.
512 EAST BLANCO, SUITE 100 ~ BOERNE, TX. 78006
PHONE: (830) 249-5533 ~ FAX: (830) 249-5534

NATURAL BRIDGE CAVERNS and
NATURAL BRIDGE WILDLIFE RANCH
WATER POLLUTION
ABATEMENT PLAN
COMAL COUNTY, TEXAS

DESIGNED
DRAWN
CHECKED
DATE 03/31/04

REVISIONS

SHEET TITLE
SITE
GEOLOGIC
MAP

SHEET
G1
OF 02

COYLE
ENGINEERING, INC.

512 EAST BLANCO, SUITE 100 / BOERNE, TEXAS 78006 / PHONE: (830)249-5533 / FAX: (830)249-5534

April 28, 2004

Mr. Bobby Caldwell
Mr. John Mauser
Texas Commission on Environmental Quality
14250 Judson Road
San Antonio, Texas 78233-4480

Reference: Water Pollution Abatement Plan, Natural Bridge Caverns/Natural Bridge Wildlife Ranch
EAPP #2142.01
Subject: Need to Begin Construction

Gentlemen,

As requested, we have submitted answers to the questions posed for the technical review as included herein. However, my Clients and our firm thought that you were going to make a decision for the commencement of construction based on conversations we have all had, and not on the technical review of the project.

As both of you have heard, the situation is now in the extremely critical stage. *The road contractor must mobilize within days, if the project is to occur at all this year.*

Let me reiterate that the I think we all agreed early in this project that the affect on water quality is minimal due to the total level of impervious cover, the extent of land owned by the Clients and the natural filtration occurring within the property. I also know that the Clients would rather not have to dedicate land for vegetative filtering if at all possible, but are willing to follow appropriate rules as necessary.

We are convinced that beginning construction now is appropriate, and very shortly thereafter, we will all be satisfied with the acceptance and appropriate documentation of the project.

Please inform us immediately of your response to this letter.

Sincerely,

Robert D. Leonhard, P.E.
Vice President

COYLE
ENGINEERING, INC.

512 EAST BLANCO, SUITE 100 / BOERNE, TEXAS 78006 / PHONE: (830)249-5533 / FAX: (830)249-5534

April 28, 2004

Mr. John Mauser
Texas Commission on Environmental Quality
14250 Judson Road
San Antonio, Texas 78233-4480

Reference: Water Pollution Abatement Plan, Natural Bridge Caverns/Natural Bridge Wildlife Ranch
EAPP #2142.01
Subject: Responses to Comments for Technical Review

The following are responses to questions concerning temporary and permanent best management practices (BMPs) for the subject project:

TBMPs

A. Item 10: Drainage area map was not included since none of the four potential responses on the application adequately explain the situation. There is not any area greater than 10 acres within a common drainage area that will be disturbed (last potential response), but sediment traps and basins will not be used. Disturbed areas are only slightly larger that the amount of impervious cover to be added, which equals less than one acre for each of the three sub-drainage areas affected. Temporary BMPs shown on the plan included with the original package are adequate to control construction runoff.

B. Item 17. Schedule of Interim and Permanent Soils stabilization is enclosed. This schedule may have been included in some of the copies provided in the intake session, as it was completed prior to our 3-31-04 meeting.

PBMPs

A. We reviewed the previous calculations and have employed the TCEQ Vegetative Filter Strip Sizing spreadsheet, as well as our own spreadsheet submitted in the previous submittal. We checked all of our calculations against those formulas embedded within the spreadsheets, and they are correct in accordance with the Technical Guidance Manual.

We have slightly modified the length of one the two strips used for treatment/mitigation. The strip length along the main entrance road for the project is now 450 feet. Added to the 1105-foot strip along the entrance drive to NBC used for mitigation, the total vegetative strip area is larger than necessary. This is because the impervious cover that will be treated after the project is complete needs to be equal to the new impervious cover added for the entire project, or 1.15 acres, as reported in the previous submittal. These areas, as shown on the spreadsheets, are 0.51 acres treated adjacent to the main entrance road, and 0.64 acres treated adjacent to the drive to NBC.

The only other change to the calculations pertains to the contributing area of the treatment area along the NBC entrance drive. This area was reported as 9.9 acres in the previous submittal, but that is a natural drainage area that sheet flows across the mitigation area. We think that the intent of the technical guidance for roadways is that the project area is the road itself when the nature of the runoff is sheet flow. This is obvious from the pattern of contours, and because the design employs such a large strip length (1105 feet). The project area for this portion of the project is 0.64 acres, as shown on the spreadsheets.

B. The modified site plan submitted with our 4-12-04 responses for administrative completeness demonstrates that the proposed vegetative filters are within the owners' property and the proposed project.

C. Existing impervious cover for each property was submitted in our 4-12-04 responses for administrative completeness.

Sincerely,

Robert D. Leonhard, P.E.
Vice President

VEGETATED FILTER STRIP SIZING

NAME:

1	Contributing drainage area (acres)	0.51	
2	Pre-development impervious cover (decimal %)	0.75	
3	Post-development impervious cover (decimal %)	1.00	
4	Rainfall (inches)	33.00	Standard for Comal County
5	Pre-development runoff coefficient	0.58	Simplified formula
6	Developed runoff coeffiecient	0.90	
7	Background condition (lbs.)	177.44	Simplified formula
8	Developed condition (lbs.)	584.53	
9	Difference (lbs.)	407.10	
10	Required load reduction (lbs.)	325.68	80% of difference
11	Fraction of impervious cover that must be treated (%)	0.66	
12	Total amount of impervious cover (sq. ft.)	22216.00	
13	Amount of impervious cover that must be treated (sq. ft.)	14562.14	
14	Amount of vegetated filter strip needed (sq. ft.)	8705.63	Based on Equation in 4.5.4
15	Amount of vegetated filter strip provided (sq. ft.)	8920.00	

use 20 ft. width

DESIGN CRITERIA	YES	NO	UNK
Filter strip information is specific to a single watershed.			
Contains dense vegetation.			
Slope of filter is less than or equal to 15%.			
Filter extends the entire length of the contributing area.			
Filter is at least 12 feet wide (in the direction of flow).			
Top of filter strip is contiguous with the developed area.			
Top of filter strip runs along a single elevation contour.			
A level spreading device is used if stormwater approaching the filter is concentrated.			
Maintenance schedule.			

Stormwater Design Manager

Natural Bridge Complex - Entrance Road Widening and Parking Improvements - Vegetative Filter Strip Via Mitigation

Assumptions:	
Raw Land TSS	80
Developed Land TSS	170
Rainfall	33
Contributing Area (Acres)	0.51
Impervious Cover (Acres)	0.38
Runoff Coefficient (Rv)	0.58
Previously Undeveloped (Au)	0.51
Developed (Ad)	0.51

BMP	Efficiency
Retention/Irrigation	100%
Vegetative Strip	85%
Detention	75%
Sand Filters	89%
Constructed Wetlands	93%

BMP in Series	Efficiency Factor
Stage 1	100%
Stage 2	80%
Stage 3	30%

Pollutant Loadings for Design

Percent Impervious Cover		**100%**	
	Lr=	176	Equation 3.1
	Rvr =	0.58	Equation 3.2
	Lm=	584	Equation 3.4
	Rvm =	0.90	Equation 3.2
Pre Development Load (Raw)		**176**	
Post Development Load		**584**	
Required Reduction (lbs)		**327**	

Vegetated Strip Calculations:

Vegetated Strip Removed (lbs)	327 lbs	Required Area %	0.66
Strip width	20 ft	Require Area to be Treated	0.34
Fraction of Site Treated	0.66	Required Treatment Area	0.20
Length of Strip Required	**446 ft**		

USE 12 FT FOR A MINIMUM LENGTH

4/28/2004

VEGETATED FILTER STRIP SIZING

NAME:

1	Contributing drainage area (acres)	0.64	
2	Pre-development impervious cover (decimal %)	0.88	
3	Post-development impervious cover (decimal %)	1.00	
4	Rainfall (inches)	33.00	Standard for Comal County
5	Pre-development runoff coefficient	0.74	Simplified formula
6	Developed runoff coeffiecient	0.90	
7	Background condition (lbs.)	283.13	Simplified formula
8	Developed condition (lbs.)	733.53	
9	Difference (lbs.)	450.41	
10	Required load reduction (lbs.)	360.32	80% of difference
11	Fraction of impervious cover that must be treated (%)	0.58	
12	Total amount of impervious cover (sq. ft.)	27625.00	
13	Amount of impervious cover that must be treated (sq. ft.)	15964.59	
14	Amount of vegetated filter strip needed (sq. ft.)	9544.05	Based on Equation in 4.5.4
15	Amount of vegetated filter strip provided (sq. ft.)	13260.00	

use 12 ft. width

DESIGN CRITERIA	YES	NO	UNK
Filter strip information is specific to a single watershed.			
Contains dense vegetation.			
Slope of filter is less than or equal to 15%.			
Filter extends the entire length of the contributing area.			
Filter is at least 12 feet wide (in the direction of flow).			
Top of filter strip is contiguous with the developed area.			
Top of filter strip runs along a single elevation contour.			
A level spreading device is used if stormwater approaching the filter is concentrated.			
Maintenance schedule.			

Stormwater Design Manager

Natural Bridge Complex - Entrance Road Widening and Parking Improvements - Vegetative Filter Strip Via Mitigation

Assumptions:	
Raw Land TSS	80
Developed Land TSS	170
Rainfall	33
Contributing Area (Acres)	0.64
Impervious Cover (Acres)	0.56
Runoff Coefficient (Rv)	0.74
Previously Undeveloped (Au)	0.64
Developed (Ad)	0.64

BMP	Efficiency
Retention/Irrigation	100%
Vegetative Strip	85%
Detention	75%
Sand Filters	89%
Constructed Wetlands	93%

BMP in Series	Efficiency Factor
Stage 1	100%
Stage 2	80%
Stage 3	30%

Pollutant Loadings for Design

Percent Impervious Cover		**100%**	
	Lr=	281	Equation 3.1
	Rvr =	0.74	Equation 3.2
	Lm=	733	Equation 3.4
	Rvm =	0.90	Equation 3.2
Pre Development Load (Raw)		**281**	
Post Development Load		**733**	
Required Reduction (lbs)		**362**	

Vegetated Strip Calculations:

Vegetated Strip Removed (lbs)	362 lbs	Required Area %	0.58
Strip width	12 ft	Require Area to be Treated	0.37
Fraction of Site Treated	0.58	Required Treatment Area	0.22
Length of Strip Required	**804 ft**		

USE 12 FT FOR A MINIMUM LENGTH

4/28/2004

ATTACHMENT J - INTERIM AND PERMANENT SOIL STABILIZATION

The grass surface of the areas disturbed during construction shall be planted as soon in the construction process as realistic for the survival of the grass. A hydromulch seeding operation will be performed after the additional asphalt is laid. Other landscaping will be planted in the created islands as soon as possible based on the construction activity and season. Watering will occur until plantings have been established and be performed as necesssary after road and parking lot construction is completed.

COYLE
ENGINEERING, INC.

512 EAST BLANCO, SUITE 100 / BOERNE, TEXAS 78006 / PH: (830)249-5533 / FAX: (830)249-5534

TRANSMITTAL

Date: **4/28/04**

To: **Mr. John Mauser**

From: **Rob Leonhard, P. E.**

Reference: **Natural Bridge WPAP, EAPP #2142.01**

Subject: **Additional Information for Technical Review**

Dear John,

For your assistance and clarification, I have prepared one original and three copies of

1. Drainage Area Map
2. Revised Temporary and Permanent Pollution Abatement Plan

The size of the filter strips, and other key information that needed to be revised is included herein.

If you have any questions, or need additional information, please call.

Thank you,

Rob Leonhard, P. E.

SENT
APR 30 2004

COYLE
ENGINEERING, INC.

512 EAST BLANCO, SUITE 100 / BOERNE, TEXAS 78006 / PH (830)249-5533 / FAX (830)249-5534

FAX TRANSMITTAL

Date: 4-30-04

To: JOHN MAUSER **Fax to #:** 210-545-4329

From: ROB LEONHARD

No. Pages: 2 PGS

Subject: EAPP 2142.01

RECEIVED
MAY 05 2004
COUNTY ENGINEER

Letter Concerning Runoff Near Main Cave!

RECEIVED TCEQ
SAN ANTONIO
REGION
2004 APR 30 PM 3:17

COYLE
ENGINEERING, INC.

512 EAST BLANCO, SUITE 100 / BOERNE, TEXAS 78006 / PH: (830)249-5533 / FAX: (830)249-5534

April 30, 2004

Mr. John Mauser
Texas Commission on Environmental Quality
14250 Judson Road
San Antonio, Texas 78233-4480

Reference: Water Pollution Abatement Plan, Natural Bridge Caverns/Natural Bridge Wildlife Ranch
EAPP #2142.01
Subject: Statement Concerning Runoff from NBC Parking Lot

Dear John,

Per your request, this is an explanation of the path of travel of the runoff from the NBC Parking Lot. As of this moment, I cannot get in touch with the Cave Geologist at the site, Brian Vauter, who would be able to provide the best explanation of this situation.

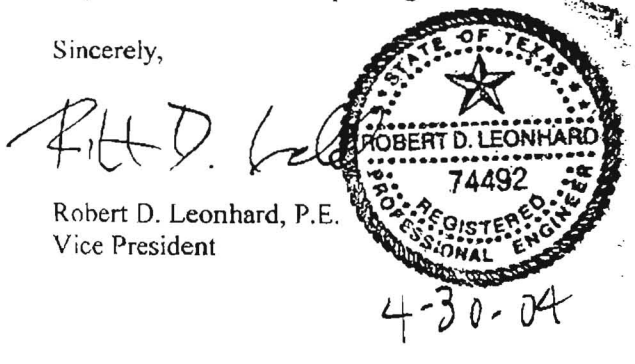
However, I am very familiar with the site, since we have performed a topographic and improvements survey of the entire NBC campus, including all of the facilities, the parking lot, the entrance to the main cavern and the surrounding area.

The sub-drainage basin including the pavement areas to be added to the parking lot ultimately flow into a natural channel behind the buildings and the main cave entrance. The buildings themselves and at least one diversion built into the existing parking lot ensure that no runoff from the parking lot directly enters the main cavern entrance adjacent to the site. This is illustrated by flow arrows on sheet C2 of the Temporary/Permanent Pollution Abatement Plan. Our update to the Overall Site Plan (signed and sealed 4/08/04) points out the main entrance to the cavern

Because of the grade of the swales that go around the cave, runoff passes quickly by the main cave area, enters the dry creek bed to the south and eventually goes off the owner's property to the southeast. This condition has existed since the original facilities and parking lot was constructed in the sixties, and has acted as a pollution control feature protecting the main cave entrance.

We hope you can use this letter to alleviate the concerns you expressed to me concerning the mitigation of the new impervious cover in the parking lot.

Sincerely,



Robert D. Leonhard, P.E.
Vice President

4-30-04

COYLE
ENGINEERING, INC.

512 EAST BLANCO, SUITE 100 / BOERNE, TEXAS 78006 / PH (830)249-5533 / FAX (830)249-5534

FAX TRANSMITTAL

Date: 4-30-04

To: JOHN MAUSER **Fax to #:** 210-545-4329

From: ROB LEONHARD

No. Pages: 4

Subject: EAPP 2142.01

RECEIVED
APR 30 2004
COYLE ENGINEERING, INC.

To: Rob Leonhard
830/249-5534 (Fax)

From: JM John Mauser
210/403-4024, 210/545-4329 (Fax)

Area	Existing IC	Proposed IC (Acres)	Total Suspended Solids (#/yr) Generated	TSS Treated	Treatment provided by vegetated filters (Acres)
Entrance	----	0.61 net acres (0.85 - 0.24)	325	325	0.205 acres (8,920 sq ft)
Driveway - new 3' width	----	0.13 acres (2000 x 3 = 6,000 sq ft)	73	----	0.304 acres (13,260 sq ft)
Driveway - existing 22' wide	0.575 acres (1140 x 22 = 25,080 sq ft)	----		----	
Driveway - total (22' + 3' = 25')	----	0.705 acres (0.575 + 0.13)	----	360	
Parking Area- new	----	0.382	214	----	Treatment of parking lot provided by vegetated filter for "Total Driveway"
Total	----	1.122	612	685	----

VEGETATED FILTER STRIP SIZING

"DRIVEWAY"

NAME:

1	Contributing drainage area (acres)	0.13	
2	Pre-development impervious cover (decimal %)	0.88	
3	Post-development impervious cover (decimal %)	1.00	
4	Rainfall (inches)	33.00	Standard for Comal County
5	Pre-development runoff coefficient	0.74	Simplified formula
6	Developed runoff coeffiecient	0.90	
7	Background condition (lbs.)	57.51	Simplified formula
8	Developed condition (lbs.)	149.00	
9	Difference (lbs.)	91.49	
10	Required load reduction (lbs.)	73.19	80% of difference
11	Fraction of impervious cover that must be treated (%)	0.58	
12	Total amount of impervious cover (sq. ft.)	0.13	
13	Amount of impervious cover that must be treated (sq. ft.)	0.08	
14	Amount of vegetated filter strip needed (sq. ft.)	0.04	Based on Equation in 4.5.4
15	Amount of vegetated filter strip provided (sq. ft.)		

DESIGN CRITERIA	YES	NO	UNK
Filter strip information is specific to a single watershed.			
Contains dense vegetation.			
Slope of filter is less than or equal to 15%.			
Filter extends the entire length of the contributing area.			
Filter is at least 12 feet wide (in the direction of flow).			
Top of filter strip is contiguous with the developed area.			
Top of filter strip runs along a single elevation contour.			
A level spreading device is used if stormwater approaching the filter is concentrated.			
Maintenance schedule.			

VEGETATED FILTER STRIP SIZING

"PARKING"

NAME:

1	Contributing drainage area (acres)	0.38	
2	Pre-development impervious cover (decimal %)	0.88	
3	Post-development impervious cover (decimal %)	1.00	
4	Rainfall (inches)	33.00	Standard for Comal County
5	Pre-development runoff coefficient	0.74	Simplified formula
6	Developed runoff coeffiecient	0.90	
7	Background condition (lbs.)	168.11	Simplified formula
8	Developed condition (lbs.)	435.54	
9	Difference (lbs.)	267.43	
10	Required load reduction (lbs.)	213.94	80% of difference
11	Fraction of impervious cover that must be treated (%)	0.58	
12	Total amount of impervious cover (sq. ft.)	0.38	
13	Amount of impervious cover that must be treated (sq. ft.)	0.22	
14	Amount of vegetated filter strip needed (sq. ft.)	0.13	Based on Equation in 4.5.4
15	Amount of vegetated filter strip provided (sq. ft.)		

DESIGN CRITERIA	YES	NO	UNK
Filter strip information is specific to a single watershed.			
Contains dense vegetation.			
Slope of filter is less than or equal to 15%.			
Filter extends the entire length of the contributing area.			
Filter is at least 12 feet wide (in the direction of flow).			
Top of filter strip is contiguous with the developed area.			
Top of filter strip runs along a single elevation contour.			
A level spreading device is used if stormwater approaching the filter is concentrated.			
Maintenance schedule.			